GEOCHRONOLOGICAL ANALYSIS AS A TEST OF THE PRESENCE OF THE SONORA ALLOCHTHON IN THE SIERRA LAS PINTAS, BAJA CALIFORNIA, MEXICO

By Claire K. Pringle

A Thesis

Submitted in Partial Fulfillment

of the Requirements for the Degree of

Master of Science

in Geology

Northern Arizona University

December 2021

Approved:

Nancy R. Riggs, Ph.D., Chair

Pilar Navas-Parejo, Ph.D.

Michelangelo Martini, Ph.D.

Michael H. Ort, Ph.D.

ABSTRACT

GEOCHRONOLOGICAL ANALYSIS AS A TEST OF THE PRESENCE OF THE SONORA ALLOCHTHON IN THE SIERRA LAS PINTAS, BAJA CALIFORNIA, MEXICO

CLAIRE K. PRINGLE

Formation of the final supercontinent, Pangea, culminated in late Paleozoic time with closing of the Rheic ocean and collision of Gondwana and Laurentia. This resulted in the hypothesized 3,000-km-long Ouachita-Marathon-Sonora orogenic belt (OMS) along the southern margin of Laurentia. The Sonora allochthon, the westernmost segment of the OMS, is dominantly located in Chihuahua and Sonora, Mexico, but recent studies have suggested that the orogen continues into northern Baja California, where sedimentary rocks in the Sierra Las Pintas have been correlated to allochthon stratigraphy in Sonora. This study provides the first detrital zircon geochronological analysis of the Sierra Las Pintas to test the hypothesis that Sonora allochthon strata are present and further correlation can be made to the Sonora allochthon documented in central Sonora.

Detrital zircon geochronology of the Sierra Las Pintas strata indicates major sources from the Peninsular Ranges batholith and the Permo-Triassic arc, as well as minor sources from Gondwana, the Grenville orogen, Granite-Rhyolite provinces, Yavapai-Mazatzal provinces and the Archean craton. Provenance analysis suggests that most of the detritus was derived from the Peninsular Ranges batholith to the west, the Cordilleran Permo-Triassic arc to the northeast, crustal provinces of the Laurentian craton to the north, and Gondwana to the south. A Late Cretaceous maximum depositional age is determined for Sierra Las Pintas strata and stratigraphic analysis indicates deposition in the Peninsular Ranges batholith forearc along the continental slope and

ocean basin. Geochronologic analyses suggest that the Sonora allochthon is not present in the Sierra Las Pintas and the succession cannot be correlated to the Sonora allochthon in central Sonora. Provenance interpretation of strata in the Sonora allochthon of central Sonora agrees with previous literature and provides strong detrital zircon evidence of Gondwanan source, which has rarely been identified in previous studies. Although the results of this study do not support the hypothesis that the Sonora allochthon is present in the Sierra Las Pintas, the strata record a mixed provenance of Gondwanan and Laurentian source regions, as well as Cretaceous Cordilleran arc activity.

ACKNOWLEDGEMENTS

This research was supported by the Geological Society of America via the Graduate Student Research Grant, the Ronald C. Blakey scholarship, the Bedwell Award, the Walter and Rosemarie Hochstrasser scholarship, and by Pioneer Natural Resources. Additional grants from Dirección General de Asuntos del Personal Académico of the Universidad Nacional Autónoma de México UNAM-DGAPA-PAPIIT IN106920 and Consejo Nacional de Ciencia y Tecnología CONACyT Ciencia de Frontera Project 7351 paid for field work expenses and helped to cover the cost of geochronologic analyses.

First and foremost, I would like to thank my family. To my husband Rhett, thank you for your immense sacrifice, incredible patience, and unconditional love and support throughout this journey. Thank you to my kids for being the cutest lab assistants, always keeping things exciting at home, and giving me laughter every day. You all have encouraged me and brought me joy on the hardest of days, sacrificed as I was pursuing my dreams as a geologist, and inspired me to accomplish my goals. I am forever grateful to be yours.

Second, I would like to thank Nancy Riggs, for being my thesis advisor, friend, and mentor these past few years. I have had the great pleasure of working with you during some of my most formative years yet, including the birth of my children, moving to 3 different states, a global pandemic, countless hours spent in the field, and hours of discussion on zoom… it has been an honor to work with you and learn from your vast knowledge of geology. Thank you to my wonderful research committee Pilar Navas-Parejo, Michelangelo Martini, and Michael Ort. To Pilar and Miche, it has been a great joy to explore the mountains of Baja California, enjoy ceviche and huevos rancheros in the field, discuss the great complexities of the Sierra Las Pintas,

and learn from your great geologic expertise. Thanks to Michael for being a part of this committee, many great volcanology discussions, and supporting me in this degree. A great thanks to Andrew Kylander-Clark for analyzing and reducing all detrital zircon data for this study when the labs were closed due to a global pandemic. Additional thanks to Luigi Solari for analyzing detrital zircon samples collected from Sonora and Gareth Seward for assistance with cathodoluminescence.

Finally, thank you to my friends and family who have supported me throughout this process. It truly takes a village, and I would not be here today without all the love and support from the wonderful people in my life. Thank you to my parents, Scott and Cindy Andrews, and sisters, Hilary Andrews and Sarah Brown. You have encouraged me to follow my dreams as a geologist from the very beginning and been a constant lifeline and source of joy. I am so grateful for you all. Thank you to my in-laws for housing us and providing us childcare and loving support when we needed it the most. Thank you to all my friends and to my fellow graduate students for being great companions through it all!

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

DEDICATION

This thesis is dedicated to my husband Rhett and my children Judah, Levi, and Eliza. Life is so much richer and full of joy thanks to you.

1.0 INTRODUCTION

The Sonora allochthon, hypothesized to be the westernmost segment of the Ouachita-Marathon-Sonora (OMS) orogen, was formed due to the collision of Gondwana and Laurentia when continental-slope and -rise deposits of Gondwana were thrust northward onto the southern continental carbonate shelf of Laurentia late in Permian time (Poole and Perry, 1997; Poole et al., 2000; 2005; Figure 1). Leier-Engelhardt (1993) hypothesized that Sonora allochthon strata documented in Sonora, Mexico, can be correlated to similar strata of the Sierra Las Pintas Group and the Arroyo Grande Group of the Sierra Las Pintas in northeastern Baja California, Mexico (Figures 1-2). The Sierra Las Pintas is divided into a northern and southern area that are composed of deep-water metasedimentary and metavolcanic rocks that exhibit similar stratigraphy to Lower Ordovician to Upper Pennsylvanian deep-water strata documented in the Minas de Barita area of Sonora, Mexico (Figure 1; Gastil et al., 1991; Stewart and Poole, 2002; Poole et al., 2005). While the metasedimentary facies and biostratigraphy of the proposed Sonora allochthon of Baja California correlate to strata found in central Sonora (Leier-Engelhardt, 1993; Poole et al., 2008; Navas-Parejo et al., 2018), previously no geochronological analysis of the Sierra Las Pintas has been completed. This study is the first to conduct dating by detrital zircon U-Pb methods to test the hypothesis that Sonora allochthon strata are present in the Sierra Las Pintas. This study utilizes geologic mapping, geochronological analysis, petrographic analysis, and zircon trace element geochemistry to determine the provenance, depositional setting, and tectonic evolution of the Sierra Las Pintas strata. Furthermore, a comparison of the geochronological data of the Sierra Las Pintas to similar strata found in the Minas de Barita area of Sonora, Mexico, is utilized to determine whether a correlation can be made between these two regions.

