Petrogenesis of High Heat Producing Granite: Implication for Mt Painter Province, South Australia

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Thesis submitted for the degree of Doctor of Philosophy
in the Faculty of Science, University of Adelaide

January 2010

APPENDICES

Appendix 1 Methods

A. Geochronology

Sample separation and analysed methods are undertaken following Payne et al. (2006). Samples were crushed and milled by a Jaw Crusher and WC mill, then sieved to collect the 79-300 μm portions. Heavy mineral concentrates were obtained by hand panning with the heavy mineral separate subject to Frantz magnetic separation to remove the highly magnetic fraction, followed by heavy liquid separation to reduce the size of the sample. Zircons were then hand-picked from the sample and mounted into epoxy resin blocks. The grain mounts were imaged using Cathode Luminescence (CL) imaging by a Philips XL-20 SEM with attached Gatan Cathode Luminescence analyser. Single zircon grains were dated by using LA-ICPMS at University of Adelaide. U–Pb isotopic analyses were collected using a New Wave 213 nm Nd-YAG laser in a He ablation atmosphere, coupled to an Agilent 7500cs ICP-MS. A 60 s gas blank was analysed first to obtain background levels, followed by 120 s measurements during zircon ablation. Before each ablation the laser was fired for 10 s with the shutter closed to allow crystal and beam stabilisation. U–Pb fractionation was corrected using the GEMOC GJ-1 zircon standard (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, Jackson et al., 2004). A combination of an in-house Sri Lankan zircon standard (BJWP-1, ca. 727 Ma), and recognised zircon standards '91500' (Wiedenbeck et al., 1995) and 'Mud Tank' (Black and Gulson, 1978) were used for checking accuracy. Data analysis was conducted using GLITER software (Van Achterbergh et al., 2001). Over the duration of this study the reported average normalised ages for GJ-1 are 607.6 ± 25.6 Ma, 601.3 ± 7.3 Ma, 602.6 ± 6.3 Ma for the $^{207}Pb/^{206}Pb$, $^{206}Pb/^{238}U$ and $^{207}Pb/^{235}U$, respectively (n =319).

B. Geochemistry

Hand specimen samples were crushed in a jaw crusher and ground to a powder using a tungsten carbide mill. Sample discs for major element analysis

and sample pellets for trace element were prepared and measured by a Philips PW 1480 X-ray Fluorescence Spectrometer at the University of Adelaide using an analytical program calibrated against international and local Standard Reference Materials (SRM's). A dual-anode (Sc-Mo) X-ray tube was used, operating at 40kV, 75mA. Samples for major element analysis including SiO_2, Al_2O_3, Fe_2O_3, MnO, MgO, CaO, Na_2O, K_2O, TiO_2, P_2O_5, SO_3 were dried overnight in pre-washed and dried glass vials at around 110^oC then accurately weighed into silica crucibles and ignited in a furnace, overnight, at 960^oC to yield loss on Ignition (LOI) values. Losses may include CO_2 , H_2O, S, Cl and other volatile elements. One gram of ignited rock powder was mixed with 4g of flux (type 12:22, 35.3% lithium tetraborate and 64.7% lithium metaborate), then was fused over a flame around 1100^o in Pt/Au crucibles and cast into a mould to produce a glass disc that can be used for analysis. The samples were then analysed with the X-ray Fluorescence Spectrometer.

Selected powdered samples were analysed for REEs by ICM and ICR methods at the Amdel Laboratories in Adelaide, South Australia using a standard ICP-MS analytical package. Sample powder (~5g) was mixed with around 1mL of Poly Vinyl Alcohol (PVA) and pressed to form a pellet. The pellet was analysed using the afore-mentioned X-ray Spectrometer. Several analysis programs were used and calibrated against many (up to 30 or more) local and international SRM. The dual-anode Sc-Mo tube and an Au tube were used for the analyses. The results are expressed in ppm.

C. Mineralogy

EPMA for major elements

Electron probe microanalysis (EPMA) of feldspar, biotite and hornblende composition was conducted by using a CAMECA SX51 electron microprobe at the Microscopy Centre of the University of Adelaide on carbon-coated epoxy resin blocks. The Astimex Scientific Ltd standards were used for element calibration and analytical conditions were 1 μm, 20 nA and 20 kV. Counting times varied between 10 and 60 seconds, depending upon the required detection limits.

LA-ICPMS for trace elements

Trace element analysis of zircon, allanite, U-Th mineral, Ti minerals and apatite was performed at Adelaide Microscopy using an Agilent 7500cs ICPMS equipped with a New Wave 213 nm Nd-YAG laser. All analyses were conducted using a 40 μm beam diameter and 5 Hz repetition rate. Total acquisition time for each analysis was 105 seconds, and involved 40 seconds of background measurement, l0 seconds for beam and crystal stabilisation, and 55 seconds of sample ablation. The NIST 610 glass standard was used for calibration, employing the coefficients of Pearce et al. (1997), and accuracy was monitored via repeat measurements of the NIST 612 glass standard. The following isotopes have been analysed: 29Si , 31P, 44Ca, 45Sc, 48Ti, 51V, 55Mn, 57Fe, 63Cu, 66Zn, 69Ga, 77Se, 88Sr, 89Y, 91Zr, 93Nb, 95Mo, 118Sn, 121Sb, 138Ba, 139La, 140Ce, 141Pr, 146Nd, 147Sm, 151Eu, 158Gd, 159Tb, 161Dy, 165Ho, 167Er, 169Tm, 172Yb, 175Lu, 178Hf, 181Ta, 182W, 185Re, 208Pb, 232Th and 238U. 29Si was used as an internal standard. Data analysis was conducted using GLITER software (Van Achterbergh et al., 2001).

D. Radiogenic Isotope

Nd-Sm and Rb-Sr whole rock isotope

Nd-Sm isotope analyses of whole-rock samples were conducted at the Radiogenic Isotopic Laboratory, University of Adelaide. Samples were spiked with a ^{150}Nd-^{147}Sm and evaporated to dryness overnight in HF/HNO_3. They were then digested in hot HF/HNO_3 in sealed Teflon Bombs' oven heated at 190°C for 5 days before being evaporated to dryness in HF/HNO_3. 6M HCL was added to the samples, which were then heated at 160°C for 2 days. Biorad Polyprep columns and HDEHP-impregnated Teflon-powder columns were used to isolate Sm, Nd and Sr. Nd and Sm concentrations were calculated by isotope dilution. Nd and Sr isotopic ratios were analysed by using a Finning MAT 262 mass spectrometer and Sm isotopic ratios were measured by a Finning MAT 261 mass spectrometer. Data blocks of ten scans were repetitively collected until acceptable (generally 10 blocks). The ^{143}Nd/^{144}Nd ratio was normalized to 0.721903. The ^{143}Nd/^{144}Nd ratio of the in-house standard (Johnson Matthey) at the Adelaide

University laboratory was 0.511594±0.000006 (1 δ, five analyses). The La Jolla standards were used with long term running average of 0.511839+0.000004 (1δ, eight analyses). The $^{88}Sr/^{86}Sr$ ratio was corrected for mass fractionation by normalisation of 8.3752. The $^{87}Rb/^{86}Sr$ ratio was calculated from accurate Rb and Sr analyses obtained by the XRF analyses.

Pb whole rock isotope

Powdered samples approximately 100 mg were dissolved in HF-HNO_3 by bomb dissolution and converted to chloride using 6M HC1. Then solutions were evaporated and taken up in 1.3 mL HBr for centrifuging. A Pb concentration was extracted by using single stage cation exchange columns. The samples were loaded with silica gel on single Re filaments and analysed on a Finnigan MAT 262 at the University of Adelaide. Data blocks of ten scans were repetitively collected until acceptable (generally 10 blocks unless otherwise stated) and a fractionation factor of 0.0010 per amu was applied to all samples based on replicate analysis of the standard SRM 987.

Pb K-feldspar isotope

K-feldspar phenocrysts were handpicked and then crushed, sieved to 500-250 um fraction. They were cleaned with a Franz isodynamic magnetic separator. An ultrasonic cleaner in double deionised H_2O were used to remove surface contaminant then were cleaned by acetone before hand-picking under a binocular microscope and crushing to a powder. The feldspars were leached 7M HNO_3 on a hot plate with a surface temperature of 125°C then was then decanted off and rinsed with double distilled H_20. The sample was leached in 6M HCl and rinsed again with H_2O. The HNO_3 and HC1 leachates were combined. The feldspar fractions were progressively leached with HF-HNO_3 for >15 minutes at 125°C and decanted off. The sample was rinsed twice with double deionised H_2O, which was added to the leachate. Then the sample was leached again. The acid leachates for each step were dried. The samples were dissolved in ≤ 10 ml 6N HCL overnight and spiked using high U/Pb spike 2N HNO_3. The dried spike samples were redissolved and cut into 1.3 ml of 0.6N HBr. The Pb and U were extracted using the column exchange and were analysed by using a Finning MAT 262 mass spectrometer at University of Adelaide.

Hf zircon isotope

The Hf isotope analyses of zircon were carried out in situ with a New Wave/Merchantek UP-213 laser-ablation microprobe, attached to a Nu Plasma multi-collector ICP-MS, at Macquarie University, Sydney based on methods which described in detail in Griffin et al. (2006). Most analyses were obtained using a beam diameter of 55 μm and a 5 Hz repetition rate resulting in typical Hf signals of $1–5 \times 10^{-11}$ A. Typical ablation times were 80–120 s, resulting in pits 40–50 μm deep. Masses 172, 175, 176, 177, 178, 179, and 180 were measured in Faraday cups and analysed in static-collection mode. Analysed data were normalised to $^{179}Hf/^{177}Hf = 0.7325$, using an exponential correction for mass bias. Initial setup of the instrument is used a 1 ppm solution of JMC475 Hf, yielding a total Hf beam of $10–14 \times 10^{-11}$ A. Interference of ^{176}Lu on ^{176}Hf is corrected by measuring the intensity of the interference-free ^{175}Lu isotope and using $^{176}Lu/^{175}Lu = 0.02669$ (Patchett, 1983) to calculate $^{176}Lu/^{177}Hf$. The interference of ^{176}Yb on ^{176}Hf has been corrected by measuring the interference-free ^{172}Yb isotope and using $^{176}Yb/^{172}Yb$ to calculate $^{176}Yb/^{177}Hf$. The appropriate value of $^{176}Yb/^{172}Yb$ was determined by spiking the JMC475 Hf standard with Yb, and finding the value of $^{176}Yb/^{172}Yb$ (0.5865) required to yield the value of $^{176}Hf/^{177}Hf$ obtained on the pure Hf solution (Griffin et al., 2004). The accuracy of the Yb and Lu corrections has been demonstrated by repeated analysis of standard zircons with a range in $^{176}Yb/^{177}Hf$ and $^{176}Lu/^{177}Hf$ (Griffin et al., 2004). The Mud Tank zircons (Griffin et al., 2004), which has an average corrected $^{176}Hf/^{177}Hf$ value of 0.282515 ± 0.000026 (2σ, $n = 11$), were analysed for checking instrument performance and stability before and during the analysis.

Appendix 2 Sample listing

List of samples collected from Mt Painter Province

Field No.	HPG001	HPG002	HPG003	HPG004	HPG005	HPG006	HPG007
Map	54J	54J	54J	54J	54J	54J	54J
LocationE	371264	364589	364526	364495	365025	365389	365389
LocationN	6689920	6686396	6686385	6686343	6687105	6686979	6686979
Granite Suite	Terrapinna Granite	Con Bore Granite	Con Bore Granite	Terrapinna Granite	Terrapinna Granite	Mafic dyke	Terrapinna Granite
TS/PTS	-	-	-	TS	PTS	-	-
Geochemistry	-	-	-	Y	Y	-	Y
Nd isotope	-	-	-	-	-	-	-
Sr Isotope	-	-	-	-	-	-	-
Pb Whole rock	-	-	-	-	-	-	-
Pb K-feldspar	-	-	-	-	-	-	-
Hf isotope	-	-	-	-	-	-	-
Geochronology	-	-	-	-	-	-	-
Mineralogy	-	-	-	-	-	-	-

Field No.	HPG008	HPG009	HPG010	HPG011	HPG012	HPG013	HPG014
Map	54J	54J	54J	54J	54J	54J	54J
LocationE	365473	365755	360674	360600	359986	360570	360029
LocationN	6686941	6687059	6669432	6669524	6669463	6668917	6669015
Granite Suite	Terrapinna Granite	Terrapinna Granite	Mt Neil Granite	Mt Neil Granite	Mt Neil Granite	Mt Neil Granite	Mafic dyke
TS/PTS	TS	PTS	TS	TS	-	-	TS
Geochemistry	Y	Y	-	-	-	-	Y
Nd isotope	-	-	-	-	-	-	-
Sr Isotope	-	-	-	-	-	-	-
Pb Whole rock	-	-	-	-	-	-	-
Pb K-feldspar	-	-	-	-	-	-	-
Hf isotope	-	-	-	-	-	-	-
Geochronology	-	-	-	-	-	-	-
Mineralogy	-	-	-	-	-	-	-

Field No.	HPG015	HPG016	HPG017	HPG018	HPG019	BB01	BB02
Map	54J	54J	54J	54J	54J	54J	54J
LocationE	360035	360382	360508	363122	363280	360136	364303
LocationN	6669036	6669155	6669139	6697240	6670368	6697806	6698228
Granite Suite	Mt Neil Granite	Mt Neil Granite	Mt Neil Granite	Mt Neil Granite	Papuena Volcanic	Terrapinna Granite	Wattleowie Granite
TS/PTS	TS	-	-	-	TS	TS	TS
Geochemistry		-	-	-	-	-	Y
Nd isotope	-	-	-	-	-	-	Y
Sr Isotope	-	-	-	-	-	-	Y
Pb Whole rock	-	-	-	-	-	-	
Pb K-feldspar	-	-	-	-	-	-	Y
Hf isotope	-	-	-	-	-	-	-
Geochronology	-	-	-	-	-	-	-
Mineralogy	-	-	-	-	-	-	-

List of samples collected from Mt Painter Province

Field No.	BB03	BB04	BB05	BB06	BB07	BB08	BB09
Map	54J	54J	54J	54J	54J	54J	54J
LocationE	364288	364266	364508	364689	366572	372299	372734
LocationN	6698114	6697949	6697974	6698246	2698270	6696437	669542
Granite Suite	Terrapinna Granite	Terrapinna Granite	Wattleowie	Mafic dyke	Terrapinna Granite	Wattleowie	Wattleowie
TS/PTS	-	-	TS	TS	TS	TS	TS
Geochemistry	-	-	Y	Y	-	-	-
Nd isotope	-	-	-	-	-	-	-
Sr Isotope	-	-	-	-	-	-	-
Pb Whole rock	-	-	-	-	-	-	-
Pb K-feldspar	-	-	-	-	-	-	-
Hf isotope	-	-	-	-	-	-	-
Geochronology	-	-	-	-	-	-	-
Mineralogy	-	-	-	-	-	-	-

Field No.	BB10	BB11	BB12	BB13	BB14	BB15	BB16
Map	54J	54J	54J	54J	54J	54J	54J
LocationE	373166	373376	372978	372575	372136	372061	371995
LocationN	6694978	6693791	6693791	6693748	6694861	6695571	6695682
Granite Suite	Terrapinna Granite	Terrapinna Granite	Terrapinna Granite	Terrapinna Granite	Terrapinna Granite	Wattleowie Granite	Wattleowie Granite
TS/PTS	-	-	-	TS	-	-	-
Geochemistry	-	Y	-	-	-	-	Y
Nd isotope	-	-	-	-	-	-	-
Sr Isotope	-	-	-	-	-	-	-
Pb Whole rock	-	-	-	-	-	-	-
Pb K-feldspar	-	-	-	-	-	-	-
Hf isotope	-	-	-	-	-	-	-
Geochronology	-	-	-	-	-	-	-
Mineralogy	-	-	-	-	-	-	-

Field No.	BB17	BB18	BB19	BB20	BB21	BB22	BB23
Map	54J	54J	54J	54J	54J	54J	54J
LocationE	369044	368988	369035	369050	367824	366488	367673
LocationN	6697363	6696897	6695028	6694377	6688938	6686970	6685279
Granite Suite	Terrapinna Granite	Wattleowie Granite	Terrapinna Granite	Terrapinna Granite	Mt Neil Granite	Mt Neil Granite	Mt Neil Granite
TS/PTS	-	PTS	TS	-	PTS,TS	TS	-
Geochemistry	-	Y	-	-	-	Y	-
Nd isotope	-	-	-	-	-	-	-
Sr Isotope	-	-	-	-	-	-	-
Pb Whole rock	-	-	-	-	-	-	-
Pb K-feldspar	-	-	-	-	-	-	-
Hf isotope	-	-	-	-	-	-	-
Geochronology	-	-	-	-	-	-	-
Mineralogy	-	-	-	-	-	-	-

List of samples collected from Mt Painter Province

Field No.	BB24A	BB24B	BB25	BB26	MN001	MN002	MN003
Map	54J	54J	54J	54J	54J	54J	54J
LocationE	357112	357112	357516	357589	367202	367119	367084
LocationN	6703401	6703401	6703469	6703468	6672745	6672634	6672261
Granite Suite	White well granite	White well granite	Pospect Hill Volcanic	Wattleowie Granite	Mt Neil Granite	Mt Neil Granite	Pepegoona Porphyry
TS/PTS	-	-	PTS	-	TS	PTS	TS
Geochemistry	-	-	Y	-	-	Y	Y
Nd isotope	-	-	-	-	-	-	-
Sr Isotope	-	-	-	-	-	-	-
Pb Whole rock	-	-	-	-	-	-	-
Pb K-feldspar	-	-	-	-	Y	-	-
Hf isotope	-	-	-	-	-	-	Y
Geochronology	-	-	-	-	-	-	-
Mineralogy	-	-	-	-	-	-	-

Field No.	MN004	MN005	MN006	MN007	MN008	MN009	MN010
Map	54J	54J	54J	54J	54J	54J	54J
LocationE	366999	366999	365254	365254	365248	365236	365336
LocationN	6672464	6672464	6671143	6671143	6671158	6671205	6671094
Granite Suite	Mt Neil Granite	Mt Neil Granite	Mt Neil Granite	Mt Neil Granite	Mt Neill granite and Pepegoona Porphyry	Pepegoona Porphyry and Metased	Pepegoona Porphyry and dyke???
TS/PTS	TS	-	-	TS	TS	TS	TS
Geochemistry	-	-	-	Y	Y	-	Y
Nd isotope	-	-	-	-	-	-	Y
Sr Isotope	-	-	-	-	-	-	Y
Pb Whole rock	-	-	-	-	-	-	Y
Pb K-feldspar	Y	-	-	-	-	-	
Hf isotope	-	-	-	-	-	-	-
Geochronology	-	-	-	-	-	-	-
Mineralogy	-	-	-	-	-	-	-

Field No.	MN011	MN012	MN013	MN014	MN015	MN016	MN017
Map	54J	54J	54J	54J	54J	54J	54J
LocationE	365389	363608	363478	363275	363240	362883	362574
LocationN	6670992	6669584	6669613	6669797	6669965	6670847	6671078
Granite Suite	Mt Neil Granite	Mt Neil Granite	Mt Neil Granite	Mt Neil Granite	Mt Neil Granite	Pepegoona volcanic	Mt Neil Granite
TS/PTS	-	-	PTS	-	-	-	PTS
Geochemistry	-	-	Y	-	-	-	-
Nd isotope	-	-	-	-	-	-	-
Sr Isotope	-	-	-	-	-	-	-
Pb Whole rock	-	-	-	-	-	-	-
Pb K-feldspar	-	-	-	-	-	-	-
Hf isotope	-	-	-	-	-	-	-
Geochronology	-	-	-	-	-	-	-
Mineralogy	-	-	-	-	-	-	-

List of samples collected from Mt Painter Province

Field No.	MN018	MN019	MN020	MN021	MN022	MN023	MN024
Map	54J	54J	54J	54J	54J	54J	54J
LocationE	362475	362523	363010	364871	364909	364881	356899
LocationN	6671178	6671121	6669913	6670532	6670608	6670476	6670447
Granite Suite	Mt Neil Granite	Pepegoona volcanic	Mt Neil Granite	Mafic dyke	Mt Neil Granite	Mt Neil Granite	Mt Neil Granite
TS/PTS	TS	-	-	TS	-	-	-
Geochemistry	Y	-	Y	Y	-	-	-
Nd isotope	-	-	-	-	-	-	-
Sr Isotope	-	-	-	-	-	-	-
Pb Whole rock	-	-	-	-	-	-	-
Pb K-feldspar	-	-	-	-	-	-	-
Hf isotope	-	-	-	-	-	-	-
Geochronology	-	-	-	-	-	-	-
Mineralogy	-	-	-	-	-	-	-

Field No.	MN025	MN026	MN027	MN028	MN029	MN030	MN031
Map	54J	54J	54J	54J	54J	54J	54J
LocationE	357159	357352	357292	357022	355471	355471	355406
LocationN	6671372	6671414	6671438	6670596	6668328	6668328	6668112
Granite Suite	Mt Neil Granite	Mt Neil Granite	Mt Neil Granite	Mt Neil Granite	Mt Neil Granite	Mt Neil Granite	Mt Neil Granite
TS/PTS	-	PTS	TS	-	TS	-	TS
Geochemistry	-	Y	Y	-	Y	-	Y
Nd isotope	-	Y	-	-	Y	-	-
Sr Isotope	-	Y	-	-	Y	-	-
Pb Whole rock	-	-	-	-	Y	-	-
Pb K-feldspar	-	-	-	-		-	-
Hf isotope	-	-	-	-	Y	-	-
Geochronology	-	-	-	-	-	-	-
Mineralogy	-	-	-	-	-	-	-

Field No.	MN032	MN033	MN034	MN035	MN036	MN037	MN038
Map	54J	54J	54J	54J	54J	54J	54J
LocationE	355601	355601	355815	355815	355815	355815	375052
LocationN	6667705	6667705	6667674	6667674	6667674	6667674	6690870
Granite Suite	Pepegoona volcanic	Pepegoona volcanic	Mt Neil Granite	Mt Neil Granite	Mt Neil Granite	Mafic dyke	Terparina granite
TS/PTS	TS	TS	-	TS	TS	-	-
Geochemistry	Y	-	-	-	Y	-	-
Nd isotope	Y	-	-	-	-	-	-
Sr Isotope	-	-	-	-	-	-	-
Pb Whole rock	Y	-	-	-	-	-	-
Pb K-feldspar	-	-	-	-	-	-	-
Hf isotope	-	-	-	-	-	-	-
Geochronology	-	-	-	-	-	-	-
Mineralogy	-	-	-	-	-	-	-

List of samples collected from Mt Painter Province

Field No.	MN039	MN040	MN041	MN042	MN043	MN044	MN045
Map	54J	54J	54J	54J	54J	54J	54J
LocationE	368034	368034	366853	365342	367703	367865	364174
LocationN	6688908	6688908	6687053	6685317	6685288	6685415	6680876
Granite Suite	Mt Neil Granite	Mt Neil Granite	Mt Neil Granite	Mt Neil Granite	Mt Neil Granite	Mt Neil Granite	Terparina granite
TS/PTS	TS	-	TS	-	-	-	TS
Geochemistry	-	Y	-	-	-	-	Y
Nd isotope	-	-	-	-	-	-	-
Sr Isotope	-	-	-	-	-	-	-
Pb Whole rock	-	-	-	-	-	-	-
Pb K-feldspar	Y	-	-	-	-	-	-
Hf isotope	-	-	-	-	-	-	-
Geochronology	-	-	-	-	-	-	-
Mineralogy	-	-	-	-	-	-	-

Field No.	SD046	SD047	SD048	SD049	SD050	SD051	SD052
Map	54J	54J	54J	54J	54J	54J	54J
LocationE	367331	367319	367317	367325	367325	377951	360362
LocationN	6691126	6691065	6690976	6690924	6690924	6689729	6691711
Granite Suite	Mafic Enclave	Enclave	Enclave	Enclave	Enclave	Enclave	Yerilar granite
TS/PTS	-	TPS	-	-	-	TPS	-
Geochemistry	Y	Y	-	Y	Y		Y
Nd isotope	-	-	-	-	Y	Y	-
Sr Isotope	-	-	-	-	-	Y	-
Pb Whole rock	-	-	-	-	-	Y	-
Pb K-feldspar	-	-	-	-	-	-	-
Hf isotope	-	Y	-	Y	Y	-	-
Geochronology	-	-	-	-	-	-	-
Mineralogy	-	-	-	-	-	-	-

Field No.	SD053	SD054	SD055	SD056	SD057	SD058	SD059
Map	54J	54J	54J	54J	54J	54J	54J
LocationE	360375	359632	359450	359450	359412	359943	360197
LocationN	6691664	6692653	6692700	6692700	6692862	6692911	6691227
Granite Suite	Yerilar granite	Chloritic vein	Yerila and pegmatite vein	Yerila and pegmatite vein	Mafic dyke	Yerilar granite	Yerilar granite
TS/PTS	-	-	-	-	-	-	-
Geochemistry	-	-	Y	-	Y	-	-
Nd isotope	-	-	-	-	-	-	-
Sr Isotope	-	-	-	-	Y	-	-
Pb Whole rock	-	-	-	-	Y	-	-
Pb K-feldspar	-	-	-	-	-	-	-
Hf isotope	-	-	-	-	Y	-	-
Geochronology	-	-	-	-	-	-	-
Mineralogy	-	-	-	-	-	-	-

List of samples collected from Mt Painter Province

Field No.	SD060	SD061	SD062	SD063	SD064	SD065	SD066
Map	54J	54J	54J	54J	54J	54J	54J
LocationE	368521	368475	368504	368511	368487	368509	369296
LocationN	6694497	6694290	6694216	6694193	6694119	6694038	6697499
Granite Suite	Yerila granite	Yerila granite	Yerila granite	Mfic dyke	Yerila granite	Mafic Enclave	Wattleowie and enclave
TS/PTS	-	-	-	-	-	-	-
Geochemistry	Y	-	Y	Y	Y	Y	-
Nd isotope	-	-	Y	-	-	Y	-
Sr Isotope	-	-	Y	-	-	-	-
Pb Whole rock	-	-	-	-	-	-	-
Pb K-feldspar	-	-	-	-	-	-	-
Hf isotope	Y	-	-	-	-	-	-
Geochronology	-	-	-	-	-	-	-
Mineralogy	-	-	-	-	-	-	-

Field No.	SD067	SD068
Map	54J	54J
LocationE	369257	369257
LocationN	6697508	6697508
Granite Suite	Wattleowie and enclave	Wattleowie and enclave
TS/PTS	-	-
Geochemistry	-	Y
Nd isotope	-	Y
Sr Isotope	-	Y
Pb Whole rock	-	-
Pb K-feldspar	-	-
Hf isotope	-	-
Geochronology	-	-
Mineralogy	-	-

Appendix 3 Mineralogy

EMPA analyses of amphibole from the mafic dyke and microgranular enclaves

Spot	Mn96_02	Mn96_03	Mn96_04	Mn96_05	Mn96_06	Mn96_07	Mn96_08
Sample number	MN096	MN096	MN096	MN096	MN096	MN096	MN096
SiO_2	35.02	36.76	36.09	36.56	36.61	36.41	36.30
TiO_2	0.45	0.53	0.53	0.44	0.53	0.45	0.47
$Al2O_3$	11.88	12.22	12.42	12.44	12.09	12.63	12.36
FeO	27.33	28.62	28.28	28.60	28.13	28.40	28.61
MnO	0.45	0.58	0.53	0.41	0.56	0.48	0.53
MgO	2.23	2.22	2.32	2.28	2.09	2.23	2.44
CaO	11.25	11.00	10.44	11.17	11.14	10.98	10.84
Na_2O	1.16	1.14	1.04	1.09	1.08	1.19	1.31
K_2O	2.02	2.00	2.04	2.04	2.23	2.03	2.02
BaO	0.00	0.00	0.00	0.00	0.04	0.00	0.00
Structural formulae based on 23 oxygens							
Si	5.997	6.027	5.962	6.001	6.074	5.983	5.956
Al ^{iv}	2.003	1.973	2.038	1.999	1.926	2.017	2.044
Al ^{vi}	0.395	0.388	0.380	0.407	0.438	0.429	0.346
Ti	0.057	0.065	0.066	0.054	0.065	0.055	0.058
Fe^{3+}	0.540	0.808	1.066	0.785	0.570	0.803	0.929
Fe^{2+}	3.375	3.116	2.842	3.141	3.333	3.100	2.997
Mn	0.066	0.081	0.074	0.057	0.078	0.067	0.074
Mg	0.568	0.542	0.571	0.557	0.516	0.546	0.597
Ca	2.063	1.933	1.848	1.964	1.981	1.934	1.906
Na	0.387	0.362	0.332	0.346	0.349	0.380	0.418
K	0.441	0.419	0.431	0.427	0.471	0.426	0.424
Ba	0.000	0.000	0.000	0.000	0.003	0.000	0.000
OH*	2	2	2	2	2	2	2
Total	17.891	17.714	17.611	17.737	17.804	17.740	17.747
Calculation scheme	?13	?13	?13	?13	?13	?13	?13
Amphibole group	Ca	Ca	Ca	Ca	Ca	Ca	Ca
(Ca+Na) (B)	2.063	2.000	2.000	2.000	2.000	2.000	2.000
Na (B)	0.000	0.067	0.152	0.036	0.019	0.066	0.094
(Na+K) (A)	0.827	0.714	0.611	0.737	0.801	0.740	0.747
Mg/(Mg+Fe2)	0.144	0.148	0.167	0.151	0.134	0.150	0.166
Fe3/(Fe3+Alvi)	0.578	0.676	0.737	0.659	0.566	0.652	0.729
Sum of S2	13.000	13.000	13.000	13.000	13.000	13.000	13.000
Amphibole names*	potassian-hastingsite	potassian-hastingsite	potassian-hastingsite	potassian-hastingsite	potassian-hastingsite	potassian-hastingsite	potassian-hastingsite
T (C) HB2**	944.45	822.41	861.66	794.70	808.39	824.46	860.07
P(Kb) HB2**		4.81	3.65	5.87	5.24	5.07	3.60

**Anderson and Smith (1995); Holland and Blundy, 1994

* Leake (1978); Leake, (1984); Mogessie et al. (1990)

EMPA analyses of amphibole from the mafic dyke and microgranular enclaves

Spot	Mn96_09	Sd51_01	Sd51_02	Sd51_03	Sd51_04	Sd51_05	Sd51_07
Sample number	MN096	SD051	SD051	SD051	SD051	SD051	SD051
SiO_2	36.55	47.13	39.47	45.14	36.32	39.65	39.29
TiO_2	0.45	0.16	0.29	0.14	0.28	0.32	0.26
$Al2O_3$	12.32	6.70	12.23	5.92	14.18	14.44	13.05
FeO	27.58	18.37	21.06	18.59	20.24	21.12	21.29
MnO	0.58	0.49	0.53	0.46	0.59	0.42	0.42
MgO	2.37	10.35	6.65	10.72	5.47	6.02	6.27
CaO	10.27	11.30	11.53	11.64	11.68	11.70	11.73
Na_2O	1.12	0.84	1.32	0.74	1.34	1.40	1.40
K_2O	1.90	0.17	0.45	0.14	0.46	0.42	0.42
BaO	0.03	0.09	0.01	0.00	0.00	0.05	0.07
Structural formulae based on 23 oxygens							
Si	6.053	7.096	6.251	6.975	5.990	6.145	6.200
Al^{iv}	1.947	0.904	1.749	1.025	2.010	1.855	1.800
Al^{vi}	0.458	0.284	0.535	0.053	0.747	0.781	0.627
Ti	0.056	0.018	0.035	0.017	0.035	0.037	0.031
Fe^{3+}	0.966	0.652	0.736	0.835	0.542	0.605	0.623
Fe^{2+}	2.854	1.660	2.055	1.567	2.249	2.131	2.187
Mn	0.082	0.062	0.071	0.060	0.082	0.055	0.057
Mg	0.585	2.324	1.569	2.469	1.345	1.390	1.475
Ca	1.823	1.822	1.956	1.928	2.063	1.942	1.984
Na	0.360	0.244	0.405	0.221	0.427	0.421	0.428
K	0.401	0.033	0.091	0.027	0.096	0.083	0.084
Ba	0.002	0.006	0.000	0.000	0.000	0.003	0.004
OH*	2	2	2	2	2	2	2
Total	17.586	17.105	17.452	17.176	17.587	17.449	17.500
Calculation scheme	?13	?13	?13	?13	?13	?13	?13
Amphibole group	Ca	Ca	Ca	Ca	Ca	Ca	Ca
(Ca+Na) (B)	2.000	2.000	2.000	2.000	2.063	2.000	2.000
Na (B)	0.177	0.178	0.044	0.072	0.000	0.058	0.016
(Na+K) (A)	0.584	0.099	0.452	0.176	0.524	0.446	0.496
Mg/(Mg+Fe2)	0.170	0.583	0.433	0.612	0.374	0.395	0.403
Fe3/(Fe3+Alvi)	0.678	0.696	0.579	0.940	0.421	0.437	0.498
Sum of S2	13.000	13.000	13.000	13.000	13.000	13.000	13.000
Amphibole names* Spot	potassian-hastingsite	magnesio-hornblende	ferro-tschermakitic hornblende	ferrian-magnesio-hornblende	ferroan pargasite	ferro-tschermakite	ferro-tschermakite
T (C) HB2**	828.80	520.15	589.49	594.77	772.63	683.71	651.05
P(Kb) HB2**	4.81	2.74	9.15	2.67	8.06	9.87	9.35

**Anderson and Smith (1995); Holland and Blundy, 1994

* Leake (1978); Leake, (1984); Mogessie et al. (1990)

EMPA analyses of amphibole from the mafic dyke and microgranular enclaves

Spot	Sd51_08	Sd51_09	Sd51_10	Sd51_11	Mn91_01 MN090 MF	Mn91_02 MN090 MF	Mn91_03 MN090 MF
Sample number	SD051	SD051	SD051	SD051			
SiO_2	39.35	39.91	38.97	48.20	41.86	43.62	51.87
TiO_2	0.41	0.37	0.25	0.27	0.46	0.42	0.16
$Al2O_3$	11.90	17.98	12.77	17.39	11.66	10.63	3.80
FeO	22.27	17.31	20.25	14.71	19.44	18.32	12.88
MnO	0.40	0.14	0.45	0.11	0.34	0.39	0.29
MgO	6.67	8.34	6.56	4.73	8.68	9.33	15.04
CaO	10.47	0.90	11.55	1.24	11.71	11.80	12.33
Na_2O	1.16	0.13	1.27	0.18	1.16	1.10	0.33
K_2O	0.60	0.57	0.46	1.74	0.36	0.28	0.07
BaO	0.00	0.00	0.00	0.07	0.05	0.00	0.00
Structural formulae based on 23 oxygens							
Si	6.194	6.527	6.230	7.409	6.369	6.591	7.499
Al ^{iv}	1.806	1.473	1.770	0.591	1.631	1.409	0.501
Al ^{vi}	0.402	1.993	0.637	2.559	0.460	0.485	0.148
Ti	0.048	0.046	0.030	0.031	0.053	0.048	0.018
Fe^{3+}	1.301	0.000	0.630	0.000	0.828	0.627	0.391
Fe^{2+}	1.631	2.367	2.078	1.891	1.646	1.689	1.167
Mn	0.053	0.020	0.061	0.014	0.043	0.049	0.035
Mg	1.565	2.032	1.564	1.084	1.969	2.102	3.242
Ca	1.766	0.157	1.978	0.204	1.909	1.911	1.910
Na	0.354	0.041	0.392	0.052	0.344	0.323	0.093
K	0.120	0.119	0.094	0.340	0.070	0.055	0.013
Ba	0.000	0.000	0.000	0.004	0.003	0.000	0.000
OH*	2	2	2	2	2	2	2
Total	17.241	16.775	17.464	16.181	17.325	17.289	17.017
Calculation scheme	?13	?15	?13	?15	?13	?13	?13
Amphibole group	Ca	Fe-Mg-Mn	Ca	Fe-Mg-Mn	Ca	Ca	Ca
(Ca+Na) (B)	2.000	0.199	2.000	0.257	2.000	2.000	2.000
Na (B)	0.234	0.041	0.022	0.052	0.091	0.089	0.090
(Na+K) (A)	0.241	0.119	0.464	0.340	0.322	0.289	0.017
Mg/(Mg+Fe2)	0.490	0.462	0.430	0.364	0.545	0.555	0.735
Fe3/(Fe3+Alvi)	0.764	0.000	0.497	0.000	0.643	0.564	0.726
Sum of S2	13.000	14.457	13.000	13.580	13.000	13.000	13.000
Amphibole names*	ferri-ferro-tschermakite	gedrite	ferro-tschermakite	potassian-alumino-anthophyllite	ferrian-tschermakitic hornblende	magnesio-hornblende	actinolitic hornblende
T (C) HB2**	573.43	565.26	583.03		589.32	509.43	
P(Kb) HB2**	8.87	16.31	9.85		8.25	6.90	

**Anderson and Smith (1995); Holland and Blundy, 1994

* Leake (1978); Leake, (1984); Mogessie et al. (1990)

EMPA analyses of amphibole from the mafic dyke and microgranular enclaves

Spot	Mn91_05	Mn91_06	Mn91_07	Mn91_08	Mn91_09	Mn91_10	Mn91_11
Sample number	MN090 MF	MN090 MF	MN090 MF	MN090 MF	MN090 MF	MN090 MF	MN090 MF
SiO_2	51.97	46.90	52.75	43.79	52.61	44.02	47.68
TiO_2	0.18	0.29	0.38	0.41	0.10	0.40	0.37
$Al2O_3$	4.58	7.88	3.05	10.81	3.19	10.71	6.89
FeO	13.00	16.03	12.94	17.75	12.21	17.14	15.93
MnO	0.20	0.21	0.35	0.29	0.35	0.31	0.32
MgO	14.77	12.16	15.04	9.71	15.85	9.79	12.01
CaO	12.24	12.11	12.18	11.52	12.17	11.96	11.91
Na_2O	0.39	0.68	0.29	0.98	0.29	1.10	0.64
K_2O	0.07	0.13	0.19	0.39	0.12	0.22	0.43
BaO	0.05	0.02	0.00	0.06	0.00	0.08	0.06
Structural formulae based on 23 oxygens							
Si	7.460	6.919	7.605	6.588	7.551	6.643	7.078
Al^{iv}	0.540	1.081	0.395	1.412	0.449	1.357	0.922
Al^{vi}	0.235	0.290	0.123	0.506	0.090	0.549	0.283
Ti	0.020	0.032	0.042	0.047	0.010	0.045	0.041
Fe^{3+}	0.376	0.681	0.311	0.731	0.493	0.478	0.498
Fe^{2+}	1.185	1.296	1.249	1.502	0.974	1.686	1.480
Mn	0.025	0.027	0.043	0.036	0.042	0.039	0.041
Mg	3.160	2.675	3.233	2.179	3.391	2.203	2.658
Ca	1.882	1.913	1.881	1.856	1.871	1.934	1.893
Na	0.109	0.194	0.081	0.287	0.081	0.320	0.184
K	0.012	0.024	0.035	0.076	0.022	0.043	0.081
Ba	0.003	0.001	0.000	0.004	0.000	0.004	0.003
OH*	2	2	2	2	2	2	2
Total	17.005	17.132	16.997	17.222	16.974	17.301	17.162
Calculation scheme	?13	?13	?13	?13	?13	?13	?13
Amphibole group	Ca	Ca	Ca	Ca	Ca	Ca	Ca
(Ca+Na) (B)	1.991	2.000	1.962	2.000	1.952	2.000	2.000
Na (B)	0.109	0.087	0.081	0.144	0.081	0.066	0.107
(Na+K) (A)	0.012	0.131	0.035	0.218	0.022	0.297	0.158
Mg/(Mg+Fe2)	0.727	0.674	0.721	0.592	0.777	0.567	0.642
Fe3/(Fe3+Alvi)	0.615	0.701	0.716	0.591	0.845	0.465	0.637
Sum of S2	13.000	13.000	13.000	13.000	13.000	13.000	13.000
Amphibole names*	actinolitic hornblende	magnesio-hornblende	actinolite	magnesio-hornblende	actinolite	magnesio-hornblende	magnesio-hornblende
T (C) HB2**		436.36		515.26		493.17	420.79
P(Kb) HB2**		2.68		7.14		6.85	1.18

**Anderson and Smith (1995); Holland and Blundy, 1994

* Leake (1978); Leake, (1984); Mogessie et al. (1990)

EMPA analyses of amphibole from the mafic dyke and microgranular enclaves

Spot	Mn91_13 MN090	Mn91_14 MN090	Mn91_15 MN090	Mn91_16 MN090	Mn91_17 MN090	Mn91_18 MN090	Mn91_19 MN090
Sample number	MF	MF	MF	MF	MF	MF	MF
SiO_2	41.26	41.76	47.67	53.15	51.03	36.61	38.11
TiO_2	0.37	0.28	0.43	0.14	0.18	0.01	0.06
$Al2O_3$	14.30	12.30	6.84	3.15	4.64	23.02	23.64
FeO	19.01	18.64	16.29	12.78	13.68	10.67	10.33
MnO	0.39	0.33	0.35	0.24	0.29	0.00	0.06
MgO	8.08	8.66	12.06	15.28	14.25	0.00	0.01
CaO	11.73	11.82	11.81	12.10	12.12	23.24	22.27
Na_2O	1.51	1.30	0.61	0.30	0.35	0.00	0.05
K_2O	0.38	0.28	0.57	0.08	0.10	0.00	0.01
BaO	0.02	0.01	0.00	0.00	0.00	0.03	0.05
Structural formulae based on 23 oxygens							
Si	6.189	6.369	7.046	7.623	7.408	5.699	5.815
Al ^{iv}	1.811	1.631	0.954	0.377	0.592	2.301	2.185
Al ^{vi}	0.717	0.579	0.239	0.155	0.201	1.921	2.066
Ti	0.042	0.032	0.048	0.016	0.019	0.001	0.006
Fe^{3+}	0.728	0.687	0.600	0.374	0.464	0.000	0.000
Fe^{2+}	1.656	1.691	1.414	1.158	1.197	1.389	1.318
Mn	0.050	0.042	0.043	0.029	0.036	0.000	0.008
Mg	1.807	1.968	2.656	3.268	3.083	0.000	0.003
Ca	1.885	1.931	1.870	1.859	1.886	3.875	3.640
Na	0.439	0.384	0.173	0.085	0.100	0.000	0.016
K	0.073	0.055	0.107	0.014	0.019	0.001	0.003
Ba	0.001	0.000	0.000	0.000	0.000	0.002	0.003
OH*	2	2	2	2	2	2	2
Total	17.397	17.370	17.150	16.958	17.004	17.189	17.062
Calculation scheme	?13	?13	?13	?13	?13	?13	?13
Amphibole group	Ca	Ca	Ca	Ca	Ca	Ca	Ca
(Ca+Na) (B)	2.000	2.000	2.000	1.944	1.985	3.875	3.640
Na (B)	0.115	0.069	0.130	0.085	0.100	0.000	0.000
(Na+K) (A)	0.396	0.369	0.150	0.014	0.019	0.001	0.019
Mg/(Mg+Fe2)	0.522	0.538	0.653	0.738	0.720	0.000	0.002
Fe3/(Fe3+Alvi)	0.504	0.542	0.715	0.707	0.698	0.000	0.000
Sum of S2	13.000	13.000	13.000	13.000	13.000	11.312	11.401
Amphibole names*	tschermakite	tschermakitic hornblende	magnesio-hornblende	actinolite	actinolitic hornblende	alumino-subsilicic ferro-tschermakite	alumino-ferro-tschermakite
T (C) HB2**	606.86	561.92	404.85				
P(Kb) HB2**	10.49	8.96	0.71				