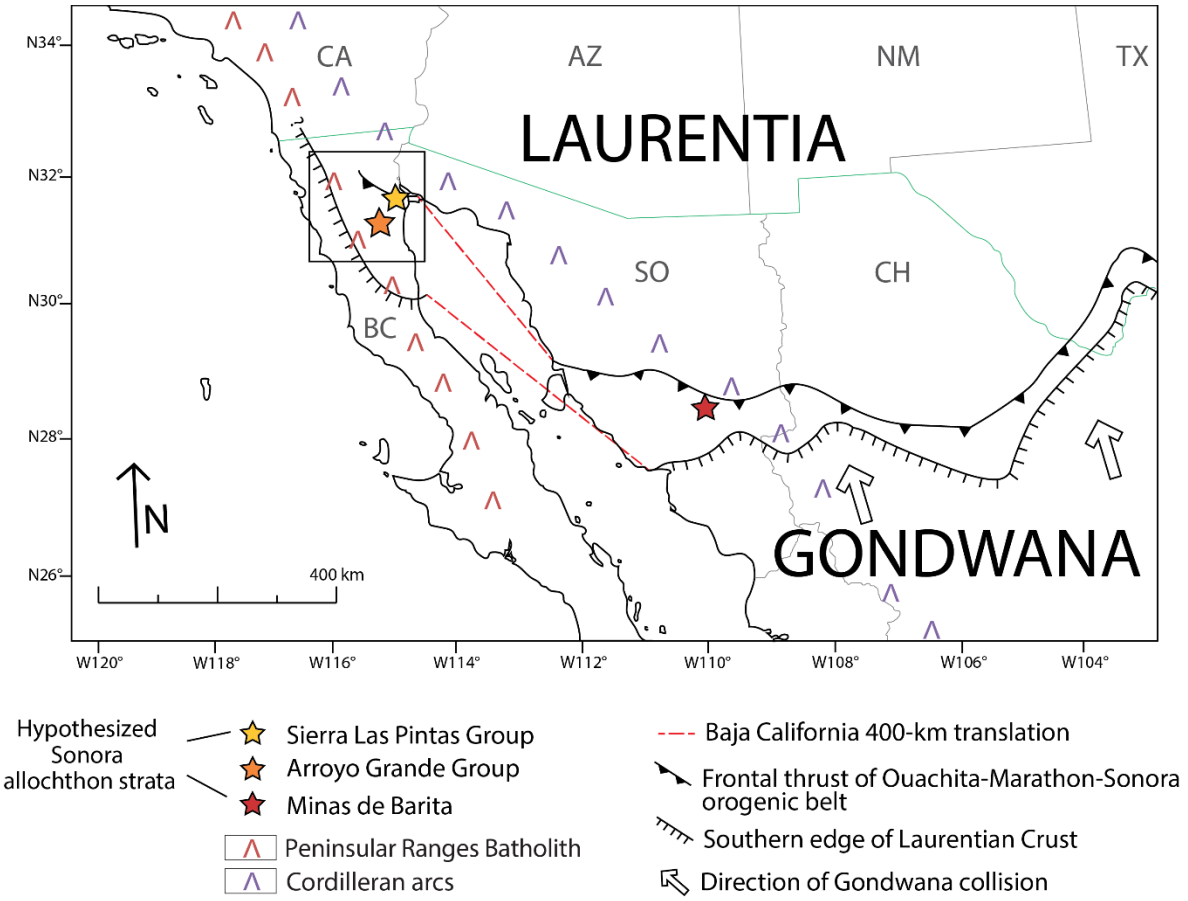


Figure 1. Regional map showing present-day positions of Laurentia, Gondwana, the Peninsular Ranges batholith, the Cordilleran arcs and the Ouachita-Marathon-Sonora orogenic belt. Red lines show the 400-km translation of Baja California and indicate the proposed displacement of the frontal thrust of Ouachita-Marathon-Sonora orogenic belt and the southern edge of Laurentian crust due to Cenozoic opening of the Gulf of California. Proposed locations of the western Sonora allochthon include the Sierra Las Pintas Group (yellow star) and the Arroyo Grande Group (orange star). The central Sonora allochthon is shown located in the Minas de Barita area (red star) of Sonora, Mexico. The black box indicates the location of the index map of Figure 2. Modified from Kimbrough et al., (2001), Poole et al. (2005), and Whitmeyer and Karlstrom (2007).

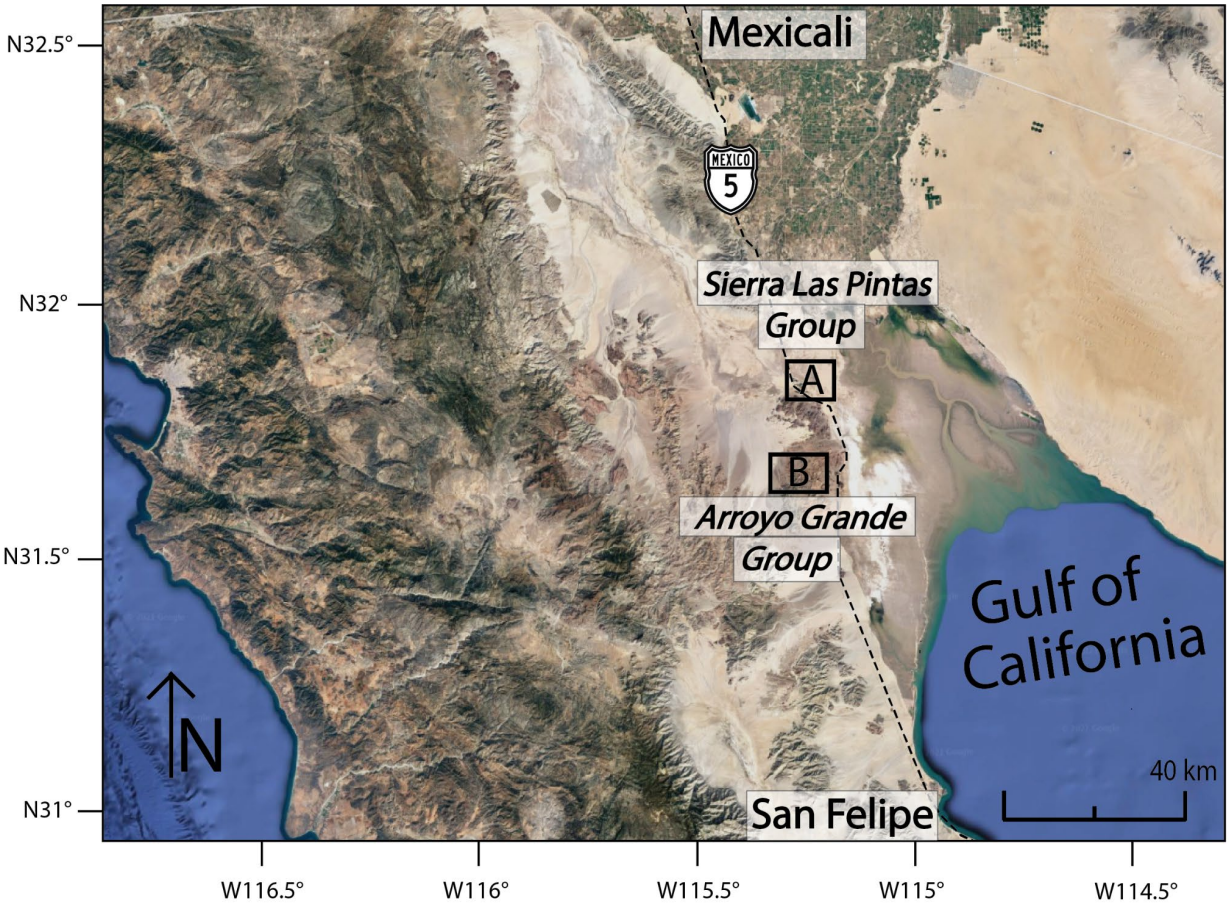


Figure 2. Index map showing the locations of the Sierra Las Pintas Group and the Arroyo Grande Group of the Sierra Las Pintas. See Figure 6 (A) and Figure 7 (B) for more detailed geologic maps of each field area.

1.1 PALEOTECTONIC AND PALEOGEOGRAPHIC SETTING

Previous Work

Initial studies by McEldowney (1970) interpreted the northern Sierra Las Pintas metasedimentary rocks as Paleozoic due to the presence of fossils such as Paleozoic lophophyllid corals and brachiopods. Further stratigraphic studies and geologic mapping established a correlation between rocks of the northern and southern Sierra Las Pintas (James, 1973; La Borde, 1967). Leier-Engelhardt (1993) completed geologic maps of the northern and southern areas of the Sierra Las Pintas and suggested correlation of the metasedimentary lithology of the western

Sonora allochthon in Baja California to similar stratigraphy found in central Sonora, Mexico, (Figure 3). Extensive biostratigraphic work by Navas-Parejo et al. (2018) further correlated metasedimentary rocks of the northern Sierra Las Pintas to formations found in central Sonora allochthon based on similar biostratigraphic and petrographic data.

An initial detrital zircon study by Gehrels and Stewart (1998) was conducted on Cambrian to Triassic strata of Sonora, Mexico. Poole et al. (2008) analyzed detrital zircon grains from deep-water strata of the Los Pozos Formation and Mina México Formation exposed in the Minas de Barita area of central Sonora. The study was continued with further U-Pb geochronology and Hf isotope analysis by Gehrels and Pecha (2014). The analysis included samples from Sonora shelf-facies strata and re-analyzed samples from the Los Pozos Formation and Mina México Formation by Poole et al. (2008) (Figure 3). No geochronologic analysis has been previously completed of the proposed Sonora allochthon of the Sierra Las Pintas.