**Anderson and Smith (1995); Holland and Blundy, 1994

* Leake (1978); Leake, (1984); Mogessie et al. (1990)

EMPA analyses of amphibole from the mafic dyke and microgranular enclaves

Spot	Mn91_20 MN090	Mn91_21 MN090	Mn91_22 MN090	Mn91_23 MN090	Mn91_24 MN090	Mn91_25 MN090	Mn91_26 MN090
Sample number	MF	MF	MF	MF	MF	MF	MF
SiO_2	49.09	42.97	52.61	46.65	51.02	50.40	44.07
TiO_2	0.25	0.38	0.15	0.27	0.17	0.19	0.36
$Al2O_3$	5.67	11.17	2.33	7.53	4.63	4.53	10.49
FeO	15.08	18.28	11.84	15.80	13.85	13.96	17.37
MnO	0.36	0.35	0.30	0.26	0.31	0.32	0.39
MgO	13.14	9.23	15.89	11.92	14.06	13.92	10.07
CaO	12.15	11.74	12.32	11.87	12.10	12.16	11.80
Na_2O	0.50	1.05	0.33	0.65	0.45	0.41	1.00
K_2O	0.30	0.52	0.15	0.31	0.09	0.10	0.21
BaO	0.02	0.04	0.00	0.00	0.05	0.00	0.00
Structural formulae based on 23 oxygens							
Si	7.214	6.513	7.658	6.977	7.419	7.397	6.618
Al^{iv}	0.786	1.487	0.342	1.023	0.581	0.603	1.382
Al^{vi}	0.196	0.509	0.058	0.304	0.212	0.181	0.475
Ti	0.027	0.043	0.016	0.030	0.018	0.021	0.040
Fe^{3+}	0.509	0.666	0.290	0.607	0.412	0.421	0.697
Fe^{2+}	1.344	1.651	1.151	1.369	1.271	1.292	1.484
Mn	0.045	0.044	0.036	0.032	0.038	0.039	0.050
Mg	2.878	2.086	3.449	2.657	3.048	3.046	2.254
Ca	1.914	1.907	1.921	1.902	1.886	1.912	1.898
Na	0.141	0.308	0.093	0.190	0.127	0.115	0.292
K	0.055	0.100	0.028	0.060	0.017	0.019	0.041
Ba	0.001	0.002	0.000	0.000	0.003	0.000	0.000
OH*	2	2	2	2	2	2	2
Total	17.112	17.316	17.041	17.151	17.032	17.047	17.231
Calculation scheme	?13	?13	?13	?13	?13	?13	?13
Amphibole group	Ca	Ca	Ca	Ca	Ca	Ca	Ca
(Ca+Na) (B)	2.000	2.000	2.000	2.000	2.000	2.000	2.000
Na (B)	0.086	0.093	0.079	0.098	0.114	0.088	0.102
(Na+K) (A)	0.110	0.314	0.041	0.151	0.030	0.047	0.231
Mg/(Mg+Fe2)	0.682	0.558	0.750	0.660	0.706	0.702	0.603
Fe3/(Fe3+Alvi)	0.722	0.567	0.833	0.666	0.661	0.699	0.595
Sum of S2	13.000	13.000	13.000	13.000	13.000	13.000	13.000
Amphibole names*							
	magnesio-hornblende	magnesio-hornblende	actinolite	magnesio-hornblende	actinolitic hornblende	actinolitic hornblende	magnesio-hornblende
T (C) HB2**	355.45	559.68		391.63			530.03
P(Kb) HB2**		7.75		1.31			6.88

**Anderson and Smith (1995); Holland and Blundy, 1994
* Leake (1978); Leake, (1984); Mogessie et al. (1990)

EMPA analyses of amphibole from the mafic dyke and microgranular enclaves

Spot	Mn91_27 MN090	Mn91_28 MN090	Mn91_29 MN099	Mn91_30 MN099	Mn91_31 MN099	Mn91_32 MN099	Mn91_33 MN099
Sample number	MF	MF	MF	MF	MF	MF	MF
SiO_2	42.01	42.48	46.98	49.23	48.91	48.19	46.39
TiO_2	0.32	0.23	0.67	0.51	0.59	0.61	0.70
$Al2O_3$	12.55	11.56	8.35	6.82	6.96	7.63	9.46
FeO	18.92	18.20	15.94	15.31	15.32	15.80	16.37
MnO	0.30	0.29	0.23	0.27	0.22	0.28	0.21
MgO	8.53	9.19	11.31	12.36	12.03	11.76	10.66
CaO	11.88	11.83	11.77	12.11	12.02	11.96	11.95
Na_2O	1.21	1.18	0.92	0.52	0.61	0.70	0.88
K_2O	0.32	0.32	0.43	0.29	0.27	0.35	0.46
BaO	0.00	0.04	0.03	0.02	0.00	0.00	0.02
Structural formulae based on 23 oxygens							
Si	6.363	6.463	6.963	7.183	7.186	7.069	6.867
Al ^{iv}	1.637	1.537	1.037	0.817	0.814	0.931	1.133
Al ^{vi}	0.602	0.536	0.420	0.356	0.391	0.387	0.517
Ti	0.037	0.026	0.075	0.056	0.065	0.067	0.078
Fe^{3+}	0.692	0.679	0.380	0.360	0.287	0.386	0.327
Fe^{2+}	1.704	1.636	1.596	1.508	1.596	1.553	1.700
Mn	0.039	0.037	0.029	0.033	0.027	0.035	0.026
Mg	1.927	2.085	2.500	2.688	2.636	2.572	2.352
Ca	1.927	1.928	1.869	1.893	1.892	1.880	1.896
Na	0.355	0.347	0.265	0.147	0.174	0.199	0.253
K	0.062	0.061	0.081	0.054	0.050	0.065	0.086
Ba	0.000	0.002	0.002	0.001	0.000	0.000	0.001
OH*	2	2	2	2	2	2	2
Total	17.343	17.339	17.216	17.096	17.116	17.144	17.235
Calculation scheme	?13	?13	?13	?13	?13	?13	?13
Amphibole group	Ca	Ca	Ca	Ca	Ca	Ca	Ca
(Ca+Na) (B)	2.000	2.000	2.000	2.000	2.000	2.000	2.000
Na (B)	0.073	0.072	0.131	0.107	0.108	0.120	0.104
(Na+K) (A)	0.343	0.337	0.215	0.094	0.116	0.144	0.234
Mg/(Mg+Fe2)	0.531	0.560	0.610	0.641	0.623	0.624	0.580
Fe3/(Fe3+Alvi)	0.535	0.559	0.475	0.503	0.423	0.499	0.387
Sum of S2	13.000	13.000	13.000	13.000	13.000	13.000	13.000
Amphibole names*							
	tschermakitic hornblende	tschermakitic hornblende	magnesio-hornblende	magnesio-hornblende	magnesio-hornblende	magnesio-hornblende	magnesio-hornblende
T (C) HB2**	544.04	535.55	456.87	440.00	441.58	470.14	482.27
P(Kb) HB2**	9.10	8.15	3.56	1.39	1.63	2.90	5.15

**Anderson and Smith (1995); Holland and Blundy, 1994

* Leake (1978); Leake, (1984); Mogessie et al. (1990)

EMPA analyses of amphibole from the mafic dyke and microgranular enclaves

Spot	Mn91_34	Mn91_35	Mn91_36	Mn91_37	Mn91_38	Mn91_39	Mn91_40
Sample number	MN099 MF	MN099 MF	MN099 MF	MN099 MF	MN099 MF	MN099 MF	MN099 MF
SiO_2	45.88	46.73	52.20	47.17	33.44	46.32	46.42
TiO_2	0.76	0.80	0.01	1.14	0.44	0.88	0.79
$Al2O_3$	9.05	8.54	29.34	7.36	16.72	9.25	8.70
FeO	16.24	15.83	0.30	15.37	9.04	16.70	16.54
MnO	0.26	0.19	0.00	0.30	0.10	0.25	0.25
MgO	10.63	10.67	0.03	11.53	0.29	10.50	10.70
CaO	11.71	12.04	12.30	11.85	14.09	11.68	11.87
Na_2O	0.89	0.72	4.51	0.59	0.08	0.90	0.84
K_2O	0.50	0.39	0.04	0.31	0.03	0.48	0.45
BaO	0.04	0.02	0.02	0.00	0.08	0.00	0.04
Structural formulae based on 23 oxygens							
Si	6.874	7.007	6.894	7.049	6.387	6.865	6.916
Al ^{iv}	1.126	0.993	1.106	0.951	1.613	1.135	1.084
Al ^{vi}	0.472	0.515	3.460	0.344	2.152	0.481	0.444
Ti	0.086	0.090	0.001	0.128	0.063	0.098	0.089
Fe^{3+}	0.364	0.144	0.000	0.326	0.000	0.397	0.341
Fe^{2+}	1.671	1.841	0.033	1.595	1.445	1.673	1.720
Mn	0.033	0.024	0.000	0.038	0.017	0.031	0.031
Mg	2.374	2.385	0.005	2.569	0.083	2.320	2.376
Ca	1.879	1.933	1.740	1.898	2.884	1.855	1.895
Na	0.259	0.209	1.155	0.172	0.028	0.259	0.243
K	0.096	0.075	0.007	0.058	0.008	0.090	0.085
Ba	0.002	0.001	0.001	0.000	0.006	0.000	0.002
OH*	2	2	2	2	2	2	2
Total	17.237	17.219	16.402	17.128	16.685	17.205	17.225
Calculation scheme	?13	?13	?13	?13	?13	?13	?13
Amphibole group	Ca	Ca	Ca	Ca	Ca	Ca	Ca
(Ca+Na) (B)	2.000	2.000	2.000	2.000	2.884	2.000	2.000
Na (B)	0.121	0.067	0.260	0.102	0.000	0.145	0.105
(Na+K) (A)	0.235	0.218	0.901	0.128	0.036	0.205	0.222
Mg/(Mg+Fe2)	0.587	0.564	0.143	0.617	0.054	0.581	0.580
Fe3/(Fe3+Alvi)	0.435	0.218	0.000	0.486	0.000	0.452	0.434
Sum of S2	13.000	13.000	11.500	13.000	11.760	13.000	13.000
Amphibole names*	magnesio-hornblende	magnesio-hornblende	sodian-alumino-ferro-edenite	magnesio-hornblende	alumino-ferro-tschermakitic hornblende	magnesio-hornblende	magnesio-hornblende
T (C) HB2**	312.50	501.32		443.78		546.68	476.98
P(Kb) HB2**	0.75	4.48		2.26		5.52	4.30

**Anderson and Smith (1995); Holland and Blundy, 1994
* Leake (1978); Leake, (1984); Mogessie et al. (1990)

EMPA analyses of amphibole from the mafic dyke and microgranular enclaves

Spot	Mn91_41	Mn91_42	Mn91_43	Mn91_44	Mn91_45	Mn91_46	Mn91_47
Sample number	MN099 MF	MN099 MF	MN099 MF	MN099 MF	MN099 MF	MN099 MF	MN099
SiO_2	47.10	47.13	47.68	47.81	47.55	47.66	48.57
TiO_2	0.73	0.72	0.64	0.55	0.61	0.65	0.61
$Al2O_3$	8.02	8.15	7.55	7.33	7.93	7.88	8.03
FeO	16.25	16.32	15.43	15.47	15.36	16.03	17.00
MnO	0.25	0.25	0.26	0.20	0.21	0.23	0.34
MgO	11.40	11.53	11.74	11.86	11.21	11.49	12.08
CaO	11.71	11.53	12.00	11.75	11.83	11.91	12.44
Na_2O	0.84	0.85	0.71	0.75	0.79	0.76	0.77
K_2O	0.43	0.39	0.36	0.33	0.38	0.42	0.35
BaO	0.03	0.00	0.07	0.02	0.04	0.00	0.04
Structural formulae based on 23 oxygens							
Si	6.965	6.937	7.069	7.091	7.099	7.027	6.939
Al ^{iv}	1.035	1.063	0.931	0.909	0.901	0.973	1.061
Al ^{vi}	0.364	0.349	0.388	0.371	0.493	0.396	0.290
Ti	0.081	0.080	0.071	0.062	0.069	0.072	0.066
Fe^{3+}	0.472	0.600	0.306	0.401	0.183	0.371	0.549
Fe^{2+}	1.538	1.410	1.608	1.518	1.735	1.606	1.482
Mn	0.031	0.031	0.032	0.025	0.026	0.029	0.041
Mg	2.513	2.530	2.595	2.623	2.494	2.526	2.572
Ca	1.856	1.819	1.907	1.867	1.892	1.882	1.905
Na	0.242	0.244	0.204	0.214	0.228	0.217	0.212
K	0.080	0.074	0.069	0.062	0.072	0.079	0.064
Ba	0.002	0.000	0.004	0.001	0.003	0.000	0.002
OH*	2	2	2	2	2	2	2
Total	17.179	17.136	17.184	17.145	17.194	17.179	17.183
Calculation scheme	?13	?13	?13	?13	?13	?13	?13
Amphibole group	Ca	Ca	Ca	Ca	Ca	Ca	Ca
(Ca+Na) (B)	2.000	2.000	2.000	2.000	2.000	2.000	2.000
Na (B)	0.144	0.181	0.093	0.133	0.108	0.118	0.095
(Na+K) (A)	0.178	0.136	0.179	0.144	0.191	0.179	0.181
Mg/(Mg+Fe2)	0.620	0.642	0.617	0.633	0.590	0.611	0.634
Fe3/(Fe3+Alvi)	0.564	0.632	0.441	0.519	0.270	0.484	0.654
Sum of S2	13.000	13.000	13.000	13.000	13.000	13.000	13.000
Amphibole names*							
	magnesio-hornblende	magnesio-hornblende	magnesio-hornblende	magnesio-hornblende	magnesio-hornblende	magnesio-hornblende	magnesio-hornblende
T (C) HB2**	519.06	288.92	496.63	463.69	387.17	445.05	535.57
P(Kb) HB2**	4.06		3.30	2.56	1.58	2.76	3.94

**Anderson and Smith (1995); Holland and Blundy, 1994

* Leake (1978); Leake, (1984); Mogessie et al. (1990)

EMPA analyses of amphibole from the mafic dyke and microgranular enclaves

Spot	Mn91_48	Mn91_49	Mn91_50	Mn91_51	Mn91_52
Sample number	MN099	MN099	MN099	MN099	MN099
SiO_2	49.77	43.65	41.87	43.26	48.34
TiO_2	0.40	0.68	0.64	0.55	0.64
Al_2O_3	6.85	7.62	7.41	6.65	8.13
FeO	15.83	15.77	15.52	14.70	15.40
MnO	0.36	0.28	0.32	0.29	0.06
MgO	13.05	11.45	11.42	12.32	11.45
CaO	12.23	11.83	12.12	12.06	11.72
Na_2O	0.71	0.89	0.78	0.68	0.72
K_2O	0.31	0.41	0.41	0.31	0.42
BaO	0.00	0.10	0.00	0.01	0.00
Structural formulae based on 23 oxygens					
Si	7.099	6.785	6.690	6.823	7.109
Al^{iv}	0.901	1.215	1.310	1.177	0.891
Al^{vi}	0.250	0.181	0.086	0.059	0.517
Ti	0.043	0.079	0.077	0.065	0.071
Fe^{3+}	0.575	0.576	0.594	0.638	0.254
Fe^{2+}	1.313	1.475	1.479	1.302	1.640
Mn	0.043	0.036	0.043	0.039	0.007
Mg	2.776	2.653	2.721	2.897	2.510
Ca	1.868	1.970	2.076	2.038	1.847
Na	0.196	0.267	0.242	0.209	0.205
K	0.057	0.081	0.083	0.062	0.079
Ba	0.000	0.006	0.000	0.001	0.000
OH*	2	2	2	2	2
Total	17.121	17.324	17.401	17.310	17.131
Calculation scheme	?13	?13	?13	?13	?13
Amphibole group	Ca	Ca	Ca	Ca	Ca
(Ca+Na) (B)	2.000	2.000	2.076	2.038	2.000
Na (B)	0.132	0.030	0.000	0.000	0.153
(Na+K) (A)	0.121	0.318	0.325	0.271	0.131
Mg/(Mg+Fe2)	0.679	0.643	0.648	0.690	0.605
Fe3/(Fe3+Alvi)	0.697	0.761	0.874	0.916	0.330
Sum of S2	13.000	13.000	13.000	13.000	13.000
Amphibole names*	magnesio-hornblende	magnesio-hornblende	magnesio-hornblende	magnesio-hornblende	magnesio-hornblende
T (C) HB2**	431.66	558.48		433.23	414.65
P(Kb) HB2**	1.10	4.38		1.74	2.38

**Anderson and Smith (1995); Holland and Blundy, 1994

* Leake (1978); Leake, (1984); Mogessie et al. (1990)

EMPA analyses of feldspar from the granites and volcanic rocks

Sample	MN092	MN092	MN092	MN092	MN092	MN092	MN092	MN092
Spot	YGc1s2_Fd	YGc2s4_Fd	YGc2s5_Fd	YGc3s1_Fd	YGc3s2_Fd	YGc4s1_Fd	YGc4s2_Fd	YGc5s3_Fd
SiO_2	61.96	64.03	49.03	60.22	63.38	55.29	56.53	59.12
$Al2O_3$	17.41	18.30	19.81	24.60	18.04	16.06	22.93	23.40
FeO	0.05	0.00	12.33	0.09	0.03	0.00	0.01	0.00
CaO	0.00	0.00	0.44	6.85	0.00	0.03	6.22	5.98
Na_2O	0.54	1.05	0.08	7.89	0.71	0.78	7.51	8.12
K_2O	16.61	15.71	6.77	0.16	16.34	12.45	0.19	0.16
BaO	0.29	0.14	0.03	0.07	0.29	0.16	0.00	0.00
Total	96.93	99.29	91.34	99.98	98.81	84.86	93.39	96.79
Cations based on 32 oxygens								
Si	11.947	12.346	9.454	11.611	12.221	10.661	10.899	11.398
Al	3.955	4.158	4.502	5.589	4.099	3.648	5.210	5.317
Fe(ii)	0.008	0.000	1.988	0.015	0.004	0.000	0.001	0.000
Ca	0.000	0.000	0.091	1.414	0.000	0.006	1.284	1.236
Na	0.202	0.392	0.028	2.951	0.264	0.291	2.808	3.033
K	4.084	3.864	1.666	0.040	4.019	3.062	0.046	0.038
Ba	0.022	0.011	0.002	0.005	0.022	0.012	0.000	0.000
Total	20.218	20.771	17.732	21.625	20.629	17.679	20.248	21.023
An	0.00	0.00	5.10	32.11	0.00	0.18	31.04	28.69
Ab	4.72	9.21	1.58	66.99	6.17	8.66	67.86	70.42
Or	95.28	90.79	93.32	0.90	93.83	91.16	1.10	0.89

Sample	MN092	MN092	MN092	MN092	MN092	MN092	MN096	MN096
Spot	YGc6s2_Fd	YGc6s3_Fd	YGc6s5_Fd	YGc6s6_Fd	YGc6s7_Fd	YGc6s8_Fd	96FD02	96FD03
SiO_2	57.88	60.37	55.73	58.21	55.79	60.41	61.83	57.24
$Al2O_3$	23.44	16.75	15.91	16.45	22.98	17.16	22.42	23.49
FeO	0.00	0.02	0.00	0.06	0.07	0.00	0.02	0.06
CaO	6.57	0.00	0.02	0.00	6.67	0.00	2.25	6.73
Na_2O	7.99	0.56	0.56	0.84	8.02	0.74	9.23	7.79
K_2O	0.13	16.48	16.09	16.01	0.19	16.09	0.89	0.12
BaO	0.00	0.23	0.30	0.25	0.00	0.31	0.08	0.03
Total	96.02	94.50	88.65	91.96	93.84	94.76	96.86	95.62
Cations based on 32 oxygens								
Si	11.160	11.639	10.745	11.222	10.757	11.647	11.922	11.037
Al	5.326	3.806	3.615	3.739	5.223	3.900	5.093	5.338
Fe(ii)	0.000	0.003	0.000	0.010	0.012	0.000	0.003	0.010
Ca	1.357	0.000	0.004	0.001	1.379	0.000	0.464	1.390
Na	2.988	0.210	0.208	0.315	2.998	0.275	3.450	2.911
K	0.033	4.053	3.958	3.938	0.046	3.956	0.218	0.029
Ba	0.000	0.017	0.023	0.019	0.000	0.023	0.006	0.002
Total	20.863	19.729	18.551	19.244	20.414	19.801	21.157	20.716
An	31.00	0.00	0.09	0.02	31.17	0.00	11.22	32.10
Ab	68.25	4.93	4.98	7.41	67.79	6.50	83.51	67.23
Or	0.75	95.07	94.94	92.58	1.04	93.50	5.27	0.67

EMPA analyses of feldspar from the granites and volcanic rocks

Sample	MN096	MN096	MN096	MN096	MN096	MN096	MN096	MN096
Spot	96c2BT01	96c2AP01	96c2FD01	96c4FD01	96c4FD02	96c5FD01	96c5FD02	96cBt01
SiO_2	60.83	59.40	58.88	59.42	59.11	61.41	64.72	61.31
$Al2O_3$	24.43	23.97	23.07	24.07	23.69	23.23	17.51	23.81
FeO	0.27	0.12	2.24	0.11	0.31	0.05	0.06	0.25
CaO	6.26	6.37	4.73	6.72	6.39	5.84	0.00	6.10
Na_2O	8.26	8.22	7.56	7.75	8.03	8.29	0.73	8.17
K_2O	0.08	0.10	0.28	0.10	0.14	0.06	16.19	0.10
BaO	0.01	0.01	0.09	0.00	0.00	0.00	0.13	0.01
Total	100.15	98.24	97.09	98.19	97.74	98.94	99.39	99.80
Cations based on 32 oxygens								
Si	11.729	11.453	11.353	11.456	11.397	11.841	12.479	11.822
Al	5.551	5.446	5.242	5.470	5.384	5.278	3.978	5.410
Fe(ii)	0.044	0.019	0.361	0.018	0.050	0.008	0.010	0.041
Ca	1.293	1.315	0.977	1.389	1.319	1.206	0.000	1.260
Na	3.087	3.074	2.824	2.898	3.002	3.098	0.272	3.055
K	0.020	0.024	0.068	0.025	0.035	0.015	3.981	0.025
Ba	0.001	0.001	0.007	0.000	0.000	0.000	0.010	0.001
Total	21.725	21.332	20.831	21.255	21.186	21.445	20.730	21.613
An	29.38	29.81	25.25	32.21	30.29	27.92	0.00	29.04
Ab	70.15	69.65	73.00	67.22	68.92	71.73	6.39	70.38
Or	0.46	0.54	1.75	0.58	0.80	0.35	93.61	0.58

Sample	MN096	MN096	MN096	MN096	MN096	MN096	MN096
Spot	96c5FD03	92C3Bi01	mn99_14_Px	mn99_19_Fd	mn99_25_Fd	mn99_28Fd	mn99_34_Fd
SiO_2	63.38	62.72	62.06	60.52	52.99	55.49	59.71
$Al2O_3$	17.31	17.24	21.33	23.68	21.70	21.71	22.79
FeO	0.12	0.36	0.80	0.41	0.04	0.09	0.84
CaO	0.02	0.00	3.60	6.03	4.90	5.16	5.12
Na_2O	0.59	0.50	9.21	8.24	7.24	7.74	8.27
K_2O	16.21	14.68	0.18	0.16	0.10	0.13	0.25
BaO	0.17	0.14	0.02	0.00	0.01	0.00	0.00
Total	97.80	95.70	97.27	99.10	87.04	90.37	97.04
Cations based on 32 oxygens							
Si	12.220	12.094	11.966	11.668	10.217	10.700	11.513
Al	3.934	3.918	4.846	5.380	4.930	4.933	5.179
Fe(ii)	0.018	0.058	0.129	0.066	0.007	0.015	0.136
Ca	0.004	0.000	0.744	1.246	1.011	1.065	1.058
Na	0.219	0.187	3.444	3.079	2.707	2.895	3.092
K	3.987	3.609	0.044	0.040	0.024	0.032	0.062
Ba	0.013	0.011	0.002	0.000	0.001	0.000	0.000
Total	20.395	19.877	21.174	21.479	18.897	19.639	21.040
An	0.08	0.00	17.58	28.55	27.02	26.68	25.12
Ab	5.21	4.93	81.39	70.53	72.33	72.52	73.40
Or	94.71	95.07	1.04	0.92	0.65	0.81	1.47

EMPA analyses of feldspar from the granites and volcanic rocks

Sample	SD047	SD047	SD047	SD047	SD047	SD047	SD047	SD047
Spot	YG47c1s6	YG47c1s8	YG47c2s1	YG47c2s2	YG47c2s3	YG47c2s4	YG47c3s1	YG47c4s1
SiO_2	62.85	59.04	62.28	62.65	64.43	62.79	65.66	60.86
$Al2O_3$	24.25	22.01	22.73	17.75	22.63	25.88	20.34	23.65
FeO	0.01	0.10	0.33	0.08	0.04	0.52	0.32	0.07
CaO	5.73	5.06	4.12	0.00	3.71	1.66	0.81	5.54
Na_2O	8.79	8.19	6.66	0.44	9.50	6.26	7.22	5.80
K_2O	0.12	0.15	2.34	16.76	0.15	2.66	4.80	0.10
BaO	0.02	0.00	0.08	0.11	0.00	0.04	0.04	0.05
Total	101.76	94.57	98.69	97.83	100.60	99.92	99.33	96.10
Cations based on 32 oxygens								
Si	12.117	11.383	12.009	12.080	12.422	12.107	12.659	11.735
Al	5.510	5.001	5.166	4.032	5.142	5.881	4.622	5.373
Fe(ii)	0.001	0.016	0.053	0.013	0.006	0.084	0.051	0.012
Ca	1.184	1.045	0.851	0.000	0.766	0.343	0.168	1.144
Na	3.286	3.062	2.489	0.164	3.552	2.341	2.700	2.170
K	0.028	0.037	0.576	4.122	0.036	0.655	1.180	0.025
Ba	0.001	0.000	0.006	0.008	0.000	0.003	0.003	0.004
Total	22.128	20.544	21.150	20.419	21.924	21.413	21.383	20.462
An	26.32	25.22	21.73	0.00	17.60	10.26	4.14	34.27
Ab	73.04	73.90	63.56	3.82	81.58	70.12	66.71	64.98
Or	0.63	0.89	14.71	96.18	0.83	19.62	29.15	0.76

Sample	YG47c4s1_Fd	MN092	MN092	MN092	MN092	MN092	MN092	MN096	MN096
Spot	SD047	YGc6s2_Fd	YGc6s3_Fd	YGc6s5_Fd	YGc6s6_Fd	YGc6s7_Fd	YGc6s8_Fd	96FD02	96FD03
SiO_2	60.86	57.88	60.37	55.73	58.21	55.79	60.41	61.83	57.24
$Al2O_3$	23.65	23.44	16.75	15.91	16.45	22.98	17.16	22.42	23.49
FeO	0.07	0.00	0.02	0.00	0.06	0.07	0.00	0.02	0.06
CaO	5.54	6.57	0.00	0.02	0.00	6.67	0.00	2.25	6.73
Na_2O	5.80	7.99	0.56	0.56	0.84	8.02	0.74	9.23	7.79
K_2O	0.10	0.13	16.48	16.09	16.01	0.19	16.09	0.89	0.12
BaO	0.05	0.00	0.23	0.30	0.25	0.00	0.31	0.08	0.03
Total	96.10	96.02	94.50	88.65	91.96	93.84	94.76	96.86	95.62
Cations based on 32 oxygens									
Si	11.735	11.160	11.639	10.745	11.222	10.757	11.647	11.922	11.037
Al	5.373	5.326	3.806	3.615	3.739	5.223	3.900	5.093	5.338
Fe(ii)	0.012	0.000	0.003	0.000	0.010	0.012	0.000	0.003	0.010
Ca	1.144	1.357	0.000	0.004	0.001	1.379	0.000	0.464	1.390
Na	2.170	2.988	0.210	0.208	0.315	2.998	0.275	3.450	2.911
K	0.025	0.033	4.053	3.958	3.938	0.046	3.956	0.218	0.029
Ba	0.004	0.000	0.017	0.023	0.019	0.000	0.023	0.006	0.002
Total	20.462	20.863	19.729	18.551	19.244	20.414	19.801	21.157	20.716
An	34.27	31.00	0.00	0.09	0.02	31.17	0.00	11.22	34.27
Ab	64.98	68.25	4.93	4.98	7.41	67.79	6.50	83.51	64.98
Or	0.76	0.75	95.07	94.94	92.58	1.04	93.50	5.27	0.76

EMPA analyses of feldspar from the granites and volcanic rocks

Sample	MN096	MN096	MN096	MN096	MN096	MN096	MN096	MN096
Spot	96c2BT01	96c2AP01	96c2FD01	96c4FD01	96c4FD02	96c5FD01	96c5FD02	96cBt01
SiO_2	60.83	59.40	58.88	59.42	59.11	61.41	64.72	61.31
$Al2O_3$	24.43	23.97	23.07	24.07	23.69	23.23	17.51	23.81
FeO	0.27	0.12	2.24	0.11	0.31	0.05	0.06	0.25
CaO	6.26	6.37	4.73	6.72	6.39	5.84	0.00	6.10
Na_2O	8.26	8.22	7.56	7.75	8.03	8.29	0.73	8.17
K_2O	0.08	0.10	0.28	0.10	0.14	0.06	16.19	0.10
BaO	0.01	0.01	0.09	0.00	0.00	0.00	0.13	0.01
Total	100.15	98.24	97.09	98.19	97.74	98.94	99.39	99.80
Cations based on 32 oxygens								
Si	11.729	11.453	11.353	11.456	11.397	11.841	12.479	11.822
Al	5.551	5.446	5.242	5.470	5.384	5.278	3.978	5.410
Fe(ii)	0.044	0.019	0.361	0.018	0.050	0.008	0.010	0.041
Ca	1.293	1.315	0.977	1.389	1.319	1.206	0.000	1.260
Na	3.087	3.074	2.824	2.898	3.002	3.098	0.272	3.055
K	0.020	0.024	0.068	0.025	0.035	0.015	3.981	0.025
Ba	0.001	0.001	0.007	0.000	0.000	0.000	0.010	0.001
Total	21.725	21.332	20.831	21.255	21.186	21.445	20.730	21.613
An	29.38	29.81	25.25	32.21	30.29	27.92	0.00	29.04
Ab	70.15	69.65	73.00	67.22	68.92	71.73	6.39	70.38
Or	0.46	0.54	1.75	0.58	0.80	0.35	93.61	0.58

Sample	MN096	MN096	MN096	MN096	MN096	MN096	MN096	MN096
Spot	96c5FD03	92C3Bi01	mn99_14	mn99_19	mn99_25	mn99_28Fd	mn99_34_Fd	mn99_38_Fd
SiO_2	63.38	62.72	62.06	60.52	52.99	55.49	59.71	61.38
$Al2O_3$	17.31	17.24	21.33	23.68	21.70	21.71	22.79	17.89
FeO	0.12	0.36	0.80	0.41	0.04	0.09	0.84	0.29
CaO	0.02	0.00	3.60	6.03	4.90	5.16	5.12	0.00
Na_2O	0.59	0.50	9.21	8.24	7.24	7.74	8.27	0.09
K_2O	16.21	14.68	0.18	0.16	0.10	0.13	0.25	15.68
BaO	0.17	0.14	0.02	0.00	0.01	0.00	0.00	0.18
Total	97.80	95.70	97.27	99.10	87.04	90.37	97.04	95.63
Cations based on 32 oxygens								
Si	12.220	12.094	11.966	11.668	10.217	10.700	11.513	11.834
Al	3.934	3.918	4.846	5.380	4.930	4.933	5.179	4.066
Fe(ii)	0.018	0.058	0.129	0.066	0.007	0.015	0.136	0.046
Ca	0.004	0.000	0.744	1.246	1.011	1.065	1.058	0.001
Na	0.219	0.187	3.444	3.079	2.707	2.895	3.092	0.035
K	3.987	3.609	0.044	0.040	0.024	0.032	0.062	3.856
Ba	0.013	0.011	0.002	0.000	0.001	0.000	0.000	0.014
Total	20.395	19.877	21.174	21.479	18.897	19.639	21.040	19.852
An	0.08	0.00	17.58	28.55	27.02	26.68	25.12	0.01
Ab	5.21	4.93	81.39	70.53	72.33	72.52	73.40	0.91
Or	94.71	95.07	1.04	0.92	0.65	0.81	1.47	99.08

EMPA analyses of feldspar from the granites and volcanic rocks

Sample	SD047	SD047	SD047	SD047	SD047	SD047	SD047	SD047
Spot	YG47c1s6	YG47c1s8	YG47c2s1	YG47c2s2	YG47c2s3	YG47c2s4	YG47c3s1	YG47c4s1
SiO_2	62.85	59.04	62.28	62.65	64.43	62.79	65.66	60.86
$Al2O_3$	24.25	22.01	22.73	17.75	22.63	25.88	20.34	23.65
FeO	0.01	0.10	0.33	0.08	0.04	0.52	0.32	0.07
CaO	5.73	5.06	4.12	0.00	3.71	1.66	0.81	5.54
Na_2O	8.79	8.19	6.66	0.44	9.50	6.26	7.22	5.80
K_2O	0.12	0.15	2.34	16.76	0.15	2.66	4.80	0.10
BaO	0.02	0.00	0.08	0.11	0.00	0.04	0.04	0.05
Total	101.76	94.57	98.69	97.83	100.60	99.92	99.33	96.10
Cations based on 32 oxygens								
Si	12.117	11.383	12.009	12.080	12.422	12.107	12.659	11.735
Al	5.510	5.001	5.166	4.032	5.142	5.881	4.622	5.373
Fe(ii)	0.001	0.016	0.053	0.013	0.006	0.084	0.051	0.012
Ca	1.184	1.045	0.851	0.000	0.766	0.343	0.168	1.144
Na	3.286	3.062	2.489	0.164	3.552	2.341	2.700	2.170
K	0.028	0.037	0.576	4.122	0.036	0.655	1.180	0.025
Ba	0.001	0.000	0.006	0.008	0.000	0.003	0.003	0.004
Total	22.128	20.544	21.150	20.419	21.924	21.413	21.383	20.462
An	26.32	25.22	21.73	0.00	17.60	10.26	4.14	34.27
Ab	73.04	73.90	63.56	3.82	81.58	70.12	66.71	64.98
Or	0.63	0.89	14.71	96.18	0.83	19.62	29.15	0.76

Sample	SD047	SD047	MN02	MN02	MN02	MN02	MN02	MN02
Spot	YG47c4s	YG47c6s1	FSFMNC1S1	FSFMNC1S3	FSFMNC1S4	FSFMNC2S1	FSFMNC2S4	FSFMNC3S1
SiO_2	57.23	83.81	65.57	63.29	63.29	64.37	68.88	62.62
$Al2O_3$	22.59	0.72	18.12	17.50	17.82	18.17	19.43	17.71
FeO	2.21	0.10	0.00	0.01	0.00	0.04	0.11	0.00
CaO	5.14	7.12	0.03	0.00	0.02	0.02	0.74	0.00
Na_2O	6.53	1.57	1.57	0.58	0.52	2.68	9.63	0.48
K_2O	1.87	0.19	15.14	16.43	16.52	13.38	0.12	16.41
BaO	0.00	0.05	0.09	0.03	0.12	0.02	0.02	0.03
Total	96.57	97.45	100.67	97.93	98.38	98.81	99.00	97.34
Cations based on 32 oxygens								
Si	11.034	16.159	12.643	12.203	12.203	12.411	13.281	12.074
Al	5.133	0.164	4.118	3.977	4.050	4.128	4.415	4.023
Fe(ii)	0.357	0.016	0.000	0.001	0.000	0.006	0.017	0.000
Ca	1.062	1.470	0.007	0.000	0.004	0.004	0.153	0.000
Na	2.443	0.587	0.587	0.217	0.194	1.000	3.598	0.179
K	0.459	0.047	3.724	4.042	4.063	3.291	0.028	4.036
Ba	0.000	0.004	0.007	0.003	0.009	0.001	0.002	0.002
Total	20.487	18.446	21.086	20.442	20.522	20.840	21.494	20.315
An	26.79	69.88	0.17	0.00	0.09	0.08	4.05	0.00
Ab	61.63	27.90	13.60	5.08	4.56	23.29	95.20	4.26
Or	11.58	2.22	86.24	94.92	95.36	76.63	0.75	95.74

EMPA analyses of feldspar from the granites and volcanic rocks

Sample	MN02	MN02	BB21	BB21	BB21	BB21	BB21	BB21
Spot	FSFMNC3S2	FSFMNC3S3	feldspar test	FSMNC1S1	FSMNC1S2	FSMNC2S2	FSMNC2S3	FSMNC2S6
SiO_2	63.44	62.81	65.84	64.76	64.23	60.72	60.82	64.81
$Al2O_3$	17.62	17.66	21.78	21.63	21.59	21.01	21.36	19.40
FeO	0.00	0.02	0.01	0.00	0.00	0.04	0.00	0.00
CaO	0.00	0.00	3.02	3.13	3.40	3.51	3.36	0.84
Na_2O	0.53	0.68	8.99	9.55	9.56	8.52	8.30	10.00
K_2O	16.48	16.35	0.09	0.07	0.04	0.12	0.08	0.08
BaO	0.00	0.00	0.00	0.00	0.00	0.03	0.05	0.00
Total	98.15	97.59	99.79	99.23	98.84	94.00	94.06	95.25
Cations based on 32 oxygens								
Si	12.232	12.111	12.695	12.486	12.384	11.707	11.726	12.495
Al	4.003	4.013	4.948	4.914	4.905	4.774	4.854	4.408
Fe(ii)	0.000	0.003	0.001	0.001	0.000	0.006	0.000	0.000
Ca	0.000	0.000	0.624	0.646	0.702	0.724	0.695	0.173
Na	0.197	0.252	3.360	3.571	3.573	3.185	3.104	3.739
K	4.053	4.020	0.022	0.018	0.011	0.028	0.019	0.020
Ba	0.000	0.000	0.000	0.000	0.000	0.003	0.004	0.000
Total	20.485	20.400	21.650	21.636	21.576	20.427	20.402	20.835
An	0.00	0.00	15.58	15.25	16.39	18.39	18.20	4.39
Ab	4.63	5.91	83.87	84.32	83.37	80.89	81.31	95.09
Or	95.37	94.09	0.55	0.43	0.25	0.72	0.49	0.52

Sample	BB21	BB21	BB25	BB25	BB25	BB25	BB25	MN61
Spot	FSMNC3S2	FSMNC3S4	FSFVLbC1S2	FSFVLbC3S2	FSFVLbC2S1	FSFVLbC4S1	FSFVLbC4S2	FSFVLMC1S1
SiO_2	64.99	60.45	63.43	63.30	62.07	66.72	65.12	64.13
$Al2O_3$	22.38	20.43	22.15	17.88	17.89	19.40	18.68	17.98
FeO	0.00	0.00	0.10	0.06	0.00	0.00	0.03	0.03
CaO	3.37	3.97	3.72	0.00	0.04	0.29	0.05	0.02
Na_2O	8.76	9.19	9.57	0.86	0.30	2.44	0.35	0.47
K_2O	0.11	0.07	0.14	16.07	15.93	12.88	16.62	16.57
BaO	0.00	0.01	0.00	0.27	1.17	0.32	0.78	0.04
Total	99.66	94.21	99.20	98.55	97.49	102.11	101.72	99.26
Cations based on 32 oxygens								
Si	12.531	11.656	12.231	12.205	11.967	12.864	12.557	12.366
Al	5.086	4.643	5.033	4.062	4.066	4.407	4.245	4.086
Fe(ii)	0.000	0.000	0.015	0.010	0.000	0.000	0.005	0.004
Ca	0.696	0.819	0.769	0.001	0.007	0.060	0.010	0.003
Na	3.275	3.436	3.577	0.323	0.113	0.913	0.129	0.174
K	0.026	0.017	0.034	3.952	3.918	3.168	4.088	4.074
Ba	0.000	0.001	0.000	0.021	0.088	0.024	0.059	0.003
Total	21.615	20.572	21.659	20.574	20.159	21.437	21.094	20.710
An	17.42	19.17	17.56	0.01	0.18	1.44	0.24	0.07
Ab	81.93	80.43	81.67	7.55	2.81	22.05	3.06	4.10
Or	0.66	0.40	0.78	92.44	97.02	76.51	96.70	95.83

EMPA analyses of feldspar from the granites and volcanic rocks

Sample	MN61	MN61	MN61	MN61	BB18	BB18	BB18	BB18
Spot	FSFVLMC1S2	FSFVLMC3S1	FSFVLMC3S2	FSFVLMC3S3	FSWTC1S1	FSWTC1S4	FSWTC2S1	FSWTC2S4
SiO_2	64.39	68.37	64.48	64.70	61.83	61.89	63.63	61.06
$Al2O_3$	17.98	21.00	18.32	18.48	17.37	17.37	19.32	20.81
FeO	0.12	0.18	0.00	0.24	0.00	0.00	0.03	0.03
CaO	0.01	0.85	0.00	0.03	0.04	0.00	1.34	2.77
Na_2O	0.46	8.83	0.52	0.90	0.72	0.55	10.65	8.17
K_2O	16.65	0.32	16.46	15.90	16.02	16.25	0.05	0.07
BaO	0.05	0.00	0.17	0.31	0.40	0.53	0.04	0.06
Total	99.81	99.63	99.98	100.64	96.47	96.81	95.17	93.02
Cations based on 32 oxygens								
Si	12.415	13.182	12.432	12.475	11.921	11.933	12.269	11.774
Al	4.086	4.772	4.163	4.199	3.947	3.946	4.391	4.728
Fe(ii)	0.020	0.028	0.000	0.039	0.000	0.000	0.004	0.006
Ca	0.001	0.175	0.000	0.006	0.009	0.001	0.277	0.571
Na	0.173	3.299	0.195	0.336	0.270	0.207	3.982	3.053
K	4.094	0.078	4.049	3.909	3.940	3.997	0.013	0.018
Ba	0.004	0.000	0.013	0.023	0.030	0.040	0.003	0.005
Total	20.793	21.536	20.851	20.987	20.117	20.124	20.939	20.154
An	0.02	4.93	0.00	0.14	0.22	0.01	6.49	15.68
Ab	4.06	92.88	4.59	7.90	6.40	4.92	93.20	83.83
Or	95.92	2.20	95.41	91.95	93.39	95.07	0.31	0.49

Sample	BB18	BB18	BB18	BB18	BB18	BB18	BB18	HPG05
Spot	FSWTC3s1	FSWTC3s2	FSWTC3s3	FSWTC4s1	FSWTC4s2	FSWTC4s4	FSWTC4s5	FSTRC1S1
SiO_2	61.07	62.74	64.38	64.84	61.29	62.94	63.03	62.59
$Al2O_3$	17.48	17.48	21.19	19.15	17.29	20.69	17.57	17.60
FeO	0.02	0.00	0.00	0.05	0.00	0.00	0.03	0.03
CaO	0.00	0.01	2.91	0.31	0.00	2.70	0.00	0.03
Na_2O	0.21	0.36	9.71	10.56	0.43	9.97	0.56	0.28
K_2O	16.40	16.48	0.12	0.10	16.12	0.13	16.65	16.56
BaO	0.68	0.52	0.00	0.00	0.46	0.00	0.50	0.11
Total	95.87	97.65	98.49	95.05	95.64	96.49	98.41	97.32
Cations based on 32 oxygens								
Si	11.774	12.097	12.413	12.501	11.816	12.136	12.152	12.068
Al	3.971	3.973	4.816	4.351	3.929	4.701	3.992	3.999
Fe(ii)	0.003	0.000	0.000	0.008	0.000	0.000	0.005	0.005
Ca	0.000	0.002	0.602	0.064	0.000	0.557	0.000	0.006
Na	0.079	0.133	3.631	3.947	0.159	3.726	0.208	0.104
K	4.034	4.052	0.029	0.024	3.965	0.032	4.094	4.072
Ba	0.051	0.039	0.000	0.000	0.034	0.000	0.038	0.008
Total	19.914	20.295	21.491	20.894	19.904	21.151	20.488	20.263
An	0.00	0.04	14.12	1.58	0.00	12.91	0.00	0.15
Ab	1.93	3.17	85.19	97.83	3.87	86.36	4.83	2.48
Or	98.07	96.79	0.69	0.59	96.13	0.73	95.17	97.37

EMPA analyses of feldspar from the Mt Painter granites and volcanic rocks

Sample	HPG05	HPG05	HPG05	HPG05	SD010	SD010	SD010	SD010
Spot	C1S2	C3S1	C3S2	C3S3	BxBc1s1	BxBc1s3	BxBc1s4	BxBc1s6
SiO_2	61.75	63.59	66.99	66.23	64.11	64.33	64.61	65.53
$Al2O_3$	17.65	17.93	20.07	20.70	17.21	22.55	18.00	20.88
FeO	0.08	0.04	0.00	0.08	0.02	0.01	0.10	0.07
CaO	0.12	0.06	0.44	0.72	0.00	3.69	0.00	1.67
Na_2O	0.38	0.41	9.70	9.39	0.72	9.23	0.53	9.45
K_2O	15.97	16.41	0.05	0.41	15.98	0.10	16.45	0.09
BaO	0.62	0.13	0.00	0.00	0.14	0.01	0.15	0.06
Total	96.74	98.71	97.35	97.60	98.26	99.98	100.00	97.79
Cations based on 32 oxygens								
Si	11.905	12.261	12.915	12.769	12.361	12.403	12.457	12.635
Al	4.011	4.074	4.561	4.703	3.909	5.123	4.090	4.744
Fe(ii)	0.012	0.006	0.000	0.013	0.003	0.001	0.017	0.011
Ca	0.024	0.012	0.091	0.148	0.000	0.762	0.000	0.344
Na	0.141	0.153	3.625	3.511	0.268	3.451	0.199	3.533
K	3.927	4.036	0.012	0.101	3.930	0.024	4.046	0.022
Ba	0.047	0.009	0.000	0.000	0.011	0.001	0.011	0.005
Total	20.067	20.553	21.204	21.246	20.483	21.765	20.821	21.294
An	0.59	0.29	2.43	3.95	0.00	17.98	0.00	8.83
Ab	3.44	3.64	97.25	93.36	6.38	81.45	4.68	90.61
Or	95.97	96.07	0.32	2.69	93.62	0.58	95.32	0.56

Sample	SD010	SD010	SD010	SD010	SD010	SD010	MN090	MN090
Spot	BxBc2s1	BxBc3s3	BxBc3s6	BxBc4s1	BxBc4s3	BxBc6s1	1-Cir1_1	1-Cir1_2
SiO_2	60.46	64.90	64.99	68.73	63.98	64.03	57.79	60.62
$Al2O_3$	22.17	18.16	18.03	20.90	18.33	21.44	26.59	24.91
FeO	0.11	0.00	0.00	0.09	0.00	0.00	0.04	0.02
CaO	4.34	0.02	0.00	0.33	0.00	3.18	8.86	6.22
Na_2O	8.38	0.38	0.41	6.97	1.23	10.17	6.26	8.04
K_2O	0.42	16.55	16.82	0.08	15.68	0.09	0.06	0.04
BaO	0.00	0.05	0.21	0.00	0.15	0.00	0.00	0.01
Total	96.01	100.06	100.48	97.10	99.43	98.95	99.64	99.89
Cations based on 32 oxygens								
Si	11.658	12.513	12.531	13.252	12.335	12.345	11.143	11.688
Al	5.038	4.126	4.096	4.748	4.166	4.871	6.041	5.659
Fe(ii)	0.018	0.000	0.001	0.014	0.000	0.000	0.006	0.003
Ca	0.896	0.003	0.000	0.069	0.000	0.657	1.831	1.286
Na	3.131	0.144	0.151	2.605	0.458	3.801	2.341	3.004
K	0.102	4.071	4.137	0.019	3.856	0.022	0.016	0.009
Ba	0.000	0.003	0.016	0.000	0.012	0.000	0.000	0.001
Total	20.843	20.861	20.931	20.707	20.826	21.697	21.378	21.649
An	21.69	0.08	0.00	2.55	0.00	14.66	43.72	29.91
Ab	75.84	3.41	3.53	96.75	10.61	84.84	55.91	69.88
Or	2.47	96.51	96.47	0.70	89.39	0.50	0.37	0.21

EMPA analyses of feldspar from the Mt Painter granites and volcanic rocks

Sample	MN090	MN090	MN090	MN090	MN090	MN099	MN099	MN099
Spot	1-Cir2_1	1-Cir2_2	1-Cir7_7	1-Cir7_8	1-Cir7_9	2-Cir1_3	2-Cir3_2	2-Cir3_3
SiO_2	57.25	60.74	59.60	59.19	59.37	55.78	55.76	52.87
$Al2O_3$	26.64	24.82	25.06	25.68	24.88	27.28	27.82	29.70
FeO	0.05	0.05	0.17	0.23	0.04	0.01	0.39	0.19
CaO	8.73	6.29	7.20	7.54	7.12	9.60	10.14	12.56
Na_2O	6.45	8.02	7.52	7.47	7.60	5.89	5.91	4.38
K_2O	0.05	0.04	0.04	0.06	0.07	0.05	0.04	0.02
BaO	0.01	0.00	0.03	0.00	0.00	0.00	0.07	0.00
Total	99.22	99.95	99.67	100.16	99.16	98.61	100.17	99.77
Cations based on 32 oxygens								
Si	11.038	11.711	11.492	11.412	11.446	10.755	10.752	10.194
Al	6.053	5.639	5.694	5.835	5.654	6.198	6.322	6.748
Fe(ii)	0.008	0.008	0.027	0.037	0.007	0.001	0.063	0.031
Ca	1.804	1.299	1.488	1.557	1.472	1.982	2.094	2.593
Na	2.409	2.997	2.810	2.792	2.840	2.202	2.207	1.637
K	0.012	0.010	0.011	0.013	0.017	0.012	0.009	0.005
Ba	0.001	0.000	0.002	0.000	0.000	0.000	0.005	0.000
Total	21.325	21.664	21.523	21.647	21.436	21.150	21.453	21.209
An	42.69	30.17	34.54	35.69	33.99	47.24	48.58	61.24
Ab	57.02	69.59	65.21	64.00	65.61	52.48	51.20	38.64
Or	0.28	0.24	0.25	0.31	0.40	0.28	0.22	0.12

Sample	MN099	MN099	MN099	MN099	MN099	MN099	MN099	MN099
Spot	2-Cir4_1	2-Cir5_2	2-Cir5_5	2-Cir7_3	2-Cir7_4	2-Cir7_5	MF99_047	MF99_050
SiO_2	57.00	52.81	52.20	53.91	56.18	65.84	52.76	53.99
$Al2O_3$	27.52	29.71	29.34	29.19	27.71	21.64	30.62	29.73
FeO	0.05	0.32	0.30	0.28	0.03	0.48	0.11	0.25
CaO	9.43	12.14	12.30	12.03	10.01	2.48	13.25	12.46
Na_2O	6.04	4.56	4.51	4.83	5.82	9.23	4.17	5.02
K_2O	0.08	0.05	0.04	0.04	0.06	0.06	0.03	0.04
BaO	0.00	0.02	0.02	0.00	0.02	0.00	0.01	0.02
Total	100.14	99.67	98.75	100.28	99.84	99.77	101.01	101.53
Cations based on 32 oxygens								
Si	10.990	10.183	10.065	10.395	10.832	12.694	10.172	10.409
Al	6.254	6.750	6.666	6.633	6.297	4.917	6.959	6.756
Fe(ii)	0.008	0.051	0.048	0.045	0.006	0.077	0.017	0.040
Ca	1.948	2.508	2.540	2.486	2.068	0.513	2.737	2.574
Na	2.258	1.704	1.686	1.804	2.177	3.451	1.558	1.877
K	0.020	0.013	0.010	0.009	0.015	0.014	0.008	0.011
Ba	0.000	0.002	0.001	0.000	0.001	0.000	0.001	0.002
Total	21.477	21.211	21.016	21.371	21.396	21.666	21.452	21.669
An	46.09	59.37	59.97	57.83	48.55	12.90	63.61	57.68
Ab	53.43	40.32	39.80	41.97	51.10	86.75	36.19	42.07
Or	0.48	0.31	0.23	0.20	0.35	0.36	0.19	0.24

EMPA analyses of feldspar from the Mt Painter granites and volcanic rocks

Sample	MN099	MN099	SD051	SD051	SD051	SD051	SD051	SD051
Spot	MF99_053	MF99_064	MF51c2s2	MF51c3s5	MF51c4s2	MF51c5s1	MF51c6s3	MF51c6s4
SiO_2	50.07	48.08	57.11	55.39	57.71	59.45	43.98	38.17
$Al2O_3$	24.27	26.86	23.17	23.78	24.15	23.21	14.14	11.38
FeO	0.04	0.06	0.00	0.19	0.08	0.00	3.33	6.51
CaO	9.84	12.39	7.38	7.52	7.21	5.81	1.02	1.99
Na_2O	6.24	4.74	7.65	7.45	7.60	7.93	0.10	0.15
K_2O	0.04	0.03	0.00	0.04	0.07	0.07	5.04	1.61
BaO	0.01	0.01	0.00	0.00	0.02	0.00	0.07	0.17
Total	90.63	92.21	95.44	94.46	96.89	96.58	70.01	62.98
Cations based on 32 oxygens								
Si	9.654	9.270	11.012	10.680	11.126	11.463	8.479	7.359
Al	5.516	6.102	5.265	5.403	5.487	5.275	3.212	2.585
Fe(ii)	0.006	0.010	0.000	0.030	0.013	0.000	0.537	1.050
Ca	2.032	2.559	1.524	1.554	1.489	1.199	0.211	0.412
Na	2.334	1.773	2.858	2.785	2.840	2.965	0.039	0.056
K	0.010	0.008	0.001	0.009	0.016	0.018	1.239	0.396
Ba	0.001	0.001	0.000	0.000	0.001	0.000	0.005	0.013
Total	19.553	19.722	20.660	20.461	20.973	20.920	13.722	11.871
An	46.44	58.96	34.77	35.74	34.26	28.68	14.17	47.63
Ab	53.33	40.86	65.21	64.06	65.36	70.90	2.60	6.51
Or	0.23	0.18	0.02	0.21	0.38	0.42	83.23	45.86

Sample	SD004	SD004	SD004
Spot	MF04c1s2	MF04c2s	MF04c5s1
SiO_2	55.84	58.51	52.48
$Al2O_3$	26.12	25.65	28.07
FeO	0.22	0.05	0.41
CaO	9.42	7.82	11.63
Na_2O	6.33	7.31	4.92
K_2O	0.11	0.09	0.20
BaO	0.09	0.00	0.02
Total	98.30	99.56	98.08
Cations based on 32 oxygens			
Si	10.765	11.282	10.118
Al	5.935	5.828	6.379
Fe(ii)	0.036	0.008	0.066
Ca	1.945	1.614	2.403
Na	2.365	2.734	1.840
K	0.027	0.023	0.049
Ba	0.007	0.000	0.001
Total	21.081	21.489	20.856
An	44.84	36.93	55.98
Ab	54.53	62.55	42.88
Or	0.63	0.53	1.14

EMPA analyses of biotite from the Mt Painter mafic and felsic rocks

Sample	BB21	BB21	BB21	BB21	BB25	BB25	MN61	SD010	SD010
Spot	BB21_01	BB21_02	BB21_03	BB21_04	BB2_01	BB2_02	MN61_01	SD10_01	SD10_02
SiO_2	35.37	33.63	38.76	34.62	32.16	30.92	30.74	31.35	32.78
TiO_2	1.31	1.33	1.17	0.89	2.79	2.10	1.30	2.79	0.02
Al_2O_3	17.55	18.51	19.06	17.00	17.44	16.86	16.44	15.24	19.12
FeO	15.04	16.87	15.11	14.02	28.88	29.61	31.99	27.91	23.87
MnO	0.30	0.22	0.28	0.34	0.44	0.42	1.15	0.55	0.25
MgO	12.46	13.85	13.40	11.20	3.21	3.61	2.60	6.06	2.89
CaO	0.02	0.00	0.04	0.10	0.10	0.05	0.13	1.27	0.86
Na_2O	0.14	0.12	0.31	0.28	0.04	0.08	0.16	0.06	0.18
K_2O	9.43	7.93	9.07	9.03	6.87	6.97	6.44	4.66	1.24
BaO	0.19	0.11	0.10	0.10	0.06	0.01	0.07	0.00	0.00
H2O*	3.85	3.87	4.14	3.69	3.63	3.54	3.50	3.57	3.43
Subtotal	95.64	96.44	101.43	91.28	95.63	94.16	94.53	93.46	84.63
Total	95.64	96.44	101.43	91.28	95.63	94.16	94.53	93.46	84.63
Si	5.504	5.204	5.611	5.620	5.310	5.237	5.261	5.262	5.735
Al iv	2.496	2.796	2.389	2.380	2.690	2.763	2.739	2.738	2.265
Al vi	0.723	0.582	0.862	0.874	0.706	0.602	0.577	0.277	1.677
Ti	0.154	0.155	0.127	0.108	0.347	0.268	0.168	0.352	0.003
Fe	1.957	2.183	1.830	1.903	3.989	4.195	4.579	3.918	3.492
Mn	0.039	0.029	0.034	0.047	0.062	0.060	0.167	0.078	0.038
Mg	2.890	3.196	2.891	2.711	0.791	0.912	0.663	1.516	0.753
Ca	0.003	0.000	0.006	0.017	0.018	0.009	0.025	0.229	0.160
Na	0.043	0.036	0.087	0.088	0.012	0.026	0.053	0.019	0.061
K	1.871	1.566	1.674	1.870	1.447	1.506	1.405	0.998	0.276
Ba	0.012	0.007	0.006	0.006	0.004	0.000	0.005	0.000	0.000
OH*	4	4	4	4	4	4	4	4	4
TOTAL	19.690	19.753	19.517	19.624	19.375	19.579	19.642	19.387	18.460
Y total	5.762	6.145	5.744	5.642	5.894	6.037	6.155	6.141	5.962
X total	1.928	1.609	1.773	1.981	1.481	1.542	1.487	1.246	0.498
Al total	3.219	3.377	3.252	3.253	3.395	3.366	3.317	3.015	3.942
Fe/Fe+Mg	0.40	0.41	0.39	0.41	0.83	0.82	0.87	0.72	0.82
Luhr et al. 84	877.29	870.27	869.08	857.93	885.06	864.07	840.47	887.83	811.29

EMPA analyses of biotite from the Mt Painter mafic and felsic rocks

Sample	MN092	MN092	MN092	MN092	MN092	SD047	SD047	SD047	SD047
Spot	MN92_01	MN92_02	MN92_03	MN92_04	MN92_05	SD47_01	SD47_02	SD47_03	SD47_04
SiO_2	33.79	34.74	34.49	50.91	31.19	35.21	47.45	33.69	37.96
TiO_2	2.99	3.05	3.06	0.11	3.08	2.20	0.14	2.56	0.50
Al_2O_3	14.90	15.59	15.95	18.71	14.56	15.54	15.68	15.22	12.82
FeO	27.64	27.23	27.48	5.70	27.11	30.04	8.67	29.42	29.90
MnO	0.48	0.27	0.39	0.04	0.58	0.44	0.01	0.54	0.50
MgO	4.04	4.32	4.24	2.66	3.90	3.51	1.38	3.69	1.67
CaO	0.03	0.02	0.04	0.55	0.00	0.06	0.38	0.03	10.90
Na_2O	0.07	0.05	0.06	0.11	0.05	0.05	0.11	0.01	1.18
K_2O	9.44	9.57	9.50	2.83	9.47	9.08	6.64	9.45	2.08
BaO	0.13	0.04	0.29	0.00	0.04	0.12	0.17	0.01	0.00
H2O*	3.66	3.74	3.75	3.99	3.48	3.76	3.73	3.67	3.85
Subtotal	97.16	98.62	99.25	85.62	93.45	99.99	84.35	98.28	101.36
Total	97.16	98.62	99.25	85.62	93.45	99.99	84.35	98.28	101.36
Si	5.542	5.568	5.511	7.654	5.369	5.619	7.622	5.500	5.906
Al iv	2.458	2.432	2.489	0.346	2.631	2.381	0.378	2.500	2.094
Al vi	0.422	0.514	0.515	2.970	0.321	0.541	2.591	0.429	0.257
Ti	0.369	0.367	0.368	0.012	0.399	0.264	0.017	0.314	0.059
Fe	3.791	3.650	3.672	0.717	3.902	4.009	1.165	4.016	3.891
Mn	0.067	0.036	0.052	0.006	0.084	0.060	0.001	0.075	0.066
Mg	0.988	1.031	1.010	0.596	1.000	0.834	0.330	0.897	0.387
Ca	0.006	0.004	0.006	0.089	0.000	0.011	0.065	0.006	1.817
Na	0.022	0.015	0.018	0.031	0.017	0.014	0.034	0.002	0.356
K	1.974	1.957	1.936	0.543	2.079	1.847	1.361	1.968	0.412
Ba	0.008	0.002	0.018	0.000	0.002	0.007	0.011	0.000	0.000
OH*	4	4	4	4	4	4	4	4	4
TOTAL	19.647	19.577	19.596	16.963	19.804	19.587	17.575	19.707	19.244
Y total	5.637	5.599	5.617	4.300	5.705	5.707	4.103	5.731	4.659
X total	2.010	1.978	1.979	0.663	2.099	1.880	1.471	1.976	2.585
Al total	2.881	2.946	3.004	3.316	2.953	2.922	2.969	2.929	2.351
Fe/Fe+Mg	0.79	0.78	0.78	0.55	0.80	0.83	0.78	0.82	0.91
Luhr et al. 84	894.87	898.13	897.72	824.49	899.64	865.85	822.06	877.06	822.65

EMPA analyses of biotite from the Mt Painter mafic and felsic rocks

Sample	MN096	MN096	MN096	MN096	MN096	MN096	MN096	MN096	MN096
Spot	MN97_01	MN97_02	MN97_03	MN97_04	MN97_05	MN97_06	MN97_07	MN97_08	MN97_09
SiO_2	33.25	32.74	25.94	34.44	33.89	33.17	30.38	30.04	32.89
TiO_2	1.99	2.18	0.23	2.23	1.92	2.25	1.55	1.38	1.67
Al_2O_3	14.61	16.01	15.50	15.52	14.61	15.11	12.90	13.15	13.93
FeO	28.20	27.89	34.74	28.96	29.67	28.44	21.48	20.08	29.95
MnO	0.58	0.38	0.57	0.34	0.26	0.42	0.21	0.31	0.51
MgO	4.01	4.52	3.30	4.48	4.85	4.35	4.20	3.69	4.34
CaO	0.17	0.08	0.58	0.03	0.05	0.24	0.01	0.05	0.70
Na_2O	0.12	0.11	0.19	0.03	0.10	0.05	0.05	0.08	0.10
K_2O	8.20	7.90	2.51	9.46	8.86	9.02	7.61	7.16	8.53
BaO	0.04	0.08	0.00	0.04	0.12	0.04	0.06	0.11	0.00
H2O*	3.57	3.62	3.18	3.73	3.67	3.63	3.14	3.07	3.58
Subtotal	94.74	95.50	86.75	99.26	98.01	96.70	81.59	79.12	96.19
Total	94.74	95.50	86.75	99.26	98.01	96.70	81.59	79.12	96.19
Si	5.587	5.428	4.899	5.532	5.538	5.481	5.800	5.864	5.517
Al iv	2.413	2.572	3.101	2.468	2.462	2.519	2.200	2.136	2.483
Al vi	0.481	0.555	0.349	0.470	0.353	0.425	0.702	0.890	0.272
Ti	0.252	0.272	0.032	0.270	0.236	0.280	0.222	0.203	0.210
Fe	3.963	3.867	5.487	3.890	4.055	3.930	3.430	3.279	4.201
Mn	0.083	0.054	0.092	0.047	0.036	0.059	0.035	0.050	0.072
Mg	1.004	1.117	0.929	1.072	1.182	1.071	1.195	1.073	1.085
Ca	0.031	0.015	0.118	0.004	0.009	0.043	0.001	0.011	0.126
Na	0.039	0.035	0.069	0.009	0.032	0.015	0.020	0.030	0.031
K	1.758	1.670	0.605	1.939	1.847	1.900	1.854	1.783	1.826
Ba	0.003	0.005	0.000	0.002	0.008	0.002	0.004	0.008	0.000
OH*	4	4	4	4	4	4	4	4	4
TOTAL	19.613	19.589	19.681	19.703	19.758	19.725	19.463	19.327	19.824
Y total	5.783	5.865	6.888	5.748	5.862	5.765	5.584	5.494	5.841
X total	1.830	1.724	0.792	1.955	1.896	1.960	1.880	1.833	1.982
Al total	2.894	3.128	3.449	2.938	2.815	2.944	2.902	3.025	2.755
Fe/Fe+Mg	0.80	0.78	0.86	0.78	0.77	0.79	0.74	0.75	0.79
Luhr et al. 84	863.74	869.84	815.34	868.96	858.96	870.67	864.96	862.20	851.91

EMPA analyses of biotite from the Mt Painter mafic and felsic rocks

Sample	MN096	MN096	MN096	MN099	MN099	MN099	MN099	MN099	MN099
Spot	MN97_10	MN97_11	MN97_12	MN99_01	MN99_02	MN99_03	MN99_04	MN99_05	MN99_06
SiO_2	33.66	33.54	39.89	34.44	36.01	36.19	36.22	36.82	35.81
TiO_2	1.97	2.01	2.25	2.11	2.45	2.50	2.49	1.89	2.44
Al_2O_3	14.53	14.34	9.02	15.03	15.47	15.81	15.63	16.04	15.36
FeO	28.54	28.82	17.96	18.56	20.14	19.52	19.86	19.84	19.49
MnO	0.49	0.37	0.15	0.13	0.12	0.08	0.15	0.09	0.11
MgO	4.40	4.63	8.28	10.67	10.61	10.71	10.74	11.26	10.72
CaO	0.05	0.01	1.10	0.15	0.05	0.04	0.06	0.07	0.13
Na_2O	0.08	0.01	0.20	0.12	0.04	0.02	0.06	0.07	0.07
K_2O	9.47	9.57	2.44	8.72	8.99	9.00	9.11	9.01	8.69
BaO	0.17	0.00	0.05	0.23	0.20	0.17	0.29	0.15	0.16
H2O*	3.63	3.62	3.53	3.71	3.86	3.88	3.89	3.93	3.83
Subtotal	96.97	96.93	84.88	93.87	97.94	97.91	98.49	99.17	96.82
Total	96.97	96.93	84.88	93.87	97.94	97.91	98.49	99.17	96.82
Si	5.566	5.552	6.774	5.567	5.590	5.594	5.588	5.616	5.602
Al iv	2.434	2.448	1.226	2.433	2.410	2.406	2.412	2.384	2.398
Al vi	0.398	0.350	0.579	0.432	0.421	0.474	0.430	0.500	0.434
Ti	0.245	0.250	0.288	0.256	0.287	0.290	0.289	0.217	0.287
Fe	3.947	3.990	2.551	2.509	2.614	2.524	2.562	2.530	2.550
Mn	0.068	0.052	0.022	0.018	0.016	0.010	0.020	0.011	0.014
Mg	1.084	1.143	2.097	2.571	2.454	2.469	2.469	2.559	2.499
Ca	0.009	0.002	0.201	0.025	0.008	0.007	0.010	0.011	0.022
Na	0.024	0.004	0.065	0.038	0.011	0.007	0.019	0.022	0.020
K	1.998	2.021	0.528	1.798	1.779	1.775	1.792	1.753	1.735
Ba	0.011	0.000	0.003	0.015	0.012	0.010	0.017	0.009	0.010
OH*	4	4	4	4	4	4	4	4	4
TOTAL	19.784	19.812	18.333	19.662	19.603	19.567	19.608	19.613	19.572
Y total	5.742	5.784	5.536	5.787	5.792	5.767	5.769	5.818	5.785
X total	2.041	2.027	0.797	1.875	1.810	1.799	1.839	1.795	1.787
Al total	2.833	2.798	1.805	2.864	2.831	2.880	2.842	2.884	2.832
Fe/Fe+Mg	0.78	0.78	0.55	0.49	0.52	0.51	0.51	0.50	0.51
Luhr et al. 84	862.54	863.05	909.96	899.61	906.82	912.17	909.98	883.99	909.90

EMPA analyses of biotite from the Mt Painter mafic and felsic rocks

Sample	MN099	SD004	SD004	SD004
Spot	MN99_07	SD04_01	SD04_02	SD04_03
SiO_2	29.19	36.13	37.83	40.54
TiO_2	0.13	2.45	1.29	1.54
Al_2O_3	15.62	14.95	12.77	12.28
FeO	35.76	18.41	17.29	13.94
MnO	0.15	0.16	0.02	0.00
MgO	3.10	12.45	14.13	15.99
CaO	0.31	0.00	0.01	0.02
Na_2O	0.21	0.04	0.03	0.08
K_2O	1.01	10.13	9.12	9.50
BaO	0.05	0.42	0.09	0.01
H2O*	3.33	3.90	3.86	4.00
Subtotal	88.85	99.03	96.43	97.90
Total	88.85	99.03	96.43	97.90
Si	5.262	5.553	5.878	6.077
Al iv	2.738	2.447	2.122	1.923
Al vi	0.582	0.263	0.216	0.246
Ti	0.018	0.283	0.151	0.174
Fe	5.390	2.367	2.247	1.748
Mn	0.023	0.020	0.002	0.000
Mg	0.832	2.853	3.272	3.573
Ca	0.059	0.000	0.001	0.003
Na	0.072	0.011	0.009	0.024
K	0.232	1.985	1.807	1.817
Ba	0.003	0.025	0.006	0.000
OH*	4	4	4	4
TOTAL	19.211	19.807	19.710	19.585
Y total	6.846	5.786	5.888	5.741
X total	0.366	2.022	1.822	1.844
Al total	3.320	2.709	2.338	2.170
Fe/Fe+Mg	0.87	0.45	0.41	0.33
Luhr et al. 84	813.34	916.69	866.87	897.02

LA-ICPMS analyses of Amphibole from the mafic rocks

Sample	BB06	BB06	BB06	BB06	BB06	BB06	BB06	BB06
Spot	BB6HB1	BB6HB2	BB6HB3	BB6HB4	BB6HB5	b6amc1s2	b6amc2s1	b6ac2s2
Sc	107.61	47.97	71.32	50.52	48.08	98.19	96.38	71.70
V	133.31	115.95	136.65	148.19	144.60	167.92	182.76	157.63
Cr	68.98	45.60	43.07	38.76	28.72	48.21	40.24	34.52
Co	17.64	16.79	16.57	16.83	16.22	19.04	18.36	13.94
Ni	20.41	19.90	20.00	17.61	16.65	21.05	20.36	15.35
Cu	0.65	1.19	<0.68	<0.62	0.81	0.98	1.41	3.18
Ga	78.73	83.18	71.95	70.42	62.94	81.47	86.02	136.37
Rb	4.10	4.56	4.13	3.85	2.85	5.59	6.07	4.64
Sr	33.72	40.49	27.63	25.50	23.70	28.83	29.55	159.33
Y	82.27	54.99	71.19	51.27	28.85	134.54	116.09	91.68
Zr	11.13	9.40	10.78	4.92	2.08	10.61	11.83	6.73
Nb	32.94	31.35	33.03	22.51	8.38	36.60	32.61	21.70
La	11.29	6.98	0.94	0.62	0.38	0.86	18.18	137.41
Ce	21.41	17.02	4.88	3.29	1.84	5.81	40.84	250.75
Pr	3.26	2.54	1.41	1.03	0.45	1.43	5.41	27.12
Nd	17.03	15.80	11.38	7.25	2.83	10.11	25.49	96.12
Sm	7.99	8.59	8.84	4.87	1.57	8.01	12.26	22.05
Eu	1.63	1.67	1.65	1.32	0.94	1.69	2.08	1.99
Gd	11.17	10.86	13.66	7.71	1.94	12.43	17.49	20.41
Tb	2.03	1.87	2.32	1.31	0.46	3.09	3.37	3.12
Dy	14.89	10.79	14.59	9.20	3.94	22.98	23.14	19.21
Ho	2.90	1.98	2.69	1.75	0.92	4.74	4.17	3.16
Er	7.57	4.74	6.84	5.14	3.63	14.31	10.17	7.70
Tm	1.07	0.61	0.86	0.74	0.66	2.08	1.41	1.03
Yb	5.88	3.36	4.48	4.49	5.63	14.53	8.61	6.75
Lu	0.65	0.38	0.51	0.49	0.66	1.61	0.96	0.79
Hf	0.62	0.46	0.44	0.20	<0.136	0.43	0.55	0.45
Ta	1.38	1.24	1.35	0.56	0.11	1.15	1.01	0.85
Pb	8.55	10.50	8.46	8.89	8.31	11.10	11.43	15.29
Th	4.52	2.10	<0.047	<0.045	<0.035	<0.044	3.76	0.85
U	1.84	6.62	0.16	0.18	0.23	0.22	2.11	0.82
Nb/La	2.92	4.49	35.06	36.25	22.23	42.71	1.79	0.16

LA-ICPMS analyses of Amphibole from the mafic rocks

Sample	BB06	MN090	MN090	MN090	MN090	MN090	MN090	MN090
Spot	b6ac4s1	90amc1s1	90amc1s2	90am3s1	90amc3s1	90amc3s2	90amc3s3	90amc4s1
Sc	78.72	55.41	75.36	143.77	137.69	25.95	80.10	79.28
V	126.99	619.39	686.19	574.39	1940.29	85.60	292.22	270.41
Cr	121.53	5.87	4.78	802.97	4.11	<11.45	3.77	6.23
Co	19.02	52.00	49.22	56.27	59.82	8.40	52.29	55.24
Ni	20.74	28.92	24.46	32.65	35.37	8.63	31.71	34.22
Cu	0.63	6.31	13.86	2.26	11.20	16.50	4.18	5.03
Ga	84.01	25.75	38.78	9.88	32.25	257.05	16.15	16.70
Rb	4.97	3.95	6.95	1.23	8.89	21.91	2.82	2.70
Sr	30.39	7.82	10.74	3.74	8.36	662.70	6.16	4.79
Y	65.46	49.93	62.51	30.62	56.95	20.22	27.92	34.70
Zr	8.69	14.89	20.54	11.46	32.02	9.81	15.52	8.57
Nb	30.70	5.33	9.30	0.32	4.49	3.64	3.86	3.81
La	0.81	3.06	5.47	0.36	6.60	11.59	2.13	2.96
Ce	5.18	12.80	21.51	2.72	24.74	26.02	8.19	12.90
Pr	1.28	2.79	4.25	0.85	4.60	3.50	1.79	2.61
Nd	9.77	16.15	24.93	5.70	26.97	19.51	10.46	14.49
Sm	6.35	5.98	8.53	2.92	9.66	4.56	3.76	5.31
Eu	1.75	1.05	1.37	0.59	1.32	0.85	0.70	0.78
Gd	10.24	8.14	10.45	4.21	10.89	5.83	4.45	6.33
Tb	2.03	1.29	1.77	0.78	1.78	0.71	0.75	1.06
Dy	13.24	8.86	11.97	5.29	11.41	4.20	5.40	7.22
Ho	2.29	1.85	2.30	1.24	2.30	0.99	1.05	1.39
Er	5.89	4.96	6.62	3.39	5.39	2.37	2.81	3.34
Tm	0.79	0.70	0.87	0.52	0.65	0.21	0.42	0.44
Yb	4.55	3.85	5.28	3.64	3.69	2.15	2.52	2.52
Lu	0.54	0.47	0.65	0.41	0.52	0.28	0.33	0.28
Hf	0.43	1.13	1.22	0.78	4.76	1.35	1.16	1.38
Ta	0.74	0.42	0.53	0.04	0.09	0.58	0.09	0.53
Pb	12.64	1.83	3.22	3.33	6.92	11.15	1.87	2.15
Th	0.04	0.09	0.10	<0.041	0.04	0.78	0.14	<0.042
U	0.18	0.24	0.39	0.30	0.95	0.94	0.42	0.10
Nb/La	37.85	1.74	1.70	0.89	0.68	0.31	1.82	1.29

LA-ICPMS analyses of Amphibole from the mafic rocks

Sample	MN090	MN096	MN096	MN096	MN096	MN096	MN097	MN097
Spot	90amc4s2	MN96AM1	MN96AM2	MN96AM3	MN96AM4	MN96AM5	97amc1s1	97amc2s2
Sc	81.47	0.22	0.16	0.16	0.16	0.20	148.18	140.28
V	417.14	0.17	0.13	0.13	0.12	0.19	176.62	163.12
Cr	47.63	0.02	0.01	<0.0041	0.01	0.02	19.53	19.66
Co	51.46	0.03	0.03	0.03	0.03	0.03	31.25	28.51
Ni	32.31	0.01	0.01	0.01	0.01	0.01	7.64	6.53
Cu	13.28	<0.00047	<0.00055	<0.00062	<0.00057	0.00	7.31	2.01
Ga	61.92	0.07	0.06	0.06	0.07	0.06	71.13	58.28
Rb	12.75	0.04	0.06	0.06	0.05	0.05	50.36	44.36
Sr	76.55	0.00	0.01	0.01	0.01	0.01	9.24	5.60
Y	29.25	0.33	0.47	0.53	0.47	0.29	324.54	555.91
Zr	16.76	0.04	0.02	0.02	0.02	0.02	101.16	20.63
Nb	1.25	0.05	0.11	0.11	0.10	0.09	76.44	80.86
La	1.19	0.00	0.01	0.02	0.00	0.00	25.25	7.14
Ce	3.68	0.00	0.01	0.03	0.00	0.00	73.35	25.70
Pr	0.83	0.00	0.00	0.00	0.00	0.00	11.35	4.84
Nd	4.76	0.00	0.01	0.02	0.01	0.01	57.01	32.37
Sm	1.62	0.00	0.01	0.01	0.01	0.01	28.03	20.81
Eu	0.61	0.00	0.00	0.00	0.00	0.00	1.25	0.87
Gd	4.09	0.01	0.03	0.03	0.02	0.02	37.33	40.63
Tb	0.68	0.00	0.01	0.01	0.01	0.01	8.71	10.16
Dy	5.00	0.04	0.07	0.08	0.06	0.05	62.90	83.53
Ho	1.15	0.01	0.02	0.02	0.02	0.01	12.99	19.32
Er	3.03	0.04	0.05	0.06	0.05	0.03	38.56	59.59
Tm	0.41	0.01	0.01	0.01	0.01	0.00	5.49	8.67
Yb	3.32	0.04	0.05	0.06	0.05	0.03	36.22	59.48
Lu	0.42	0.01	0.01	0.01	0.01	0.00	5.87	9.70
Hf	0.91	0.00	0.00	0.00	0.00	0.00	6.95	2.67
Ta	<0.061	0.00	0.00	0.00	0.00	0.00	0.84	1.54
Pb	3.17	0.02	0.02	0.02	0.01	0.02	31.51	17.22
Th	<0.061	0.01	0.00	0.00	0.00	0.00	713.89	17.62
U	0.19	0.01	0.00	0.00	0.00	0.00	72.31	25.00
Nb/La	1.05	27.22	19.82	5.16	91.67	24.20	3.03	11.32

LA-ICPMS analyses of Amphibole from the mafic rocks

Sample	MN097	MN097	MN097	MN097	MN099	MN099	MN099	MN099
Spot	97amc3s1	97amc6s1	97AMC6S1	97AMC7S1	99amc2s1	99amc2s2	99amc2s3	99pxc2s1
Sc	185.96	143.68	162.77	135.18	52.69	49.71	65.42	42.22
V	164.38	172.92	175.06	131.60	421.80	453.99	426.51	432.25
Cr	13.47	<3.60	21.75	<19.71	133.95	267.07	240.67	373.00
Co	29.62	30.94	29.88	76.00	73.66	72.15	71.23	65.46
Ni	6.52	7.05	7.38	5.76	172.60	167.35	162.75	152.22
Cu	2.54	4.09	<2.97	4.33	131.44	12.19	36.67	9.58
Ga	59.58	63.28	69.17	52.15	15.64	14.33	18.14	15.18
Rb	42.90	43.20	44.95	37.88	2.93	2.38	3.78	3.99
Sr	7.89	7.83	5.76	8.84	9.30	7.30	9.43	9.79
Y	332.25	344.85	192.71	869.38	19.75	20.36	21.59	20.75
Zr	21.87	16.79	13.93	2273.02	70.70	6.03	11.52	10.20
Nb	82.36	78.58	48.85	31.56	1.17	1.55	1.50	1.61
La	4.38	6.66	2.89	151.79	1.73	0.76	1.83	1.67
Ce	8.81	11.89	7.60	108.81	6.93	3.78	8.08	7.64
Pr	2.35	2.30	1.29	27.46	1.26	0.83	1.44	1.29
Nd	13.47	12.73	7.30	111.94	6.48	4.54	7.92	6.97
Sm	11.11	8.52	6.06	38.99	2.21	1.93	2.87	2.49
Eu	0.56	0.54	0.25	2.77	0.70	0.97	0.89	0.83
Gd	22.05	18.69	12.71	68.69	2.73	2.27	2.91	2.72
Tb	5.94	5.53	3.49	15.85	0.49	0.53	0.52	0.48
Dy	50.02	49.47	31.98	132.02	3.41	3.20	3.44	3.18
Ho	12.04	12.18	7.66	33.25	0.68	0.72	0.85	0.70
Er	37.29	39.38	24.15	105.08	2.16	2.09	2.17	2.38
Tm	5.08	6.16	3.46	15.80	0.33	0.34	0.31	0.31
Yb	33.42	43.33	24.22	108.25	1.90	2.16	1.96	2.10
Lu	5.14	6.84	3.97	18.37	0.31	0.34	0.31	0.33
Hf	1.53	0.64	1.43	85.41	2.09	0.32	1.22	0.62
Ta	0.62	0.61	0.28	0.30	<0.051	<0.052	0.09	0.04
Pb	21.15	16.66	29.08	42.63	0.80	0.79	1.51	0.69
Th	1.32	1.08	0.99	46.98	0.34	<0.061	<0.046	<0.047
U	2.97	3.75	3.39	57.97	0.23	<0.035	0.05	0.02
Nb/La	18.80	11.80	16.90	0.21	0.67	2.05	0.82	0.96