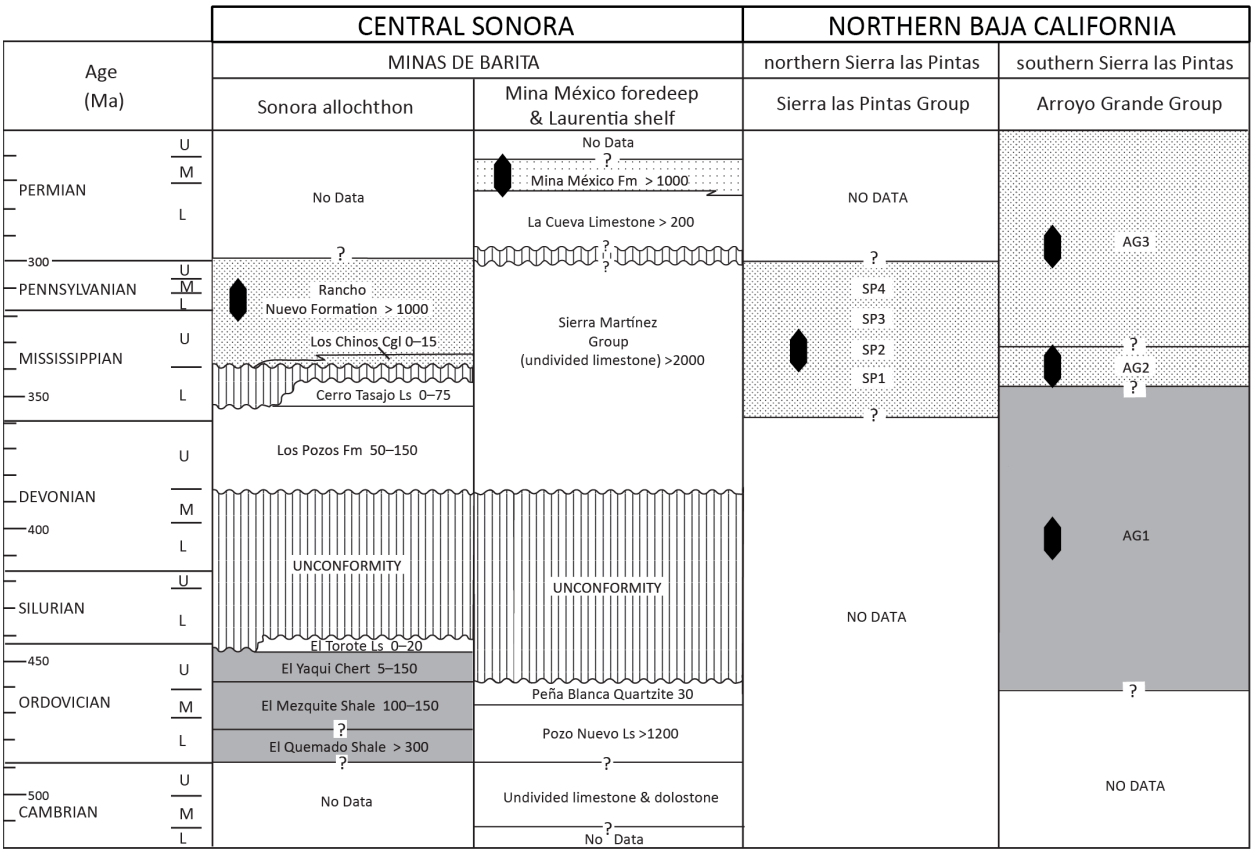
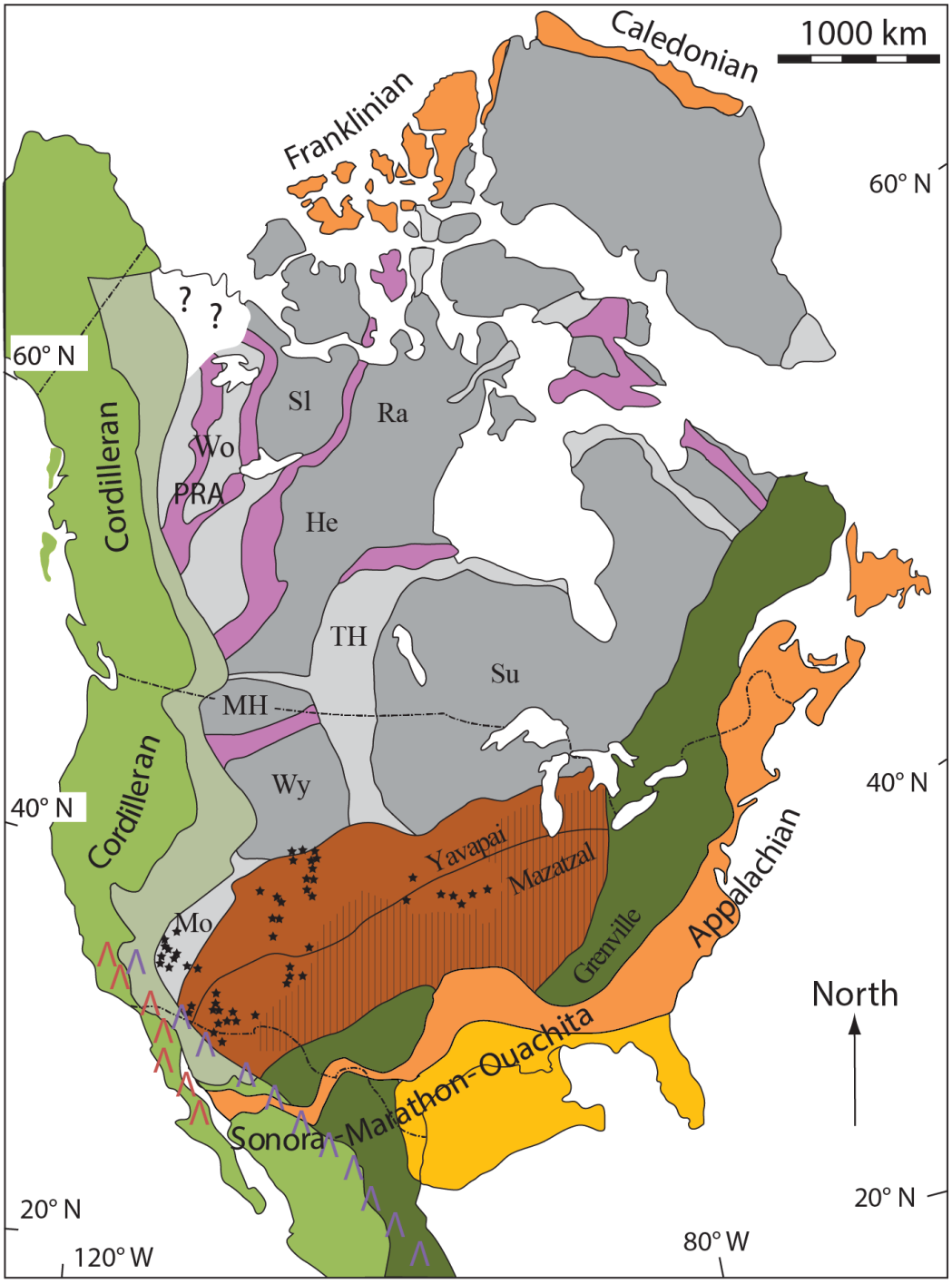


Figure 3. Generalized stratigraphic chart of Paleozoic strata showing previous correlations of the Sonora allochthon from central Sonora and from northern Baja California. The stratigraphic level of detrital zircon samples is indicated by the zircon cartoon. Similar patterns represent correlative strata. Stipple indicates flysch facies. Approximate unit thicknesses in meters. Modified time scale and correlative strata determined based on Leier-Engelhardt (1993), Poole et al., (2005; 2008), Stevens et al., (2014), Navas-Parejo et al., (2018), and Lara-Peña et al., (2020).

Paleotectonic Setting

Provenance groupings for this study are largely determined based on extensive provenance analysis done by Hoffman (1989), Saleeby et al. (1992), Gehrels et al. (1995), Dickinson and Lawton (2001), Blakey (2007), Whitmeyer and Karlstrom (2007), Poole et al., (2008), Gehrels and Pecha (2014), Saleeby and Dunne (2015), and numerous others. The main source regions that are identified in this study are summarized here. Figure 4 provides the locations of major age provinces and terranes of central North America that are utilized for these provenance determinations.



- Peninsular Ranges Batholith (ca.140–90 Ma)
- Cordilleran arcs (ca. 280–220 Ma)
- Cordilleran margin
- Cordilleran passive margin
- Peri-Laurentia terranes (500-300 Ma)
- Peri-Gondwana Prov (720–500 Ma)
- Grenville orogen (1.2–1.0 Ga)
- 1.48–1.34 Ga Magmatic Prov
- Yavapai-Mazatzal (1.8–1.7 Ga; 1.7-1.6 Ga)
- Juvenile arcs (2.0–1.8 Ga)
- Archean & 2.3–1.8 Ga Prov
- Archean (>2.5 Ga)

Figure 4. Locations of major age provinces and terranes of central North America utilized for provenance determinations used in this study. PRA – Peace River Arch region; Mo – Mojave province; Wy – Wyoming province; MH – Medicine Hat province; Su – Superior province; TH – Trans-Hudson province; Ra – Rae province; He – Hearne province; Sl – Slave province; Wo – Wopmay province. Adapted from Saleeby et al (1992), Gehrels et al. (1995), Dickinson and Lawton (2001), Kimbrough et al., (2001), Poole et al., (2005), Whitmeyer and Karlstrom (2007), and Gehrels and Pecha (2014).

Building the Laurentian and Gondwanan Continents

The core of Laurentia was assembled during the Paleoproterozoic from 2000-1800 Ma. Much of the continental shield was formed from Archean continents (3000-2500 Ma) that collided together, such as the Slave (2700-2500 Ma) and Rae-Hearne continent-continent collisional event (1960-1830 Ma), and the Slave-Rae-Hearne assembly collision of the Superior craton (1830-1800 Ma). The Archean continents that collided with smaller continental fragments such as Wyoming, Medicine Hat, Sask Marshfield, and Nain terranes primarily compose the core of the North American continent and resulted in the Trans-Hudson orogen (Dickinson, 1983; Hoffman, 1989; Dickinson and Gehrels, 2003; Whitmeyer & Karlstrom, 2007).

Arc-continent accretion of juvenile volcanic arcs and oceanic terranes added to the North American craton. Major accretionary provinces include the Yavapai (1800-1700 Ma) and Mazatzal (1700-1650 Ma) that were added to Laurentia during the Yavapai-Mazatzal orogeny (1700-1600 Ma). The Granite-Rhyolite province (1500-1300 Ma) was another major tectonic event associated with A-type intracratonic magmatism. The Llano-Grenville province (1300-1000 Ma) was added to the continent during the Grenville orogeny (1250-950 Ma) (Dickinson and Gehrels, 2003; Whitmeyer & Karlstrom, 2007).

Formation of Gondwana as summarized by Meert and Van Der Voo (1997) began around 800-650 Ma with the East African orogeny as present-day India, Madagascar, and Sri Lanka collided with East Africa. This event was followed by the Brasiliano orogeny (600-530 Ma) as South America and Africa collided. Final Gondwana assembly occurred with the Kuunga orogeny (~550 Ma) with amalgamation of Australia and Antarctica (Hoffman, 1989; Wortman et al., 2000). Peri-Gondwanan terranes that are thought to have accreted during the Appalachian orogenies include the Avalon terrane, Carolina terrane, and Suwannee terrane (635-535 Ma) (Blakey, 2007; Dickinson and Gehrels, 2003).

Pangea Formation

The collision of Laurentia and Gondwana and subsequent formation of Pangea had a major effect on global tectonism, eustacy, global climate patterns and sediment supply with evidence seen spanning the globe throughout North America, central Eurasia, and northwestern Europe (Murphy and Nance, 1991; Blakey, 2007). The tectonic history of Pangea can be summarized as break-up of the previous supercontinent, Rodinia, in Late Proterozoic time, assembly of Laurussia and Laurasia throughout Paleozoic time, assembly of western Pangea and closing of the Paleotethys Ocean beginning in Mississippian time, followed by the final assembly of eastern Pangea with coeval initial break-up of western Pangea (Murphy and Nance, 1991; Ziegler, 1992; Dickinson and Lawton, 2001; Hatcher, 2002; Stampfli et al., 2002; Blakey, 2007). The collision and accretion of Gondwana, Laurentia/Baltica, and Siberia-Kazakhstan-Asia continental masses during the final assembly of western Pangea in Carboniferous time resulted in an accretionary orogenic system (Stampfli et al., 2002; Cawood and Buchan, 2007). The final oblique collision closed the Rheic Ocean and distributed collisional forces differently along the orogenic front in a zipper fashion from eastern to western Pangea (Dickinson and Lawton, 2001;

Hatcher, 2002; Blakey, 2007). These tectonic events resulted in the formation of the Appalachian orogen (500-280 Ma) and the Ouachita-Marathon-Sonora orogen (300-250 Ma) (Dickinson, 1983; Becker et al., 2006; Blakey, 2007; Kröner et al., 2016). Reorganization of the plates due to transpressional and transtensional tectonics followed collision until rifting began in Triassic time (Blakey, 2007).