LA-ICPMS analyses of Amphibole from the mafic rocks

Sample	MN099	MN099	MN099	MN099	MN099	MN099	MN099	MN099
Spot	99amc3s1	99amc3s2	99amc4s1	99amc4s2	99amc4s3	99amc5s1	MN99HB1	MN99HB2
Sc	60.20	21.25	63.88	61.04	89.64	33.74	21206.58	25368.93
V	740.13	183.31	557.04	526.21	982.51	439.00	165467.39	182624.06
Cr	538.66	68.24	274.14	274.77	293.34	756.03	71717.37	75206.42
Co	68.49	25.69	73.76	68.96	145.19	74.00	23976.98	23966.49
Ni	159.83	59.53	175.69	155.97	164.75	183.57	54403.82	54444.78
Cu	116.80	119.28	155.16	44.36	292.40	0.49	<200.03	<260.10
Ga	16.43	23.96	21.36	21.31	24.44	14.23	6214.05	6346.59
Rb	3.52	10.88	4.39	4.39	7.82	3.00	1243.25	1423.16
Sr	8.15	396.54	15.89	9.74	12.04	8.33	3857.39	3938.02
Y	24.14	8.27	42.62	46.72	35.32	19.34	6649.08	7300.04
Zr	709.16	4.10	371.80	157.16	398.98	6.87	3227.95	3676.62
Nb	1.42	0.73	10.46	8.25	8.77	1.58	412.08	502.17
La	1.16	1.17	23.42	3.00	2.84	1.37	717.91	724.98
Ce	6.16	3.56	65.85	17.20	12.07	6.27	2446.13	2561.84
Pr	1.10	0.54	8.23	3.30	2.12	1.17	426.31	436.85
Nd	6.69	3.07	34.99	19.33	13.14	6.39	2538.72	2711.88
Sm	2.80	1.01	7.33	6.75	4.59	2.41	828.08	812.98
Eu	0.83	0.69	2.14	2.36	1.20	0.86	325.40	280.93
Gd	3.26	1.21	6.49	6.96	5.83	2.45	997.18	1170.86
Tb	0.55	0.22	1.08	1.35	1.00	0.47	169.28	181.66
Dy	3.95	1.60	7.38	8.96	6.18	3.54	1337.15	1330.82
Ho	0.97	0.33	1.58	1.88	1.32	0.75	227.09	304.28
Er	2.50	1.13	4.44	5.09	3.71	1.97	735.10	751.21
Tm	0.33	0.12	0.58	0.66	0.51	0.25	105.61	105.62
Yb	2.51	0.80	4.12	4.65	3.68	2.03	754.44	675.21
Lu	0.42	0.11	0.71	0.55	0.54	0.29	97.43	82.47
Hf	17.14	<0.216	10.07	4.64	13.69	0.42	195.58	232.34
Ta	0.05	<0.058	0.73	0.54	0.53	0.05	12.60	<18.74
Pb	1.98	8.58	1.56	1.66	3.44	1.03	165.28	191.16
Th	0.19	<0.077	2.39	0.26	0.58	<0.056	<12.74	<22.74
U	0.85	0.06	1.19	0.63	1.53	<0.037	<9.09	<14.06
Nb/La	1.23	0.62	0.45	2.75	3.09	1.15	0.57	0.69

LA-ICPMS analyses of Feldspar from the Yerila Granite and microgranular enclaves

Sample	MN096	MN097	MN092
Spot	MN96FEL1	MN96FEL2	MN92FD1
Ba	1.090	1.180	0.232
Ce	1.330	0.190	0.015
Co	<0.070	<0.091	0.011
Cr	<0.56	<0.59	<0.036
Cu	0.093	<0.118	0.015
Dy	<0.019	<0.023	<0.00126
Er	0.013	<0.024	<0.00127
Eu	0.038	0.019	0.001
Fe	0.500	0.810	2149.710
Ga	4.770	3.970	0.284
Gd	<0.033	<0.029	<0.0029
Hf	<0.021	<0.030	<0.00090
Ho	<0.0038	<0.0067	<0.00038
La	0.910	0.170	0.008
Lu	<0.0057	<0.0072	<0.00042
Nb	<0.0061	0.029	0.009
Nd	0.230	0.045	0.005
Ni	0.200	<0.206	<0.0056
Pb	1.180	1.120	1.200
Pr	0.099	0.016	0.001
Rb	0.550	0.110	0.521
Sc	0.280	0.230	0.030
Sm	0.038	<0.039	<0.00191
Sr	12.010	9.640	1.099
Ta	<0.0062	<0.0071	0.000
Tb	0.006	<0.0049	<0.00031
Th	0.030	<0.0103	0.019
Tm	<0.0054	<0.0061	<0.00034
U	0.035	<0.0060	<0.00057
V	<0.045	<0.060	0.012
Y	0.098	0.017	0.004
Yb	<0.0209	<0.026	0.001
Zr	<0.0150	<0.0212	<0.00116

LA-ICPMS analyses of biotite from mafic and felsic rocks

Sample	BB06	BB06	BB06	BB06	BB06	BB06	BB06	BB06
Spot	BB6BT1	BB6BT2	b6bc1s1	b6bc2s2	b6bc2s3	b6bc4s1	b6bc7s1	b6bc1s2
Ce	0.023	0.040	0.034	0.046	0.042	0.025	0.129	0.139
Co	7.010	13.750	0.606	0.080	0.078	0.071	0.007	2.710
Cr	7.350	11.760	1.150	0.283	0.247	0.361	0.015	4.850
Cu	0.555	0.500	0.093	0.004	0.008	0.007	0.006	0.489
Dy	<0.029	<0.087	0.044	0.060	0.051	0.059	0.006	0.015
Er	<0.0197	<0.105	0.030	0.039	0.039	0.028	0.002	0.009
Eu	0.119	0.189	0.010	0.006	0.005	0.007	0.003	0.037
Ga	236.920	501.470	54.320	0.332	0.313	0.390	0.215	219.520
Gd	<0.053	0.115	0.050	0.032	0.027	0.054	0.007	0.158
Hf	0.058	0.113	0.004	<0.00066	0.001	0.003	0.001	0.030
Ho	<0.0078	<0.0242	0.009	0.013	0.012	0.010	0.001	<0.0032
La	0.017	<0.030	0.015	0.016	0.018	0.006	0.054	0.073
Lu	<0.0081	<0.0195	0.004	0.005	0.006	0.003	<0.00012	<0.0033
Nb	52.780	99.800	5.450	0.073	0.054	0.133	0.009	23.040
Nd	<0.039	0.101	0.027	0.039	0.030	0.046	0.042	0.077
Ni	9.330	17.690	0.908	0.088	0.082	0.089	0.008	4.200
Pb	2.880	4.900	0.242	0.043	0.049	0.045	0.095	1.204
Pr	<0.0074	<0.0223	0.005	0.007	0.007	0.006	0.011	0.011
Rb	173.450	329.400	14.740	0.018	0.014	0.044	0.008	70.520
Sc	1.000	2.830	0.232	0.160	0.160	0.349	0.019	0.418
Sm	<0.047	<0.174	0.009	0.020	0.015	0.035	0.010	0.030
Sr	2.560	1.260	0.215	0.119	0.113	0.292	1.937	1.329
Ta	2.170	4.130	0.155	0.002	0.001	0.005	0.000	0.782
Tb	<0.0071	<0.0262	0.005	0.007	0.006	0.010	0.001	0.003
Th	<0.0102	<0.038	0.003	0.000	0.008	0.000	0.089	0.010
Tm	<0.0077	<0.0214	0.004	0.006	0.007	0.004	0.000	<0.0034
U	<0.0061	0.047	0.037	0.002	0.005	0.002	0.005	0.049
V	22.350	44.800	1.942	0.434	0.411	0.730	0.036	7.120
Y	0.122	0.310	0.255	0.372	0.340	0.288	0.021	0.161
Yb	<0.040	<0.117	0.025	0.041	0.046	0.024	0.001	<0.0160
Zr	0.059	0.093	0.059	0.027	0.019	0.046	0.010	0.377

LA-ICPMS analyses of biotite from mafic and felsic rocks

Sample	MN099	MN099	MN099	MN099	MN099	MN097	MN097	MN097
Spot	99bc1s1	99bc3s1	99bc3s2	99bc4s1	99bc4s2	c1s1	c1s2	c2s1
Ce	0.025	0.323	0.019	0.034	0.049	0.485	0.025	0.147
Co	0.302	0.232	0.294	0.336	0.985	0.000	0.000	0.002
Cr	1.219	2.380	0.298	1.590	16.470	0.000	0.000	0.000
Cu	0.400	0.267	0.002	0.025	2.561	0.001	0.000	0.001
Dy	0.014	0.135	0.015	0.021	0.020	0.027	0.000	0.024
Er	0.008	0.070	0.009	0.014	0.013	0.022	0.004	0.014
Eu	0.003	0.039	0.004	0.005	0.005	0.029	0.007	0.024
Ga	0.070	0.066	0.058	0.070	0.327	0.019	0.006	0.302
Gd	0.011	0.113	0.011	0.019	0.017	0.086	0.000	0.040
Hf	0.003	0.239	0.002	0.014	0.004	0.013	0.016	0.041
Ho	0.003	0.025	0.003	0.004	0.004	0.018	0.000	0.012
La	0.006	0.072	0.004	0.006	0.014	1.074	0.034	0.397
Lu	0.001	0.009	0.001	0.002	0.002	0.012	0.000	0.000
Nb	0.005	0.221	0.007	0.010	0.093	0.294	0.008	14.460
Nd	0.026	0.342	0.023	0.042	0.036	0.303	0.015	0.077
Ni	0.751	0.554	0.738	0.838	1.264	0.000	0.000	0.000
Pb	0.008	0.006	0.004	0.006	0.066	0.044	0.010	0.111
Pr	0.004	0.060	0.004	0.007	0.007	0.512	0.039	0.120
Rb	0.016	0.013	0.013	0.014	1.201	0.420	0.023	21.260
Sc	0.193	0.211	0.156	0.262	0.317	0.005	0.006	0.057
Sm	0.008	0.113	0.008	0.017	0.013	0.147	0.000	0.058
Sr	0.208	0.036	0.031	0.031	0.056	0.035	0.015	0.035
Ta	<0.00014	0.024	0.000	0.000	0.005	0.025	0.000	1.085
Tb	0.002	0.021	0.002	0.003	0.003	0.032	0.000	0.000
Th	0.001	0.019	<0.00021	0.086	0.006	1.943	0.070	0.099
Tm	0.001	0.010	0.001	0.002	0.002	0.012	0.000	0.000
U	0.002	0.022	<0.00009	0.001	0.005	3.620	0.151	1.750
V	1.833	2.670	1.812	2.170	5.830	0.001	0.000	0.037
Y	0.070	0.623	0.079	0.117	0.108	0.017	0.004	0.014
Yb	0.008	0.067	0.009	0.013	0.013	0.014	0.000	0.000
Zr	0.052	8.800	0.026	0.537	0.072	0.019	0.023	0.023

LA-ICPMS analyses of biotite from mafic and felsic rocks

Sample	MN097	MN097	MN097	MN097	MN097	MN097	MN097	MN096
Spot	c2s2	c3s1	c5s2	c6s1	c6s2	c8s1	c9s1	MN96BT1
Ce	0.929	1.147	0.158	2.860	0.131	143.320	0.431	6.750
Co	0.007	0.001	0.001	0.000	0.001	0.001	0.001	111.580
Cr	0.000	0.000	0.000	0.000	0.000	0.000	0.000	34.420
Cu	0.002	0.001	0.002	0.000	0.001	0.001	0.001	1.040
Dy	0.248	0.128	0.015	5.230	0.000	3.950	0.018	<0.44
Er	0.318	0.092	0.015	5.640	0.007	1.314	0.000	<0.23
Eu	0.123	0.072	0.017	0.403	0.000	2.093	0.028	<0.107
Ga	0.805	0.172	0.153	0.010	0.092	0.338	0.145	166.560
Gd	0.283	0.452	0.034	3.330	0.000	22.270	0.056	<0.51
Hf	0.137	0.098	0.021	1.900	0.028	0.024	0.000	<0.25
Ho	0.210	0.108	0.019	5.300	0.000	2.337	0.000	<0.075
La	1.319	10.250	0.496	3.570	0.058	300.590	0.854	3.720
Lu	0.314	0.060	0.019	5.520	0.000	0.440	0.000	<0.09
Nb	52.330	9.940	10.330	19.420	5.430	5.090	9.580	427.490
Nd	0.694	2.218	0.157	2.617	0.022	92.490	0.195	2.740
Ni	0.000	0.000	0.000	0.000	0.000	0.000	0.000	33.010
Pb	0.811	0.449	0.087	0.559	0.029	0.064	0.050	18.350
Pr	0.999	3.640	0.243	3.030	0.032	129.090	0.355	0.670
Rb	77.430	14.920	15.210	0.317	8.920	7.520	14.400	5386.490
Sc	0.367	0.050	0.057	0.007	0.023	0.039	0.060	48.900
Sm	0.494	0.797	0.081	3.340	0.015	52.370	0.096	0.570
Sr	0.016	0.022	0.017	0.006	0.017	0.063	0.016	1.640
Ta	3.270	0.788	0.925	10.930	0.298	0.591	0.464	1.330
Tb	0.254	0.192	0.021	4.260	0.000	8.080	0.031	<0.084
Th	19.810	5.240	0.931	10.560	0.108	3.660	0.562	1.200
Tm	0.396	0.061	0.000	6.340	0.000	0.778	0.026	<0.064
U	84.670	12.350	6.480	286.770	0.461	29.990	1.069	0.800
V	0.151	0.031	0.029	0.004	0.015	0.014	0.028	229.450
Y	0.248	0.129	0.018	5.370	0.005	3.530	0.016	0.610
Yb	0.295	0.066	0.015	6.700	0.009	0.550	0.000	<0.27
Zr	0.091	0.108	0.024	2.282	0.025	0.025	0.024	1.220

LA-ICPMS analyses of biotite from mafic and felsic rocks

Sample	MN096	MN096	MN096	MN092	MN092	MN092	MN092	MN092
Spot	MN96BT2	MN96BT4	MN96BT5	MN92BT1	MN92BT2	92c1s1	92c1s2	92c1s3
Ce	536.920	0.660	1.330	3.780	0.177	0.074	0.052	3.200
Co	115.480	81.480	131.200	22.440	19.560	25.390	0.005	31.070
Cr	22.440	23.460	39.300	3.930	3.350	5.380	<0.052	12.020
Cu	8.320	1.890	1.370	<0.28	1.120	1.270	0.042	2.030
Dy	3.700	<0.217	<0.43	0.159	<0.050	<0.038	0.002	0.710
Er	1.410	<0.155	<0.28	<0.051	<0.046	<0.032	0.001	0.252
Eu	0.570	<0.096	0.152	0.084	<0.0177	<0.02	0.002	0.050
Ga	176.280	116.250	197.880	44.810	35.050	48.540	0.815	61.980
Gd	7.120	<0.51	<0.66	0.148	<0.082	<0.106	0.003	0.481
Hf	0.310	<0.199	<0.27	0.117	<0.051	0.049	0.003	0.155
Ho	0.530	<0.064	<0.091	<0.0193	<0.0160	<0.0174	<0.00043	0.118
La	366.940	0.330	0.890	1.480	0.113	0.035	0.026	0.628
Lu	0.111	<0.055	<0.092	0.014	<0.0159	<0.0126	<0.00038	0.028
Nb	459.200	333.270	487.200	128.640	98.520	114.730	0.008	157.090
Nd	146.810	<0.34	0.790	0.880	<0.094	<0.061	0.015	1.070
Ni	36.520	26.880	43.130	6.750	5.810	7.050	0.007	9.800
Pb	100.780	7.660	13.710	3.480	1.730	1.680	0.371	8.260
Pr	47.400	0.071	0.153	0.195	0.024	<0.0116	0.004	0.191
Rb	5444.950	4062.810	6015.890	1291.880	1396.050	1259.630	6.410	1595.780
Sc	52.100	31.480	57.210	19.730	16.820	19.310	0.052	26.280
Sm	14.550	<0.34	<0.54	0.149	<0.086	0.061	<0.0028	0.840
Sr	9.130	1.010	1.670	0.223	0.157	0.381	0.222	0.566
Ta	1.510	1.100	1.720	1.000	0.700	0.604	0.002	0.813
Tb	0.960	<0.073	<0.095	0.020	<0.0099	<0.0113	0.000	0.096
Th	1.330	<0.068	<0.137	<1.35	8.120	0.032	0.002	22.910
Tm	0.139	<0.058	0.126	<0.0207	<0.0106	<0.0128	<0.00034	0.049
U	64.150	<0.047	0.490	1.580	0.710	0.027	0.003	15.260
V	250.930	173.590	272.270	49.710	42.960	49.160	0.008	66.140
Y	15.100	0.127	1.390	0.414	0.039	0.026	0.012	3.690
Yb	0.660	<0.218	0.860	<0.091	<0.061	<0.061	<0.00133	0.181
Zr	7.740	0.520	<0.36	5.430	1.410	0.174	0.107	9.870

LA-ICPMS analyses of biotite from mafic and felsic rocks

Sample	MN092	MN092	MN092	MN092	MN092	MN092	MN092	MN092
Spot	92c2s1	92c2s2	92c4s1	92c4s2	92c8s1	92c8s2	92c9s1	92c9s2
Ce	0.057	13.120	0.297	4.410	0.654	0.028	0.098	1.027
Co	1.691	7.970	33.570	10.620	21.460	0.005	4.560	1.391
Cr	0.414	5.650	15.320	5.700	6.680	<0.052	1.830	0.422
Cu	0.213	0.474	0.597	1.181	3.430	0.080	0.656	0.196
Dy	0.005	0.777	<0.07	0.353	0.087	0.002	<0.0141	0.024
Er	<0.0039	0.272	<0.038	0.095	<0.039	0.002	<0.0110	0.010
Eu	<0.00196	0.096	<0.021	0.042	<0.0186	<0.00053	<0.0058	0.004
Ga	3.550	19.750	68.010	23.270	37.120	0.092	9.510	3.130
Gd	<0.0095	0.960	<0.099	0.376	<0.099	0.003	<0.0162	0.051
Hf	0.008	0.328	<0.069	0.306	0.078	0.002	0.021	0.022
Ho	<0.00182	0.114	0.014	0.048	<0.0155	<0.00047	<0.0042	0.004
La	0.027	4.620	0.114	1.622	0.439	0.022	0.102	0.655
Lu	<0.00128	0.028	<0.0151	<0.0089	<0.0126	<0.00045	0.004	<0.00106
Nb	8.520	50.190	222.460	68.800	121.400	0.015	26.230	7.960
Nd	0.020	5.640	0.163	1.860	0.364	0.013	0.057	0.275
Ni	0.478	2.540	9.470	3.090	6.670	0.012	1.470	0.440
Pb	0.473	18.850	3.020	7.580	5.590	0.061	0.444	0.422
Pr	0.006	1.528	0.037	0.503	0.104	0.005	0.010	0.085
Rb	109.600	500.570	1835.250	640.200	1385.540	0.169	269.870	81.800
Sc	1.320	6.400	29.770	9.620	18.900	0.057	4.270	1.355
Sm	<0.0072	1.121	<0.104	0.512	<0.067	0.004	<0.0218	0.036
Sr	0.219	0.656	0.181	0.426	0.799	0.169	0.287	0.297
Ta	0.053	0.379	6.310	1.950	0.481	0.001	0.103	0.032
Tb	<0.00137	0.132	<0.0148	0.058	0.023	<0.00042	<0.0035	0.005
Th	0.020	4.440	2.790	17.130	0.691	0.014	0.028	0.435
Tm	<0.00100	0.030	<0.0177	0.011	<0.0156	<0.00043	<0.0032	0.001
U	0.083	53.420	0.346	2.640	0.837	0.012	0.061	5.330
V	3.140	18.540	69.290	22.320	53.490	0.012	11.490	3.560
Y	0.037	3.040	0.094	1.089	0.479	0.009	0.019	0.116
Yb	<0.0048	0.248	<0.081	0.049	0.052	<0.00176	<0.0206	0.010
Zr	0.220	12.590	0.920	10.570	1.760	0.125	0.322	0.850

LA-ICPMS analyses of biotite from mafic and felsic rocks

Sample	MN097	MN097	MN097	MN097
Spot	97BIC2S1	97BIC3S1	97BIC6S1	97BIC7S1
Ce	2.670	6.030	1.130	14.810
Co	436.550	36.210	306.410	21.280
Cr	<140.71	<15.31	<90.95	9.430
Cu	<27.03	<2.67	20.920	2.780
Dy	<0.56	0.580	0.050	1.220
Er	0.650	0.540	<0.00	0.570
Eu	0.240	0.055	0.150	0.070
Ga	630.400	52.930	443.900	30.860
Gd	0.130	0.570	0.180	1.600
Hf	<0.38	0.134	0.230	0.059
Ho	<0.136	0.085	0.012	0.220
La	1.670	2.590	0.580	7.410
Lu	<0.124	0.055	0.066	0.062
Nb	1638.220	111.160	1115.180	80.020
Nd	0.890	2.760	0.850	7.840
Ni	158.370	11.300	87.030	7.050
Pb	45.640	33.610	29.530	24.000
Pr	0.360	0.680	0.056	2.030
Rb	21938.760	1665.400	15836.840	1035.530
Sc	111.650	8.030	136.650	7.630
Sm	<1.02	0.500	0.090	1.680
Sr	9.560	3.960	3.110	3.140
Ta	5.420	0.286	4.850	0.436
Tb	<0.134	0.118	<0.080	0.230
Th	0.160	10.100	0.110	0.140
Tm	<0.126	0.059	<0.00	0.055
U	1.310	1.290	0.090	3.450
V	843.550	69.210	624.430	48.820
Y	3.430	3.390	0.180	4.400
Yb	0.070	0.580	<0.00	0.399
Zr	<2.84	2.860	0.980	1.730

LA-ICPMS analyses of Allanite from the mafic and felsic rocks

Sample	MN096	MN096	MN096	MN096	MN096	MN096	MN092	MN092
Spot	MN96ALN1	MN96ALN2	MN96ALN3	MN96ALN5	MN96ALN6	MN96ALN7	MN92ALN1	MN92ALN3
Ba	390	150	188	78	55	53	71	93
Ce	48386	122578	62	85038	86664	86439	63708	54644
Co	10	2	11	3	5	4	5	2
Cr	46	48	15	45	26	41	27	15
Cu	85	4	227	4	2	3	3	20
Dy	2975	1581	7	1314	681	707	675	451
Er	1232	486	3	421	218	235	227	152
Eu	48	63	1	43	27	40	46	32
Ga	87	237	104	177	179	171	171	141
Gd	2115	3250	14	2316	1345	1421	1356	823
Hf	2	4	3	6	1	3	0	151
Ho	499	225	1	192	99	102	101	67
La	1780	67703	95	46228	54931	50417	34655	41832
Lu	141	42	0	37	20	24	20	16
Mn	2468	2332	545	1969	2385	2403	2611	854
Nb	14	28	6	42	26	13	22	156
Nd	3846	39714	70	27546	22020	24335	18887	14080
Ni	9	1	31	1	2	2	1	2
Pb	1951	2667	77	2233	1019	1592	689	824
Pr	887	12264	16	8552	7690	8254	6173	4734
Rb	457	9	236	18	5	8	4	8
Sc	69	54	9	54	25	23	20	49
Sm	1381	5395	12	3708	2337	2600	2323	1464
Sr	110	1431	56	1354	892	1137	669	2363
Ta	0	0	0	0	1	0	1	1
Tb	435	350	1	270	145	150	144	94
Th	64089	16854	14	15014	9820	8860	6962	10056
Ti	2045	11242	2668	10698	13474	12754	12408	6319
Tm	151	55	0	47	26	29	26	20
U	7845	2170	111	568	347	458	1036	648
V	193	221	240	196	174	164	136	51
Y	9474	6631	35	4996	2783	2710	3302	2008
Yb	9615	329	2	284	152	181	153	108
Zr	191	651	465	660	84	192	13	6936
Sum REE	62846	241401	267	167123	168494	166473	122149	113659

LA-ICPMS analyses of Allanite from the mafic and felsic rocks

Sample	MN092	MN092	MN092	MN092	MN092	MN092	MN092	MN097
Spot	MN92ALN2	MN92ALN4	MN92ALN5	92al9s1	92al10s1	92al11s1	92ALC0S1	97alc4s1
Ba	102	112	91				230	
Ce	63232	110231	67560	49845	79106	87037	79755	118355
Co	4	4	6	6	7	10	11	14
Cr	28	26	26	26	35	24	37	23
Cu	6	21	9	229	25	6	36	170
Dy	958	1564	1297	1056	1503	917	1471	906
Er	319	575	435	391	540	296	540	315
Eu	53	72	71	94	80	66	83	30
Ga	164	144	145	1105	1305	1827	180	2804
Gd	1705	2288	2091	1773	2543	2080	2360	2102
Hf	0	42	2	476	29	1	170	1
Ho	142	253	195	165	234	135	238	136
La	35146	27789	30904	25975	30101	42874	41305	56844
Lu	31	52	38	46	51	25	50	31
Mn	2837	2278	2204	2244	2851	13450	2078	3666
Nb	34	449	111	1485	462	290	333	22
Nd	20248	19121	21070	14816	21752	26152	23074	27128
Ni	2	2	2	4	2	2	3	4
Pb	963	1717	1310	8884	1852	938	1793	2204
Pr	6393	5800	6449	4580	6658	7991	7104	9908
Rb	7	11	8	41	14	9	15	6
Sc	32	206	129	333	159	50	149	23
Sm	2768	3200	3168	2423	3625	3219	3478	3267
Sr	878	981	1117	1522	1133	905	1144	1326
Ta	0	1	1	34	1	14	2	1
Tb	197	294	252	215	294	209	289	201
Th	8162	15234	11014	65501	13282	7908	20383	11662
Ti	8933	9123	6438	23229	9119	35604	9100	22262
Tm	38	67	49	50	65	31	63	38
U	1236	2049	2272	3932	2119	1167	2441	1102
V	133	208	453	81	166	150	292	237
Y	3985	6797	6126	3675	5895	4000	5533	3355
Yb	231	386	284	328	373	185	368	240
Zr	9	2310	159	19401	1479	22	4794	52
Sum REE	124805	165455	127092	96803	139844	163016	152658	209322

LA-ICPMS analyses of Allanite from the Mt Painter mafic and felsic rocks

Sample	MN097	MN097	MN097	MN097	MN097	MN097	MN097	MN097	MN097
Spot	97alc4s2	97alc6s1	97alc9s1	97alc9s2	97alc9s3	97ALC1S1	97ALC1S2	97ALC4S1	97ALC3S1
Ba									
Ce	117532	58047	296088	42272	871	38936	59629	49627	89281
Co	9	39	26	33	0	4	7	4	2
Cr	35	164	54	212	8	130	275	163	1462
Cu	76	178	208	214	1	<1.24	<2.16	46	93
Dy	698	513	2207	1567	1076	117	240	191	968
Er	224	196	610	550	637	74	157	126	736
Eu	48	37	133	99	20	2193	3972	3261	14256
Ga	2828	1172	7040	763	11	136	208	197	204
Gd	1932	1103	6626	2353	708	37	57	56	1656
Hf	1	70	12	219	10	14	27	25	145
Ho	99	79	288	235	220	514	1089	887	4545
La	59602	23552	148562	15654	139	25	75	120	70
Lu	20	23	47	65	67	110	215	190	1013
Mn	3223	2462	1117	1798	352	20	35	78	<31.82
Nb	11	248	26	70	2256	8	249	130	143
Nd	29122	15844	107666	17298	1198	6432	10464	8509	23115
Ni	4	141	11	11	0	<1.18	1	11	4
Pb	1070	4067	1861	4384	10	0	7	1	1
Pr	10335	5513	32739	4484	195	68452	113449	89988	175661
Rb	6	108	11	112	2	4	5	16	19
Sc	17	97	67	274	9	72185	72185	72185	72185
Sm	3268	2036	12468	3497	569	18901	31144	25987	97611
Sr	1069	1422	2018	417	3	926	1489	1405	1012
Ta	0	3	1	1	245	1	10	82	9
Tb	165	109	560	309	148	1227	2398	1841	11126
Th	14448	56054	29888	141190	57	544	1268	6126	10401
Ti	13073	39792	12690	37554	75872	15	29	251	18
Tm	24	27	64	71	95	159	328	268	1666
U	671	2555	2080	2746	68	4585	11603	11805	1388348
V	251	352	305	208	65	6597	69349	28310	1188
Y	2664	1627	7147	4349	5949	2075	4136	3087	30861
Yb	154	182	389	469	609	18	35	32	186
Zr	31	2274	464	7287	111	22	253	3657	732
Sum REE	212713	101544	575271	83904	5678	68616	109555	90874	245030

LA-ICPMS analyses of Apatite

Sample	BB06	BB06	BB06	MN092	MN092
Spot	b6zc8s1	BB6AP1	BB6AP2	92pc1s1	92pc3s1
Ce	n.d.	489	744	172	658
Co	n.d.	n.d.	n.d.	3	1
Cu	n.d.	n.d.	n.d.	59	3
Dy	4	227	276	490	2011
Er	5	95	120	430	1812
Eu	n.d.	32	30	15	39
Ga	n.d.	n.d.	1	4	10
Gd	n.d.	295	331	206	878
Ho	1	40	50	128	528
La	n.d.	147	381	49	192
Lu	1	7	8	69	292
Nb	n.d.	n.d.	n.d.	1	2
Nd	n.d.	603	618	173	711
Pb	n.d.	4	4	7	47
Pr	n.d.	93	106	31	119
Rb	n.d.	<0.35	<0.34	3	7
Sm	n.d.	234	237	95	405
Sr	n.d.	312	275	31	30
Ta	n.d.	n.d.	n.d.	n.d.	n.d.
Tb	n.d.	39	46	54	218
Th	n.d.	2	3	71	540
Tm	1	11	13	63	278
U	n.d.	28	30	32	171
Y	33	1159	1346	4089	17226
Yb	6	54	65	419	1878
Zr	n.d.	n.d.	n.d.	11	58

Sample	MN092	MN092	MN092	MN092	MN092
Spot	MN92AP1	MN92AP3	MN96AP4	MN96AP6	92pc4s1
Ce	381	784	119	69	497
Co	0	n.d.	n.d.	n.d.	1
Cu	n.d.	n.d.	n.d.	n.d.	1
Dy	2861	2210	612	360	1805
Er	2180	1770	450	264	1386
Eu	56	63	6	4	37
Ga	n.d.	1	n.d.	n.d.	18
Gd	1643	1361	352	207	1053
Ho	711	561	143	83	435
La	111	213	26	15	113
Lu	312	312	65	40	205
Nb	n.d.	n.d.	n.d.	n.d.	1
Nd	898	1166	213	118	873
Pb	27	22	1	2	19
Pr	100	170	29	16	117
Rb	2	2	2	n.d.	85
Sm	726	659	149	85	550
Sr	21	20	9	6	26
Ta	n.d.	n.d.	n.d.	n.d.	n.d.
Tb	348	271	75	44	226
Th	725	567	155	122	317
Tm	328	289	65	39	204
U	229	184	61	46	117
Y	22265	20770	4757	2678	13368
Yb	2083	1918	442	266	1352
Zr	2	4	n.d.	n.d.	7

n.d.-not detected

LA-ICPMS analyses of U-Th minerals from the mafic and felsic rocks

Sample	MN092	MN092	MN092	MN096
Spot	MN92U1	MN92U3	MN92UZ3	MN96U
Ba	22	33	3	660
Ca	1	1	1	8
Ce	850	6850	548	40604
Co	4	1	0	56
Cr	2	36	0	44
Cu	9	7	2	133
Dy	39	100	92	477
Er	13	34	57	141
Eu	6	8	5	99
Ga	12	13	1	259
Gd	56	174	83	1358
Hf	35	26	9	843
Ho	6	16	20	72
K	2931	196	69	34347
La	230	3174	151	29756
Lu	1	4	8	12
Mg	3815	446	43	124883
Mn	319	279	29	4912
Nb	58	80	179	733
Nd	250	1676	205	14145
Ni	2	0	0	28
Pb	884	383	161	1462
Pr	63	521	48	4591
Rb	93	1	0	1419
Sc	7	11	3	55
Sm	57	254	68	2065
Sr	15	85	6	2683
Ta	1	4	21	4
Tb	7	21	13	121
Th	22931	1328	4441	259370
Ti	1265	1621	5051	28133
Tm	2	5	9	15
U	829	551	489	6117
V	7	7	10	173
Y	147	413	653	2382
Yb	9	32	60	81
Zr	2160	1124	513	40623
Sume REE	1735	13281	2021	95919

LA-ICPMS analyses of Ti-minerals from the mafic and felsic rocks

Sample	MN096	MN096	MN096	MN096	MN096	MN096	MN092	MN092
Spot	MN96TIN1	MN96TIN2	MN96TIN3	MN96TIN4	MN96TIN7	MN96TIN9	MN92TI2	MN92TI3
Ba	<0.29	<0.184	1	<0.154	8	<0.276	<0.43	3
Ce	454	63	1625	1291	601	309	177	710
Co	0	0	0	0	2	<0.133	<0.27	<0.34
Cr	12	7	14	11	11	9	13	7
Cu	1	1	2	2	2	2	2	4
Dy	2255	1592	3510	3319	2523	1843	3687	2458
Er	1369	1286	2086	1999	1591	1257	2291	1519
Eu	36	13	52	54	31	30	40	41
Ga	6	5	8	7	10	6	10	8
Gd	1389	542	2326	2213	1329	982	1807	1320
Hf	9	5	25	18	12	5	12	11
Ho	465	388	720	679	534	399	798	521
La	72	10	272	174	109	40	29	229
Lu	160	191	230	224	181	163	258	178
Nb	5004	5469	6253	6671	5762	6101	4964	5646
Nd	1261	181	3015	2796	1141	733	650	875
Ni	0	0	<0.30	<0.29	1	0	<0.62	<0.69
Pb	10	4	28	10	63	3	27	94
Pr	156	21	427	374	159	93	63	129
Rb	1	1	2	2	7	1	2	3
Sc	13	13	18	18	13	13	40	36
Sm	870	196	1609	1565	755	544	880	784
Sr	3	3	5	3	9	2	4	7
Ta	421	160	683	529	624	385	1803	1732
Tb	300	167	482	456	322	230	460	313
Th	47	42	148	102	48	34	60	303
Ti	184595	170310	193590	191783	198541	203702	212369	215741
Tm	208	207	314	300	240	194	368	246
U	54	94	186	95	198	66	91	532
V	99	97	137	128	122	115	130	144
Y	14367	12012	20869	20186	15326	12143	23108	15583
Yb	1354	1440	2005	1932	1543	1297	2346	1602
Zr	76	42	239	170	135	57	78	167

a.d.-above detected

LA-ICPMS analyses of Ti-minerals from the mafic and felsic rocks

Sample	MN092	MN090	MN090	MN090	MN090	SD007	SD007	SD007
Spot	MN92TI4	90tic4s	90tic4s2	90ilc1s1	90ilc1s2	SD07TIN1	SD07TIN3	SD07TIN4
Ba	3					10068	10068	10068
Ce	289	243	377	6180	461	370	6353	13291
Co	0	486	206	86728	174656	1109	2570	<1439.12
Cr	8	116	23	19987	23800	37626	142082	195398
Cu	6	180	61	10070	61000	6951	14363	32344
Dy	2014	138	84	<237.39	<678.56	<171.99	11489	<1358.34
Er	1751	105	51	<221.86	<619.60	<158.77	24921	<786.26
Eu	34	21	17	<76.64	<273.23	<77.01	347	<405.70
Ga	9	35	25	1193	1394	1927	4408	1444
Gd	680	93	68	630	<1605.16	<320.33	3514	<1891.45
Hf	9	4	10	<237.34	<646.26	2415	1040005	11932
Ho	527	33	18	<68.68	<173.15	<60.23	4451	355
La	92	119	105	3891	349	337	2802	8084
Lu	275	18	9	62	<215.78	<59.99	23856	<297.84
Nb	6839	1378	499	371219	454190	844036	875949	6341536
Nd	385	177	172	2320	1183	253	4665	5408
Ni	<0.66	45	10	18591	39160	700	<2009.93	<3467.59
Pb	102	388	163	41761	2864	<237.37	2580	8855
Pr	61	35	36	718	<158.43	<43.48	912	1303
Rb	4	3	0	<135.97	<323.16	22493	57166	4414
Sc	57	27	20	6044	20430	245010	498123	823419
Sm	303	67	55	645	<809.23	<268.84	1628	<1428.40
Sr	6	51	30	5074	5267	1080	2837	25409
Ta	735	121	43	17886	31679	67676	74384	769546
Tb	205	19	12	<55.28	<129.02	<42.44	981	308
Th	191	4	11	155	<271.65	202	23555	10386
Ti	206819	2527652	827086	a.d.	a.d.	a.d.	a.d.	a.d.
Tm	310	17	8	<64.91	211	<59.02	7284	<277.45
U	345	56	52	3753	5421	11420	209296	86338
V	117	3434	1483	1919888	3840113	790510	1660309	4264862
Y	16236	764	495	865	736	88	124775	5044
Yb	2145	129	64	<318.96	<727.31	<170.31	91094	<1400.91
Zr	220	148	781	5610	1642	82655	a.d.	419633

a.d.-above detected

LA-ICPMS analyses of Ti-minerals from the mafic and felsic rocks

Sample	SD007	SD007	SD007	SD007	SD007	BB06	BB06
Spot	SD07TIN6	SD04TIN1	SD04TIN2	SD04TIN3	SD04TIN4	MN99TI1	MN99TI2
Ba	10068	10068	10068	10068	10068	1	1
Ce	745	4785	332	14943	7084	7707	2211
Co	<2704.31	<2001.48	207	<5929.54	617	49523	41167
Cr	396076	486210	37441	3835464	189236	296750	48782
Cu	98125	65985	4573	139676	483941	18035	348
Dy	<1814.92	2221	167	10054	1816	1058	901
Er	<1150.42	<1148.85	<92.27	2906	973	650	519
Eu	<741.82	<396.76	<45.11	<1312.84	247	244	294
Ga	2637	2127	519	4882	1195	3422	414
Gd	<2471.38	<2584.32	<187.60	<8124.13	1396	885	808
Hf	60455	16004	1182	97035	3647	219	6147
Ho	<388.99	462	35	1080	305	227	171
La	510	3036	175	8667	3405	4084	725
Lu	<582.03	<291.10	<25.63	1588	149	93	71
Nb	a.d.	a.d.	509422	a.d.	995666	59967	12004
Nd	<2278.04	2546	222	<6589.95	3919	4534	2121
Ni	8581	<4550.63	468	<14766.66	<1119.51	28496	2658
Pb	<2214.83	4033	1867	4870	4206	1729	1182
Pr	<274.05	570	<24.44	2334	988	1089	392
Rb	<4008.45	5396	5423	<8786.35	10195	1141	1608
Sc	2356597	939320	78902	2424878	262136	11278	772
Sm	<3045.84	<1978.01	<185.88	<6296.68	1325	1133	718
Sr	12249	10615	4829	22357	7495	3339	301
Ta	1468003	704914	36387	8076430	57013	2509	495
Tb	<481.06	327	28	<1048.68	275	174	137
Th	<598.00	1883	164	9649	8634	212	600
Ti	a.d.	a.d.	a.d.	a.d.	a.d.	a.d.	a.d.
Tm	<382.92	<296.34	<29.16	1291	214	110	70
U	319975	96829	8827	348787	33855	444	373
V	9346746	a.d.	803778	a.d.	2326813	172745	32255
Y	1478	6719	674	27258	5451	5522	4830
Yb	<2315.04	1532	141	<5009.24	1284	666	508
Zr	1811761	235705	24037	974317	95758	7804	283695

a.d.-above detected

LA-ICPMS analyses of zircon from the mafic and felsic rocks

Sample	SD049	SD049	SD049	SD049	SD049	SD065	SD065	SD065
Spot	S49MYZ1	S49MYZ2	S49MYZ3	S49MYZ4	S49MYZ5	S65MYZ1	S65MYZ2	S65MYZ3
Ba	43	1156	142	119	221	1178	970	448
Ce	998	46151	2012	1993	885	1701	2472	677
Dy	3939	220742	6742	6965	4371	5441	6421	1836
Er	5070	306184	6054	5839	3165	4751	5789	1346
Eu	34	1768	96	121	106	185	265	83
Gd	1350	68971	3055	3353	2275	3058	4217	1227
Ho	1240	73586	1758	1756	982	1369	1612	416
La	215	9011	390	891	647	191	257	97
Lu	1421	88395	1153	1077	626	1119	1300	276
Nb	2104	70449	11954	7825	5683	560	725	206
Nd	877	33475	2037	2724	2259	2016	3253	973
Pb	780	25756	1643	1673	1468	1232	1192	916
Pr	139	5426	326	451	390	318	515	151
Sc	3576	199570	5285	2895	1410	4735	4181	1036
Sm	611	26430	1663	1930	1419	1801	2957	845
Sr	26	820	120	152	167	445	449	163
Ta	127	1708	252	121	163	82	29	18
Tb	363	19403	725	818	527	657	807	243
Th	7114	225845	9564	10800	8735	13439	11034	2447
Tm	1025	63916	1132	1031	571	908	1097	247
U	12818	442942	8427	10109	15132	27617	14812	5749
Y	33059	1981487	40023	40300	23405	38775	52234	12163
Yb	9202	577575	8810	8133	4664	7780	9345	2131

Sample	SD065	SD065	SD050	SD050	SD050	SD050	SD050	SD060
Spot	S65MYZ4	S65MYZ5	S50MYZ1	S50MYZ2	S50MYZ3	S50MYZ4	S50MYZ5	SD60YGZ1
Ba	256	631	46	841	169	31	43	10745
Ce	1238	2304	1227	10428	3855	1649	1133	1958
Dy	2370	15080	1001	13090	1316	905	1163	842
Er	2426	19234	1802	18661	1524	1246	1689	632
Eu	64	232	7	157	24	13	9	48
Gd	1404	6079	357	6182	721	465	493	516
Ho	666	4804	367	4145	365	283	383	203
La	382	174	450	2226	1596	851	753	271
Lu	609	5359	968	8420	705	489	656	137
Nb	139	608	206	2317	610	148	322	120
Nd	1315	2556	481	5796	1662	806	599	972
Pb	742	4244	1126	8068	1154	1194	817	569
Pr	246	359	125	1132	388	198	157	206
Sc	1996	15998	2336	31429	1036	771	1138	304
Sm	833	2545	189	3203	531	309	274	333
Sr	79	358	82	516	152	127	197	352
Ta	23	135	97	1680	85	74	94	21
Tb	274	1436	91	1384	150	94	116	106
Th	5959	38636	5793	40739	30423	31581	13601	4013
Tm	481	3962	461	4553	365	290	394	121
U	23367	64338	25790	310654	33000	36961	25267	2168
Y	19604	139157	11608	127521	10303	8513	11478	6469
Yb	4208	36557	5127	50437	3904	3039	4091	974

LA-ICPMS analyses of zircon from the mafic and felsic rocks

Sample	SD060	SD060	SD060	SD060	SD060	MN031	MN003	MN003
Spot	SD60YGZ2	SD60YZ3	SD60YZ4	SD60YZ5	SD60YZ6	MN31MZ2	MN03VLZ1	MN03VLZ2
Ba	109	65	111	470	247	30	130	9
Ce	1880	5805	4671	2503	2619	283	651	51
Dy	837	2143	911	6490	1355	5287	1376	465
Er	664	2630	1016	10600	1211	9487	1650	610
Eu	41	178	48	55	38	15	11	2
Gd	507	994	491	1660	741	1077	423	134
Ho	205	641	257	2321	340	1977	414	150
La	229	2033	1477	298	240	108	140	7
Lu	144	807	380	3800	245	3515	425	161
Nb	341	241	175	376	104	62	99	12
Nd	886	2637	1754	1327	1142	220	292	30
Pb	387	2052	1192	1674	937	411	314	75
Pr	184	617	454	262	216	34	50	4
Sc	256	2309	512	8672	738	14709	524	344
Sm	333	668	321	600	407	216	161	34
Sr	134	254	204	220	116	19	17	2
Ta	9	76	39	66	44	37	15	3
Tb	104	223	103	517	155	393	121	41
Th	9260	12581	8677	7748	3256	3175	2745	679
Tm	126	572	239	2488	194	2268	352	126
U	1504	23290	10575	19889	11898	10211	4757	1077
Y	6322	19135	8491	69760	12014	56285	12064	4356
Yb	1005	5024	2304	23378	1668	22190	3011	1094

Sample	MN003	MN003	MN003	SD015	SD015	SD015	SD015	SD015
Spot	MN03VLZ3	MN03VLZ4	MN03VLZ5	SD15BBZ1	SD15BBZ2	SD15BBZ3	SD15BBZ4	SD15BBZ5
Ba	17	36	1	5	331	16	67	110
Ce	81	404	13	22	807	94	189	258
Dy	239	282	364	248	8039	348	962	2107
Er	289	348	539	400	8858	434	1117	2363
Eu	2	3	1	1	52	2	7	15
Gd	71	96	92	55	1696	97	254	488
Ho	72	84	127	88	2269	102	285	573
La	14	262	1	4	95	34	23	44
Lu	83	104	160	132	1529	113	280	569
Nb	49	34	7	14	1404	19	96	643
Nd	41	181	10	14	784	86	133	298
Pb	19	42	66	76	206	59	119	101
Pr	6	44	1	2	123	16	22	50
Sc	324	341	351	350	2006	341	455	561
Sm	26	50	18	14	749	54	110	239
Sr	3	8	1	2	181	3	27	73
Ta	7	9	3	6	35	8	34	53
Tb	23	26	30	19	673	31	92	190
Th	318	666	557	643	4883	503	1972	1375
Tm	64	80	119	92	1725	84	240	525
U	542	1218	1040	1635	2783	1283	4194	3482
Y	1944	2302	3422	2485	50707	2828	7684	13370
Yb	546	737	1037	852	14026	717	1981	4465

LA-ICPMS analyses of zircon from the mafic and felsic rocks

Sample	MN029	MN029	MN029	MN029	MN029	MN101	MN101
Spot	MN29MNZ1	MN29MNZ2	MN29MNZ3	MN29MNZ4	MN29MNZ5	MN10TPZ2	MN10TPZ3
Ba	<2.58	2	62	3	3	<2.71	48
Ce	25	13	1518	32	99	75	434
Dy	371	107	1635	87	185	362	2219
Er	603	175	2117	137	283	448	1844
Eu	1	1	26	1	2	5	54
Gd	93	31	570	26	49	124	804
Ho	132	39	488	29	63	103	523
La	2	2	216	8	14	12	62
Lu	187	61	675	51	102	157	457
Nb	14	5	193	11	26	34	559
Nd	13	6	495	12	24	85	466
Pb	110	18	209	23	63	177	288
Pr	2	1	97	2	5	15	91
Sc	337	258	436	244	265	376	684
Sm	20	7	251	6	15	53	398
Sr	1	1	42	3	2	13	79
Ta	7	1	12	6	8	3	22
Tb	29	9	150	7	15	33	238
Th	805	69	1210	116	382	187	1319
Tm	122	36	449	30	61	95	358
U	1596	178	3176	399	1082	1014	1805
Y	4282	1167	14968	906	1819	3145	13776
Yb	1023	321	4061	263	557	883	2994

Sample	MN101	MN101	SD028	SD028	SD051	SD051	SD051
Spot	MN10TPZ4	MN10TPZ5	SD028MZ3	SD028MZ4	SD51MDZ1	SD51MDZ2	SD51MDZ3
Ba	3	58	133	475	175	585	724
Ce	23	507	338	501	901	17506	3358
Dy	395	3200	13196	37867	2396	140201	20387
Er	708	2649	25882	72204	2976	159661	27375
Eu	1	79	24	28	139	746	428
Gd	81	984	2236	6727	1155	41494	6429
Ho	148	740	5225	14846	767	43694	6895
La	4	43	54	99	342	377	564
Lu	293	665	10061	27107	600	25674	5155
Nb	11	568	196	473	156	1573	169
Nd	20	493	232	456	1769	7115	3441
Pb	32	260	1202	3713	573	11244	1963
Pr	4	87	29	51	282	672	528
Sc	548	763	36596	87871	621	11829	5161
Sm	18	452	343	964	784	9455	2466
Sr	5	100	65	227	76	422	112
Ta	3	20	133	284	43	269	77
Tb	29	333	922	2636	225	12140	1712
Th	230	633	7047	29443	12472	185763	26146
Tm	159	527	6295	16947	565	28148	5165
U	1201	2048	30367	97359	8733	84274	33238
Y	4578	20582	145751	438922	21976	1279579	201808
Yb	1561	4526	61975	168759	4462	209940	40252

LA-ICPMS analyses of zircon from the mafic and felsic rocks

Sample	SD051	SD051	MN084	MN084	MN084	MN084
Spot	SD51MDZ7	SD51MDZ8	MN84MNZ1	MN84MNZ2	MN84MNZ3	MN84MNZ4
Ba	925	32	1	1	<0.67	1
Ce	4243	7570	27	27	91	10
Dy	11726	165759	97	139	141	121
Er	16012	255532	168	210	223	207
Eu	1455	1012	0	0	0	0
Gd	7503	38823	22	32	39	25
Ho	3796	60342	35	47	48	44
La	393	34	5	2	41	1
Lu	4485	66401	59	68	77	73
Nb	130	1684	7	11	6	13
Nd	7258	3110	11	7	59	3
Pb	990	11617	24	20	27	28
Pr	969	168	2	1	12	0
Sc	4279	46064	302	348	333	339
Sm	6335	6846	6	8	17	5
Sr	549	230	1	1	1	0
Ta	28	315	3	4	3	4
Tb	1300	12775	7	11	11	9
Th	19552	189525	169	160	210	211
Tm	3344	52565	38	45	49	46
U	15696	175512	592	603	615	674
Y	116112	1857078	1060	1441	1583	1336
Yb	29755	463528	360	408	437	416

Sample	MN057	MN057	MN057	MN057	MN057	MN084
Spot	SD57MNZ2	MN57MNZ3	MN57MNZ4	MN57MNZ5	MN57MNZ6	MN84MNZ5
Ba	81	32	84	827	88	<0.67
Ce	252	33	209	4299	395	14
Dy	100	126	182	340	252	88
Er	189	240	297	260	478	161
Eu	12	1	4	25	4	<0.123
Gd	45	41	113	526	91	15
Ho	37	44	60	72	90	32
La	68	5	239	876	144	1
Lu	94	145	127	95	249	60
Nb	25	47	30	77	74	7
Nd	114	25	510	3218	206	2
Pb	61	685	218	616	671	18
Pr	28	4	111	644	45	0
Sc	232	229	217	209	215	314
Sm	33	16	120	722	60	3
Sr	32	12	40	304	21	0
Ta	17	21	16	15	20	3
Tb	9	11	19	58	25	6
Th	418	16719	4163	4532	6805	125
Tm	48	65	72	55	121	35
U	3072	8266	4534	2098	14859	489
Y	1271	1372	1988	2543	2520	969
Yb	489	704	690	526	1216	328

Appendix 4 Geochronology

LA-ICPMS analytical data of U-Pb zircon ages for mafic and felsic rocks of Mt painter Province

Sample	Spot	$^{207}Pb/^{206}Pb$	1σ	$^{206}Pb/^{238}U$	1σ	$^{207}Pb/^{235}U$	1σ	$^{208}Pb/^{232}Th$	1σ	$^{207}Pb/^{206}Pb$ Age (Ma)	1σ	$^{206}Pb/^{238}U$ Age (Ma)	1σ	$^{207}Pb/^{235}U$ Age (Ma)	1σ	Conc. %
MN003	Z1	0.09924	0.00098	0.26086	0.00314	3.56876	0.04222	0.05579	0.00054	1609.9	18.3	1494.2	16.1	1542.6	9.4	107.7
MN003	Z2	0.10452	0.00103	0.20495	0.00257	2.95250	0.03597	0.06141	0.00058	1705.8	18.0	1201.9	13.7	1395.5	9.2	141.9
MN003	Z3	0.10107	0.00099	0.21638	0.00258	3.01471	0.03519	0.05936	0.00057	1643.9	18.2	1262.7	13.7	1411.3	8.9	130.2
MN003	Z4	0.09821	0.00099	0.26658	0.00318	3.60903	0.04272	0.07369	0.00073	1590.4	18.7	1523.4	16.2	1551.5	9.4	104.4
MN003	Z5	0.09883	0.00098	0.26443	0.00318	3.60243	0.04269	0.07174	0.00069	1602.2	18.4	1512.4	16.2	1550.1	9.4	105.9
MN003	Z6	0.09901	0.00098	0.26624	0.00326	3.63348	0.04368	0.06556	0.00064	1605.6	18.4	1521.7	16.6	1556.9	9.6	105.5
MN003	Z7	0.09924	0.00100	0.20327	0.00245	2.78090	0.03326	0.02768	0.00027	1609.9	18.6	1192.9	13.1	1350.4	8.9	135.0
MN003	Z9	0.09880	0.00103	0.25591	0.00311	3.48525	0.04286	0.04682	0.00047	1601.7	19.3	1468.9	15.9	1523.9	9.7	109.0
MN003	Z10	0.10134	0.00100	0.24783	0.00301	3.46195	0.04130	0.07639	0.00073	1648.9	18.2	1427.3	15.5	1518.6	9.4	115.5
MN003	Z11	0.10175	0.00105	0.21269	0.00268	2.98204	0.03761	0.02307	0.00024	1656.4	18.9	1243.1	14.2	1403.1	9.6	133.2
MN003	Z12	0.09932	0.00104	0.26862	0.00326	3.67721	0.04530	0.07569	0.00078	1611.3	19.3	1533.8	16.6	1566.4	9.8	105.1
MN003	Z13	0.09993	0.00104	0.24011	0.00293	3.30640	0.04101	0.02671	0.00027	1622.7	19.3	1387.2	15.3	1482.6	9.7	117.0
MN003	Z14	0.09989	0.00100	0.27326	0.00329	3.76271	0.04501	0.08202	0.00080	1622.0	18.5	1557.3	16.7	1584.8	9.6	104.2
MN003	Z15	0.09808	0.00100	0.26584	0.00323	3.59417	0.04364	0.06754	0.00066	1587.9	18.9	1519.7	16.4	1548.2	9.6	104.5
MN003	Z16	0.09852	0.00100	0.27515	0.00332	3.73702	0.04527	0.07719	0.00077	1596.3	18.9	1566.9	16.8	1579.3	9.7	101.9
MN003	Z17	0.10046	0.00101	0.23703	0.00286	3.28266	0.03952	0.07210	0.00070	1632.7	18.6	1371.2	14.9	1477.0	9.4	119.1
MN003	Z18	0.09896	0.00100	0.27524	0.00332	3.75492	0.04540	0.07727	0.00076	1604.6	18.8	1567.3	16.8	1583.2	9.7	102.4
MN003	Z19	0.09794	0.00097	0.27037	0.00331	3.65117	0.04407	0.07395	0.00071	1585.3	18.4	1542.7	16.8	1560.8	9.6	102.8
MN003	Z20	0.09987	0.00105	0.26735	0.00340	3.68163	0.04756	0.06418	0.00065	1621.6	19.4	1527.3	17.3	1567.4	10.3	106.2
MN003	Z21	0.09844	0.00098	0.27854	0.00331	3.78027	0.04476	0.07878	0.00077	1594.7	18.6	1584.0	16.7	1588.6	9.5	100.7
MN003	Z22	0.09992	0.00104	0.26716	0.00319	3.68055	0.04468	0.07742	0.00079	1622.6	19.2	1526.4	16.2	1567.2	9.7	106.3
MN003	Z23	0.13615	0.00136	0.10915	0.00134	2.04844	0.02494	0.03774	0.00037	2178.8	17.3	667.8	7.8	1131.8	8.3	326.3
MN003	Z24	0.09877	0.00100	0.27760	0.00331	3.78005	0.04519	0.07847	0.00078	1601.0	18.8	1579.3	16.7	1588.5	9.6	101.4
MN003	Z25	0.09970	0.00101	0.23941	0.00286	3.29046	0.03939	0.04527	0.00045	1618.5	18.7	1383.6	14.9	1478.8	9.3	117.0
MN003	Z26	0.10237	0.00105	0.25246	0.00288	3.56299	0.04142	0.06921	0.00070	1667.5	18.9	1451.2	14.8	1541.3	9.2	114.9
MN003	Z27	0.09950	0.00100	0.22964	0.00273	3.14971	0.03732	0.01899	0.00019	1614.8	18.5	1332.6	14.3	1444.9	9.1	121.2
MN003	Z28	0.09906	0.00101	0.26478	0.00314	3.61512	0.04309	0.07293	0.00072	1606.4	18.8	1514.2	16.0	1552.9	9.5	106.1
MN003	Z29	0.13418	0.00135	0.06724	0.00080	1.24370	0.01482	0.01905	0.00019	2153.4	17.5	419.5	4.8	820.6	6.7	513.3
MN003	Z30	0.09951	0.00102	0.26414	0.00312	3.62275	0.04341	0.07975	0.00080	1614.9	19.1	1511.0	15.9	1554.5	9.5	106.9
MN029	Z1	0.09962	0.00098	0.26685	0.00346	3.66544	0.04639	0.08587	0.00089	1617.0	18.2	1524.8	17.6	1563.9	10.1	106.0
MN029	Z2	0.10703	0.00109	0.21831	0.00279	3.22140	0.04067	0.09639	0.00104	1749.4	18.4	1272.9	14.8	1462.3	9.8	137.4
MN029	Z3	0.09785	0.00107	0.27048	0.00356	3.64901	0.04914	0.08297	0.00104	1583.5	20.4	1543.2	18.0	1560.3	10.7	102.6

LA-ICPMS analytical data of U-Pb zircon ages for mafic and felsic rocks of Mt painter Province

Sample	Spot	$^{207}Pb/^{206}Pb$	1σ	$^{206}Pb/^{238}U$	1σ	$^{207}Pb/^{235}U$	1σ	$^{208}Pb/^{232}Th$	1σ	$^{207}Pb/^{206}Pb$ Age (Ma)	1σ	$^{206}Pb/^{238}U$ Age (Ma)	1σ	$^{207}Pb/^{235}U$ Age (Ma)	1σ	Conc. %
MN029	Z4	0.09795	0.00100	0.26395	0.00345	3.56480	0.04624	0.04788	0.00055	1585.5	19.0	1510.0	17.6	1541.7	10.3	105.0
MN029	Z5	0.10241	0.00105	0.26366	0.00335	3.72240	0.04712	0.09667	0.00109	1668.2	18.9	1508.5	17.1	1576.2	10.1	110.6
MN029	Z6	0.09872	0.00103	0.27265	0.00372	3.71141	0.05087	0.08252	0.00102	1600.0	19.4	1554.3	18.8	1573.8	11.0	102.9
MN029	Z7	0.30066	0.00313	0.06237	0.00077	2.58462	0.03195	0.35504	0.00404	3473.7	16.0	390.1	4.7	1296.3	9.1	890.5
MN029	Z8	0.09768	0.00108	0.19498	0.00274	2.62545	0.03773	0.05170	0.00085	1580.3	20.6	1148.3	14.8	1307.8	10.6	137.6
MN029	Z5	0.10241	0.00105	0.26366	0.00335	3.72240	0.04712	0.09667	0.00109	1668.2	18.9	1508.5	17.1	1576.2	10.1	110.6
MN029	Z6	0.09872	0.00103	0.27265	0.00372	3.71141	0.05087	0.08252	0.00102	1600.0	19.4	1554.3	18.8	1573.8	11.0	102.9
MN029	Z7	0.30066	0.00313	0.06237	0.00077	2.58462	0.03195	0.35504	0.00404	3473.7	16.0	390.1	4.7	1296.3	9.1	890.5
MN029	Z8	0.09768	0.00108	0.19498	0.00274	2.62545	0.03773	0.05170	0.00085	1580.3	20.6	1148.3	14.8	1307.8	10.6	137.6
MN029	Z9	0.09811	0.00098	0.27314	0.00361	3.69462	0.04828	0.07385	0.00080	1588.5	18.6	1556.7	18.3	1570.2	10.4	102.0
MN029	Z10	0.09949	0.00106	0.27289	0.00369	3.74346	0.05110	0.08454	0.00106	1614.6	19.7	1555.5	18.7	1580.7	10.9	103.8
MN029	Z11	0.11017	0.00116	0.27109	0.00359	4.11887	0.05506	0.11986	0.00152	1802.3	19.1	1546.3	18.2	1658.1	10.9	116.6
MN029	Z12	0.09796	0.00100	0.28398	0.00384	3.83552	0.05156	0.08331	0.00095	1585.7	18.9	1611.4	19.3	1600.2	10.8	98.4
MN029	Z13	0.10027	0.00101	0.25477	0.00357	3.52032	0.04894	0.08352	0.00102	1629.1	18.6	1463.0	18.4	1531.8	11.0	111.4
MN029	Z14	0.09785	0.00102	0.27643	0.00372	3.72944	0.05053	0.08484	0.00104	1583.6	19.4	1573.4	18.8	1577.7	10.9	100.6
MN029	Z15	0.09784	0.00102	0.27746	0.00378	3.74262	0.05118	0.08252	0.00098	1583.3	19.3	1578.5	19.1	1580.5	11.0	100.3
MN029	Z16	0.09808	0.00102	0.28347	0.00387	3.83333	0.05259	0.08295	0.00100	1588.0	19.3	1608.8	19.5	1599.8	11.1	98.7
MN029	Z17	0.09986	0.00102	0.27927	0.00382	3.84497	0.05249	0.09256	0.00111	1621.5	18.9	1587.7	19.2	1602.2	11.0	102.1
MN029	Z18	0.10518	0.00114	0.25843	0.00348	3.74746	0.05161	0.09144	0.00118	1717.5	19.8	1481.8	17.9	1581.6	11.0	115.9
MN029	Z19	0.09892	0.00101	0.26091	0.00357	3.55798	0.04862	0.05815	0.00071	1603.9	18.9	1494.5	18.3	1540.2	10.8	107.3
MN029	Z20	0.09742	0.00100	0.28054	0.00383	3.76791	0.05160	0.08451	0.00100	1575.3	19.1	1594.1	19.3	1585.9	11.0	98.8
MN029	Z21	0.09754	0.00100	0.28531	0.00387	3.83702	0.05240	0.08257	0.00097	1577.7	19.1	1618.1	19.4	1600.5	11.0	97.5
MN029	Z22	0.11914	0.00119	0.26250	0.00347	4.31133	0.05682	0.07690	0.00087	1943.4	17.8	1502.6	17.7	1695.5	10.9	129.3
MN029	Z23	0.10733	0.00111	0.24649	0.00332	3.64629	0.04966	0.07108	0.00087	1754.5	18.8	1420.3	17.2	1559.7	10.9	123.5
MN029	Z24	0.09761	0.00101	0.28316	0.00386	3.81075	0.05237	0.08067	0.00093	1578.9	19.2	1607.3	19.4	1595.0	11.1	98.2
MN029	Z25	0.10364	0.00104	0.26917	0.00373	3.84591	0.05316	0.06712	0.00076	1690.2	18.4	1536.6	19.0	1602.4	11.1	110.0
MN029	Z26	0.10020	0.00104	0.25214	0.00352	3.48339	0.04907	0.08614	0.00104	1627.9	19.2	1449.5	18.1	1523.5	11.1	112.3
MN029	Z27	0.09794	0.00099	0.29676	0.00407	4.00716	0.05499	0.08189	0.00089	1585.3	18.7	1675.2	20.3	1635.6	11.2	94.6
MN029	Z28	0.09823	0.00102	0.28565	0.00389	3.86836	0.05344	0.07879	0.00095	1590.8	19.3	1619.7	19.5	1607.1	11.2	98.2
MN029	Z29	0.09761	0.00102	0.27995	0.00381	3.76728	0.05201	0.07990	0.00094	1578.9	19.4	1591.1	19.2	1585.8	11.1	99.2
MN029	Z30	0.09843	0.00108	0.28435	0.00383	3.85839	0.05383	0.08136	0.00102	1594.6	20.3	1613.2	19.2	1605.0	11.3	98.8
MN029	Z31	0.09751	0.00101	0.27668	0.00373	3.71971	0.05067	0.07848	0.00090	1577.1	19.2	1574.6	18.8	1575.6	10.9	100.2

LA-ICPMS analytical data of U-Pb zircon ages for mafic and felsic rocks of Mt painter Province

Sample	Spot	$^{207}Pb/^{206}Pb$	1σ	$^{206}Pb/^{238}U$	1σ	$^{207}Pb/^{235}U$	1σ	$^{208}Pb/^{232}Th$	1σ	$^{207}Pb/^{206}Pb$ Age (Ma)	1σ	$^{206}Pb/^{238}U$ Age (Ma)	1σ	$^{207}Pb/^{235}U$ Age (Ma)	1σ	Conc. %
MN029	Z32	0.09708	0.00098	0.29722	0.00400	3.97818	0.05365	0.08281	0.00088	1568.8	18.8	1677.5	19.9	1629.8	10.9	93.5
MN029	Z33	0.09954	0.00106	0.27030	0.00387	3.71032	0.05405	0.06002	0.00075	1615.6	19.8	1542.3	19.6	1573.6	11.7	104.8
MN029	Z34	0.09914	0.00103	0.27943	0.00379	3.81927	0.05256	0.08354	0.00095	1608.0	19.2	1588.5	19.1	1596.8	11.1	101.2
MN029	Z35	0.09876	0.00105	0.27063	0.00368	3.68491	0.05128	0.08184	0.00100	1600.8	19.8	1544.0	18.7	1568.1	11.1	103.7
MN029	Z36	0.10462	0.00132	0.13795	0.00208	1.98749	0.03239	0.04873	0.00105	1707.7	23.1	833.1	11.8	1111.3	11.0	205.0
MN029	Z37	0.09731	0.00098	0.30175	0.00408	4.04838	0.05486	0.08632	0.00093	1573.1	18.7	1700.0	20.2	1644.0	11.0	92.5
MN029	Z38	0.09867	0.00116	0.28161	0.00377	3.83125	0.05516	0.08428	0.00120	1599.1	21.8	1599.5	19.0	1599.3	11.6	100.0
MN029	Z39	0.10604	0.00107	0.22216	0.00304	3.24786	0.04458	0.09222	0.00103	1732.5	18.4	1293.3	16.1	1468.7	10.7	134.0
SD015	Z1	0.09824	0.00099	0.27081	0.00317	3.66913	0.04294	0.07553	0.00072	1591.0	18.7	1544.9	16.1	1564.7	9.3	103.0
SD015	Z2	0.09915	0.00099	0.26308	0.00307	3.59693	0.04173	0.06183	0.00059	1608.2	18.5	1505.6	15.7	1548.9	9.2	106.8
SD015	Z3	0.09650	0.00096	0.25109	0.00295	3.34143	0.03890	0.05528	0.00052	1557.5	18.5	1444.1	15.2	1490.8	9.1	107.9
SD015	Z4	0.09550	0.00095	0.26285	0.00308	3.46152	0.04037	0.06488	0.00063	1537.9	18.7	1504.4	15.7	1518.5	9.2	102.2
SD015	Z5	0.09756	0.00098	0.24925	0.00293	3.35304	0.03931	0.03550	0.00034	1577.9	18.6	1434.6	15.1	1493.5	9.2	110.0
SD015	Z6	0.09841	0.00099	0.24331	0.00283	3.30132	0.03842	0.04823	0.00047	1594.2	18.7	1403.9	14.7	1481.4	9.1	113.6
SD015	Z7	0.09212	0.00093	0.18187	0.00210	2.31006	0.02671	0.02982	0.00030	1469.7	19.1	1077.2	11.4	1215.4	8.2	136.4
SD015	Z8	0.09385	0.00094	0.21920	0.00258	2.83639	0.03338	0.04050	0.00039	1505.1	18.8	1277.6	13.7	1365.2	8.8	117.8
SD015	Z9	0.09733	0.00098	0.25439	0.00295	3.41357	0.03982	0.02671	0.00027	1573.6	18.8	1461.1	15.2	1507.5	9.2	107.7
SD015	Z10	0.09590	0.00096	0.25596	0.00316	3.38197	0.04150	0.06126	0.00056	1545.8	18.7	1469.1	16.2	1500.2	9.6	105.2
SD015	Z11	0.09701	0.00097	0.25406	0.00301	3.39752	0.04015	0.04412	0.00042	1567.3	18.6	1459.4	15.5	1503.8	9.3	107.4
SD015	Z12	0.09821	0.00099	0.25923	0.00306	3.50967	0.04156	0.06010	0.00059	1590.4	18.7	1485.9	15.7	1529.4	9.4	107.0
SD015	Z13	0.09608	0.00096	0.21028	0.00242	2.78512	0.03206	0.03527	0.00034	1549.3	18.7	1230.3	12.9	1351.6	8.6	125.9
SD015	Z14	0.11941	0.00120	0.14764	0.00172	2.43049	0.02829	0.07940	0.00076	1947.5	17.8	887.7	9.7	1251.7	8.4	219.4
SD015	Z15	0.14106	0.00142	0.12307	0.00143	2.39332	0.02781	0.02958	0.00028	2240.3	17.2	748.2	8.2	1240.6	8.3	299.4
SD015	Z16	0.09836	0.00099	0.27551	0.00319	3.73595	0.04334	0.07716	0.00075	1593.2	18.7	1568.7	16.1	1579.1	9.3	101.6
SD015	Z17	0.09978	0.00102	0.07105	0.00085	0.97733	0.01178	0.03159	0.00031	1620.1	19.0	442.5	5.1	692.2	6.1	366.1
SD015	Z18	0.09909	0.00099	0.22533	0.00260	3.07829	0.03554	0.06044	0.00058	1607.1	18.6	1310.0	13.7	1427.3	8.9	122.7
SD015	Z19	0.09778	0.00098	0.23633	0.00273	3.18580	0.03687	0.02723	0.00027	1582.2	18.7	1367.6	14.2	1453.7	8.9	115.7
SD015	Z20	0.10501	0.00105	0.24789	0.00288	3.58867	0.04175	0.07269	0.00071	1714.5	18.3	1427.6	14.9	1547.0	9.2	120.1
SD015	Z21	0.10760	0.00113	0.11328	0.00141	1.68008	0.02125	0.04676	0.00047	1759.1	19.1	691.7	8.2	1001.0	8.1	254.3
SD015	Z22	0.10263	0.00103	0.16440	0.00190	2.32596	0.02691	0.03420	0.00033	1672.2	18.5	981.2	10.5	1220.2	8.2	170.4
SD015	Z23	0.08831	0.00088	0.15727	0.00183	1.91472	0.02220	0.03841	0.00037	1389.3	19.0	941.6	10.2	1086.2	7.7	147.5
SD015	Z24	0.15245	0.00153	0.11749	0.00139	2.46942	0.02909	0.05176	0.00050	2373.6	17.0	716.1	8.0	1263.1	8.5	331.5

LA-ICPMS analytical data of U-Pb zircon ages for mafic and felsic rocks of Mt painter Province

Sample	Spot	$^{207}Pb/^{206}Pb$	1σ	$^{206}Pb/^{238}U$	1σ	$^{207}Pb/^{235}U$	1σ	$^{208}Pb/^{232}Th$	1σ	$^{207}Pb/^{206}Pb$ Age (Ma)	1σ	$^{206}Pb/^{238}U$ Age (Ma)	1σ	$^{207}Pb/^{235}U$ Age (Ma)	1σ	Conc. %
SD015	Z25	0.10776	0.00109	0.10597	0.00123	1.57426	0.01830	0.03416	0.00032	1761.9	18.3	649.3	7.2	960.1	7.2	271.4
SD015	Z26	0.09720	0.00097	0.25196	0.00299	3.37629	0.03996	0.06196	0.00059	1571.1	18.6	1448.6	15.4	1498.9	9.3	108.5
SD015	Z27	0.10410	0.00112	0.06046	0.00067	0.86747	0.01008	0.02285	0.00022	1698.4	19.7	378.4	4.1	634.2	5.5	448.8
SD015	Z28	0.10000	0.00102	0.24339	0.00279	3.35519	0.03892	0.02665	0.00026	1624.2	18.8	1404.3	14.5	1494.0	9.1	115.7
SD015	Z29	0.10605	0.00110	0.05662	0.00065	0.82766	0.00973	0.05967	0.00058	1732.6	18.9	355.0	4.0	612.3	5.4	488.1
SD015	Z30	0.09755	0.00099	0.27955	0.00323	3.75951	0.04392	0.07746	0.00075	1577.8	18.9	1589.1	16.3	1584.1	9.4	99.3
MN101	Z1	0.19395	0.00194	0.27972	0.00342	7.47879	0.09001	0.23339	0.00211	2775.9	16.3	1589.9	17.2	2170.5	10.8	174.6
MN101	Z2	0.35306	0.00350	0.24736	0.00303	12.03987	0.14533	0.97781	0.00909	3720.3	15.0	1424.9	15.7	2607.5	11.3	261.1
MN101	Z3	0.09422	0.00094	0.28068	0.00341	3.64564	0.04386	0.09788	0.00098	1512.5	18.8	1594.8	17.2	1559.6	9.6	94.8
MN101	Z4	0.16279	0.00162	0.29254	0.00356	6.56537	0.07881	0.35879	0.00328	2484.9	16.6	1654.2	17.8	2054.7	10.6	150.2
MN101	Z5	0.09427	0.00096	0.23617	0.00288	3.06939	0.03746	0.06557	0.00072	1513.6	19.2	1366.7	15.0	1425.1	9.4	110.7
MN101	Z6	0.13007	0.00132	0.29377	0.00359	5.26798	0.06410	0.26134	0.00255	2099.0	17.7	1660.3	17.9	1863.7	10.4	126.4
MN101	Z7	0.20546	0.00206	0.22782	0.00279	6.45319	0.07816	0.52627	0.00485	2870.0	16.2	1323.1	14.7	2039.5	10.7	216.9
MN101	Z8	0.09532	0.00100	0.27094	0.00338	3.56066	0.04494	0.06893	0.00090	1534.5	19.6	1545.6	17.1	1540.8	10.0	99.3
MN101	Z9	0.11516	0.00116	0.17087	0.00210	2.71289	0.03322	0.09040	0.00081	1882.4	18.1	1016.9	11.6	1332.0	9.1	185.1
MN101	Z10	0.09555	0.00098	0.27606	0.00339	3.63680	0.04483	0.07152	0.00080	1538.9	19.2	1571.5	17.1	1557.6	9.8	97.9
MN101	Z11	0.15121	0.00154	0.35902	0.00445	7.48483	0.09263	0.44191	0.00484	2359.7	17.3	1977.5	21.1	2171.2	11.1	119.3
MN101	Z12	0.09480	0.00100	0.26984	0.00357	3.52484	0.04664	0.05483	0.00137	1524.1	19.7	1540.0	18.1	1532.8	10.5	99.0
MN101	Z13	0.48012	0.00475	0.23185	0.00287	15.34718	0.18728	1.23484	0.01261	4181.3	14.6	1344.2	15.0	2837.0	11.6	311.1
MN101	Z14	0.09705	0.00099	0.27623	0.00348	3.69523	0.04649	0.05405	0.00067	1568.3	18.9	1572.3	17.6	1570.3	10.1	99.7
MN101	Z15	0.09924	0.00100	0.28060	0.00349	3.83924	0.04752	0.09266	0.00107	1609.9	18.7	1594.4	17.6	1601.0	10.0	101.0
MN101	Z16	0.49022	0.00493	0.13819	0.00171	9.33959	0.11398	0.10004	0.00115	4212.1	14.8	834.4	9.7	2371.9	11.2	504.8
MN101	Z17	0.18366	0.00190	0.19849	0.00246	5.02611	0.06248	0.14149	0.00168	2686.2	17.0	1167.2	13.3	1823.7	10.5	230.1
MN101	Z18	0.09509	0.00095	0.22312	0.00277	2.92497	0.03610	0.05847	0.00064	1529.8	18.8	1298.3	14.6	1388.4	9.3	117.8
MN101	Z19	0.09704	0.00101	0.27750	0.00355	3.71235	0.04787	0.07669	0.00119	1568.0	19.4	1578.8	17.9	1574.0	10.3	99.3
MN101	Z20	0.09678	0.00098	0.28783	0.00358	3.84055	0.04756	0.07588	0.00093	1563.0	18.8	1630.7	17.9	1601.3	10.0	95.8
MN101	Z21	0.09665	0.00100	0.27547	0.00345	3.67099	0.04613	0.07351	0.00102	1560.4	19.3	1568.5	17.5	1565.1	10.0	99.5
MN101	Z22	0.10057	0.00109	0.26401	0.00325	3.66096	0.04629	0.08342	0.00168	1634.6	20.0	1510.3	16.6	1562.9	10.1	108.2
MN101	Z23	0.17680	0.00178	0.24939	0.00312	6.07972	0.07500	0.31743	0.00426	2623.1	16.7	1435.3	16.1	1987.3	10.8	182.8
MN101	Z24	0.23213	0.00235	0.13723	0.00176	4.39171	0.05538	0.07444	0.00107	3066.8	16.1	829.0	10.0	1710.8	10.4	369.9
MN101	Z25	0.30947	0.00306	0.14849	0.00186	6.33613	0.07754	0.20999	0.00267	3518.3	15.2	892.5	10.4	2023.5	10.7	394.2
MN101	Z26	0.10272	0.00111	0.24376	0.00324	3.45105	0.04605	0.06912	0.00212	1673.8	19.8	1406.2	16.8	1516.1	10.5	119.0

LA-ICPMS analytical data of U-Pb zircon ages for mafic and felsic rocks of Mt painter Province

Sample	Spot	$^{207}Pb/^{206}Pb$	1σ	$^{206}Pb/^{238}U$	1σ	$^{207}Pb/^{235}U$	1σ	$^{208}Pb/^{232}Th$	1σ	$^{207}Pb/^{206}Pb$ Age (Ma)	1σ	$^{206}Pb/^{238}U$ Age (Ma)	1σ	$^{207}Pb/^{235}U$ Age (Ma)	1σ	Conc. %
MN101	Z27	0.32209	0.00317	0.18303	0.00230	8.12852	0.09951	0.05672	0.00070	3579.8	15.0	1083.5	12.5	2245.4	11.1	330.4
MN101	Z28	0.11588	0.00115	0.35047	0.00440	5.60000	0.06891	0.13267	0.00170	1893.7	17.7	1936.8	21.0	1916.1	10.6	97.8
MN101	Z29	0.38160	0.00372	0.23239	0.00292	12.22749	0.14920	0.17262	0.00212	3838.1	14.6	1347.0	15.3	2622.0	11.5	284.9
MN101	Z30	0.09671	0.00096	0.23985	0.00302	3.19840	0.03954	0.06808	0.00091	1561.6	18.6	1385.9	15.7	1456.8	9.6	112.7
MN101	Z31	0.09486	0.00096	0.28351	0.00357	3.70778	0.04647	0.07184	0.00113	1525.4	19.0	1609.0	18.0	1573.0	10.0	94.8
MN101	Z32	0.14239	0.00144	0.16818	0.00212	3.30168	0.04113	0.02114	0.00031	2256.5	17.3	1002.1	11.7	1481.4	9.7	225.2
MN101	Z33	0.37123	0.00366	0.27220	0.00343	13.93144	0.17177	1.33336	0.01899	3796.4	14.9	1551.9	17.4	2745.1	11.7	244.6
MN101	Z34	0.33293	0.00328	0.33333	0.00421	15.30127	0.18862	0.95435	0.01355	3630.6	15.0	1854.5	20.3	2834.2	11.8	195.8
MN101	Z35	0.26753	0.00270	0.20102	0.00250	7.41508	0.09132	0.32727	0.00565	3291.6	15.7	1180.8	13.4	2162.8	11.0	278.8
MN101	Z36	0.10016	0.00103	0.26542	0.00337	3.66584	0.04636	0.07216	0.00104	1627.0	19.0	1517.5	17.2	1564.0	10.1	107.2
MN101	Z37	0.09882	0.00104	0.28026	0.00357	3.81905	0.04896	0.08124	0.00131	1602.0	19.5	1592.7	18.0	1596.8	10.3	100.6
MN101	Z38	0.14260	0.00143	0.16361	0.00208	3.21709	0.04019	0.08357	0.00124	2259.0	17.2	976.8	11.5	1461.3	9.7	231.3
MN101	Z39	0.14119	0.00147	0.27600	0.00352	5.37333	0.06852	0.09322	0.00145	2241.8	17.9	1571.2	17.8	1880.6	10.9	142.7
MN101	Z40	0.21257	0.00211	0.21722	0.00273	6.36708	0.07854	0.28418	0.00446	2925.3	15.9	1267.2	14.5	2027.7	10.8	230.8
SD022	Z1	0.09754	0.00097	0.25837	0.00382	3.47435	0.05012	0.06707	0.00069	1577.6	18.4	1481.5	19.5	1521.4	11.4	106.5
SD022	Z2	0.09559	0.00095	0.26484	0.00390	3.49010	0.05031	0.06669	0.00078	1539.8	18.6	1514.5	19.9	1525.0	11.4	101.7
SD022	Z3	0.09775	0.00108	0.27336	0.00406	3.68364	0.05542	0.07096	0.00089	1581.6	20.5	1557.9	20.6	1567.8	12.0	101.5
SD022	Z4	0.09570	0.00096	0.20226	0.00299	2.66821	0.03859	0.06562	0.00069	1541.9	18.7	1187.4	16.1	1319.7	10.7	129.9
SD022	Z5	0.09505	0.00105	0.12389	0.00185	1.62319	0.02447	0.01566	0.00017	1529.0	20.7	752.9	10.6	979.2	9.5	203.1
SD022	Z6	0.09743	0.00099	0.11789	0.00180	1.58276	0.02359	0.00971	0.00010	1575.4	18.9	718.4	10.4	963.5	9.3	219.3
SD022	Z7	0.09393	0.00092	0.27539	0.00412	3.56579	0.05153	0.06785	0.00069	1506.7	18.3	1568.1	20.8	1542.0	11.5	96.1
SD022	Z8	0.09593	0.00102	0.25094	0.00377	3.31817	0.04945	0.07918	0.00093	1546.4	19.8	1443.3	19.5	1485.3	11.6	107.1
SD022	Z9	0.09505	0.00094	0.24005	0.00353	3.14479	0.04500	0.05034	0.00053	1529.0	18.6	1387.0	18.4	1443.7	11.0	110.2
SD022	Z10	0.09415	0.00093	0.23747	0.00355	3.08154	0.04464	0.01918	0.00021	1511.2	18.6	1373.5	18.5	1428.1	11.1	110.0
SD022	Z11	0.09375	0.00093	0.25018	0.00370	3.23147	0.04665	0.06904	0.00075	1503.0	18.6	1439.4	19.1	1464.7	11.2	104.4
SD022	Z12	0.08841	0.00087	0.13668	0.00203	1.66504	0.02408	0.01766	0.00019	1391.4	18.7	825.8	11.5	995.3	9.2	168.5
SD022	Z13	0.09599	0.00099	0.22234	0.00324	2.94134	0.04242	0.15642	0.00197	1547.7	19.2	1294.2	17.1	1392.6	10.9	119.6
SD022	Z14	0.09536	0.00094	0.23667	0.00351	3.11051	0.04507	0.17470	0.00191	1535.2	18.5	1369.4	18.3	1435.3	11.1	112.1
SD022	Z15	0.19599	0.00268	0.63261	0.01113	17.08895	0.30948	0.89838	0.01977	2793.1	22.2	3159.9	43.9	2939.8	17.4	88.4
SD022	Z16	0.09894	0.00099	0.15753	0.00232	2.14838	0.03108	0.03056	0.00034	1604.2	18.5	943.0	13.0	1164.5	10.0	170.1
SD022	Z17	0.14086	0.00139	0.23580	0.00351	4.57869	0.06659	0.07479	0.00084	2237.8	17.0	1364.8	18.3	1745.4	12.1	164.0
SD022	Z18	0.09818	0.00097	0.30731	0.00454	4.15975	0.06009	0.11393	0.00129	1589.9	18.4	1727.4	22.4	1666.1	11.8	92.0

LA-ICPMS analytical data of U-Pb zircon ages for mafic and felsic rocks of Mt painter Province