Ouachita-Marathon-Sonora Orogen

The Ouachita-Marathon-Sonora orogen (OMS) is a 3,000-km deformation belt of three segments that collectively span the southern margin of North America from Mississippi to Oklahoma (Ouachita), southwest through Texas (Marathon) and westward through Chihuahua and Sonora, ending in Baja California, Sonora (Figure 1; Poole et al., 2005). Many authors (e.g., Ross (1986), Handschy et al. (1987), Dickinson and Lawton (2001)) and others subscribe to the view that the farthest extent of the Ouachita-Marathon belt terminates in eastern Mexico and does not include the Sonora segment. Stratigraphic and structural data support the continuation of the orogen to the west into Central Sonora and Baja California as the Sonora allochthon (Gastil et al., 1991; Poole et al., 2005). Inferred remnants of the Gondwanan volcanic arc with associated fore-arc and back-arc assemblages that amalgamated from the collision are exposed in southern Sonora and Sinaloa as the El Fuerte Block along the northern margin of Gondwana (Poole et al., 2005). Crustal blocks of eastern Mexico including the Coahuila block, the Tampico and Del Sur blocks, and the Yucatan-Chiapas block are interpreted as fragments of the Gondwanan continent and were also sutured to Laurentia during the collision (Dickinson and Lawton, 2001). Despite various crustal elements and volcanic arcs of Gondwana identified in Mexico, zircon that ranges in age from 750-500 Ma and is considered characteristic of Gondwanan provenance are rare in southwestern North America. Westward termination of

Ouachita-Marathon-Sonora orogenesis occurred along the orogenic belt with deformation ending in Late Pennsylvanian time in the Ouachita Mountains, early Permian time in the Marathon region, and middle Permian (Guadalupian) time in the Sonora region (Poole et al., 2005; Stevens et al., 2014; Lara-Peña et al., 2020).

While cross-cutting younger features such as plutonic and volcanic rocks of the Sierra Madre Occidental, as well as fold-and-thrust belts of the Sierra Madre Oriental, interrupt the continuous orogenic belt of the OMS, each segment is linked through stratigraphic similarities, persistent biostratigraphy, deformation features and detrital zircon ages (Hatcher et al., 1989; Poole et al., 2005). Stratigraphic correlations of characteristic sections of the Sonora, Marathon, and Ouachita segments indicate similar successions of strata and erosional hiatuses (Poole et al., 2005). Paleozoic rocks of each segment of the OMS are primarily deep-water deposits with fossils such as radiolarians, graptolites, conodonts, sponge spicules, fusulinids, and brachiopods (Poole et al., 2005). Foreland basins formed adjacent to basement uplifts that developed in the continental crust during orogenesis, including foredeeps that formed subparallel to the orogenic front due to crustal flexure and isostatic loading during collision (Hatcher et al., 1989; Poole et al., 2005).

Related Subsequent Orogenesis

Concurrent with final Pangea amalgamation in late Paleozoic time (Poole et al., 2005; 2008), continuing transtensional and transform tectonics led to rifting within the supercontinent, which would eventually break apart into the present-day continents (Blakey, 2007). Subduction of the Farallon plate beneath southwestern North America was initiated in late Permian time and began to build the Cordilleran system, shaping much of the western coast of the Americas

(Dickinson, 2004; Cecil et al., 2018). Permian plutons (270-260 Ma) in Sonora, Mexico, and Permian-Middle Triassic plutons (275-235 Ma) in the Mojave Desert have been interpreted as the root of the continental arc that developed along the southwestern Laurentian margin (Riggs et al., 2010; Cecil et al., 2018). Cecil et al. (2018) identified more evolved Hf and Nd isotopic signatures of the Sonoran Permo-Triassic magmatism than isotopic signatures of Permo-Triassic magmatism in northern Mojave region, suggesting the regions contain two distinct magmatic systems. Subduction complexes and intra-oceanic island arcs, such as the Guerrero superterrane, were accreted to southwest North American during mid-Mesozoic time that led to growth of the Cordilleran continental margin through arc-continent collision-accretion (Dickinson and Lawton, 2001; Dickinson, 2004). Continued subduction beneath Laurentia and accretion of terranes during Mesozoic time led to the formation of the Cretaceous Sierra Nevada and the Peninsular Ranges batholiths (Dickinson, 2004; Cecil et al., 2018). The Peninsular Ranges batholith spans southern California to southern Baja California (Figure 4) and was emplaced between 140-80 Ma with an eastward younging across Alta and Baja California, likely due to changes of dip and velocity of the subducting slab (Ortega-Rivera, 2003; Sedlock, 2003). The Peninsular Ranges batholith is divided into a western (140-105 Ma) and eastern belt (105-80 Ma) (Silver and Chappell, 2011; Busby, 2004). The western Peninsular Ranges batholith contains 140-105 Ma plutons and 125-118 Ma volcanic rocks. The eastern Peninsular Ranges batholith contains 105-80 Ma plutons that invade Phanerozoic metasedimentary, metavolcanic and metaplutonic rocks (Ortega-Rivera, 2003). The western Cordillera experienced crustal shortening due to the Sevier and Laramide orogenies, subsequent stretching and large-scale transform tectonics from Late Cretaceous to Cenozoic time (Ortega-Rivera, 2003). By Miocene time, transform faulting led to

opening of the Gulf of California and consequent 300-500 km northward translation of the Baja peninsula to its current location (Ortega-Rivera, 2003; Sedlock, 2003).

Paleogeography of Cretaceous Baja California

Paleogeographic reconstruction of Late Cretaceous northern Baja California by Bottjer (1984) suggests a west-facing forearc basin made up of the Peninsular Ranges batholith and portions of the western Transverse Ranges. Upper Cretaceous strata were deposited in nonmarine, shallow-marine, shelf, slope, and deep-sea fan environments with west-directed transport patterns. Paleocurrent directions in Baja California during this time are consistently toward the west (Busby-Spera and Boles, 1986).

1.2 GEOLOGIC BACKGROUND OF THE SONORA ALLOCHTHON

The Sonora allochthon was emplaced during latest early-middle Permian time and major thrusting associated with emplacement of the allochthon likely ended before Triassic time, followed by formation of rift basins from transtensional and extensional faulting in the Early and Middle Triassic epochs (Poole et al., 2005). The Sonora allochthon consists of deep-water continental-rise and ocean-basin rocks that were emplaced onto continental-shelf and deep-water foredeep rocks of southern Laurentia (Poole et al., 2005; 2008; Stevens et al., 2014).

Stratigraphy of central Sonora, Mexico

Poole and Amaya-Martínez (2000) described the Sonora allochthon of central Sonora as composed of continental-slope and -rise deposits; a foreland basin north and subparallel to the orogenic belt were filled with sediment eroding from the advancing orogeny. The Sonora allochthon can be divided into pre-Upper Mississippian pre-orogenic continental-rise deposits

that are approximately 600-800 m thick and post-Lower Mississippian synorogenic turbidite deposits approximately 1,000 m thick. Pre-orogenic deposits were folded and faulted in the Mississippian Los Chinos deformational event. Those deposits underlie synorogenic siliceous turbiditic sediments that were emplaced during the Sonora orogeny in Carboniferous-Permian time that also folded and thrusted the entirety of the Paleozoic oceanic-rock sequence.

The best exposure of Paleozoic outcrops in central Sonora are found in the Minas de Barita area, which contains the Sonora allochthon, the Mina México foredeep and Laurentian shelf deposits (Figure 5). Sonora allochthon strata of the Minas de Barita are generally composed of Ordovician, Devonian, and Mississippian to Pennsylvanian formations, including the Rancho Nuevo Formation (Figure 2) that are primarily made up of deep-water successions including radiolarian chert, shale, mudstone, siltstone, stratiform barite, sandstone, quartzite, limestone and conglomerate lithologies (Poole and Amaya-Martínez, 2000; Poole et al., 2008; Stevens et al., 2014; Navas-Parejo et al., 2018). The Rancho Nuevo Formation was described by Poole et al. (2005; 2008) as synorogenic strata of the Sonora allochthon estimated to be thicker than 1000 m. The formation is composed of Upper Mississippian mudstone, siltstone, chert, barite, and Lower to Upper Pennsylvanian interbedded turbiditic mudstone, siltstone, sandstone, conglomerate, chert, barite, limestone, and minor dolostone. Radiolarians, conodonts, and fusulinids are identified within the formation.

The Mina México Formation was described by Poole et al. (2005, 2008) as approximately 1000 m of turbiditic siltstones, fine sandstones, and sparse turbiditic lime grainstones that represent the lower to middle Permian Mina México foredeep that accumulated in front of the evolving Sonora allochthon on the outer part of the Laurentian continental shelf. The Mina México Formation is a synorogenic turbidite sequence that tectonically underlies part

of the Sonora allochthon strata. The foredeep was formed along the leading edge of the Sonora allochthon and on the outer exposure of the Laurentian continental shelf in response to crustal flexing and isostatic loading.

Initial detrital zircon studies by Gehrels and Stewart (1998) determined provenance of Cambrian to Triassic strata throughout Sonora, Mexico. In central Sonora, they determined that the source of the middle Permian Mina México Formation of the Santa Teresa foredeep was likely recycled Precambrian rocks of the southwestern North America and northernmost Sonora. Poole et al. (2008) presented U-Pb isotopic ages of detrital zircon from Upper Devonian Los Pozos Formation of the Sonora allochthon and middle Permian carbonate sandstone of the Mina México foredeep that established similar ages to the middle Permian Mina México Formation of the Santa Teresa foredeep from Gehrels and Stewart (1998) (Figure 3). Gehrels and Pecha (2014) continued the detrital zircon study of Sonoran strata by Gehrels and Stewart (1998) and Poole et al. (2008) with further U-Pb geochronology and Hf isotope geochemistry. U-Pb ages and εHf signatures showed that Devonian strata were locally derived from basement provinces that are likely made up of detritus from recycled underlying Cambrian and Neoproterozoic strata. The Permian strata yielded zircon grains with U-Pb ages and εHf signatures similar to the Mojave-Yavapai-Mazatzal provinces, 1.48-1.34 Ga local basement rocks, the Grenville orogen, or local recycled Devonian strata (Gehrels and Stewart, 1998; Poole et al., 2008; Gehrels and Pecha, 2014).

Stevens et al. (2014) reported fusulinid faunas in Sonora that indicated three depositional settings: off-shelf continental-rise and ocean basin (Sonora allochthon), shallow continental shelf (Laurentian carbonate shelf) and foredeep basin on the continental shelf (Mina México Basin). The Sonora allochthon overlies the middle Permian foredeep deposits of the Mina México basin

and underlies Triassic deposits unaffected by thrusting; allochthon emplacement must have ceased by late Permian time.

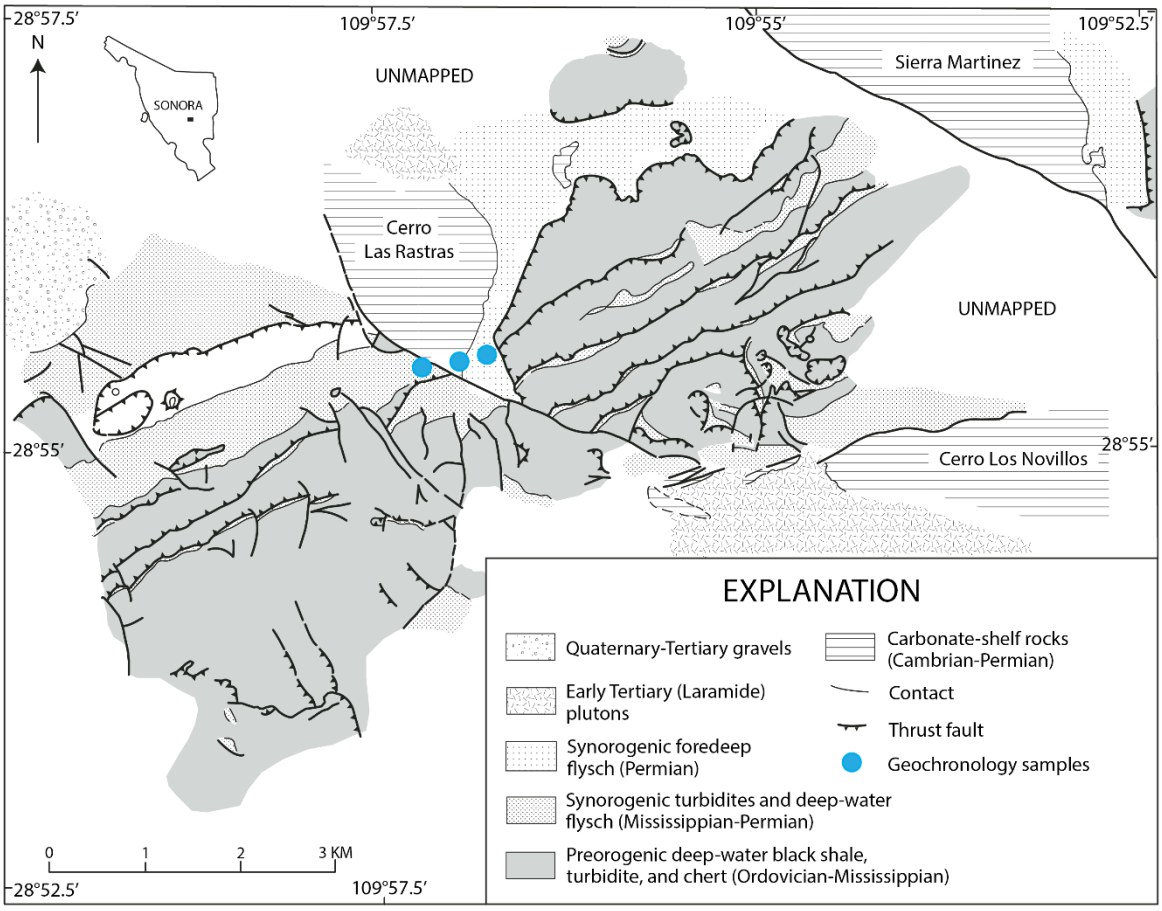


Figure 5. Simplified geologic map of the Minas de Barita area (modified from Poole et al., 2008). Location of detrital zircon samples collected for this study are indicated by the circles.

Stratigraphy of the Sierra Las Pintas, Baja California

The Sierra Las Pintas is located within the floodplain of the Colorado River delta in northern Baja California, approximately 110 km south of Mexicali and 60 km north of San Felipe (Figure 2). Leier-Engelhardt (1993) inferred that the strata of the Sierra Las Pintas have undergone varying degrees of metamorphism due to late Paleozoic collision of Gondwana and

Laurentia. The Sierra Las Pintas strata are predominantly low- to high- greenschist-facies metasedimentary rocks that are separated into a northern area defined as the Sierra Las Pintas Group and a southern area referred to as the Arroyo Grande Group (Figure 2, 6-7). Leier-Engelhardt (1986, 1993) presented geologic maps of the northern and southern Sierra Las Pintas that subdivided the rocks into six units of the Sierra Las Pintas Group and four units of the Arroyo Grande Group.

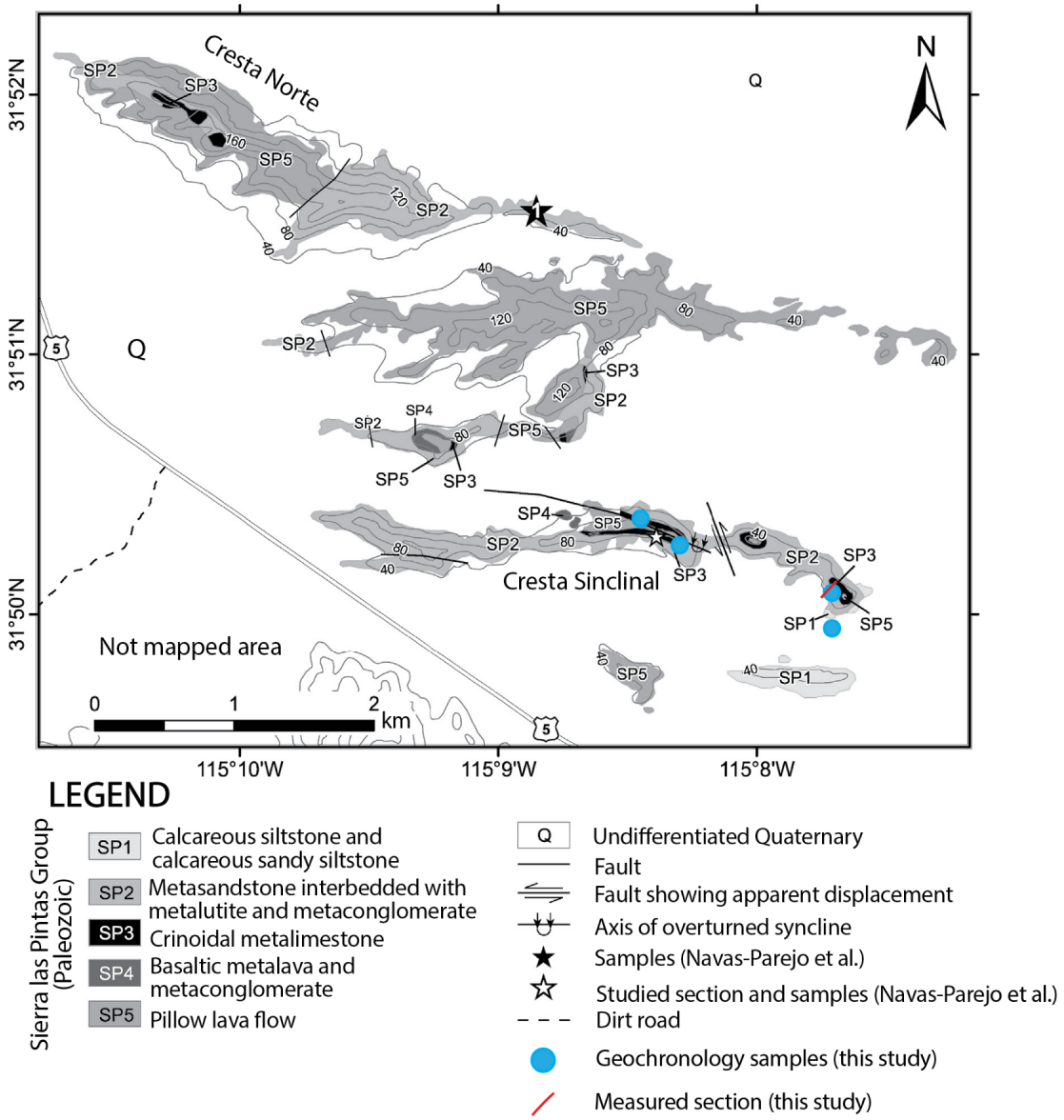


Figure 6. Geologic map of the northern Sierra Las Pintas area by Navas-Parejo et al. (2018) including location of measured section and detrital zircon samples from this study.