Sample	Spot	$^{207}Pb/^{206}Pb$	1σ	$^{206}Pb/^{238}U$	1σ	$^{207}Pb/^{235}U$	1σ	$^{208}Pb/^{232}Th$	1σ	$^{207}Pb/^{206}Pb$ Age (Ma)	1σ	$^{206}Pb/^{238}U$ Age (Ma)	1σ	$^{207}Pb/^{235}U$ Age (Ma)	1σ	Conc. %
SD022	Z19	0.08789	0.00086	0.16084	0.00239	1.94915	0.02832	0.05972	0.00068	1380.1	18.8	961.4	13.3	1098.2	9.8	143.6
SD022	Z20	0.09801	0.00098	0.17758	0.00265	2.39993	0.03507	0.09853	0.00109	1586.6	18.5	1053.7	14.5	1242.6	10.5	150.6
SD022	Z21	0.10530	0.00114	0.30339	0.00453	4.40114	0.06642	0.07880	0.00100	1719.6	19.7	1708.1	22.4	1712.6	12.5	100.7
SD022	Z22	0.09793	0.00100	0.15435	0.00228	2.08179	0.03054	0.03517	0.00042	1585.1	18.9	925.3	12.7	1142.8	10.1	171.3
SD022	Z23	0.10135	0.00112	0.27795	0.00417	3.88036	0.05941	0.07108	0.00097	1649.0	20.3	1581.0	21.1	1609.6	12.4	104.3
SD022	Z24	0.10053	0.00102	0.18432	0.00274	2.55169	0.03766	0.10955	0.00130	1633.8	18.7	1090.5	14.9	1286.9	10.8	149.8
SD022	Z25	0.09782	0.00103	0.23066	0.00341	3.10606	0.04627	0.12180	0.00153	1583.0	19.6	1338.0	17.8	1434.2	11.4	118.3
SD022	Z26	0.10018	0.00101	0.19265	0.00278	2.65588	0.03824	0.04368	0.00054	1627.4	18.6	1135.7	15.1	1316.3	10.6	143.3
SD022	Z28	0.09730	0.00103	0.23387	0.00345	3.13120	0.04662	0.08859	0.00109	1573.1	19.6	1354.8	18.0	1440.4	11.5	116.1
SD022	Z29	0.09659	0.00098	0.26558	0.00390	3.52923	0.05175	0.07174	0.00088	1559.2	19.0	1518.3	19.9	1533.8	11.6	102.7
SD022	Z30	0.09744	0.00105	0.22988	0.00335	3.08097	0.04586	0.03413	0.00048	1575.7	20.0	1333.9	17.6	1428.0	11.4	118.1
SD022	Z31	0.09567	0.00103	0.24806	0.00363	3.26750	0.04891	0.05324	0.00079	1541.3	20.1	1428.5	18.8	1473.4	11.6	107.9
SD022	Z32	0.09755	0.00100	0.21058	0.00305	2.82883	0.04116	0.15434	0.00204	1577.9	19.0	1231.9	16.2	1363.2	10.9	128.1
SD022	Z33	0.09614	0.00103	0.27056	0.00398	3.58251	0.05373	0.06117	0.00087	1550.6	20.0	1543.6	20.2	1545.7	11.9	100.5
SD022	Z34	0.10275	0.00114	0.21115	0.00313	2.98802	0.04555	0.07720	0.00109	1674.4	20.3	1234.9	16.7	1404.6	11.6	135.6
SD022	Z35	0.15587	0.00164	0.44958	0.00668	9.65228	0.14437	0.11623	0.00160	2411.3	17.8	2393.4	29.7	2402.2	13.8	100.7
SD022	Z36	0.09548	0.00097	0.20405	0.00302	2.68351	0.03960	0.14469	0.00186	1537.5	19.0	1197.0	16.2	1323.9	10.9	128.4
SD022	Z37	0.09643	0.00100	0.19790	0.00286	2.62992	0.03848	0.08896	0.00130	1556.2	19.3	1164.0	15.4	1309.0	10.8	133.7
SD022	Z38	0.10100	0.00102	0.09150	0.00135	1.27336	0.01871	0.02612	0.00034	1642.5	18.6	564.4	8.0	833.9	8.4	291.0
SD022	Z39	0.09705	0.00099	0.26220	0.00387	3.50747	0.05164	0.08967	0.00120	1568.2	18.9	1501.1	19.8	1528.9	11.6	104.5
SD022	Z40	0.09712	0.00099	0.26094	0.00382	3.49382	0.05125	0.04174	0.00058	1569.5	19.0	1494.7	19.5	1525.8	11.6	105.0
SD060	Z1	0.10266	0.00103	0.40805	0.00478	5.77376	0.06760	0.11927	0.00115	1672.7	18.4	2206.0	21.9	1942.5	10.1	75.8
SD060	Z2	0.10285	0.00103	0.34360	0.00404	4.87087	0.05717	0.23835	0.00229	1676.1	18.4	1903.9	19.4	1797.2	9.9	88.0
SD060	Z3	0.10001	0.00101	0.10412	0.00125	1.43560	0.01730	0.04124	0.00040	1624.3	18.8	638.5	7.3	903.9	7.2	254.4
SD060	Z4	0.09711	0.00098	0.40572	0.00469	5.43103	0.06291	0.13500	0.00131	1569.3	18.7	2195.3	21.5	1889.8	9.9	71.5
SD060	Z5	0.10008	0.00101	0.39585	0.00460	5.46139	0.06371	0.43730	0.00421	1625.6	18.6	2149.9	21.3	1894.5	10.0	75.6
SD060	Z6	0.09548	0.00097	0.26016	0.00304	3.42392	0.04043	0.09264	0.00091	1537.5	19.0	1490.7	15.6	1509.9	9.3	103.1
SD060	Z7	0.09817	0.00103	0.29314	0.00328	3.96575	0.04604	0.06640	0.00065	1589.6	19.6	1657.2	16.4	1627.2	9.4	95.9
SD060	Z8	0.23923	0.00241	0.18458	0.00215	6.08715	0.07130	0.05999	0.00057	3114.8	16.0	1092.0	11.7	1988.4	10.2	285.2
SD060	Z9	0.09385	0.00094	0.23804	0.00279	3.07964	0.03632	0.06355	0.00060	1505.0	18.9	1376.5	14.6	1427.6	9.0	109.3
SD060	Z10	0.10060	0.00101	0.37777	0.00451	5.23961	0.06281	0.10688	0.00100	1635.2	18.6	2065.8	21.1	1859.1	10.2	79.2
SD060	Z11	0.09679	0.00098	0.30066	0.00352	4.01233	0.04713	0.10591	0.00103	1563.2	18.8	1694.6	17.4	1636.7	9.6	92.2

LA-ICPMS analytical data of U-Pb zircon ages for mafic and felsic rocks of Mt painter Province

Sample	Spot	$^{207}Pb/^{206}Pb$	1σ	$^{206}Pb/^{238}U$	1σ	$^{207}Pb/^{235}U$	1σ	$^{208}Pb/^{232}Th$	1σ	$^{207}Pb/^{206}Pb$ Age (Ma)	1σ	$^{206}Pb/^{238}U$ Age (Ma)	1σ	$^{207}Pb/^{235}U$ Age (Ma)	1σ	Conc. %
SD060	Z12	0.09820	0.00098	0.28741	0.00337	3.89132	0.04561	0.34837	0.00342	1590.3	18.6	1628.6	16.9	1611.9	9.5	97.6
SD060	Z13	0.09552	0.00096	0.27059	0.00333	3.56352	0.04392	0.06810	0.00063	1538.4	18.9	1543.8	16.9	1541.4	9.8	99.7
SD060	Z14	0.09580	0.00096	0.27175	0.00320	3.58923	0.04238	0.13795	0.00135	1543.8	18.8	1549.7	16.2	1547.2	9.4	99.6
SD060	Z15	0.09975	0.00101	0.25393	0.00307	3.49230	0.04236	0.14584	0.00141	1619.4	18.7	1458.7	15.8	1525.5	9.6	111.0
SD060	Z16	0.09800	0.00098	0.26144	0.00313	3.53240	0.04228	0.05025	0.00050	1586.4	18.6	1497.2	16.0	1534.5	9.5	106.0
SD060	Z17	0.09983	0.00106	0.29032	0.00363	3.99112	0.05149	0.10997	0.00107	1620.9	19.6	1643.1	18.1	1632.4	10.5	98.6
SD060	Z18	0.10581	0.00108	0.47305	0.00549	6.90111	0.08118	0.16584	0.00170	1728.5	18.6	2496.9	24.0	2098.8	10.4	69.2
SD060	Z19	0.09593	0.00096	0.26578	0.00315	3.51506	0.04164	0.14063	0.00140	1546.3	18.7	1519.3	16.0	1530.6	9.4	101.8
SD060	Z20	0.09926	0.00099	0.29574	0.00352	4.04737	0.04799	0.15030	0.00148	1610.3	18.5	1670.1	17.5	1643.8	9.7	96.4
SD060	Z21	0.09981	0.00100	0.23655	0.00282	3.25524	0.03896	0.11059	0.00107	1620.5	18.6	1368.8	14.7	1470.4	9.3	118.4
SD060	Z22	0.10220	0.00103	0.30216	0.00358	4.25767	0.05079	0.08990	0.00087	1664.5	18.5	1702.0	17.7	1685.2	9.8	97.8
SD060	Z23	0.10585	0.00107	0.33320	0.00394	4.86291	0.05776	0.33901	0.00326	1729.1	18.4	1853.9	19.0	1795.9	10.0	93.3
SD060	Z24	0.09956	0.00101	0.30941	0.00357	4.24735	0.04960	0.09689	0.00095	1615.9	18.7	1737.8	17.6	1683.2	9.6	93.0
SD060	Z25	0.09957	0.00101	0.27583	0.00324	3.78672	0.04491	0.10409	0.00102	1616.0	18.8	1570.3	16.4	1589.9	9.5	102.9
SD060	Z26	0.09962	0.00101	0.35142	0.00411	4.82684	0.05697	0.19064	0.00182	1617.0	18.7	1941.4	19.6	1789.6	9.9	83.3
SD060	Z27	0.09453	0.00095	0.26335	0.00311	3.43254	0.04081	0.06470	0.00061	1518.8	18.9	1507.0	15.9	1511.9	9.4	100.8
SD060	Z28	0.09373	0.00095	0.25724	0.00298	3.32446	0.03891	0.09123	0.00087	1502.7	19.0	1475.7	15.3	1486.8	9.1	101.8
SD060	Z29	0.10278	0.00105	0.34424	0.00392	4.87832	0.05642	0.12502	0.00124	1674.9	18.7	1907.0	18.8	1798.5	9.8	87.8
SD060	Z30	0.09892	0.00101	0.24691	0.00292	3.36756	0.04046	0.23401	0.00221	1603.8	18.9	1422.5	15.1	1496.9	9.4	112.7
SD047	Z1	0.09366	0.00093	0.27476	0.00337	3.54653	0.04277	0.08313	0.00072	1501.3	18.6	1564.9	17.1	1537.7	9.6	95.9
SD047	Z2	0.09493	0.00093	0.25855	0.00300	3.38329	0.03850	0.06325	0.00051	1526.7	18.4	1482.4	15.4	1500.5	8.9	103.0
SD047	Z3	0.09395	0.00092	0.24652	0.00289	3.19282	0.03670	0.06758	0.00056	1507.2	18.4	1420.5	15.0	1455.4	8.9	106.1
SD047	Z4	0.09117	0.00090	0.21208	0.00231	2.66558	0.02846	0.06434	0.00051	1450.1	18.6	1239.9	12.3	1319.0	7.9	117.0
SD047	Z5	0.09403	0.00092	0.26048	0.00314	3.37663	0.03987	0.10924	0.00094	1508.6	18.5	1492.3	16.1	1499.0	9.3	101.1
SD047	Z6	0.09589	0.00095	0.27252	0.00322	3.60262	0.04186	0.10482	0.00090	1545.6	18.5	1553.6	16.3	1550.1	9.2	99.5
SD047	Z7	0.09166	0.00090	0.23132	0.00279	2.92324	0.03465	0.08244	0.00071	1460.3	18.6	1341.4	14.6	1387.9	9.0	108.9
SD047	Z8	0.09250	0.00091	0.24075	0.00303	3.06932	0.03797	0.03247	0.00028	1477.6	18.7	1390.6	15.8	1425.1	9.5	106.3
SD047	Z9	0.08645	0.00086	0.21586	0.00262	2.57262	0.03073	0.11262	0.00102	1348.2	19.1	1260.0	13.9	1292.9	8.7	107.0
SD047	Z10	0.09470	0.00093	0.29366	0.00363	3.83395	0.04639	0.08575	0.00078	1522.2	18.4	1659.8	18.1	1599.9	9.8	91.7
SD047	Z11	0.09410	0.00092	0.25091	0.00290	3.25544	0.03687	0.07054	0.00058	1510.1	18.4	1443.2	14.9	1470.5	8.8	104.6
SD047	Z12	0.09550	0.00094	0.23767	0.00286	3.12953	0.03708	0.07482	0.00063	1537.9	18.4	1374.6	14.9	1440.0	9.1	111.9
SD047	Z13	0.09345	0.00092	0.25458	0.00311	3.27990	0.03941	0.08644	0.00072	1496.9	18.5	1462.0	16.0	1476.3	9.4	102.4

LA-ICPMS analytical data of U-Pb zircon ages for mafic and felsic rocks of Mt painter Province

Sample	Spot	$^{207}Pb/^{206}Pb$	1σ	$^{206}Pb/^{238}U$	1σ	$^{207}Pb/^{235}U$	1σ	$^{208}Pb/^{232}Th$	1σ	$^{207}Pb/^{206}Pb$ Age (Ma)	1σ	$^{206}Pb/^{238}U$ Age (Ma)	1σ	$^{207}Pb/^{235}U$ Age (Ma)	1σ	Conc. %
SD047	Z14	0.09472	0.00093	0.25378	0.00312	3.31385	0.04000	0.10702	0.00090	1522.6	18.5	1458.0	16.1	1484.3	9.4	104.4
SD047	Z15	0.10869	0.00107	0.26619	0.00321	3.98885	0.04718	0.17007	0.00138	1777.5	17.9	1521.4	16.3	1631.9	9.6	116.8
SD047	Z16	0.09407	0.00093	0.26061	0.00309	3.37967	0.03957	0.08598	0.00069	1509.4	18.6	1492.9	15.8	1499.7	9.2	101.1
SD047	Z17	0.09529	0.00095	0.26990	0.00326	3.54589	0.04237	0.09115	0.00075	1533.8	18.6	1540.3	16.5	1537.5	9.5	99.6
SD047	Z18	0.09301	0.00092	0.24130	0.00288	3.09423	0.03653	0.07579	0.00062	1488.1	18.6	1393.4	15.0	1431.3	9.1	106.8
SD047	Z19	0.09398	0.00093	0.27869	0.00343	3.61045	0.04344	0.07181	0.00061	1507.8	18.5	1584.8	17.3	1551.8	9.6	95.1
SD047	Z20	0.09516	0.00095	0.24625	0.00289	3.23029	0.03760	0.12933	0.00101	1531.2	18.6	1419.1	15.0	1464.5	9.0	107.9
SD047	Z21	0.09014	0.00090	0.19681	0.00219	2.44549	0.02707	0.05849	0.00056	1428.5	18.9	1158.1	11.8	1256.1	8.0	123.3
SD047	Z22	0.08820	0.00103	0.22569	0.00280	2.74280	0.03525	0.02906	0.00105	1386.9	22.3	1311.9	14.7	1340.1	9.6	105.7
SD047	Z23	0.09609	0.00096	0.28507	0.00315	3.77659	0.04166	0.08058	0.00076	1549.6	18.6	1616.9	15.8	1587.8	8.9	95.8
SD047	Z24	0.09505	0.00095	0.27121	0.00322	3.55458	0.04204	0.12326	0.00120	1529.0	18.7	1546.9	16.3	1539.5	9.4	98.8
SD047	Z25	0.09296	0.00093	0.23890	0.00283	3.06261	0.03619	0.06118	0.00060	1487.2	18.8	1381.0	14.8	1423.4	9.1	107.7
SD047	Z26	0.09588	0.00096	0.29050	0.00323	3.84002	0.04261	0.08128	0.00077	1545.4	18.6	1644.0	16.2	1601.2	8.9	94.0
SD047	Z27	0.09511	0.00095	0.30113	0.00338	3.94863	0.04432	0.10095	0.00096	1530.2	18.8	1696.9	16.7	1623.7	9.1	90.2
SD047	Z28	0.09279	0.00093	0.24463	0.00291	3.12890	0.03704	0.07803	0.00077	1483.5	18.9	1410.7	15.1	1439.8	9.1	105.2
SD047	Z29	0.09152	0.00092	0.24227	0.00288	3.05575	0.03619	0.07518	0.00074	1457.3	18.9	1398.5	14.9	1421.7	9.1	104.2
SD047	Z30	0.07526	0.00075	0.07784	0.00092	0.80733	0.00951	0.01435	0.00014	1075.4	19.9	483.2	5.5	601.0	5.3	222.6
SD047	Z31	0.09491	0.00095	0.25467	0.00274	3.33132	0.03590	0.07101	0.00067	1526.4	18.8	1462.5	14.1	1488.4	8.4	104.4
SD047	Z32	0.09032	0.00093	0.21524	0.00270	2.68559	0.03375	0.05029	0.00082	1432.2	19.5	1256.7	14.3	1324.5	9.3	114.0
SD047	Z33	0.09522	0.00095	0.25944	0.00309	3.40528	0.04037	0.07068	0.00068	1532.4	18.7	1487.0	15.8	1505.6	9.3	103.1
SD047	Z34	0.09410	0.00096	0.27793	0.00350	3.60892	0.04549	0.06660	0.00081	1510.2	19.2	1580.9	17.7	1551.5	10.0	95.5
SD047	Z35	0.09490	0.00095	0.22924	0.00266	2.99908	0.03480	0.05427	0.00051	1526.1	18.7	1330.5	14.0	1407.4	8.8	114.7
SD049	Z1	0.09431	0.00096	0.21560	0.00273	2.80300	0.03521	0.03155	0.00036	1514.3	19.1	1258.6	14.5	1356.3	9.4	120.3
SD049	Z2	0.09432	0.00093	0.24117	0.00313	3.13639	0.03975	0.06496	0.00068	1514.6	18.5	1392.8	16.3	1441.7	9.8	108.7
SD049	Z3	0.09658	0.00095	0.20805	0.00294	2.77197	0.03744	0.00686	0.00008	1559.1	18.4	1218.4	15.7	1348.0	10.1	128.0
SD049	Z4	0.09750	0.00096	0.21900	0.00288	2.94452	0.03772	0.05750	0.00059	1576.9	18.3	1276.6	15.3	1393.4	9.7	123.5
SD049	Z5	0.13594	0.00159	3.11607	0.04595	58.40820	0.88519	0.76548	0.00830	2176.0	20.2	9121.0	72.0	4147.3	15.1	23.9
SD049	Z6	0.10247	0.00105	0.17997	0.00233	2.54268	0.03279	0.00512	0.00006	1669.4	18.9	1066.8	12.7	1284.3	9.4	156.5
SD049	Z8	0.10322	0.00103	0.07953	0.00107	1.13170	0.01496	0.00822	0.00008	1682.8	18.3	493.3	6.4	768.6	7.1	341.1
SD049	Z9	0.09457	0.00093	0.26035	0.00347	3.39583	0.04408	0.06453	0.00070	1519.5	18.5	1491.6	17.8	1503.4	10.2	101.9
SD049	Z10	0.09368	0.00092	0.22795	0.00325	2.94660	0.03969	0.13121	0.00150	1501.7	18.4	1323.7	17.1	1394.0	10.2	113.4
SD049	Z11	0.10206	0.00097	0.19156	0.00268	2.67147	0.03497	0.23418	0.00252	1661.9	17.5	1129.8	14.5	1320.6	9.7	147.1

LA-ICPMS analytical data of U-Pb zircon ages for mafic and felsic rocks of Mt painter Province

Sample	Spot	$^{207}Pb/^{206}Pb$	1σ	$^{206}Pb/^{238}U$	1σ	$^{207}Pb/^{235}U$	1σ	$^{208}Pb/^{232}Th$	1σ	$^{207}Pb/^{206}Pb$ Age (Ma)	1σ	$^{206}Pb/^{238}U$ Age (Ma)	1σ	$^{207}Pb/^{235}U$ Age (Ma)	1σ	Conc. %
SD049	Z12	0.10212	0.00100	0.25379	0.00355	3.54356	0.04708	0.06960	0.00080	1663.1	18.0	1458.0	18.3	1537.0	10.5	114.1
SD049	Z13	0.09893	0.00095	0.14553	0.00202	1.96927	0.02584	0.04429	0.00048	1604.1	17.8	875.9	11.4	1105.1	8.8	183.1
SD049	Z14	0.10464	0.00105	0.26201	0.00366	3.75320	0.05035	0.08168	0.00093	1708.0	18.3	1500.1	18.7	1582.8	10.8	113.9
SD049	Z15	0.10855	0.00108	0.25622	0.00358	3.81183	0.05111	0.07451	0.00086	1775.2	18.0	1470.5	18.4	1595.2	10.8	120.7
SD049	Z16	0.10817	0.00111	0.25152	0.00331	3.71601	0.04896	0.06972	0.00089	1768.7	18.6	1446.3	17.1	1574.8	10.5	122.3
SD049	Z17	0.10588	0.00101	0.15528	0.00231	2.26214	0.03105	0.01873	0.00026	1729.6	17.3	930.5	12.9	1200.6	9.7	185.9
SD049	Z18	0.10854	0.00109	0.23610	0.00317	3.51010	0.04645	0.05854	0.00069	1774.9	18.2	1366.4	16.6	1529.5	10.5	129.9
SD049	Z19	0.10361	0.00100	0.26603	0.00382	3.79113	0.05166	0.07155	0.00097	1689.7	17.7	1520.6	19.5	1590.9	11.0	111.1
SD049	Z20	0.10380	0.00103	0.27399	0.00377	3.90861	0.05251	0.08234	0.00100	1693.1	18.2	1561.0	19.1	1615.5	10.9	108.5
SD049	Z21	0.10809	0.00098	0.16072	0.00242	2.40923	0.03228	0.01800	0.00018	1767.4	16.5	960.7	13.4	1245.4	9.6	184.0
SD049	Z22	0.10147	0.00093	0.26244	0.00390	3.69381	0.04942	0.03374	0.00034	1651.1	16.8	1502.3	19.9	1570.0	10.7	109.9
SD049	Z23	0.10181	0.00098	0.22536	0.00331	3.18655	0.04331	0.06445	0.00069	1657.3	17.8	1310.1	17.4	1453.9	10.5	126.5
SD049	Z24	0.08622	0.00082	0.19790	0.00278	2.38093	0.03146	0.01925	0.00019	1343.1	18.2	1164.0	15.0	1236.9	9.5	115.4
SD049	Z25	0.09293	0.00091	0.26975	0.00395	3.47565	0.04816	0.07463	0.00085	1486.3	18.6	1539.5	20.1	1521.7	10.9	96.5
SD049	Z26	0.09293	0.00089	0.24270	0.00340	3.14044	0.04205	0.02885	0.00029	1486.2	18.2	1400.7	17.6	1442.7	10.3	106.1
SD049	Z27	0.09402	0.00091	0.26796	0.00392	3.48094	0.04861	0.16018	0.00172	1508.4	18.3	1530.4	19.9	1522.9	11.0	98.6
SD049	Z28	0.09364	0.00099	0.26352	0.00351	3.43610	0.04653	0.22489	0.00262	1500.8	19.8	1507.8	17.9	1512.7	10.7	99.5
SD049	Z29	0.09209	0.00097	0.29585	0.00386	3.79069	0.05116	0.06421	0.00095	1469.1	20.0	1670.7	19.2	1590.8	10.8	87.9
SD049	Z30	0.09297	0.00098	0.20177	0.00264	2.60678	0.03540	0.04902	0.00055	1487.3	19.9	1184.8	14.2	1302.5	10.0	125.5
SD050	Z1	0.09348	0.00097	0.28010	0.00353	3.61150	0.04681	0.08416	0.00094	1497.6	19.5	1591.9	17.8	1552.1	10.3	94.1
SD050	Z2	0.09334	0.00101	0.27621	0.00376	3.55689	0.05103	0.06997	0.00117	1494.8	20.3	1572.3	19.0	1540.0	11.4	95.1
SD050	Z3	0.09459	0.00100	0.28011	0.00348	3.65346	0.04701	0.08067	0.00093	1519.9	19.7	1591.9	17.6	1561.3	10.3	95.5
SD050	Z4	0.09421	0.00097	0.28715	0.00354	3.73013	0.04698	0.08078	0.00088	1512.3	19.2	1627.3	17.8	1577.9	10.1	92.9
SD050	Z5	0.09330	0.00095	0.28195	0.00341	3.62635	0.04464	0.12255	0.00135	1493.9	19.2	1601.2	17.2	1555.3	9.8	93.3
SD050	Z6	0.09459	0.00097	0.29543	0.00362	3.85312	0.04791	0.09655	0.00107	1520.0	19.1	1668.6	18.0	1603.9	10.0	91.1
SD050	Z7	0.09003	0.00092	0.21356	0.00268	2.65110	0.03380	0.05143	0.00064	1426.1	19.4	1247.7	14.3	1314.9	9.4	114.3
SD050	Z8	0.08913	0.00092	0.07082	0.00079	0.86987	0.00995	0.01004	0.00021	1406.8	19.7	441.1	4.8	635.5	5.4	318.9
SD050	Z9	0.08911	0.00090	0.24356	0.00299	2.99338	0.03690	0.07435	0.00078	1406.4	19.2	1405.2	15.5	1405.9	9.4	100.1
SD050	Z10	0.08741	0.00088	0.20107	0.00242	2.42368	0.02921	0.05395	0.00066	1369.4	19.4	1181.1	13.0	1249.6	8.7	115.9
SD050	Z11	0.09032	0.00090	0.29062	0.00380	3.61553	0.04651	0.08547	0.00092	1432.2	18.8	1644.6	19.0	1553.0	10.2	87.1
SD050	Z12	0.08926	0.00088	0.28998	0.00385	3.56549	0.04605	0.07784	0.00079	1409.7	18.6	1641.4	19.2	1541.9	10.2	85.9
SD050	Z13	0.09308	0.00093	0.19540	0.00251	2.50596	0.03176	0.04977	0.00050	1489.6	18.7	1150.5	13.5	1273.8	9.2	129.5

LA-ICPMS analytical data of U-Pb zircon ages for mafic and felsic rocks of Mt painter Province

Sample	Spot	$^{207}Pb/^{206}Pb$	1σ	$^{206}Pb/^{238}U$	1σ	$^{207}Pb/^{235}U$	1σ	$^{208}Pb/^{232}Th$	1σ	$^{207}Pb/^{206}Pb$ Age (Ma)	1σ	$^{206}Pb/^{238}U$ Age (Ma)	1σ	$^{207}Pb/^{235}U$ Age (Ma)	1σ	Conc. %
SD050	Z14	0.09117	0.00088	0.27274	0.00374	3.42566	0.04462	0.13915	0.00142	1450.0	18.2	1554.7	18.9	1510.3	10.2	93.3
SD050	Z15	0.08911	0.00087	0.28555	0.00378	3.50333	0.04479	0.10125	0.00100	1406.5	18.5	1619.3	19.0	1528.0	10.1	86.9
SD050	Z16	0.08812	0.00088	0.23469	0.00297	2.84878	0.03560	0.05017	0.00054	1385.2	19.1	1359.0	15.5	1368.5	9.4	101.9
SD050	Z17	0.08721	0.00083	0.20850	0.00285	2.50358	0.03238	0.08819	0.00082	1365.1	18.3	1220.8	15.2	1273.1	9.4	111.8
SD050	Z18	0.10346	0.00100	0.21111	0.00278	3.00603	0.03797	0.03213	0.00032	1687.1	17.8	1234.8	14.8	1409.1	9.6	136.6
SD050	Z19	0.08556	0.00081	0.29995	0.00409	3.53081	0.04534	0.07719	0.00078	1328.2	18.2	1691.1	20.3	1534.1	10.2	78.5
SD050	Z20	0.07747	0.00073	0.20898	0.00296	2.22499	0.02931	0.04517	0.00045	1133.6	18.4	1223.4	15.8	1188.9	9.2	92.7
SD050	Z21	0.09078	0.00094	0.22129	0.00291	2.76998	0.03758	0.06985	0.00069	1441.9	19.7	1288.7	15.3	1347.5	10.1	111.9
SD050	Z22	0.09122	0.00098	0.21096	0.00249	2.65392	0.03295	0.03234	0.00040	1451.1	20.3	1233.9	13.3	1315.7	9.2	117.6
SD050	Z23	0.09398	0.00098	0.23133	0.00292	2.99847	0.03926	0.03697	0.00037	1507.8	19.5	1341.4	15.3	1407.2	10.0	112.4
SD050	Z24	0.09489	0.00099	0.27042	0.00342	3.53926	0.04635	0.07655	0.00077	1526.0	19.5	1542.9	17.3	1536.0	10.4	98.9
SD050	Z25	0.09376	0.00099	0.26870	0.00339	3.47458	0.04583	0.07687	0.00079	1503.3	19.7	1534.2	17.2	1521.5	10.4	98.0
SD050	Z26	0.09440	0.00099	0.27972	0.00350	3.64199	0.04755	0.08740	0.00089	1516.1	19.6	1589.9	17.6	1558.8	10.4	95.4
SD050	Z27	0.09527	0.00101	0.27598	0.00357	3.62535	0.04933	0.07742	0.00079	1533.3	19.8	1571.1	18.0	1555.1	10.8	97.6
SD050	Z28	0.09350	0.00101	0.28287	0.00381	3.64799	0.05212	0.07840	0.00091	1498.0	20.2	1605.8	19.1	1560.1	11.4	93.3
SD050	Z29	0.09463	0.00101	0.25213	0.00315	3.29033	0.04339	0.08364	0.00088	1520.8	19.9	1449.4	16.2	1478.8	10.3	104.9
SD050	Z30	0.09555	0.00103	0.25986	0.00318	3.42249	0.04465	0.07887	0.00099	1538.8	20.1	1489.2	16.3	1509.6	10.3	103.3
SD050	Z31	0.09046	0.00095	0.19957	0.00248	2.48970	0.03223	0.06655	0.00070	1435.1	19.8	1173.0	13.3	1269.0	9.4	122.3
SD050	Z32	0.09535	0.00099	0.28741	0.00354	3.77965	0.04831	0.08559	0.00089	1535.0	19.5	1628.6	17.8	1588.4	10.3	94.3
SD050	Z33	0.09529	0.00099	0.28686	0.00354	3.77002	0.04823	0.10128	0.00106	1533.8	19.5	1625.8	17.8	1586.4	10.3	94.3
SD050	Z34	0.09575	0.00099	0.26204	0.00321	3.46040	0.04388	0.07951	0.00085	1542.8	19.4	1500.3	16.4	1518.2	10.0	102.8
SD050	Z35	0.09499	0.00098	0.22503	0.00277	2.94798	0.03752	0.03923	0.00041	1528.0	19.4	1308.4	14.6	1394.3	9.7	116.8
SD050	Z36	0.08995	0.00092	0.18537	0.00213	2.30031	0.02672	0.03517	0.00046	1424.4	19.4	1096.2	11.6	1212.4	8.2	129.9
SD050	Z37	0.09526	0.00098	0.27524	0.00338	3.61550	0.04571	0.07886	0.00086	1533.2	19.3	1567.3	17.1	1552.9	10.1	97.8
SD050	Z38	0.08674	0.00090	0.16292	0.00200	1.94881	0.02460	0.03612	0.00038	1354.8	19.8	973.0	11.1	1098.0	8.5	139.2
SD050	Z39	0.09376	0.00099	0.29154	0.00354	3.76912	0.04791	0.11527	0.00154	1503.4	19.9	1649.2	17.7	1586.2	10.2	91.2
SD050	Z40	0.08522	0.00087	0.11617	0.00134	1.36492	0.01592	0.02029	0.00026	1320.5	19.7	708.5	7.7	874.0	6.8	186.4
MN084	Z1	0.09808	0.00098	0.26338	0.00344	3.56141	0.04591	0.07584	0.00063	1588.0	18.5	1507.1	17.6	1541.0	10.2	105.4
MN084	Z2	0.09721	0.00097	0.28209	0.00361	3.78053	0.04769	0.07884	0.00064	1571.2	18.5	1601.9	18.2	1588.6	10.1	98.1
MN084	Z3	0.09747	0.00097	0.27921	0.00357	3.75179	0.04719	0.07831	0.00064	1576.2	18.5	1587.4	18.0	1582.5	10.1	99.3
MN084	Z4	0.10059	0.00100	0.25268	0.00328	3.50426	0.04484	0.08045	0.00065	1635.1	18.4	1452.3	16.9	1528.2	10.1	112.6
MN084	Z5	0.10398	0.00102	0.21319	0.00273	3.05612	0.03827	0.12498	0.00099	1696.3	18.0	1245.8	14.5	1421.8	9.6	136.2

LA-ICPMS analytical data of U-Pb zircon ages for mafic and felsic rocks of Mt painter Province

Sample	Spot	$^{207}Pb/^{206}Pb$	1σ	$^{206}Pb/^{238}U$	1σ	$^{207}Pb/^{235}U$	1σ	$^{208}Pb/^{232}Th$	1σ	$^{207}Pb/^{206}Pb$ Age (Ma)	1σ	$^{206}Pb/^{238}U$ Age (Ma)	1σ	$^{207}Pb/^{235}U$ Age (Ma)	1σ	Conc. %
MN084	Z15	0.09654	0.00097	0.28124	0.00362	3.74315	0.04790	0.07646	0.00066	1558.2	18.8	1597.6	18.2	1580.6	10.3	97.5
MN084	Z6	0.09684	0.00095	0.27416	0.00351	3.66022	0.04591	0.07269	0.00058	1564.1	18.4	1561.9	17.8	1562.7	10.0	100.1
MN084	Z7	0.09688	0.00097	0.27578	0.00353	3.68343	0.04653	0.07370	0.00060	1564.8	18.6	1570.1	17.8	1567.8	10.1	99.7
MN084	Z8	0.10186	0.00106	0.28111	0.00360	3.94754	0.05083	0.07943	0.00065	1658.3	19.1	1596.9	18.1	1623.5	10.4	103.8
MN084	Z9	0.10201	0.00100	0.20485	0.00257	2.88064	0.03539	0.06831	0.00056	1661.0	18.1	1201.3	13.8	1376.9	9.3	138.3
MN084	Z10	0.09703	0.00096	0.26802	0.00342	3.58534	0.04497	0.04637	0.00037	1567.8	18.5	1530.8	17.4	1546.3	10.0	102.4
MN084	Z11	0.10128	0.00101	0.19039	0.00254	2.65886	0.03497	0.05320	0.00046	1647.8	18.3	1123.5	13.8	1317.1	9.7	146.7
MN084	Z12	0.09725	0.00098	0.27793	0.00356	3.72672	0.04754	0.07825	0.00068	1572.1	18.8	1580.9	18.0	1577.1	10.2	99.4
MN084	Z13	0.09952	0.00099	0.26509	0.00339	3.63722	0.04590	0.08869	0.00075	1615.1	18.4	1515.8	17.3	1557.7	10.1	106.6
MN084	Z14	0.09730	0.00098	0.27008	0.00346	3.62323	0.04617	0.07827	0.00068	1573.1	18.7	1541.2	17.6	1554.6	10.1	102.1
MN084	Z16	0.09714	0.00098	0.27901	0.00357	3.73672	0.04754	0.07735	0.00067	1569.9	18.7	1586.4	18.0	1579.3	10.2	99.0
MN084	Z17	0.09794	0.00098	0.26311	0.00339	3.55249	0.04540	0.07649	0.00064	1585.2	18.6	1505.7	17.3	1539.0	10.1	105.3
MN084	Z18	0.09795	0.00099	0.25922	0.00333	3.50035	0.04474	0.06814	0.00059	1585.4	18.7	1485.9	17.1	1527.3	10.1	106.7
MN084	Z19	0.09784	0.00099	0.27669	0.00353	3.73228	0.04746	0.07831	0.00070	1583.4	18.8	1574.7	17.8	1578.3	10.2	100.6
MN084	Z20	0.09722	0.00098	0.27376	0.00349	3.66949	0.04648	0.06799	0.00060	1571.5	18.7	1559.9	17.7	1564.8	10.1	100.7
MN084	Z22	0.09735	0.00099	0.27615	0.00353	3.70642	0.04741	0.07649	0.00067	1573.9	18.8	1571.9	17.9	1572.8	10.2	100.1
SD031	Z1	0.09680	0.00099	0.27178	0.00323	3.62734	0.04327	0.08421	0.00087	1563.3	19.1	1549.8	16.4	1555.5	9.5	100.9
SD031	Z2	0.09762	0.00096	0.24743	0.00286	3.33015	0.03779	0.07032	0.00067	1579.1	18.4	1425.2	14.8	1488.1	8.9	110.8
SD031	Z3	0.09754	0.00099	0.25881	0.00302	3.48048	0.04043	0.07956	0.00079	1577.6	18.8	1483.8	15.5	1522.8	9.2	106.3
SD031	Z4	0.11301	0.00125	0.24995	0.00311	3.89341	0.04994	0.08374	0.00080	1848.4	19.8	1438.2	16.0	1612.3	10.4	128.5
SD031	Z5	0.09870	0.00099	0.26538	0.00309	3.61147	0.04175	0.08965	0.00090	1599.7	18.7	1517.3	15.8	1552.1	9.2	105.4
SD031	Z6	0.09967	0.00103	0.27022	0.00324	3.71325	0.04480	0.08721	0.00090	1617.9	19.1	1541.9	16.4	1574.2	9.7	104.9
SD031	Z7	0.09832	0.00098	0.25879	0.00314	3.50759	0.04204	0.07530	0.00073	1592.5	18.6	1483.7	16.1	1528.9	9.5	107.3
SD031	Z8	0.09698	0.00098	0.26623	0.00317	3.55976	0.04224	0.07857	0.00080	1566.9	18.8	1521.6	16.2	1540.6	9.4	103.0
SD031	Z9	0.09674	0.00098	0.27113	0.00322	3.61626	0.04286	0.08077	0.00081	1562.3	18.9	1546.6	16.3	1553.1	9.4	101.0
SD031	Z10	0.09972	0.00104	0.24534	0.00292	3.37289	0.04074	0.04455	0.00046	1618.9	19.3	1414.4	15.1	1498.1	9.5	114.5
SD031	Z11	0.10590	0.00132	0.25547	0.00325	3.72875	0.05276	0.08812	0.00108	1730.1	22.6	1466.6	16.7	1577.6	11.3	118.0
SD031	Z12	0.11078	0.00111	0.11147	0.00133	1.70241	0.02015	0.04047	0.00040	1812.3	18.1	681.3	7.7	1009.4	7.6	266.0
SD031	Z13	0.09971	0.00102	0.25963	0.00302	3.56885	0.04191	0.08048	0.00082	1618.7	19.0	1487.9	15.5	1542.6	9.3	108.8
SD031	Z14	0.10085	0.00103	0.23156	0.00279	3.21956	0.03893	0.07781	0.00077	1639.9	18.9	1342.7	14.6	1461.9	9.4	122.1
SD031	Z15	0.09954	0.00103	0.24361	0.00288	3.34284	0.03997	0.08746	0.00090	1615.4	19.1	1405.5	14.9	1491.1	9.4	114.9
SD031	Z16	0.09820	0.00102	0.26121	0.00301	3.53576	0.04157	0.07976	0.00082	1590.3	19.3	1496.0	15.4	1535.3	9.3	106.3

LA-ICPMS analytical data of U-Pb zircon ages for mafic and felsic rocks of Mt painter Province

Sample	Spot	$^{207}Pb/^{206}Pb$	1σ	$^{206}Pb/^{238}U$	1σ	$^{207}Pb/^{235}U$	1σ	$^{208}Pb/^{232}Th$	1σ	$^{207}Pb/^{206}Pb$ Age (Ma)	1σ	$^{206}Pb/^{238}U$ Age (Ma)	1σ	$^{207}Pb/^{235}U$ Age (Ma)	1σ	Conc. %
SD031	Z17	0.09941	0.00104	0.26262	0.00294	3.59886	0.04139	0.08376	0.00086	1613.0	19.4	1503.2	15.0	1549.3	9.1	107.3
SD031	Z18	0.09741	0.00098	0.26774	0.00313	3.59585	0.04184	0.07394	0.00070	1575.2	18.7	1529.3	15.9	1548.6	9.2	103.0
SD031	Z19	0.09925	0.00101	0.23626	0.00275	3.23292	0.03797	0.07037	0.00069	1610.2	18.9	1367.2	14.4	1465.1	9.1	117.8
SD031	Z20	0.10941	0.00125	0.24240	0.00300	3.65630	0.04834	0.09597	0.00104	1789.6	20.7	1399.2	15.6	1561.9	10.5	127.9
SD031	Z21	0.10249	0.00107	0.25092	0.00301	3.54519	0.04337	0.06380	0.00064	1669.6	19.2	1443.2	15.5	1537.4	9.7	115.7
SD031	Z22	0.09897	0.00101	0.27496	0.00320	3.75187	0.04414	0.08605	0.00085	1604.8	19.0	1566.0	16.2	1582.5	9.4	102.5
SD031	Z23	0.09734	0.00100	0.26733	0.00313	3.58740	0.04251	0.07670	0.00076	1573.7	19.1	1527.3	15.9	1546.7	9.4	103.0
SD031	Z24	0.09660	0.00099	0.26938	0.00311	3.58726	0.04197	0.07911	0.00080	1559.4	19.2	1537.6	15.8	1546.7	9.3	101.4
SD031	Z25	0.09726	0.00099	0.26600	0.00314	3.56646	0.04233	0.07165	0.00070	1572.2	18.9	1520.5	16.0	1542.1	9.4	103.4
SD031	Z26	0.09696	0.00099	0.26492	0.00313	3.54128	0.04228	0.07161	0.00070	1566.4	19.1	1515.0	16.0	1536.5	9.5	103.4
SD031	Z27	0.09865	0.00102	0.26777	0.00314	3.64188	0.04353	0.08502	0.00084	1598.7	19.2	1529.5	16.0	1558.7	9.5	104.5
SD031	Z28	0.09822	0.00103	0.26343	0.00311	3.56741	0.04313	0.08342	0.00085	1590.7	19.4	1507.3	15.9	1542.3	9.6	105.5
SD031	Z29	0.10011	0.00103	0.26897	0.00311	3.71233	0.04379	0.08749	0.00087	1626.1	19.1	1535.6	15.8	1574.0	9.4	105.9
SD031	Z30	0.09784	0.00100	0.26431	0.00308	3.56523	0.04205	0.07770	0.00074	1583.4	19.0	1511.8	15.7	1541.8	9.4	104.7
SD031	Z31	0.09696	0.00101	0.28366	0.00334	3.79176	0.04563	0.08242	0.00081	1566.4	19.3	1609.8	16.8	1591.0	9.7	97.3
SD031	Z32	0.09879	0.00102	0.26417	0.00309	3.59791	0.04296	0.08165	0.00078	1601.4	19.2	1511.2	15.8	1549.1	9.5	106.0
SD031	Z33	0.09786	0.00100	0.26757	0.00317	3.60988	0.04321	0.07679	0.00069	1583.7	19.0	1528.5	16.2	1551.7	9.5	103.6
SD031	Z34	0.09672	0.00100	0.27014	0.00315	3.60194	0.04290	0.07526	0.00072	1561.7	19.3	1541.5	16.0	1550.0	9.5	101.3
SD031	Z35	0.10910	0.00112	0.24292	0.00289	3.65362	0.04422	0.02479	0.00023	1784.4	18.7	1401.9	15.0	1561.3	9.7	127.3
SD031	Z36	0.09875	0.00106	0.26881	0.00340	3.65862	0.04673	0.07419	0.00081	1600.6	19.8	1534.7	17.3	1562.4	10.2	104.3
SD031	Z37	0.10092	0.00107	0.25828	0.00328	3.59196	0.04573	0.07148	0.00068	1641.1	19.5	1481.0	16.8	1547.8	10.1	110.8
SD031	Z38	0.10176	0.00108	0.23578	0.00299	3.30557	0.04215	0.06671	0.00071	1656.4	19.5	1364.7	15.6	1482.4	9.9	121.4
SD031	Z39	0.09652	0.00101	0.26647	0.00338	3.54201	0.04478	0.06573	0.00066	1557.8	19.5	1522.9	17.2	1536.7	10.0	102.3
SD031	Z40	0.09609	0.00104	0.24580	0.00315	3.25257	0.04215	0.06993	0.00101	1549.4	20.2	1416.8	16.3	1469.8	10.1	109.4
SD031	Z41	0.09649	0.00112	0.25121	0.00330	3.33460	0.04573	0.07272	0.00114	1557.3	21.6	1444.7	17.0	1489.2	10.7	107.8
SD031	Z42	0.09476	0.00095	0.26860	0.00348	3.50192	0.04414	0.06146	0.00056	1523.3	18.7	1533.7	17.7	1527.6	10.0	99.3
SD031	Z43	0.10076	0.00117	0.28444	0.00372	3.94385	0.05370	0.06981	0.00066	1638.1	21.4	1613.7	18.7	1622.7	11.0	101.5
SD031	Z44	0.10087	0.00109	0.25791	0.00334	3.57951	0.04662	0.07891	0.00083	1640.2	19.9	1479.1	17.1	1545.0	10.3	110.9
SD051	Z1	0.07037	0.00072	0.11516	0.00138	1.11717	0.01333	0.03260	0.00030	939.0	20.7	702.6	8.0	761.6	6.4	133.6
SD051	Z2	0.08344	0.00090	0.07022	0.00090	0.80746	0.01058	0.00707	0.00007	1279.3	21.0	437.5	5.4	601.0	5.9	292.4
SD051	Z3	0.06751	0.00068	0.14212	0.00172	1.32276	0.01592	0.04091	0.00038	853.6	20.9	856.6	9.7	855.7	7.0	99.6
SD051	Z4	0.07269	0.00082	0.12739	0.00175	1.27633	0.01823	0.03132	0.00039	1005.3	22.8	772.9	10.0	835.2	8.1	130.1