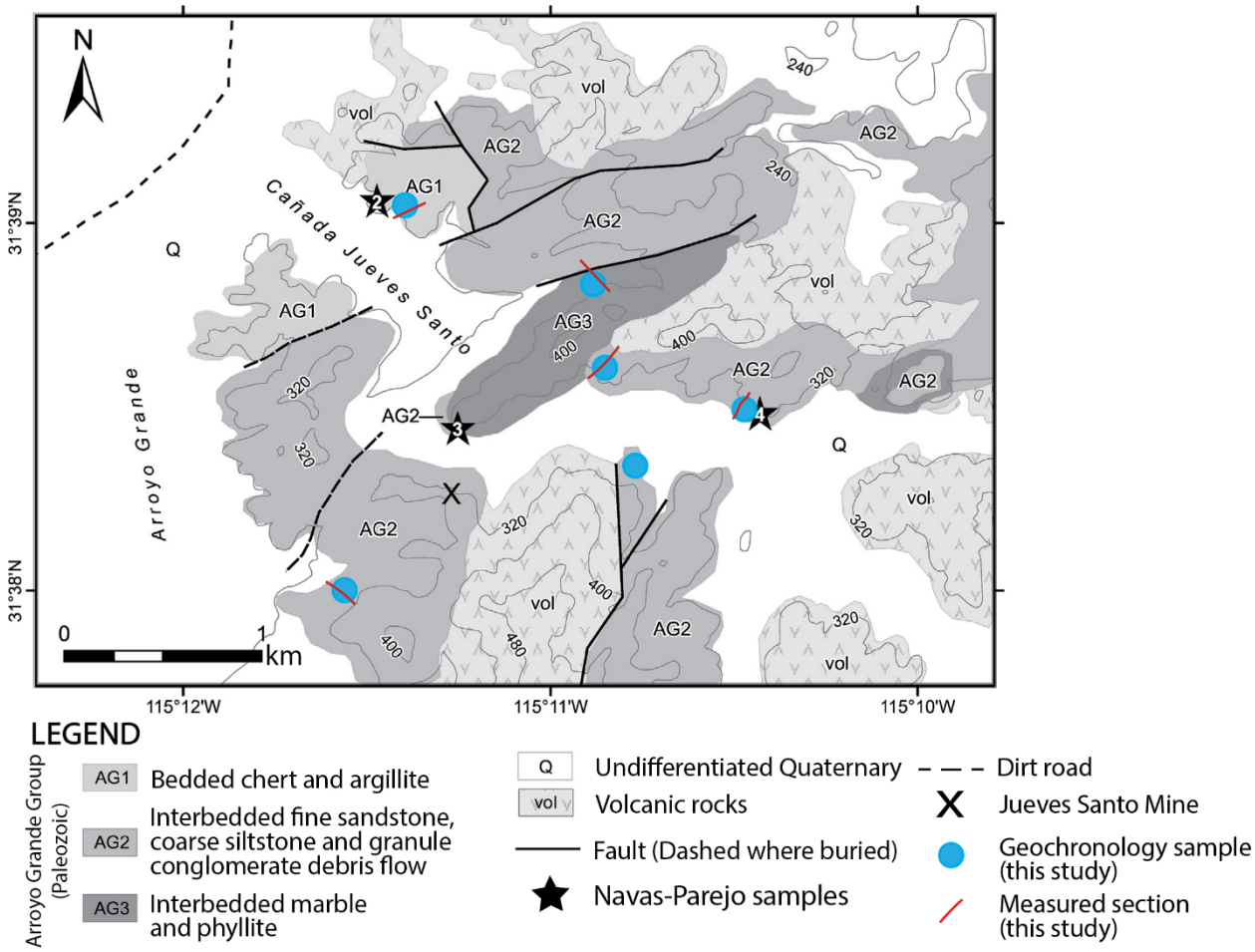


Figure 7. Geologic map of the Arroyo Grande field area by Navas-Parejo et al. (2018) showing detrital zircon sample locations and measured section lines from this study.

Sierra Las Pintas Group

Leier-Engelhardt (1993) initially mapped and interpreted the strata of the Sierra Las Pintas Group. The Sierra Las Pintas contains four east-west-trending ridges that exhibit increasing metamorphic grade northward. Leier-Engelhardt (1993) inferred that the strata of the

Sierra Las Pintas Group are Carboniferous metasedimentary rocks due to the presence of Carboniferous fossils such as crinoids, solitary corals, and brachiopods (McEldowney, 1970; Leier-Engelhardt, 1986, 1993; Navas-Parejo, 2018). The metasedimentary rocks are overlain by basaltic flows and pillow basalts. Leier-Engelhardt (1993) divided the Sierra Las Pintas Group into six geologic units, SP1-SP6, that were later modified by Navas-Parejo et al. (2018; Figure 6). SP1 is described as bedded finely-laminated siltstone, calcareous siltstone, and calcareous sandstone classified as calcitic and immature lithic arkose. Original textures have been obliterated due to metamorphism that sheared the grains along the long axis, parallel to the east-west-trending ridge. SP2 is a dark-gray subarkosic siltstone, shale, and mudstone interbedded with pale-brown calcareous siltstone. SP2 also contains lenses of crinoidal packstone and granule conglomerate. SP3 is a dark yellowish-orange sandy crinoidal packstone that is considered a marker bed due to the presence of Paleozoic lophophyllid corals, brachiopods, and crinoid ossicles. The packstone is composed of fine sand and crinoid debris within a sparry calcite cement. SP4 is composed of coarsening-upward beds of massive granule, pebble, and cobble conglomerate that contain clasts of siltstone, sandstone, carbonate, and volcanic rock fragments. SP5 is composed of dark-gray pillow breccia at the base, overlying massive basalt flows, minor hyalotuff, and rare pillow basalt. Most of the basalt flow has been metamorphosed to chlorite. An irregular contact, possibly an unconformity, is interpreted between SP4 and SP5. SP6 is composed of bedded chert that has been thoroughly recrystallized and is interbedded with shaly limestone beds with sharp contacts. No known stratigraphic relation is identified between SP6 and other units. Initial geochemical results led to an interpretation that the volcanic rocks were formed in a transitional tectonic setting in regions of extreme continental lithospheric attenuation (Leier-Engelhardt, 1993). Navas-Parejo et al. (2018) suggested that the presence of crinoid fauna

indicates Middle Pennsylvanian to early Permian-age strata in the northern Sierra Las Pintas, which correlate with Paleozoic strata in Sonora, Mexico. Leier-Engelhardt (1993) inferred that Units SP1-SP4 of the northern Sierra Las Pintas were deposited onto a continental slope or at the base of the slope. Navas-Parejo et al. (2018) later interpreted the slope deposits to have been derived from high-grade metamorphic rocks and from a shallow-water platform due to the presence of crinoidal fauna, indicating a crinoid meadow.

Arroyo Grande Group

Leier-Engelhardt (1993) also completed the initial mapping of the Arroyo Grande Group of the southern Sierra Las Pintas, which was later modified by Navas-Parejo et al. (2018; Figure 6). Leier-Engelhardt (1993) interpreted the strata of the Arroyo Grande Group as Lower Devonian to Lower Mississippian siliciclastic rocks that have undergone greenschist-grade metamorphism, later overprinted by Tertiary hydrothermal alteration. These units contain sedimentary structures that indicate deposition by turbidity currents and the metasedimentary units are overlain by basaltic flows and pillow basalts. Leier-Engelhardt (1993) initially described and divided the strata of the Arroyo Grande Group into subunits AG1-AG4. AG1 is described as gray, rhythmically bedded chert and argillite. Platform-type conodonts identified as *Polygnathus* sp. in the upper part of the sequence led Leier-Engelhardt (1993) to infer a late Early Devonian to Early Mississippian age for the succession. The unexposed base of AG2 is interpreted as a fault between AG1 and AG2. AG2, the thickest and most varied unit, is described as a sequence of coarsening-upward, finely laminated, fine-grained sandstone and mudstone. The entire unit has undergone metamorphism, but some original sedimentary features are preserved. AG3 is highly deformed and mineralized and described as predominantly interbedded marble and phyllite, originally limestone and calcareous shale. Leier-Engelhardt

(1993) inferred that the folding and mineralization noted in unit AG3 was due to post-Miocene faulting. AG3 is interbedded with the calcareous upper part of AG2 and is inferred to have a gradational contact. The contact between AG3 and AG4 is not exposed. AG4 is described as composed of dark-greenish gray pillow basalts and massive basalt flows. This unit shows the greatest hydrothermal alteration of the Arroyo Grande Group. AG4 is described as locally interbedded with AG2. The general stratigraphy of the Arroyo Grande Group shows similarities to strata found in the Sierra Las Pintas Group and has been loosely correlated (Leier-Engelhardt et al., 1993; Poole et al., 2005; 2008; Navas-Parejo et al., 2018; Figure 2).

2.0 METHODS

2.1 FIELD METHODS

This study tests the hypothesis that correlation can be made between inferred strata of the Sonora allochthon of central Sonora and Baja California, as well as provide evidence of Gondwanan provenance through extensive geochronologic analysis. Samples were collected from the proposed Sonora allochthon strata of the Minas de Barita area in Sonora, Mexico, the Sierra Las Pintas Group and the Arroyo Grande Group of Baja California, Mexico (Figure 1). Field characteristics were noted and samples were collected for detrital zircon geochronology and petrographic analysis from each of these areas. A total of 14 samples were collected for detrital zircon U-Pb dating and trace element analysis (Table 1). Each sample weighed approximately 10 kg and was collected from the coarsest grain bed within the unit. A total of 18 hand samples were also collected for petrographic analysis throughout each of the field areas (Table 1).

In Baja California, field work was conducted in the Arroyo Grande Group and Sierra Las Pintas Group in January 2020. Significant differences were noted in the geology of the Arroyo Grande Group from previous work and five new units were defined. Table 2 lists updated unit names with corresponding original unit names as described by Leier-Engelhardt (1993). Samples were collected from each unit, eight for detrital zircon geochronology and 16 for petrographic analysis (Figure 6; Table 1). Due to the pervasive folding and metamorphism of the strata, sedimentary structures are not well preserved in the area and stratigraphic sections do not depict lateral continuity. Stratigraphic sections were measured using a meter stick, Brunton compass, and a handheld GPS device along locations where detrital zircon samples were collected.

In the Sierra Las Pintas Group, two samples were collected for geochronologic analysis as well as hand samples for petrographic analysis (Figure 7). A stratigraphic section was measured at the collection of sample LP110120-1. A previous reconnaissance study in 2019 included collection of two other samples by committee members Dr. Nancy Riggs and Dr. Pilar Navas-Parejo for detrital zircon geochronology that were analyzed for this study (Table 1).

In Sonora, Mexico, eight samples were collected for detrital zircon geochronology by committee members Dr. Pilar Navas-Parejo and Dr. Michelangelo Martini from the Sonora allochthon of the Minas de Barita area. Samples were taken from the Mina México and Rancho Nuevo Formations. Unfortunately, only three of the samples contained sufficient zircon for analysis (Table 1).

Field Area	Sample Name	Unit	GPS Location	Purpose	# of Zircon
Arroyo Grande Group	LP070120-1	1	31º38'55.85" N, 115º11'21.21" W	DZ	180
	LP070120-2	2	31º38'45.89" N, 115º11'01.51" W	DZ	180
	LP080120-1	3	31º38'34.05" N, 115º10'53.20" W	DZ + TS	50
	LP080120-2	3	31º38'32.62" N, 115º10'53.04" W	TS	
	LP080120-3	3	31º38'32.62" N, 115º10'53.04" W	TS	
	LP080120-4	3	31º38'30.95" N, 115º10'52.01" W	TS	
	LP080120-5	3	31º38'30.95" N, 115º10'52.01" W	TS	
	LP080120-6	3	31º38'30.95" N, 115º10'52.01" W	TS	
	LP080120-8	3	31º38'27.53" N, 115º10'28.99" W	DZ + TS	180
	LP080120-9	3	31º38'27.53" N, 115º10'28.99" W	DZ + TS	180
	LP090120-1	3	31º38'17.76" N, 115º11' 34.12" W	TS	
	LP090120-2	4	31º38'09.22" N, 115º11,16.61" W	DZ + TS	180
	LP090120-3	4	31º38'09.22" N, 115º11,16.61" W	DZ + TS	180
	LP120120-1	3	31º38'22.64" N, 115º11'24.43" W	TS	
	LP120120-2	3	31º38'12.18" N, 115º11'47.82 W	TS	
	LP130120-1	3	31º38'23.7"N, 115º10'47.04" W	DZ	15
	LP130120-2	5	31º38' 23.31" N 115º10' 44.40" W	TS	
	LP140120-1	3	31º38'20.64" N, 115º10'30.06" W	TS	
	LP140120-2	3	31º38'20.4" N, 115º10'25.98" W	TS	
Sierra Las Pintas Group	LP100120-1	SP1	31º49'56.77" N, 115º07'44.35" W	DZ + TS	180
	LP110120-1	SP2	31º 50'2.71" N, 115º07'43.73" W	DZ	180
	LP110120-2	SP2	31º 50'2.71" N, 115º07'43.73" W	TS	
	18-LP-10	SP2	31º50'09.66" N, 115º08'16.57" W	DZ	155
	X181218	SP4	31° 50' 18.25", 115° 8' 22.33" W	DZ	19
Minas de Barita Area	13-11-SR2	Rancho Nuevo Fm	28º55'27.26" N, 109º57'02.97" W	DZ	74
	12-11-SR2	Mina México Fm	28º55'39.22" N, 109º56'55.17" W	DZ	90
	13-11-SR3 A+B	Mina México Fm	28º55'57.15" N, 109º56'37.19" W	DZ	72

Table 1. Sample names, formations, units, GPS locations, purpose of collection and amount of zircon processed. TS = thin section; DZ = detrital zircon; Fm = formation.

<table>
<tr><th colspan="2">Arroyo Grande Group Unit Names</th></tr>
<tr><th>This Study</th><th>Leier-Engelhardt (1993)</th></tr>
<tr><td>Unit 5</td><td>vol</td></tr>
<tr><td>Unit 4</td><td rowspan="4">AG3 AG2</td></tr>
<tr><td>Unit 3</td></tr>
<tr><td>Unit 2</td></tr>
<tr><td>Unit 1</td></tr>
<tr><td></td><td>AG1</td></tr>
</table>

Table 2. Updated unit names for Arroyo Grande Group and corresponding original unit names by Leier-Engelhardt (1993).

2.2 LABORATORY METHODS

Petrography

A total of 17 thin sections were created for petrographic analysis from the Arroyo Grande Group and two from the Sierra Las Pintas Group of Baja California (Table 1). The large quantity of samples collected from Unit 3 of the Arroyo Grande Group was intended to track any changes moving upsection. Thin sections were analyzed using an Olympus petrographic microscope. Due to the pervasive metamorphism of the rocks, original individual minerals could not be identified

and point counting was not possible. Petrographic analysis was used to aid in determining the primary composition of the samples and support provenance analyses.

Zircon U-Pb Geochronology

Zircon is a common accessory mineral found in igneous, metamorphic, and sedimentary rocks. Zircon forms by crystallization in a magmatic or metamorphic setting and can retain its crystallization age, regardless of weathering or erosion (Cawood et al., 2012). Zircon grains are highly resistant to physical abrasion and chemical breakdown and are preserved as detrital zircon in sedimentary deposits. The crystals have a high closure temperature of >900 °C (Davis et al., 2003). The resistant nature of zircon allows for preservation of original U and accumulated radiogenic Pb contents in the zircon grain, even through reheating events (Barth et al., 2013). Zircon is typically dated using the U-Pb decay scheme in which ^{238}U decays to ^{206}Pb with a half-life of 4.47 Ga, and ^{235}U decays to ^{207}Pb with a half-life of 710 Ma. The uranium-lead ratios from both decay systems can be used to determine the age of the zircon grain.

Analysis of detrital zircon that have accumulated in sedimentary rocks provides a range of ages and populations that reflects various suites of recycled magmatic material that have been incorporated into the sedimentary package (Gehrels, 2012). The youngest suite of statistically valid zircon ages found within a sedimentary package provides an estimate of maximum depositional age (MDA). The various populations of zircon ages within a sedimentary deposit can provide insight to the provenance of a rock and can be utilized along with maximum depositional ages to reconstruct the tectonic setting of a sedimentary unit on a regional scale.

All zircon samples collected for this study were processed in the mineral separation lab at Northern Arizona University, following standard zircon extraction procedures (Gehrels, 2000). Each sample was passed through the jaw crusher and roller mill, then filtered through a 500-µm

sieve. Grains less than 500 μm were run across a Gemeni water table, which separates the sample into light, medium, and heavy fractions based on the density of the grains. Zircon grains would be expected in the heavy fraction based on its higher density. The heavy fraction was passed through a Frantz magnetic separator, which divides the sample at increasing intervals up to 1 ampere to extract all magnetic minerals. The remaining non-magnetic sample was passed through methylene iodide ($\rho = 3.32$ g/cm^3) and stirred to allow the denser minerals, such as zircon, to sink to the bottom of the liquid. The minerals were then rinsed in acetone and dried under a heat lamp. Finally, the remainder of the processed sample was examined under a light microscope to separate out individual zircon crystals.

When selecting detrital zircon grains for analysis, 150-200 grains were selected randomly per sample and no preference was given shape or size of zircon, to adhere to standard zircon provenance study practices (Gehrels, 2012). For samples that did not contain 150-200 zircon grains, all zircon grains were selected for analysis. Selected grains were secured on double sided tape, fixed within a 1-inch diameter puck, epoxied and polished to expose the interior of the grains. Once mounted, zircon grains from the Sierra Las Pintas Group and Arroyo Grande Group samples were then analyzed for U-Th-Pb and trace element concentrations at the University of California Santa Barbara (UCSB) laser-ablation split-stream petrochronology lab by Dr. Andrew Kylander-Clark. Mounted zircon grains from the Minas de Barita samples were analyzed by Dr. Luigi Solari at Laboratorio de Estudios Isotópicos del Centro de Geociencias of the Universidad Nacional Autónoma de México (LEI).

Analysis was done using a Photon Machines 193 nm excimer laser with a HeLex sample cell at a 25-μm beam coupled to a Nu Instruments Plasma high-resolution multi-collector inductively-coupled plasma mass spectrometer (HR-MC-ICP-MS) for U and Pb isotope analysis

and an Agilent 7700x quadrupole inductively coupled plasma mass spectrometer (ICP-MS) for measurement of trace element concentrations. U-Pb and trace element analyses in August 2021 were calibrated using the primary standard Plesovice (337.71 ± 0.37 Ma; Sláma et al., 2008) every 10 grains, and alternating secondary standards 91500 (1062.4±0.4 Ma; Wiedenbeck et al., 1995) GJ-1 (601.9±0.7 Ma; Horstwood et al., 2016), and Piexe (564 Ma; Dickinson and Gehrels, 2003). Each run began with four to six measurements of Mali and four of the glass standard NIST-612; most runs ended with one-two NIST grains. The values of the standard were within 1-2% of the published values and error assessment of the data follows Kylander-Clark et al. (2013). U-Pb and trace element analyses were obtained simultaneously to ensure that the same growth zones were sampled within each zircon crystal. The data were reduced using the software package Iolite 2.5 in WaveMetrics IgorPro 6.37. Grains older than 90 Ma that were calculated to be discordant by >15% or reversely discordant by >5% were discarded. Grains with an uncertainty > 10% of the age are also not reported in the discussion. Reported ages for grains younger than approximately 1.0 Ga are $^{206}Pb/^{238}U$ ages. Grains older than approximately 1.0 Ga (or after a significant age gap in the data) report $^{207}Pb/^{206}U$ ages for the zircon grains. All analytical data can be found in Supplemental Table 1.

Graphical Displays

The populations of zircon ages for each sample are displayed using a traditional histogram with age in Ma along the x-axis and the numbers of grains for each bin, or age grouping, along the y-axis using Kernel Density Estimation (KDE) plots and Probability Density Plots (PDPs). KDE plots group the ages of all zircon grains in a sample into bins and show the dominant age populations for the sample (Vermeesch, 2018). Probability density functions are a statistical measure that suggests the likely outcome of a value, or in terms of geochronology

analysis, the age of the zircon. Probability density plots provide a visualization of the probability density of zircon ages for a sample, but there is criticism that PDPs lack theoretical basis as a probability density estimator (Vermeesch, 2012). The PDP can be overlain on a KDE plot to provide the probability density of grains. The major age peaks determined from the analysis can be compared to known source areas to determine the provenance of the sample. Plots for this study were created using IsoplotR (Vermeesch, 2018). Kernel and histogram bandwidths of 40 were used for the plots.

Other plots used for analysis include concordia diagrams and weighted mean plots. By plotting the two decay systems of a zircon against one another, a 'concordia' curve is created. Grains that plot off the concordia curve are considered discordant and could have been affected by hydrothermal alteration or metamorphism that causes lead loss or inheritance of uranium. Weighted mean plots are used to highlight a set of ages for a sample by calculating the weighted mean age. This plot weights each measurement by its uncertainty and can be utilized to represent a relevant population of ages, such as the youngest spectrum of zircon for a sample. The mean square of weighted deviates (MSWD) is also calculated to evaluate the likelihood that a set of zircon are related and reflect the same source. MSWD is determined by comparing the scatter of ages against their uncertainty. A MSWD value of one or less can be considered a sufficient fit to explain the scatter of ages compared to uncertainty and it is reasonable to assume the grains are related. A MSWD value of greater than one means that the uncertainty is not sufficient to explain the scatter of ages and the grains are likely not related.

By utilizing each of these plots, a maximum depositional age (MDA) for a sample can be determined. PDPs are the simplest method used to estimate MDA as the largest population of youngest ages for a sample, or peak in age probability, is a reasonable estimation for the MDA.