LA-ICPMS analytical data of U-Pb zircon ages for mafic and felsic rocks of Mt painter Province

Sample	Spot	$^{207}Pb/^{206}Pb$	1σ	$^{206}Pb/^{238}U$	1σ	$^{207}Pb/^{235}U$	1σ	$^{208}Pb/^{232}Th$	1σ	$^{207}Pb/^{206}Pb$ Age (Ma)	1σ	$^{206}Pb/^{238}U$ Age (Ma)	1σ	$^{207}Pb/^{235}U$ Age (Ma)	1σ	Conc. %
SD051	Z5	0.06740	0.00068	0.13625	0.00166	1.26594	0.01528	0.04015	0.00038	850.1	20.9	823.4	9.4	830.6	6.9	103.2
SD051	Z6	0.07413	0.00082	0.11281	0.00135	1.15274	0.01447	0.03931	0.00044	1044.9	22.1	689.1	7.8	778.5	6.8	151.6
SD051	Z7	0.07695	0.00086	0.12585	0.00167	1.33558	0.01843	0.03820	0.00046	1119.9	22.0	764.1	9.6	861.3	8.0	146.6
SD051	Z8	0.07314	0.00080	0.11006	0.00141	1.10959	0.01462	0.04096	0.00045	1018.0	21.9	673.1	8.2	758.0	7.0	151.2
SD051	Z9	0.07597	0.00080	0.10449	0.00126	1.09440	0.01336	0.04416	0.00046	1094.3	20.9	640.7	7.4	750.6	6.5	170.8
SD051	Z10	0.06564	0.00067	0.13906	0.00171	1.25835	0.01542	0.04361	0.00044	795.0	21.2	839.4	9.7	827.2	6.9	94.7
SD051	Z11	0.07751	0.00087	0.13950	0.00168	1.48993	0.01892	0.04668	0.00100	1134.4	22.3	841.8	9.5	926.3	7.7	134.8
SD051	Z12	0.08851	0.00089	0.05794	0.00073	0.70695	0.00878	0.02565	0.00028	1393.5	19.1	363.1	4.4	542.9	5.2	383.8
SD051	Z13	0.07388	0.00077	0.10864	0.00134	1.10655	0.01375	0.03914	0.00043	1038.2	20.5	664.9	7.8	756.5	6.6	156.1
SD051	Z14	0.09072	0.00091	0.08737	0.00109	1.09255	0.01346	0.01208	0.00013	1440.5	18.9	540.0	6.5	749.7	6.5	266.8
SD051	Z15	0.10184	0.00102	0.05038	0.00063	0.70752	0.00867	0.04869	0.00059	1658.0	18.5	316.9	3.9	543.3	5.2	523.2
SD051	Z16	0.09000	0.00093	0.05753	0.00076	0.71372	0.00943	0.03565	0.00046	1425.4	19.6	360.6	4.6	547.0	5.6	395.3
SD051	Z17	0.13970	0.00144	0.07257	0.00094	1.39747	0.01797	0.01750	0.00020	2223.4	17.8	451.6	5.6	887.9	7.6	492.3
SD051	Z18	0.12196	0.00124	0.08282	0.00101	1.39251	0.01688	0.01878	0.00023	1985.1	18.0	512.9	6.0	885.8	7.2	387.0
SD051	Z19	0.08345	0.00084	0.05415	0.00067	0.62297	0.00758	0.01759	0.00019	1279.5	19.6	340.0	4.1	491.7	4.7	376.3
SD051	Z20	0.12790	0.00133	0.05509	0.00072	0.97136	0.01281	0.02897	0.00037	2069.3	18.3	345.7	4.4	689.2	6.6	598.6
SD051	Z21	0.10748	0.00119	0.04911	0.00067	0.72737	0.01014	0.01864	0.00042	1757.1	20.1	309.0	4.1	555.0	6.0	568.6
SD051	Z22	0.06992	0.00071	0.09911	0.00128	0.95592	0.01213	0.02442	0.00032	926.1	20.6	609.2	7.5	681.2	6.3	152.0
SD051	Z23	0.06567	0.00067	0.12708	0.00165	1.15144	0.01465	0.03977	0.00051	795.9	21.2	771.2	9.5	777.9	6.9	103.2
SD051	Z24	0.16785	0.00162	0.04893	0.00064	1.13318	0.01399	0.03591	0.00046	2536.4	16.1	307.9	3.9	769.3	6.7	823.8
SD051	Z25	0.07629	0.00079	0.11330	0.00149	1.19423	0.01504	0.03735	0.00092	1102.7	20.5	691.9	8.7	797.9	7.0	159.4
SD051	Z26	0.12716	0.00126	0.04054	0.00054	0.71200	0.00879	0.01180	0.00030	2059.0	17.4	256.2	3.4	545.9	5.2	803.7
SD051	Z27	0.07843	0.00080	0.05181	0.00068	0.56006	0.00720	0.02024	0.00032	1157.7	20.1	325.6	4.2	451.6	4.7	355.6
SD051	Z28	0.06990	0.00068	0.10473	0.00140	1.00954	0.01264	0.02417	0.00032	925.4	19.8	642.1	8.1	708.6	6.4	144.1
SD051	Z29	0.08309	0.00085	0.25856	0.00348	2.96026	0.03786	0.07740	0.00115	1271.3	19.7	1482.4	17.8	1397.5	9.7	85.8
SD051	Z30	0.09996	0.00094	0.06683	0.00090	0.92045	0.01136	0.01152	0.00016	1623.3	17.3	417.0	5.4	662.6	6.0	389.3
SD051	Z31	0.09110	0.00089	0.06341	0.00085	0.79057	0.00997	0.00892	0.00012	1448.7	18.5	396.3	5.1	591.5	5.7	365.6
SD051	Z32	0.10677	0.00108	0.06953	0.00093	1.01686	0.01318	0.00516	0.00008	1744.9	18.4	433.3	5.6	712.3	6.6	402.7
SD051	Z34	0.06885	0.00088	0.10119	0.00135	0.94880	0.01388	0.03063	0.00134	894.2	26.1	621.4	7.9	677.5	7.2	143.9
SD051	Z35	0.06390	0.00062	0.14455	0.00194	1.26259	0.01601	0.04085	0.00056	738.3	20.5	870.3	10.9	829.1	7.2	84.8
SD051	Z36	0.07342	0.00079	0.10368	0.00141	1.03946	0.01408	0.03944	0.00067	1025.6	21.7	636.0	8.3	723.7	7.0	161.3
SD051	Z37	0.10515	0.00107	0.09357	0.00129	1.34292	0.01781	0.02663	0.00061	1716.9	18.6	576.6	7.6	864.5	7.7	297.8

LA-ICPMS analytical data of U-Pb zircon ages for mafic and felsic rocks of Mt painter Province

Sample	Spot	$^{207}Pb/^{206}Pb$	1σ	$^{206}Pb/^{238}U$	1σ	$^{207}Pb/^{235}U$	1σ	$^{208}Pb/^{232}Th$	1σ	$^{207}Pb/^{206}Pb$ Age (Ma)	1σ	$^{206}Pb/^{238}U$ Age (Ma)	1σ	$^{207}Pb/^{235}U$ Age (Ma)	1σ	Conc. %
SD051	Z38	0.06338	0.00061	0.13874	0.00187	1.20075	0.01521	0.03696	0.00051	721.1	20.5	837.5	10.6	800.9	7.0	86.1
SD051	Z40	0.06604	0.00066	0.14506	0.00194	1.30667	0.01671	0.04360	0.00072	807.6	20.7	873.2	10.9	848.7	7.4	92.5
SD057	Z1	0.09237	0.00089	0.25416	0.00340	3.23633	0.04155	0.02612	0.00020	1474.8	18.4	1459.9	17.5	1465.9	10.0	101.0
SD057	Z2	0.08640	0.00084	0.13088	0.00167	1.55891	0.01923	0.04451	0.00034	1347.0	18.7	792.9	9.5	954.0	7.6	169.9
SD057	Z3	0.09413	0.00091	0.25270	0.00318	3.27914	0.03995	0.07230	0.00056	1510.7	18.2	1452.4	16.3	1476.1	9.5	104.0
SD057	Z4	0.09454	0.00092	0.24670	0.00312	3.21538	0.03940	0.04921	0.00039	1518.9	18.3	1421.4	16.1	1460.9	9.5	106.9
SD057	Z5	0.09371	0.00091	0.27972	0.00361	3.61412	0.04511	0.14961	0.00116	1502.3	18.2	1589.9	18.2	1552.6	9.9	94.5
SD057	Z6	0.09455	0.00092	0.26934	0.00340	3.51065	0.04300	0.07794	0.00062	1519.0	18.3	1537.4	17.3	1529.6	9.7	98.8
SD057	Z7	0.09444	0.00092	0.26851	0.00338	3.49615	0.04267	0.08209	0.00064	1517.0	18.2	1533.2	17.2	1526.3	9.6	98.9
SD057	Z8	0.09246	0.00090	0.24165	0.00303	3.08056	0.03749	0.06704	0.00054	1476.8	18.5	1395.3	15.7	1427.9	9.3	105.8
SD057	Z9	0.09415	0.00092	0.22482	0.00270	2.91719	0.03422	0.01820	0.00014	1511.2	18.4	1307.3	14.2	1386.4	8.9	115.6
SD057	Z10	0.09383	0.00091	0.25891	0.00342	3.34949	0.04267	0.03600	0.00028	1504.7	18.2	1484.3	17.5	1492.7	10.0	101.4
SD057	Z11	0.09369	0.00092	0.23936	0.00298	3.09133	0.03758	0.06110	0.00050	1501.8	18.4	1383.4	15.5	1430.5	9.3	108.6
SD057	Z12	0.09182	0.00091	0.21443	0.00259	2.71395	0.03232	0.08765	0.00076	1463.6	18.7	1252.4	13.7	1332.3	8.8	116.9
SD057	Z13	0.09494	0.00092	0.24431	0.00312	3.19788	0.03956	0.06782	0.00054	1527.0	18.2	1409.1	16.2	1456.6	9.6	108.4
SD057	Z14	0.08598	0.00083	0.13717	0.00177	1.62602	0.02023	0.03874	0.00031	1337.7	18.6	828.6	10.0	980.3	7.8	161.4
SD057	Z15	0.10010	0.00097	0.26821	0.00347	3.70147	0.04627	0.06568	0.00053	1625.9	17.9	1531.7	17.7	1571.7	10.0	106.2
SD057	Z16	0.09374	0.00091	0.25499	0.00325	3.29539	0.04064	0.08980	0.00073	1502.9	18.2	1464.2	16.7	1480.0	9.6	102.6
SD057	Z17	0.09385	0.00091	0.26400	0.00338	3.41599	0.04221	0.02251	0.00019	1505.2	18.2	1510.3	17.2	1508.1	9.7	99.7
SD057	Z18	0.09449	0.00092	0.26388	0.00336	3.43768	0.04245	0.10058	0.00084	1518.0	18.2	1509.7	17.2	1513.1	9.7	100.5
SD057	Z19	0.09230	0.00089	0.24201	0.00323	3.07941	0.03936	0.05781	0.00048	1473.5	18.3	1397.1	16.8	1427.6	9.8	105.5
SD057	Z20	0.09451	0.00092	0.27641	0.00355	3.60137	0.04472	0.06238	0.00053	1518.2	18.2	1573.3	17.9	1549.8	9.9	96.5
SD057	Z21	0.09309	0.00091	0.23453	0.00312	3.00956	0.03894	0.07128	0.00060	1489.7	18.4	1358.2	16.3	1410.0	9.9	109.7
SD057	Z22	0.09449	0.00093	0.21923	0.00282	2.85548	0.03589	0.07638	0.00064	1517.9	18.4	1277.8	14.9	1370.3	9.5	118.8
SD057	Z23	0.09523	0.00094	0.27569	0.00356	3.61872	0.04589	0.08443	0.00071	1532.6	18.4	1569.6	18.0	1553.7	10.1	97.6
SD057	Z24	0.08998	0.00087	0.24030	0.00342	2.98111	0.04057	0.05528	0.00048	1425.1	18.4	1388.3	17.8	1402.8	10.4	102.7
SD057	Z25	0.09315	0.00092	0.20189	0.00263	2.59236	0.03313	0.02149	0.00017	1490.9	18.5	1185.5	14.1	1298.5	9.4	125.8
SD057	Z26	0.09567	0.00095	0.25889	0.00324	3.41393	0.04218	0.07903	0.00070	1541.2	18.5	1484.2	16.6	1507.6	9.7	103.8
SD057	Z27	0.09175	0.00090	0.21781	0.00288	2.75501	0.03579	0.06263	0.00051	1462.1	18.6	1270.3	15.3	1343.4	9.7	115.1
SD057	Z28	0.09195	0.00092	0.22995	0.00303	2.91487	0.03800	0.02708	0.00023	1466.1	18.8	1334.3	15.9	1385.8	9.9	109.9
SD057	Z29	0.09672	0.00098	0.26553	0.00335	3.53939	0.04480	0.08878	0.00086	1561.7	18.9	1518.1	17.1	1536.1	10.0	102.9
SD057	Z30	0.09490	0.00094	0.28119	0.00363	3.67881	0.04693	0.28021	0.00235	1526.1	18.6	1597.3	18.2	1566.8	10.2	95.5

Appendix 5 Geochemistry

Major (in wt%) and trace (in ppm) elements and zircon saturation temperature (in °C) of the Mt Painter granites and volcanic rocks form XRF analyses

Sample	HPG04	HPG05	HPG07	HPG08	HPG09	HPG14	BB02	BB05	BB11	BB16
SiO_2	73.60	73.88	71.23	75.06	75.34	50.41	74.42	73.24	74.22	75.52
Al_2O_3	13.08	13.19	14.05	11.96	12.40	13.90	12.90	13.69	13.47	11.88
Fe_2O_3T	2.90	2.49	3.43	2.32	2.16	14.48	1.61	0.97	2.04	1.69
MnO	0.05	0.06	0.07	0.05	0.04	0.21	0.04	0.03	0.03	0.04
MgO	0.49	0.46	0.49	0.64	0.20	5.02	0.27	0.21	0.55	0.48
CaO	0.18	0.48	0.82	0.37	0.52	7.93	0.79	0.87	1.30	0.66
Na_2O	0.75	2.08	2.23	2.38	2.44	2.19	2.39	2.35	4.13	1.62
K_2O	6.37	6.18	5.72	6.05	6.00	1.83	6.42	6.74	2.43	6.63
TiO_2	0.32	0.24	0.32	0.29	0.12	2.33	0.19	0.15	0.28	0.38
P_2O_5	0.11	0.10	0.12	0.08	0.07	0.43	0.12	0.14	0.09	0.04
SO_3	0.01	0.01	0.03	0.01	0.02	0.02	0.01	0.01	0.01	0.01
LOI	1.25	0.83	0.99	0.25	0.50	0.91	0.21	0.32	0.39	0.37
Zr	202	180	233	212	70	282	123	68	186	347
Nb	24	18	21	12	16	21	9	8	19	17
Y	131	95	75	16	115	65	33	41	91	12
Sr	19	41	55	42	43	140	78	113	85	75
Rb	300	326	317	123	282	140	183	232	122	207
U	9	4	11	2	6	4	4	5	3	2
Th	40	37	39	6	43	11	13	8	31	17
Pb	16	25	39	28	45	4	33	47	23	101
Ga	24	21	21	14	18	21	17	16	23	14
Cu	6	2	8	7	1	54	1	8	7	8
Zn	29	48	77	41	40	89	30	24	22	47
Ni	3	2	3	1	1	15	1	2	0	1
Ba	1135	1084	1275	1739	288	584	1656	2385	742	1530
Sc	16	12	11	3	7	47	4	3	14	5
Co	66	67	61	66	69	68	73	93	65	80
V	14	11	18	11	7	366	11	8	13	16
Ce	104	135	172	44	136	102	47	68	111	73
Nd	49	65	77	17	64	53	17	25	53	27
La	48	66	81	18	58	48	17	32	52	38
Cr	1	2	5	2	1	53	3	1	3	0
TZr.sat.	846	813	837	819	726	726	767	721	811	868

TZr.sat-zircon saturation temperature after Watson and Harrison , 1983

Major (in wt%) and trace (in ppm) elements and zircon saturation temperature (in °C) of the Mt Painter granites and volcanic rocks form XRF analyses

Sample	BB18	BB22	BB25	MN002	MN003	MN007	MN008	MN010	MN013	MN018
SiO_2	75.85	72.73	71.75	75.26	71.78	72.61	71.31	71.39	66.99	73.55
Al_2O_3	12.26	13.52	12.80	12.37	13.24	12.67	12.85	13.06	14.30	12.29
Fe_2O_3T	1.56	2.87	3.59	0.94	4.76	4.91	3.88	3.88	4.16	1.78
MnO	0.04	0.07	0.07	0.01	0.02	0.03	0.03	0.15	0.02	0.02
MgO	0.27	0.51	0.39	0.19	0.49	1.81	3.43	0.33	5.02	0.42
CaO	0.60	0.54	0.70	0.13	0.22	0.07	0.04	0.61	0.03	0.23
Na_2O	2.47	2.23	1.21	2.10	1.65	0.08	0.10	1.71	0.14	2.34
K_2O	5.77	5.81	7.74	6.17	5.52	4.77	5.11	7.35	5.98	5.85
TiO_2	0.21	0.29	0.30	0.18	0.37	0.36	0.34	0.34	0.40	0.29
P_2O_5	0.06	0.10	0.12	0.03	0.05	0.05	0.05	0.05	0.03	0.06
SO_3	0.01	0.01	0.02	0.01	0.01	0.01	0.01	0.02	0.01	0.01
LOI	0.31	0.84	0.86	0.68	1.07	1.97	1.70	0.72	1.75	0.71
Zr	156	195	257	236	411	397	384	405	514	291
Nb	9	22	19	41	42	37	37	39	76	33
Y	25	105	88	92	87	84	93	96	168	106
Sr	64	40	46	26	23	5	3	33	8	32
Rb	139	390	395	218	410	493	340	362	421	278
U	2	6	11	24	16	15	19	31	11	30
Th	22	57	34	149	69	72	65	73	93	102
Pb	36	52	44	22	13	4	5	36	4	14
Ga	15	22	21	22	25	30	22	22	32	21
Cu	0	16	1	2	32	17	2	7	0	10
Zn	33	55	111	9	12	17	24	74	7	10
Ni	1	2	3	1	2	3	2	2	10	2
Ba	1528	633	1433	281	630	481	338	599	429	547
Sc	2	8	18	8	11	12	8	10	8	7
Co	78	69	61	76	47	37	42	59	35	131
V	10	15	18	10	21	20	17	19	7	18
Ce	100	189	149	154	225	126	236	241	63	276
Nd	43	100	66	64	96	51	87	105	36	111
La	47	115	71	64	115	51	91	120	25	124
Cr	2	5	3	1	5	3	4	4	0	4
TZr.sat.	792	822	836	841	912	945	937	880	963	857

TZr.sat-zircon saturation temperature after Watson and Harrison , 1983

Major (in wt%) and trace (in ppm) elements and zircon saturation temperature (in °C) of the Mt Painter granites and volcanic rocks form XRF analyses

Sample	MN020	MN021	MN026	MN027	MN029	MN031	MN032	MN036	MN040	MN045
SiO_2	64.15	65.71	75.89	72.76	67.67	68.45	68.63	70.44	76.79	75.66
Al_2O_3	18.43	14.20	13.33	13.53	14.19	14.04	14.76	14.28	11.50	12.38
Fe_2O_3T	1.04	5.48	0.53	0.57	5.11	2.37	2.14	1.74	1.85	1.35
MnO	0.01	0.03	0.01	0.03	0.11	0.02	0.01	0.02	0.02	0.01
MgO	3.56	5.97	0.21	0.20	0.26	2.97	3.29	2.37	0.40	0.42
CaO	0.14	0.03	0.62	0.57	1.85	0.19	0.23	0.18	0.15	0.02
Na_2O	8.99	0.17	3.36	2.39	3.33	5.91	6.58	7.04	0.97	0.15
K_2O	0.15	6.18	5.56	6.54	5.76	2.46	2.21	1.37	6.11	7.77
TiO_2	0.49	0.47	0.02	0.05	0.44	0.44	0.41	0.31	0.20	0.14
P_2O_5	0.04	0.06	0.02	0.31	0.07	0.06	0.05	0.04	0.09	0.06
SO_3	0.01	0.01	0.01	0.01	0.02	0.01	0.01	0.01	0.01	0.01
LOI	1.71	1.62	0.29	0.64	0.45	0.62	0.49	0.51	0.93	1.05
Zr	787	692	52	17	726	673	663	518	171	112
Nb	69	51	3	29	54	55	60	44	17	24
Y	212	138	45	27	153	128	146	93	60	112
Sr	34	6	41	75	56	29	53	29	33	19
Rb	11	498	241	407	389	227	219	142	326	456
U	5	7	3	3	23	18	19	12	3	8
Th	84	65	9	5	66	63	72	64	32	42
Pb	3	2	35	33	38	3	5	2	26	9
Ga	26	38	14	17	27	26	25	26	15	22
Cu	0	0	10	11	12	0	7	15	12	5
Zn	4	11	0	6	108	9	7	5	44	9
Ni	1	8	1	1	2	1	2	2	2	1
Ba	48	665	164	338	1144	260	157	120	853	298
Sc	5	20	1	5	9	9	9	7	6	8
Co	42	30	89	61	61	56	50	58	70	79
V	10	17	5	6	5	5	6	12	10	7
Ce	135	299	16	10	314	187	210	190	72	78
Nd	61	130	4	4	145	81	91	78	20	34
La	61	145	5	1	156	84	102	84	20	30
Cr	2	0	2	1	1	1	1	0	3	2
TZr.sat.	944	992	700	630	913	926	920	895	824	788

TZr.sat-zircon saturation temperature after Watson and Harrison , 1983

Major (in wt%) and trace (in ppm) elements and zircon saturation temperature (in °C) of the Mt Painter granites and volcanic rocks form XRF analyses

Sample	MN046	MN047	MN050	MN052	MN055	MN058	MN062	MN067	MN077	MN084
SiO_2	67.28	67.94	76.32	73.90	50.47	71.71	73.98	74.51	50.76	49.36
Al_2O_3	16.12	14.02	12.69	12.79	13.92	13.16	12.29	11.73	12.64	13.57
Fe_2O_3T	3.20	5.85	0.86	2.45	16.14	4.72	5.44	2.49	18.28	16.53
MnO	0.07	0.09	0.03	0.04	0.18	0.08	0.03	0.04	0.04	0.33
MgO	0.42	0.26	0.18	0.35	5.13	0.31	1.19	0.38	5.04	4.92
CaO	1.64	1.75	0.65	0.57	6.59	0.51	0.17	0.62	1.96	7.21
Na_2O	2.63	2.95	2.74	1.89	4.01	2.28	0.10	1.67	3.20	1.97
K_2O	7.13	5.55	5.91	5.98	0.28	5.91	4.58	6.14	3.34	1.57
TiO_2	0.34	0.53	0.02	0.23	2.86	0.36	0.18	0.28	3.00	2.86
P_2O_5	0.13	0.08	0.01	0.06	0.61	0.05	0.02	0.05	0.68	0.62
SO_3	0.02	0.02	0.02	0.01	0.02	0.02	0.01	0.02	0.01	0.02
LOI	0.57	0.31	0.41	0.68	0.09	0.73	1.72	1.02	0.43	0.62
Zr	227	907	30	197	323	406	250	242	377	335
Nb	18	40	52	18	25	40	43	37	29	22
Y	51	178	83	47	74	92	65	104	76	78
Sr	108	59	37	60	174	27	4	24	97	149
Rb	267	147	220	227	28	355	484	310	312	172
U	7	20	8	4	7	24	29	15	5	6
Th	49	62	18	48	15	67	94	83	20	15
Pb	43	31	35	38	9	26	10	17	4	4
Ga	22	26	18	18	23	22	27	18	25	26
Cu	2	15	2	17	16	0	5	6	13	17
Zn	57	37	16	34	74	55	12	19	10	190
Ni	3	2	1	2	13	2	2	2	9	14
Ba	1879	831	438	1331	196	601	385	380	226	905
Sc	7	10	3	5	46	9	12	7	49	49
Co	58	64	70	74	69	49	51	66	44	66
V	18	7	4	12	369	21	11	14	322	365
Ce	162	303	46	152	128	231	127	241	118	122
Nd	58	169	20	68	64	101	54	112	60	63
La	71	153	22	72	53	110	65	132	50	54
Cr	6	1	1	3	55	4	2	4	22	55
TZr.sat.	812	948	663	823	744	889	893	836	818	752

TZr.sat-zircon saturation temperature after Watson and Harrison , 1983

Major (in wt%) and trace (in ppm) elements and zircon saturation temperature (in °C) of the Mt Painter granites and volcanic rocks form XRF analyses

Sample	MN086	MN087	MN090	MN092	MN099	MN100	MN101	MN102	SD002	SD004
SiO_2	50.44	49.57	51.92	68.22	49.79	68.40	72.86	74.67	49.34	51.75
Al_2O_3	13.84	13.74	14.57	13.28	14.03	12.76	13.85	12.57	13.92	14.62
Fe_2O_3T	16.24	16.08	11.03	4.82	12.76	6.03	2.38	2.37	14.38	12.94
MnO	0.16	0.32	0.17	0.06	0.19	0.07	0.05	0.05	0.16	0.06
MgO	4.97	4.98	5.94	0.78	7.55	0.60	0.51	0.69	5.89	5.89
CaO	6.34	7.11	9.51	1.99	11.33	2.27	1.01	0.38	8.43	1.49
Na_2O	4.05	1.98	3.21	2.18	2.24	2.22	2.73	2.02	2.33	2.41
K_2O	0.34	1.70	0.41	6.19	0.29	5.09	4.98	5.43	1.71	5.37
TiO_2	2.90	2.82	2.19	0.50	1.43	0.54	0.26	0.27	2.17	2.38
P_2O_5	0.62	0.62	0.41	0.09	0.12	0.10	0.08	0.09	0.43	0.42
SO_3	0.02	0.01	0.01	0.02	0.02	0.03	0.01	0.01	0.02	0.02
LOI	0.10	0.50	0.57	0.69	0.34	0.81	0.82	0.80	99.81	98.70
Zr	339	268	601	619	642	185	198	198	241	285
Nb	23	17	83	80	84	19	19	19	16	17
Y	76	68	219	223	277	83	71	71	58	25
Sr	146	193	52	64	58	62	38	38	145	86
Rb	192	30	632	502	486	270	308	308	140	767
U	6	4	215	150	172	13	9	9	5	7
Th	16	10	413	452	442	53	56	56	10	9
Pb	5	2	57	63	53	33	32	32	4	0
Ga	24	23	23	24	24	21	20	20	20	32
Cu	32	3	0	7	7	1	22	22	n.a.	n.a.
Zn	198	49	37	40	39	33	44	44	35	15
Ni	13	18	4	3	6	1	2	2	18	16
Ba	850	608	363	387	353	772	756	756	528	636
Sc	46	49	9	10	10	7	7	7	45	44
Co	62	56	70	63	71	64	66	66	69	34
V	349	348	20	21	23	16	15	15	351	311
Ce	126	99	857	712	825	189	191	191	93	104
Nd	59	48	326	277	311	81	84	84	40	37
La	54	38	467	384	462	91	92	92	37	50
Cr	49	68	4	5	7	5	4	4	67	56
TZr.sat.	868	756	704	901	594	787	813	829	699	815

TZr.sat-zircon saturation temperature after Watson and Harrison , 1983

Major (in wt%) and trace (in ppm) elements and zircon saturation temperature (in °C) of the Mt Painter granites and volcanic rocks form XRF analyses

Sample	SD005	SD007	SD008	SD010	SD011	SD013	SD015	SD016	SD018	SD020
SiO_2	50.04	50.23	75.65	75.68	76.11	70.25	73.39	73.13	72.03	50.02
Al_2O_3	13.66	13.77	12.35	10.45	11.57	14.50	13.15	12.52	12.86	14.15
Fe_2O_3T	15.06	14.61	1.57	2.85	1.65	4.14	2.36	2.85	4.21	13.36
MnO	0.20	0.21	0.04	0.05	0.02	0.03	0.02	0.05	0.05	0.22
MgO	5.27	5.39	0.24	0.36	0.17	0.25	0.38	1.59	0.59	6.96
CaO	8.01	8.81	0.68	0.92	0.62	2.74	0.76	0.37	0.95	10.81
Na_2O	2.32	2.29	2.42	2.08	2.19	5.81	2.56	4.94	2.08	2.13
K_2O	1.59	0.67	5.81	4.79	6.49	0.67	6.30	1.51	5.68	0.26
TiO_2	2.36	2.30	0.20	0.33	0.20	0.37	0.29	0.44	0.44	1.74
P_2O_5	0.44	0.41	0.04	0.06	0.05	0.08	0.06	0.10	0.16	0.17
SO_3	0.02	0.06	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.02
LOI	99.69	99.45	99.61	98.05	99.54	99.78	99.78	98.20	99.81	100.34
Zr	283	271	130	279	189	374	264	703	539	103
Nb	19	18	13	26	23	18	23	88	41	6
Y	64	68	46	62	74	75	81	196	95	29
Sr	131	130	66	35	45	308	51	23	57	159
Rb	97	48	267	295	312	36	364	100	275	10
U	3	4	11	27	16	18	13	156	41	2
Th	12	13	95	62	107	82	74	467	202	5
Pb	8	3	21	24	8	13	12	30	36	5
Ga	24	23	17	17	16	25	20	21	20	20
Cu	n.a	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Zn	89	57	20	33	5	17	10	25	40	102
Ni	15	14	1	2	1	5	3	2	3	111
Ba	649	166	474	388	537	221	595	336	778	49
Sc	45	46	4	3	4	6	7	8	6	43
Co	64	70	100	90	91	100	89	99	95	81
V	385	375	13	18	15	26	18	18	18	365
Ce	104	90	219	171	204	92	193	644	203	39
Nd	38	48	95	66	80	42	122	232	53	8
La	38	46	122	88	96	40	131	322	48	6
Cr	47	58	2	1	0	5	2	2	0	243
TZr.sat.	720	716	776	842	801	849	835	954	918	624

TZr.sat-zircon saturation temperature after Watson and Harrison , 1983

Major (in wt%) and trace (in ppm) elements and zircon saturation temperature (in °C) of the Mt Painter granites and volcanic rocks form XRF analyses

Sample	SD022	SD023	SD024	SD025	SD026	SD028	SD029	SD031	SD037	SD039
SiO_2	68.97	50.67	71.80	71.47	74.25	71.04	49.99	39.72	66.35	49.49
Al_2O_3	13.07	14.36	12.66	13.12	12.91	13.68	14.15	21.12	12.92	13.85
Fe_2O_3T	6.06	12.24	3.93	3.74	2.13	5.06	12.65	20.31	4.89	14.65
MnO	0.09	0.19	0.09	0.09	0.05	0.09	0.31	0.51	0.02	0.23
MgO	0.81	7.84	1.80	1.35	0.28	0.61	7.30	2.03	7.09	5.20
CaO	1.97	11.26	1.04	0.93	0.91	3.33	10.02	12.50	0.05	8.19
Na_2O	2.37	1.46	4.42	4.73	2.39	3.41	2.15	1.05	0.16	2.44
K_2O	4.58	0.17	1.81	2.11	5.82	1.41	0.52	0.46	3.96	1.99
TiO_2	0.65	1.39	0.48	0.54	0.22	0.52	1.60	1.62	0.35	2.34
P_2O_5	0.16	0.13	0.10	0.13	0.13	0.14	0.15	0.40	0.04	0.43
SO_3	0.02	0.02	0.01	0.01	0.01	0.01	0.02	0.03	0.01	0.04
LOI	99.50	100.25	98.86	98.73	99.56	99.74	99.79		99.48	99.88
Zr	756	77	631	726	164	403	89	1144	484	256
Nb	69	4	73	92	16	26	5	62	44	17
Y	180	24	199	245	74	49	25	120	91	64
Sr	47	153	30	75	68	206	192	304	2	153
Rb	600	10	134	213	291	82	25	4	237	137
U	50	1	96	83	3	4	1	9	13	5
Th	261	3	364	510	28	32	3	37	51	10
Pb	38	1	42	55	39	48	11	15	2	13
Ga	24	18	24	23	18	20	17	65	26	22
Cu										
Zn	65	73	707	264	53	102	175	217	5	91
Ni	6	122	2	4	3	4	118	14	3	18
Ba	523	229	385	434	1241	697	590	1179	211	626
Sc	10	44	9	10	10	10	45	54	8	45
Co	92	82	87	94	104	85	70	39	26	64
V	40	351	22	24	11	23	368	117	9	379
Ce	582	33	506	857	107	239	44	294	141	105
Nd	207	9	195	337	44	113	12	125	60	43
La	289	3	238	481	52	126	7		65	40
Cr	3	339	3	3	2	4	261	31	0	62
TZr.sat.	943	613	934	947	795	871	624	841	973	703

TZr.sat-zircon saturation temperature after Watson and Harrison , 1983

Major (in wt%) and trace (in ppm) elements and zircon saturation temperature (in °C) of the Mt Painter granites and volcanic rocks form XRF analyses

Sample	SD041	SD041.5	SD042	SD043	SD044	SD045	SD046	SD047	SD049	SD050
SiO_2	50.06	74.66	68.90	63.31	51.02	64.91	65.22	50.87	70.03	56.49
Al_2O_3	14.50	12.51	13.22	13.29	15.85	13.31	13.64	12.29	13.39	13.86
Fe_2O_3T	11.19	2.53	5.32	10.16	14.91	8.55	7.44	17.48	5.18	11.35
MnO	0.19	0.02	0.07	0.12	0.19	0.11	0.10	0.20	0.05	0.14
MgO	8.20	0.37	0.53	1.03	2.70	0.95	1.16	2.18	0.95	2.12
CaO	12.00	0.17	2.10	2.84	8.62	2.85	2.56	3.64	1.80	3.88
Na_2O	2.16	2.22	2.42	3.04	3.07	2.82	3.03	1.43	3.06	2.46
K_2O	0.24	5.99	5.51	2.79	0.66	3.63	3.55	4.47	4.02	4.10
TiO_2	1.01	0.32	0.48	0.95	2.42	0.89	0.86	1.80	0.60	1.36
P_2O_5	0.09	0.05	0.09	0.20	0.34	0.25	0.16	0.30	0.12	0.23
SO_3	0.02	0.01	0.03	0.03	0.02	0.03	0.02	0.05	0.02	0.03
LOI	100.14	99.62	99.40	98.71	99.99	98.77	98.49	95.91	99.53	97.04
Zr	53	327	569	1194	212	1151	1089		1886	816
Nb	2	38	83	133	14	123	105		152	123
Y	16	95	189	367	54	311	261		664	217
Sr	165	28	56	61	232	54	47		61	55
Rb	10	369	691	554	31	551	620		1034	299
U	0	22	159	139	2	144	124		421	113
Th	3	79	375	616	6	528	523		1359	612
Pb	5	73	226	75	35	60	57		97	57
Ga	16	20	27	31	26	26	30		39	24
Cu										
Zn	83	44	146	93	104	70	68		199	28
Ni	130	3	4	6	19	8	5		8	4
Ba	127	482	242	169	215	324	192		341	393
Sc	43	7	7	12	31	15	14		28	14
Co	76	103	102	69	80	86	82		58	93
V	331	18	21	37	178	42	37		73	27
Ce	30	189	632	1159	66	231	724		3290	268
Nd	2	76	226	412	27	190	266		1172	165
La	4	90	350	696	24	98	410		1934	109
Cr	329	3	0	3	0	2	2		13	0
TZr.sat.	571	873	898	986	716	976	975		1059	908

TZr.sat-zircon saturation temperature after Watson and Harrison , 1983

Major (in wt%) and trace (in ppm) elements and zircon saturation temperature (in °C) of the Mt Painter granites and volcanic rocks form XRF analyses

Sample	SD051	SD052	SD055	SD057	SD060	SD062	SD063	SD064	SD065	SD068
SiO_2	48.96	60.73	72.39	49.68	75.06	67.21	50.12	65.61	66.63	75.94
Al_2O_3	13.72	19.31	13.19	10.96	12.38	13.11	13.97	13.35	13.27	13.34
Fe_2O_3T	17.55	3.44	1.89	4.93	2.03	6.49	13.14	7.44	6.65	1.75
MnO	0.33	0.04	0.02	0.26	0.05	0.09	0.22	0.08	0.08	0.04
MgO	4.22	0.65	2.53	13.55	0.24	0.79	7.35	0.84	0.70	0.42
CaO	8.65	8.00	0.80	16.40	1.04	2.53	10.77	2.98	2.54	3.07
Na_2O	2.82	4.94	5.49	0.85	1.91	2.15	1.47	2.75	2.58	4.13
K_2O	0.34	0.85	1.58	0.76	6.17	5.22	0.47	4.31	4.91	0.65
TiO_2	3.07	0.35	0.45	0.40	0.22	0.67	1.63	0.77	0.69	0.07
P_2O_5	0.33	0.02	0.10	0.10	0.06	0.14	0.15	0.18	0.13	0.12
SO_3	0.02	0.02	0.01	0.03	0.01	0.02	0.02	0.03	0.03	0.01
LOI	100.19	99.18	98.81	99.53	99.52	99.21	100.02	99.27	99.03	99.86
Zr	1404	247.7	344.5	517.1	496.9	718.3	92.4	881.2	907.3	48.2
Nb	240	8.9	161.3	82.2	41.8	93.4	5.6	98.0	107.9	5.5
Y	557	57.8	460.3	153.9	120.1	256.4	25.6	212.8	246.5	24.6
Sr	108	86.8	427.6	18.2	97.2	61.7	151.5	53.4	54.7	165.5
Rb	757	10.0	73.3	106.3	89.0	462.4	31.6	633.0	659.6	35.1
U	276	22.0	323.3	46.0	49.9	116.1	1.3	85.5	211.9	3.2
Th	1050	10.4	349.7	319.6	314.2	407.2	2.6	268.7	337.4	11.5
Pb	70	19.3	63.8	32.4	19.1	46.4	13.5	30.1	46.2	67.0
Ga	33	23.5	42.3	20.9	15.1	23.7	18.5	28.2	26.4	13.3
Cu										
Zn	66	175	4	15	180	58	89	53	49	42
Ni	12	10	2	2	3	5	119	6	4	1
Ba	346	124	189	112	195	615	312	329	395	290
Sc	30	35.3	9.4	8.9	9.1	14.5	44.4	11.6	12.8	4.6
Co	60	62	69	101	21	64	71	68	73	96
V	63	178	10	25	16	29	369	37	29	11
Ce	2815	69	977	783	361	729	34	541	834	58
Nd	1004	25	361	282	138	317	6	214	320	22
La	1635	22	559	420	185	403	6	297	462	24
Cr	9	0	1	1	0	0	259	4	0	1
TZr.sat.	701	771.8	860.9	576.3	903.2	920.8	623.8	935	943.6	692.8

TZr.sat-zircon saturation temperature after Watson and Harrison , 1983

Trace and rare earth elements (in ppm) of the Mt Painter granites and volcanic rocks form LA-ICPMS analyses

Sample	BB02	HPG07	MN029	MN032	MN052	MN084	MN090	MN092	MN0100	SD010
Ag	<0.1	<0.1	0.1	<0.1	<0.1	0.1	<0.1	0.2	0.2	<0.1
As	1.5	9.5	14	1	19.5	1.5	3	4	2	4
Bi	0.2	0.5	0.3	<0.1	0.3	0.3	0.2	0.1	<0.1	0.1
Cd	<0.1	0.2	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Cs	1.7	3.5	4	1.6	1.8	2.7	0.5	5	4.8	2.2
Ce	41.5	165	300	310	170	105	80	900	850	180
Co	66	52	52	42.5	62	66	52	60	58	80
Cu	1.5	10	8.5	2	21	8	2.5	1	1	2
Ga	22	28.5	34	31.5	23	28	25	33.5	34	20.5
In	<0.05	0.1	0.15	<0.05	0.05	0.15	0.2	0.1	0.2	<0.05
La	24.5	80	155	160	84	54	37.5	490	480	96
Mo	0.1	1	4.9	1.9	<0.1	2.1	0.6	4.9	3.2	1.9
Ni	<2	<2	<2	<2	<2	10	16	2	2	<2
Pb	32	36	30.5	3.5	35.5	4.5	3	44.5	45	20.5
Rb	165	280	340	195	200	145	25	550	440	260
Sb	<0.5	<0.5	1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Se	<0.5	0.5	0.5	<0.5	<0.5	0.5	<0.5	0.5	<0.5	<0.5
Sr	76	54	56	58	58	140	185	52	56	34
Te	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	0.2	<0.2
Th	15.5	49	82	86	60	20	12.5	480	500	76
Tl	1	2	1	0	1	1	<0.1	2	2	1
U	4	8	20	12	3	4	3	175	140	23
W	400	230	280	240	400	145	135	330	330	490
Y	17	58	140	34	19	70	62	200	260	56
Zn	34	72	100	2	34	98	<0.5	32	33	28
Nb	13	24	62	33	22	33	26	76	90	39
Dy	4	14	29	10	6	15	13	42	54	12
Er	2	7	17	4	2	8	7	23	32	7
Eu	2	2	3	2	1	3	2	3	3	1
Gd	4	12	23	14	9	12	10	37	43	10
Ho	1	2	5	1	1	2	2	7	9	2
Lu	0	1	2	1	0	1	1	3	4	1
Nd	21	76	140	135	80	60	48	330	320	76
Pr	6	21	39	39	23	15	12	105	100	22
Sm	5	16	28	25	15	14	11	54	58	14
Tb	1	2	4	2	1	2	2	7	9	2
Tm	0	1	2	1	0	1	1	3	4	1
Yb	1	7	16	4	2	7	7	21	29	7

Trace and rare earth elements (in ppm) of the Mt Painter granites and volcanic rocks form LA-ICPMS analyses

Sample	SD013	SD022	SD031	SD041	SD049	SD050	SD051	SD057	SD062	SD065
Ag	<0.1	0.1	0.3	<0.1	0.2	0.6	0.2	0.2	0.2	0.2
As	2.5	1.5	1	<0.5	1	3	3	1	2	3
Bi	0.5	0.1	0.5	<0.1	<0.1	0.3	1.9	0.1	0.1	<0.1
Cd	<0.1	<0.1	0.1	<0.1	<0.1	<0.1	0.1	0.2	<0.1	<0.1
Cs	0.5	8	<0.1	0.4	1.5	13	0.2	0.9	4.1	7
Ce	72	600	250	12.5	250	2950	47.5	430	750	850
Co	86	78	40	72	76	46	64	19	52	60
Cu	3	11.5	<0.5	94	1	<0.5	46	0.5	4	1.5
Ga	27.5	32	68	19	30	56	27.5	19.5	32.5	35
In	<0.05	0.05	0.25	0.05	0.1	0.2	0.15	0.15	0.1	0.1
La	35	280	125	5	100	1650	20	220	410	460
Mo	1.2	1	0.6	0.4	1.5	9	0.9	0.3	6.5	8.5
Ni	5	4	11	125	3	6	15	4	3	2
Pb	10	33.5	14	3	48	62	12.5	14.5	41	37
Rb	20	500	2.1	7.5	260	700	8	76	410	600
Sb	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.5	<0.5	<0.5
Se	<0.5	<0.5	0.5	0.5	<0.5	0.5	0.5	<0.5	<0.5	<0.5
Sr	280	47	290	165	58	115	78	96	60	54
Te	<0.2	<0.2	<0.2	<0.2	0.2	0.6	<0.2	<0.2	0.2	0.2
Th	86	290	44	2.6	650	1200	7.5	320	430	350
Tl	0	2	<0.1	<0.1	1	3	<0.1	0	2	2
U	10	39	6	0	90	240	18	37	92	160
W	550	480	170	130	420	195	105	86	270	310
Y	62	160	105	17	155	550	50	105	240	230
Zn	8	50	145	49	19	41	90	145	46	37
Nb	34	76	105	8	84	210	31	80	88	120
Dy	12	32	21	4	38	115	10	23	49	44
Er	8	19	13	2	19	62	6	12	26	25
Eu	1	2	3	1	2	4	2	1	3	3
Gd	8	26	17	3	32	100	8	19	41	37
Ho	2	6	4	1	6	19	2	4	8	8
Lu	1	2	2	0	2	8	1	1	3	3
Nd	42	200	110	9	160	1000	28	160	310	300
Pr	11	60	29	2	37	320	7	48	92	96
Sm	9	36	21	3	41	150	8	28	56	52
Tb	2	5	3	1	6	18	2	4	8	7
Tm	1	3	2	0	3	8	1	2	3	3
Yb	7	18	12	2	17	56	5	11	23	24

Appendix 6 Radeogenic isotopes

Nd-Sm isotopes for the mafic and felsic rocks form the Mt Painter Province

Sample	Nd (ppm)	Sm (ppm)	Sr (ppm)	Rb (ppm)	Age (Ma)	$^{143}Nd/^{144}Nd$	$^{147}Sm/^{144}Nd$	εNd(T)	Tmod: dep (Ma)	Tmod: CHUR (Ma)
BB02	18	4	78	183	1570	0.511858	0.1342	-1.25	2031	1713
MN010	92	18	33	362	1604	0.511613	0.1178	-2.63	2102	1863
MN026	61	17	41	241	1586	0.511846	0.1708	-8.77	3420	3931
MN029	130	25	56	389	1586	0.511714	0.1200	-0.51	1930	1641
MN032	130	23	53	219	1604	0.511690	0.1095	0.59	1838	1554
MN047	167	11	59	147	1576	0.511898	0.1229	0.19	1858	1553
MN084	58	12	149	172	1571	0.511898	0.1352	1.04	1824	1461
MN090	42	10	193	30	1571	0.511938	0.1408	-1.09	2074	1725
MN092	297	49	64	502	1556	0.511454	0.0989	-2.58	1985	1762
MN099	13	4	175	12	1571	0.512485	0.1670	-0.3	1604	530
MN102	79	16	38	308	1576	0.511681	0.1184	-1.86	2021	1755
SD004	18	4	86	767	1529	0.511759	0.1359	-2.64	2173	1901
SD011	72	13	45	312	1586	0.511574	0.1088	-1.58	1976	1727
SD015	108	21	51	364	1586	0.511705	0.1170	-0.72	1945	1658
SD025	335	55	75	213	1556	0.511506	0.0990	-1.56	1921	1681
SD028	97	16	206	82	1570	0.511539	0.1000	-0.84	1883	1631
SD029	13	4	192	25	440?	0.512625	0.1685	2.47	1204	209
SD041	8	2	165	10	440?	0.512550	0.1695	0.1	1582	413
SD042	214	32	56	691	1556	0.511475	0.0915	-0.65	1846	1606
SD043	361	59	61	554	1514	0.511482	0.0990	-2.54	1945	1712
SD045	89	25	54	551	1514	0.512177	0.1708	-2.81	2593	2351
SD050	856	121	55	299	1514	0.511418	0.0854	-2.11	1878	1657
SD051	28	7	108	757	800	0.512457	0.1643	0.73	1606	624
SD057	157	27	18	106	1514	0.511519	0.1047	-1.95	1932	1680
SD062	288	52	62	462	1556	0.511603	0.1084	-1.46	1945	1686
SD065	287	47	55	660	1514	0.511486	0.0991	-2.41	1938	1702
SD068	20	4	166	35	440?	0.512131	0.1282	-4.86	1497	995

Appendix 6

Sr-Rb isotopes for the mafic and felsic rocks form the Mt Painter Province

Sample	$^{87}Sr/^{86}Sr$	Sr ppm	Rb ppm	Rb/Sr	$^{87}Rb/^{86}Sr$	$^{87}Sr/^{86}Sr(T)$
BB02	0.8495026	78	183	2.36	6.911	0.695194
MN010	1.3276695	33	362	10.92	33.524	0.579187
MN026	0.9038769	41	241	5.85	17.263	0.518448
MN029	1.0662482	56	389	6.91	20.697	0.604150
MN047	0.8560247	59	147	2.47	7.264	0.693851
MN084	0.7828199	149	172	1.15	3.348	0.708079
MN090	0.7655611	193	30	0.16	0.452	0.755471
MN092	1.3756169	64	502	7.84	24.158	0.836262
MN099	0.7196091	175	12	0.07	0.203	0.715074
SD004	0.8779241	86	767	8.93	26.264	0.291538
SD011	0.9658815	45	312	6.88	20.398	0.510454
SD015	1.1019053	51	364	7.19	21.597	0.619721
SD025	0.882177	75	213	2.84	8.360	0.695532
SD029	0.7573504	192	25	0.13	0.379	0.748885
SD041	0.711811	165	10	0.06	0.167	0.708093
SD042	1.4491229	56	691	12.39	38.438	0.590923
SD043	1.1769188	61	554	9.14	27.669	0.559165
SD045	1.3486763	54	551	10.27	31.590	0.643379
SD050	1.0240489	55	299	5.46	16.288	0.660391
SD051	0.7469223	108	757	7.02	20.376	0.291990
SD057	0.7737798	18	106	5.84	17.008	0.394055
SD062	1.1604381	62	462	7.49	22.643	0.654890
SD068	0.7905547	166	35	0.21	0.619	0.776744

Pb isotopes for the mafic and felsic wholerocks form the Mt Painter Province

Sample	Pb (ppm)	U (ppm)	Th (ppm)	$^{206}Pb/^{204}Pb$	2SE	$^{207}Pb/^{204}Pb$	2SE
MN010	36	31	73	32.0075	0.002807	16.9111	0.001627
MN029	38	23	66	29.4161	0.002398	16.6388	0.001548
MN032	5	19	72	109.2746	0.115223	22.2383	0.023629
MN084	4	6	15	33.3532	0.003317	16.8979	0.001702
MN092	63	150	452	22.6738	0.017761	27.1610	0.004107
MN099	2	1	5	34.9527	0.005447	17.3977	0.002707
MN102	33	13	53	24.9403	0.001691	16.1835	0.001362
SD011	8	16	107	77.9768	0.019482	20.2245	0.005165
SD025	55	83	510	108.7366	0.029851	22.8700	0.006640
SD028	11	1	3	20.0171	0.001325	15.7763	0.001070
SD029	5	0	3	38.2870	0.009074	17.7743	0.004250
SD042	75	139	616	50.4900	0.008493	18.0935	0.004220
SD045	97	421	1359	102.3376	0.011904	22.4421	0.003098
SD051	18	24	8	39.7271	0.006061	17.0029	0.002493
SD057	32	46	320	133.0255	0.026789	22.8348	0.004578
SD065	46	212	337	152.8636	0.081363	26.7331	0.014118

Sample	$^{208}Pb/^{204}Pb$	2SE	$^{206}/^{204}Pb(i)$	$^{207}Pb/^{204}Pb(i)$	$^{208}Pb/^{204}Pb(i)$
MN010	48.1242	0.005347	11.71604	14.90373186	33.64753
MN029	47.0575	0.005007	15.43645	15.27346914	35.07554
MN032	120.5598	0.127159	-123.12328	-0.752279694	-141.25776
MN084	48.7791	0.005058	3.00526	13.94818579	24.50433
MN092	153.6928	0.027751	-92.78875	16.02793059	47.92589
MN099	53.6774	0.008376	31.98161	17.2315045	47.94125
MN102	42.4828	0.004405	16.69746	15.38403065	32.57597
SD011	88.5008	0.023703	-13.00993	11.30977624	-96.83555
SD025	125.6296	0.037791	17.14677	14.03876261	-45.56783
SD028	40.0638	0.002772	19.48840	15.74669679	39.61017
SD029	56.9354	0.013592	37.98400	17.75738001	55.61925
SD042	72.0463	0.021929	-10.04910	12.33950529	-9.22637
SD045	118.7868	0.017906	-143.06973	-0.883086523	-121.47742
SD051	41.4977	0.006565	8.75087	14.07277814	38.45595
SD057	159.0255	0.032425	30.49556	13.16688034	-57.26073
SD065	176.9892	0.094745	-239.09471	-11.44513999	-11.85783

Pb, U and Th cencetrations measured by XRF

Pb isotope values for all samples corrected for mass fractionation of 0.0010 amu.

Hf-Lu isotopes of zircons form the mafic and felsic rocks of the Mt Painter Province

Sample_spot	Suite	$^{176}Hf/^{177}Hf$	1 S.D.	$^{176}Lu/^{177}Hf$	$^{176}Yb/^{177}Hf$	U/Pb Age (Ma)	Hfi	εHf	1s	T(DM) (Ga)	T(DM) crustal (Ga)	Hf Chur (t)	Hf DM (t)
MN003_01	PV	0.281840	0.00001	0.000799	0.041336	1621	0.2818155	2.22	0.34	1.97	2.21	0.281753	0.282072
MN003_22	PV	0.281860	0.00002	0.001894	0.105181	1595	0.2818028	1.18	0.63	2.00	2.25	0.281770	0.282092
MN003_03	PV	0.281687	0.00001	0.000689	0.034468	1622	0.2816658	-3.07	0.39	2.18	2.54	0.281752	0.282072
MN003_55	PV	0.281763	0.00002	0.000623	0.034572	1601	0.2817441	-0.77	0.53	2.07	2.38	0.281766	0.282087
MN003_06	PV	0.281926	0.00004	0.001587	0.075570	1606	0.2818777	4.09	1.51	1.89	2.08	0.281763	0.282083
MN003_88	PV	0.281785	0.00001	0.000676	0.036519	1590	0.2817647	-0.29	0.21	2.04	2.34	0.281773	0.282095
MN003_99	PV	0.281794	0.00001	0.001247	0.074068	1602	0.2817562	-0.32	0.49	2.06	2.35	0.281765	0.282086
MN003_10	PV	0.281816	0.00001	0.000943	0.050701	1601	0.2817874	0.77	0.29	2.01	2.28	0.281766	0.282087
MN003_11	PV	0.281834	0.00001	0.000654	0.033981	1611	0.2818140	1.94	0.39	1.97	2.22	0.281759	0.282080
MN003_12	PV	0.281842	0.00001	0.001340	0.072508	1614	0.2818011	1.55	0.35	2.00	2.24	0.281757	0.282078
MN003_13	PV	0.281837	0.00001	0.001030	0.053252	1622	0.2818054	1.88	0.39	1.99	2.23	0.281752	0.282072
MN003_14	PV	0.281826	0.00001	0.001202	0.064603	1587	0.2817899	0.54	0.35	2.01	2.29	0.281775	0.282097
MN003_155	PV	0.281804	0.00001	0.000855	0.047954	1596	0.2817782	0.33	0.35	2.03	2.31	0.281769	0.282091
MN003_166	PV	0.281851	0.00001	0.001378	0.051065	1604	0.2818092	1.61	0.49	1.99	2.23	0.281764	0.282085
MN029_01	MN	0.281880	0.00001	0.001397	0.074984	1617	0.2818027	1.29	0.42	2.00	2.25	0.281766	0.282088
MN029_02	MN	0.281875	0.00001	0.000798	0.040808	1583	0.2818000	1.58	0.46	2.00	2.24	0.281756	0.282075
MN029_03	MN	0.281833	0.00001	0.001331	0.070627	1585	0.2817873	1.60	0.46	2.02	2.26	0.281742	0.282060
MN029_04	MN	0.281810	0.00001	0.000644	0.033776	1625	0.2817565	-1.10	0.60	2.07	2.38	0.281787	0.282112
MN029_05	MN	0.281822	0.00001	0.000533	0.028390	1600	0.2818586	2.41	0.33	1.92	2.15	0.281791	0.282116
MN029_06	MN	0.281845	0.00001	0.000695	0.037934	1585	0.2818231	1.79	0.34	1.97	2.21	0.281773	0.282095
MN029_07	MN	0.281866	0.00001	0.000836	0.044876	1614	0.2819006	4.20	0.39	1.87	2.04	0.281782	0.282106
MN029_08	MN	0.281835	0.00001	0.000873	0.047910	1585	0.2817845	0.01	0.42	2.03	2.31	0.281784	0.282109
MN029_09	MN	0.281854	0.00001	0.000594	0.030984	1583	0.2817594	-1.18	0.30	2.06	2.37	0.281793	0.282118
MN029_10	MN	0.281866	0.00001	0.000613	0.031560	1588	0.2818331	1.42	0.46	1.96	2.21	0.281793	0.282119
MN029_11	MN	0.281826	0.00001	0.000491	0.025541	1621	0.2818359	2.49	0.46	1.95	2.17	0.281766	0.282087
MN029_12	MN	0.281777	0.00002	0.003269	0.193140	1604	0.2818243	1.28	0.21	1.97	2.22	0.281788	0.282113
MN029_13	MN	0.281828	0.00001	0.000887	0.044789	1575	0.2818652	2.62	0.26	1.91	2.13	0.281791	0.282117
MN029_14	MN	0.281777	0.00001	0.001171	0.061723	1591	0.2818153	1.76	0.29	1.98	2.22	0.281766	0.282087
MN029_15	MN	0.281850	0.00001	0.001084	0.059949	1601	0.2818087	0.73	0.63	1.99	2.26	0.281788	0.282113
SD015_02	BB	0.281786	0.00006	0.001418	0.085277	1608	0.2817428	-0.65	2.24	2.08	2.38	0.281761	0.282082
SD015_33	BB	0.281659	0.00003	0.004993	0.338261	1622	0.2815057	-8.76	1.05	2.49	2.90	0.281752	0.282072

Hf-Lu isotopes of zircons form the mafic and felsic rocks of the Mt Painter Province

Sample_spot	Suite	$^{176}Hf/^{177}Hf$	1 S.D.	$^{176}Lu/^{177}Hf$	$^{176}Yb/^{177}Hf$	U/Pb Age (Ma)	Hfi	εHf	1s	T(DM) (Ga)	T(DM) crustal (Ga)	Hf Chur (t)	Hf DM (t)
SD015_333	BB	0.281653	0.00002	0.005207	0.371414	1622	0.2814931	-9.20	0.56	2.52	2.93	0.281752	0.282072
SD015_05	BB	0.281845	0.00001	0.001157	0.066349	1578	0.2818104	1.07	0.39	1.99	2.25	0.281780	0.282104
SD015_06	BB	0.281809	0.00001	0.000429	0.022508	1594	0.2817961	0.92	0.35	2.00	2.27	0.281770	0.282092
SD015_07	BB	0.281847	0.00001	0.000950	0.055763	1574	0.2818187	1.27	0.32	1.97	2.23	0.281783	0.282107
SD015_88	BB	0.281831	0.00001	0.002194	0.117708	1590	0.281765	-0.28	0.39	2.06	2.34	0.281773	0.282095
SD015_09	BB	0.281872	0.00003	0.004486	0.275483	1567	0.281739	-1.72	1.16	2.14	2.42	0.281787	0.282112
SD015_10	BB	0.281870	0.00002	0.001301	0.083535	1590	0.2818308	2.06	0.56	1.96	2.19	0.281773	0.282095
SD015_11	BB	0.281849	0.00002	0.001247	0.076732	1593	0.2818114	1.44	0.53	1.98	2.23	0.281771	0.282093
SD015_12	BB	0.281863	0.00002	0.002508	0.159418	1582	0.2817879	0.36	0.56	2.03	2.30	0.281778	0.282101
SD015_13	BB	0.281800	0.00005	0.006677	0.488318	1714	0.2815831	-3.92	1.58	2.40	2.67	0.281694	0.282004
SD015_14	BB	0.281854	0.00008	0.011133	0.812315	1571	0.281523	-9.29	2.73	2.68	2.90	0.281785	0.282109
SD015_15	BB	0.281901	0.00002	0.002967	0.200490	1624	0.2818098	2.08	0.70	2.00	2.22	0.281751	0.282070
SD015_16	BB	0.281865	0.00001	0.002183	0.115140	1577	0.2817998	0.67	0.42	2.01	2.27	0.281781	0.282105
SD015_17	BB	0.281794	0.00002	0.002741	0.165939	1607	0.2817106	-1.82	0.77	2.15	2.45	0.281762	0.282083
SD015_18	BB	0.281780	0.00002	0.003552	0.230336	1591	0.281673	-3.52	0.81	2.22	2.55	0.281772	0.282095
MN101_01	TP	0.281867	0.00001	0.001742	0.093721	1575	0.2818315	0.64	0.39	1.96	2.23	0.281814	0.282142
MN101_02	TP	0.281469	0.00002	0.001883	0.097342	1587	0.2818608	1.25	0.46	1.93	2.18	0.281826	0.282156
MN101_03	TP	0.281735	0.00006	0.003910	0.155687	1893	0.281849	0.85	0.39	1.93	2.21	0.281825	0.282156
MN101_04	TP	0.281898	0.00004	0.002941	0.168156	1576	0.2818573	1.15	0.39	1.92	2.19	0.281825	0.282156
MN101_05	TP	0.281841	0.00003	0.002931	0.152007	1627	0.2818705	0.53	0.46	1.91	2.19	0.281856	0.282191
MN101_06	TP	0.281879	0.00001	0.001384	0.069712	1602	0.2818978	2.90	0.39	1.87	2.09	0.281816	0.282145
MN101_07	TP	0.281757	0.00004	0.006559	0.385315	1893	0.2818986	3.29	0.63	1.87	2.07	0.281806	0.282134
MN101_08	TP	0.281855	0.00001	0.003688	0.171600	1634	0.2818254	-0.26	0.22	1.97	2.27	0.281833	0.282165
MN101_09	TP	0.281849	0.00001	0.003464	0.164483	1560	0.2818612	1.60	0.35	1.92	2.17	0.281816	0.282145
MN101_10	TP	0.281854	0.00001	0.002330	0.110557	1568	0.2819135	3.73	0.67	1.85	2.04	0.281808	0.282137
MN101_11	TP	0.281925	0.00002	0.002499	0.115312	1512	0.2819027	2.30	0.35	1.86	2.10	0.281838	0.282170
SD047_01	ME	0.281872	0.00001	0.001403	0.072318	1526	0.2819103	3.00	0.56	1.85	2.07	0.281826	0.282156
SD047_02	ME	0.281924	0.00001	0.002215	0.118447	1507	0.2819454	4.75	0.74	1.81	1.97	0.281812	0.282140
SD047_03	ME	0.281874	0.00001	0.000878	0.045169	1508	0.2818564	1.95	0.35	1.92	2.16	0.281801	0.282128
SD047_04	ME	0.281893	0.00001	0.001252	0.065747	1508	0.2818428	1.13	0.35	1.94	2.21	0.281811	0.282139
SD047_05	ME	0.281910	0.00001	0.001429	0.071928	1460	0.2818097	-0.50	0.39	1.99	2.29	0.281824	0.282154

Hf-Lu isotopes of zircons form the mafic and felsic rocks of the Mt Painter Province

Sample_spot	Suite	$^{176}Hf/^{177}Hf$	1 S.D.	$^{176}Lu/^{177}Hf$	$^{176}Yb/^{177}Hf$	U/Pb Age (Ma)	Hfi	εHf	1s	T(DM) (Ga)	T(DM) crustal (Ga)	Hf Chur (t)	Hf DM (t)
SD047_06	ME	0.281937	0.00001	0.001362	0.059066	1522	0.2817793	-1.62	0.56	2.05	2.36	0.281825	0.282156
SD047_07	ME	0.281936	0.00002	0.001287	0.062697	1538	0.2818562	0.93	0.29	1.92	2.20	0.281830	0.282162
SD047_08	ME	0.281856	0.00001	0.001080	0.049059	1496	0.2818774	1.36	0.39	1.89	2.16	0.281839	0.282172
SD047_09	ME	0.281909	0.00001	0.001658	0.081806	1522	0.2817775	-2.18	0.63	2.05	2.38	0.281839	0.282172
SD047_10	ME	0.281952	0.00002	0.001328	0.070073	1534	0.2818255	4.21	0.32	1.96	2.14	0.281707	0.282019
SD047_11	ME	0.281942	0.00001	0.001398	0.069934	1488	0.2816533	-2.86	0.67	2.22	2.55	0.281734	0.282050
SD047_12	ME	0.281953	0.00002	0.001498	0.072342	1507	0.2817954	-0.80	0.49	2.01	2.32	0.281818	0.282148
SD047_13	ME	0.282007	0.00002	0.002128	0.096964	1529	0.2818545	1.18	0.46	1.92	2.19	0.281821	0.282151
SD047_14	ME	0.281890	0.00001	0.001150	0.055395	1545	0.2818127	-0.57	0.35	1.99	2.29	0.281829	0.282160
SD047_15	ME	0.281865	0.00001	0.000768	0.035992	1530	0.2818461	0.97	0.53	1.95	2.21	0.281819	0.282148
SD047_16	ME	0.281836	0.00001	0.000920	0.040824	1510	0.2817191	-1.31	0.56	2.15	2.43	0.281756	0.282076
SD049_01	ME	0.281852	0.00002	0.002550	0.165630	1508	0.281854	4.56	0.42	1.92	2.09	0.281726	0.282041
SD049_02	ME	0.281889	0.00001	0.001156	0.064050	1500	0.2817762	-0.87	0.39	2.07	2.35	0.281801	0.282128
SD049_03	ME	0.281891	0.00001	0.000484	0.032814	1486	0.2821199	12.77	0.60	1.55	1.52	0.281760	0.282080
SD049_04	ME	0.281836	0.00002	0.002083	0.136697	1486	0.2818142	2.15	0.88	2.00	2.21	0.281754	0.282073
SD049_05	ME	0.281851	0.00001	0.000795	0.046353	1693	0.2818782	3.65	0.49	1.90	2.09	0.281775	0.282098
SD049_06	ME	0.281729	0.00002	0.002422	0.152465	1651	0.2818009	-0.06	0.42	2.01	2.29	0.281803	0.282130
SD049_07	ME	0.281840	0.00001	0.001553	0.093164	1519	0.2818009	-0.18	0.56	2.00	2.29	0.281806	0.282134
SD049_08	ME	0.281874	0.00001	0.000681	0.034712	1514	0.2817897	-0.58	0.77	2.02	2.32	0.281806	0.282134
SD050_01	ME	0.281900	0.00001	0.001327	0.055513	1497	0.2816777	-3.06	0.67	2.20	2.53	0.281764	0.282085
SD050_02	ME	0.281921	0.00001	0.002288	0.099223	1495	0.2818016	0.68	0.35	1.99	2.27	0.281782	0.282106
SD050_03	ME	0.281875	0.00001	0.001373	0.065663	1520	0.2817417	-1.08	0.49	2.08	2.39	0.281772	0.282095
SD050_04	ME	0.281887	0.00001	0.001169	0.053670	1512	0.2818171	1.82	0.39	1.97	2.22	0.281766	0.282087
SD050_05	ME	0.281875	0.00001	0.001890	0.080277	1494	0.2818151	1.16	0.35	1.99	2.24	0.281782	0.282106
SD050_06	ME	0.281874	0.00001	0.001139	0.053270	1406	0.2814124	-12.86	0.53	2.55	3.13	0.281775	0.282097
SD050_07	ME	0.281869	0.00001	0.000585	0.027646	1450	0.2815945	0.55	2.07	2.30	2.52	0.281579	0.281871
SD050_08	ME	0.281850	0.00001	0.001353	0.058820	1503	0.2818103	1.01	1.30	2.01	2.25	0.281782	0.282106
SD050_09	ME	0.281874	0.00001	0.001286	0.059813	1509	0.2817507	0.06	0.88	2.09	2.35	0.281749	0.282068
SD050_10	ME	0.281940	0.00002	0.001826	0.085410	1526	0.281837	2.55	0.21	1.95	2.17	0.281765	0.282086
SD050_11	ME	0.281905	0.00001	0.000965	0.043131	1516	0.2815213	-2.05	1.54	2.46	2.69	0.281579	0.281871

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Sample_spot	Suite	$^{176}Hf/^{177}Hf$	1 S.D.	$^{176}Lu/^{177}Hf$	$^{176}Yb/^{177}Hf$	U/Pb Age (Ma)	Hfi	εHf	1s	T(DM) (Ga)	T(DM) crustal (Ga)	Hf Chur (t)	Hf DM (t)
SD050_12	ME	0.282045	0.00001	0.001129	0.048994	1498	0.2817409	-0.13	0.39	2.11	2.37	0.281745	0.282063
SD050_13	ME	0.281937	0.00001	0.002229	0.100084	1539	0.2817467	-1.60	0.49	2.11	2.40	0.281792	0.282117
SD050_14	ME	0.281893	0.00001	0.001158	0.055473	1535	0.2817849	-0.07	0.30	2.04	2.31	0.281787	0.282111
SD050_15	ME	0.281890	0.00002	0.001312	0.062820	1534	0.2818535	1.10	0.74	1.94	2.19	0.281822	0.282153
SD060_01	YG	0.281851	0.00001	0.001349	0.065162	1502	0.2818334	2.15	0.67	1.96	2.19	0.281773	0.282095
SD060_02	YG	0.281910	0.00002	0.002226	0.115572	1518	0.2818208	-0.22	0.46	1.98	2.27	0.281827	0.282158
SD060_03	YG	0.281833	0.00002	0.003721	0.185640	1616	0.2818228	3.73	0.42	1.96	2.15	0.281718	0.282032
SD060_04	YG	0.281897	0.00001	0.001366	0.069627	1664	0.2817895	0.12	0.42	2.04	2.30	0.281786	0.282111
SD060_05	YG	0.281894	0.00001	0.004026	0.241046	1546	0.281735	-1.84	0.46	2.11	2.42	0.281787	0.282111
SD060_06	YG	0.282161	0.00002	0.001349	0.079548	1610	0.2817294	-2.87	0.39	2.10	2.46	0.281810	0.282139
SD060_07	YG	0.281900	0.00003	0.002796	0.176503	1620	0.2813028	2.05	0.46	2.66	2.83	0.281245	0.281485
SD060_08	YG	0.281940	0.00001	0.002060	0.111064	1586	0.2818287	1.10	0.27	1.96	2.22	0.281798	0.282124
SD060_09	YG	0.281857	0.00001	0.001921	0.114346	1543	0.281818	-0.20	0.30	1.97	2.27	0.281824	0.282154
SD060_10	YG	0.281840	0.00002	0.001343	0.067344	1538	0.2818659	2.20	0.29	1.90	2.15	0.281804	0.282131
SD060_11	YG	0.281839	0.00002	0.001696	0.094933	1538	0.2818435	1.81	0.25	1.94	2.18	0.281793	0.282118
SD060_12	YG	0.281895	0.00002	0.002047	0.110806	1590	0.2818905	4.18	0.42	1.87	2.06	0.281773	0.282095
SD060_13	YG	0.281860	0.00001	0.001378	0.069499	1505	0.281664	-0.91	0.29	2.18	2.48	0.281690	0.281999
SD060_15	YG	0.281849	0.00001	0.000824	0.045343	1676	0.2818269	3.26	0.28	1.96	2.16	0.281735	0.282052
SD022_01	WG	0.281875	0.00001	0.002879	0.155759	1569	0.281808	1.48	0.81	1.99	2.24	0.281766	0.282088
SD022_02	WG	0.281805	0.00001	0.002359	0.162082	1568	0.2817137	-2.10	0.49	2.13	2.46	0.281773	0.282095
SD022_03	WG	0.281773	0.00001	0.001506	0.082211	1531	0.2817127	-4.10	0.29	2.13	2.52	0.281828	0.282159
SD022_04	WG	0.281360	0.00001	0.001244	0.064985	2411	0.2816824	-3.48	0.60	2.19	2.54	0.281780	0.282104
SD022_05	WG	0.281860	0.00001	0.001066	0.058274	1551	0.2818031	-0.05	0.67	2.00	2.29	0.281805	0.282132
SD022_06	WG	0.281834	0.00001	0.000560	0.029618	1510	0.2818463	2.41	0.21	1.93	2.16	0.281779	0.282102
SD022_07	WG	0.281883	0.00001	0.000587	0.031385	1541	0.2818579	1.91	0.28	1.92	2.16	0.281804	0.282131
SD022_08	WG	0.281875	0.00001	0.001068	0.063070	1559	0.2818078	1.08	0.77	1.99	2.25	0.281777	0.282100
SD022_09	WG	0.281910	0.00001	0.000646	0.032768	1590	0.2817812	0.19	0.53	2.04	2.31	0.281776	0.282099
SD022_10	WG	0.281697	0.00001	0.001013	0.054195	1720	0.281785	-0.02	0.46	2.02	2.31	0.281786	0.282110
SD022_11	WG	0.281860	0.00001	0.001059	0.052968	1649	0.2816976	-2.78	1.02	2.16	2.50	0.281776	0.282099
SD022_12	WG	0.281839	0.00002	0.001025	0.046634	1600	0.2817448	-0.43	0.49	2.08	2.37	0.281757	0.282077
SD022_13	WG	0.281762	0.00001	0.001604	0.108631	1590	0.2818383	1.94	0.63	1.94	2.19	0.281784	0.282108

Hf-Lu isotopes of zircons form the mafic and felsic rocks of the Mt Painter Province

Sample_spot	Suite	$^{176}Hf/^{177}Hf$	1 S.D.	$^{176}Lu/^{177}Hf$	$^{176}Yb/^{177}Hf$	U/Pb Age (Ma)	Hfi	εHf	1s	T(DM) (Ga)	T(DM) crustal (Ga)	Hf Chur (t)	Hf DM (t)
SD022_14	WG	0.281757	0.00001	0.001558	0.084405	1503	0.2818992	4.08	0.49	1.86	2.05	0.281784	0.282109
SD022_15	WG	0.281775	0.00002	0.003101	0.185644	1578	0.2818315	4.24	0.60	1.96	2.13	0.281712	0.282025
SD022_16	WG	0.281835	0.00002	0.001095	0.054829	1540	0.2818307	1.56	0.39	1.96	2.21	0.281787	0.282111
SD022_17	WG	0.281871	0.00001	0.000826	0.043420	1581	0.2817551	-1.19	0.39	2.06	2.38	0.281789	0.282114
SD022_18	WG	0.281882	0.00001	0.000828	0.044364	1541	0.281777	-0.28	0.34	2.03	2.33	0.281785	0.282109
MN084_01	MF	0.281834	0.00002	0.000876	0.047382	1583	0.2818129	1.38	0.39	1.98	2.23	0.281774	0.282097
MN084_02	MF	0.281849	0.00002	0.002259	0.118024	1585	0.2814853	-9.18	1.23	2.51	2.94	0.281744	0.282062
MN084_03	MF	0.281806	0.00001	0.000708	0.035018	1570	0.2818317	0.28	0.35	1.96	2.24	0.281824	0.282154
MN084_04	MF	0.281760	0.00003	0.002079	0.121565	1585	0.2817845	-2.18	0.74	2.07	2.37	0.281846	0.282180
MN084_05	MF	0.281792	0.00001	0.001545	0.072413	1615	0.2818244	0.25	0.39	1.96	2.25	0.281817	0.282147
MN084_06	MF	0.281858	0.00002	0.000663	0.032550	1573	0.2818413	0.82	0.53	1.94	2.22	0.281818	0.282148
MN084_07	MF	0.281912	0.00001	0.000431	0.021420	1572	0.2819716	5.11	0.60	1.76	1.93	0.281828	0.282159
MN084_08	MF	0.281894	0.00002	0.001957	0.100791	1685	0.2819585	4.01	0.49	1.78	1.98	0.281845	0.282179
MN084_09	MF	0.281864	0.00001	0.001123	0.059193	1568	0.2819428	4.02	0.46	1.80	2.00	0.281829	0.282161
MN084_10	MF	0.281780	0.00001	0.000841	0.044163	1565	0.2819627	7.53	0.98	1.77	1.87	0.281750	0.282069
MN084_11	MF	0.281803	0.00001	0.000873	0.043039	1571	0.2818247	-0.19	0.53	1.97	2.27	0.281830	0.282162
MN084_12	MF	0.281849	0.00001	0.001200	0.061184	1588	0.281861	1.21	0.35	1.92	2.18	0.281827	0.282158
MN084_13	MF	0.281620	0.00004	0.004349	0.273575	1635	0.2817377	-2.87	0.39	2.09	2.45	0.281819	0.282148
SD057_01	MF	0.281861	0.00001	0.001026	0.043263	1510	0.2818939	1.65	0.60	1.88	2.13	0.281847	0.282181
SD057_02	MF	0.281904	0.00002	0.004283	0.190166	1475	0.2817691	-1.76	0.39	2.04	2.38	0.281819	0.282148
SD057_03	MF	0.281843	0.00001	0.000648	0.030854	1520	0.2817999	-0.67	0.60	2.00	2.31	0.281819	0.282148
SD057_04	MF	0.281859	0.00002	0.000618	0.028912	1519	0.2817815	-3.42	0.39	2.02	2.41	0.281878	0.282217
SD057_05	MF	0.281997	0.00002	0.000891	0.038071	1504	0.2818372	2.90	0.39	1.95	2.16	0.281756	0.282075
SD057_06	MF	0.281996	0.00001	0.001345	0.046040	1476	0.2818511	2.62	0.32	1.93	2.15	0.281777	0.282100
SD057_07	MF	0.281968	0.00001	0.000887	0.034750	1501	0.2817931	0.61	0.39	2.01	2.28	0.281776	0.282099
SD057_08	MF	0.282006	0.00003	0.001409	0.059411	1625	0.2817902	1.41	0.49	2.01	2.26	0.281750	0.282069
SD057_09	MF	0.281860	0.00002	0.001244	0.057114	1500	0.2818059	1.40	0.39	1.98	2.24	0.281766	0.282088
SD057_10	MF	0.281909	0.00001	0.001685	0.073633	1505	0.2818241	1.71	0.35	1.96	2.21	0.281776	0.282099
SD057_11	MF	0.281765	0.00001	0.000950	0.044034	1518	0.2818405	2.95	0.46	1.94	2.15	0.281757	0.282078

Hf-Lu isotopes of zircons form the mafic and felsic rocks of the Mt Painter Province

Sample_spot	Suite	$^{176}Hf/^{177}Hf$	1 S.D.	$^{176}Lu/^{177}Hf$	$^{176}Yb/^{177}Hf$	U/Pb Age (Ma)	Hfi	εHf	1s	T(DM) (Ga)	T(DM) crustal (Ga)	Hf Chur (t)	Hf DM (t)
SD057_12	Mafic Dyke	0.281941	0.00002	0.001693	0.065259	1473	0.2818088	1.17	0.39	1.98	2.25	0.281776	
SD057_13	Mafic Dyke	0.281789	0.00001	0.000692	0.028793	1518	0.2818362	2.09	0.33	1.94	2.19	0.281777	
SD057_14	Mafic Dyke	0.281824	0.00002	0.000840	0.034520	1518	0.2818476	2.61	0.39	1.93	2.16	0.281774	
SD057_15	Mafic Dyke	0.281796	0.00001	0.000537	0.022227	1425	0.2818109	2.06	0.33	1.98	2.22	0.281753	
SD031_01	Mafic Dyke	0.281931	0.00001	0.002397	0.120386	1579	0.2818624	1.08	0.46	1.92	2.18	0.281832	
SD031_02	Mafic Dyke	0.281858	0.00001	0.001826	0.080322	1600	0.2818563	0.82	0.34	1.94	2.20	0.281833	
SD031_03	Mafic Dyke	0.281830	0.00001	0.000979	0.049621	1617	0.2818355	0.64	0.30	1.96	2.23	0.281817	
SD031_04	Mafic Dyke	0.281831	0.00001	0.001410	0.047354	1638	0.2818536	1.10	0.35	1.93	2.19	0.281822	
SD031_05	Mafic Dyke	0.281813	0.00002	0.001904	0.071940	1567	0.2818216	-0.44	0.29	1.98	2.28	0.281834	
SD031_06	Mafic Dyke	0.281905	0.00001	0.001568	0.079589	1562	0.2818437	-1.64	0.30	1.94	2.29	0.281890	
SD031_07	Mafic Dyke	0.281861	0.00001	0.001258	0.065358	1590	0.281853	-0.32	0.42	1.92	2.24	0.281862	
SD031_08	Mafic Dyke	0.281962	0.00001	0.002061	0.103481	1575	0.2818116	-0.59	0.29	1.99	2.29	0.281828	
SD031_09	Mafic Dyke	0.281843	0.00001	0.001965	0.097478	1572	0.2818373	0.46	0.34	1.95	2.23	0.281824	
SD031_10	Mafic Dyke	0.281803	0.00001	0.001479	0.073813	1559	0.2818873	2.62	0.60	1.89	2.11	0.281814	
SD031_11	Mafic Dyke	0.281873	0.00001	0.001354	0.071794	1558	0.2818773	2.04	0.32	1.89	2.14	0.281820	
SD031_12	Mafic Dyke	0.281876	0.00001	0.001322	0.065538	1601	0.282013	6.44	0.49	1.71	1.84	0.281831	
SD031_13	Mafic Dyke	0.281861	0.00001	0.001240	0.059835	1566	0.2818721	2.37	0.46	1.91	2.13	0.281805	
SD031_13	Mafic Dyke	0.281904	0.00001	0.001315	0.061710	1561	0.2818594	1.83	0.30	1.92	2.16	0.281808	
SD031_15	Mafic Dyke	0.281851	0.00001	0.001178	0.054287	1601	0.2818519	1.54	0.53	1.93	2.18	0.281808	
SD031_16	Mafic Dyke	0.281848	0.00002	0.001327	0.062403	1566	0.2818594	2.82	0.46	1.93	2.14	0.281780	

Hfi = $^{176}Hf/^{177}Hf$ ratio - ($^{176}Lu/^{177}Hf$ ratio * (EXP(0.0193 * $^{207}Pb/^{206}Pb$ ratio / 1000)$^{-1}$))
^{176}Lu decay constant (1.865x10-11); Scherer et al. (2001)

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