When the largest population of youngest grains from a PDP plot is coupled with the weighted mean plot and associated MSWD containing a value close to 1, the likelihood that the set of ages are coeval can be evaluated and a reliable MDA for the sample can be determined (Dickinson et al., 2009; Dobbs, 2017; Lodes, 2019).

Zircon Trace Element Geochemistry

Trace element geochemistry in conjunction with geochronologic analysis provides information about the host magma environment, variations in melt compositions, and can be used to further understand the evolution of an arc (Hoskin and Schaltegger, 2003; Grimes et al., 2007; Barth et al., 2013; Van Lankvelt, 2016). Although concentrations of trace elements such as U, Th, Y, and REEs can vary significantly within zircon suites, trace element ratios can show systematic variation and can be used to interpret source rock provenance (Grimes et al., 2007; Barth et al., 2013). For this study, four geochemical plots U vs Yb, Hf vs U/Yb, Th/U vs age, and Yd/Gd vs age were used to further understand source rock provenance. Th/U and Yb/Gd ratios can provide insight to the composition of the host. Th/U ratios can also help discriminate between metamorphic and magmatic zircon as ratios for magmatic zircon (0.2-4) are typically much higher than metamorphic zircon (<0.07) (Rubatto, 2002; Grimes et al., 2015; Kirkland et al., 2015; Van Lankvelt et al., 2016). U vs Yb and Hf vs U/Yb ratios are used to discriminate zircon that crystallized in oceanic or continental crustal settings (Grimes et al., 2007, 2011; Barth et al., 2013; Kirkland et al., 2015). U vs Yb and Hf vs U/Yb geochemical diagrams created for this study use continental vs oceanic signature discrimination based on established fields from Grimes et al., (2007).

3.0 RESULTS

3.1 LITHOLOGY, STRATIGRAPHY, AND PETROGRAPHY

The field areas investigated for this study are the Arroyo Grande Group, the Sierra Las Pintas Group, and Minas de Barita area. Field observations for each unit from the three field areas are summarized in Table 3 and results of petrographic analysis are summarized in Table 4. Detailed descriptions of each unit are presented here, along with stratigraphic columns for each unit, outcrop photographs and photomicrographs (Figures 10-27). An updated detailed geologic map was created for the Arroyo Grande Group, including redefined units from previous literature (Figure 8; Table 2).

Field Area	Unit	Lithology	Color	Grain size	Sorting	Sedimentary structures	Clasts
AGG	1	Radiolarian chert; metashale; metasiltstone	Dark gray - brown; light gray; gray	vf - f	Well sorted	Slumping, parallel laminations, pinching out of layers, convolute bedding	Siltstone intraclast, mud rip-up clasts
AGG	2	Metalimestone; metashale; metasiltstone; diagenetic chert	Light gray - tan; tan to gray; light gray; black	vf - f	Well sorted	Slumping, flame structure, convolute bedding, parallel laminations	N/A
AGG	3	Siliciclastic metasandstone; volcaniclastic metasandstone; metasiltstone	Tan - dark brown; light green; light gray	vf - c	Moderate to well sorted	Cross-bedding, parallel laminations, coarsening upward, boudinage	N/A
AGG	4	Metaconglomerate; metashale; metasiltstone; metasandstone;	Dark brown - purple; light gray - light brown; light gray - brown; light brown - dark brown	vf - c	Poor to moderate	Slumping, parallel laminations, sheared clasts	Chert, shale, sandstone, siltstone, limestone
AGG	5	Felsic dikes; Miocene volcanics	Light orange, light tan, pink	N/A	N/A	N/A	N/A
SLP	SP1	Metasandstone; calcerous metashale; metasiltstone	Tan - light orange; light to dark brown; light brown	vf - f	Well sorted	Parallel laminations	N/A
SLP	SP2	Metasandstone; metashale; metaconglomerate	Light brown - orange; dark brown; tan	f - c	Moderate to well sorted	Parallel laminations, ripple-cross laminations	Crinoids, quartz, plagioclase
SLP	SP4	Basaltic metalava; metaconglomerate	Black, light brown	N/A	N/A	N/A	N/A
MB	Rancho Nuevo Fm	Calcareous sandstone; shale; chert	N/A	N/A	Moderate to poorly sorted	Fining upward sequences, cross laminations, parallel laminations, massive to inverse grading	Skeletal and mudstone intraclasts, extraclasts of chert, calcareous and non-calcareous shale
MB	Mina México Fm	Siliciclastic sandstone; siltstone; conglomerate	Tan - light brown; light gray - blue; light brown	N/A	Moderate to poorly sorted	Parallel laminations, ripple-cross laminations, inverse grading, soft-sediment deformation, syn-sedimentary faults	Skeletal intraclasts, ichnofossils

Table 3. Summary of units and descriptions from field observations in the Arroyo Grande Group (AGG), Sierra Las Pintas Group (SLP), and Minas de Barita (MB) area. Grain size abbreviations: vf = very fine, f = fine, c = coarse.

Sample name	Lithology	Formation	Unit	Composition
LP080120-1	Volcaniclastic siltstone	AGG	3	50% fine-grained plagioclase feldspar, carlsbad twinning; 35% amphibole, locally replaced; 10% other; 5% oxides
LP080120-2	Very fine-grained volcaniclastic sandstone	AGG	3	50% very fine-grained plagioclase feldspar, carlsbad and albite twinning, sericitization; 35% amphibole, locally replaced; 10% other; 5% calcite veins
LP080120-3	Fine-grained volcaniclastic sandstone	AGG	3	15% plagioclase feldspar phenocryst, carlsbad and albite twinning, seritization; 35% fine-grained plagioclase feldspar; 45% actinolite, locally replaced; 5% oxide
LP080120-4	Very-fine to fine-grained siliciclastic siltstone	AGG	3	80% well-sorted, fine- to very fine-grained quartz; 15% amphibole, locally replaced; 3% calcite veins; 2% oxides
LP080120-5	Fine-grained volcaniclastic sandstone	AGG	3	40% fine-grained plagioclase feldspar, carlsbad twinning; 35% tremolite, locally replaced; 15% oxides
LP080120-6	Fine-grained volcaniclastic siltstone	AGG	3	65% poorly-sorted, fine-grained plagioclase feldspar; 30% plagioclase feldspar phenocrysts, seritization; 5% calcite veins
LP080120-8	Coarse-grained siliciclastic sandstone	AGG	3	67% very well-sorted, coarse-grained quartz, undulatory extinction; 25% fine-grained plagioclase feldspar, albite twinning; 5% tremolite; 3% calcite veins
LP080120-9	Coarse-grained volcaniclastic sandstone	AGG	3	45% coarse-grained, relict plagioclase feldspar, seritization; 50% tremolite, locally replaced; 5% oxides
LP090120-1	Coarse-grained volcaniclastic sandstone	AGG	3	50% poorly-sorted, coarse-grained plagioclase feldspar, albite and carlsbad twinning; 20% tremolite, locally replaced; 3% oxide; volcanic lithic matrix, seritization
LP120120-1	Coarse-grained volcaniclastic sandstone	AGG	3	40% coarse-grained plagioclase feldspar, albite and carlsbad twinning; 20% volcanic lithic fragments, 15% tremolite, locally replaced; 10% hematite cement, 5% oxides
LP120120-2	Fine-grained volcaniclastic sandstone	AGG	3	45% well-sorted, fine-grained feldspathic matrix; 30% tremolite, locally replaced; 20% fine-grained quartz, undulatory extinction; 5% volcanic lithic fragments
LP130120-1	Coarse-grained volcaniclastic sandstone	AGG	3	50% coarse-grained plagioclase feldspar, albite twinning; 25% tremolite, locally replaced; 18% volcanic lithic fragments; 5% calcite; 2% oxides
LP140120-1	Coarse-grained volcaniclastic sandstone	AGG	3	55% coarse-grained plagioclase feldspar, albite twinning, seritization; 30% tremolite, locally replaced; 12% volcanic lithic fragments; 3% oxides
LP140120-2	Coarse-grained siliciclastic sandstone	AGG	3	85% very well-sorted quartz (60% coarse-grained, 40% very fine-grained), undulatory extinction; 10% volcanic lithic fragments; 5% muscovite mica
LP090120-2	Sandstone lens in conglomerate	AGG	4	70% very well-sorted quartz (30% coarse-grained, 70% very fine-grained), undulatory extinction; 20% micaceous matrix, 5% tremolite, 5% oxides
LP090120-3	Conglomerate with shale, siltstone, and chert clasts	AGG	4	50% poorly-sorted, fine-grained quartz, undulatory extinction; 25% micaceous and very fine-grained quartz matrix; 15% chert clasts, sheared; 5% sedimentary lithic fragments, sheared; 5% volcanicaniclastic lithic fragments
LP130120-2	Volcanic dike	AGG	5	60% coarse-grained plagioclase feldspar, albite twinning, seritization; 20% tremolite, locally replaced; 10% volcanic lithic fragments; 5% oxides; 5% hematite cement
LP100120-1	Very fine-grained sandstone	SLP	SP1	60% well-sorted quartz (20% coarse-grained, 80% very fine-grained), undulatory extinction; 32% micaceous matrix; 5% tremolite, locally replaced; 2% oxides, 1% very fine-grained plagioclase feldspar, albite twinning
LP110120-2	Very coarse-grained sandstone	SLP	SP2	45% well-sorted quartz (80% very coarse-grained, 20% fine-grained), undulatory extinction, rare myrmekitic intergrowth; 30% calcite; 14% micaceous matrix; 10% tremolite, locally replaced; 1% very fine-grained plagioclase feldspar, carlsbad twinning

Table 4. Summary of petrographic analysis for all thin sections collected from Arroyo Grande Group (AGG) and Sierra Las Pintas Group (SLP). Composition estimations determined based on Journal of Sedimentary Petrography estimation comparison chart (Folk, 1951).

3.1.1 ARROYO GRANDE GROUP

The units of the Arroyo Grande Group are (1) bedded radiolarian chert and metashale, (2) bedded diagenetic chert and metalimestone, (3) interbedded siliciclastic metasandstone, volcaniclastic metasandstone, and metashale (4) interbedded metasandstone, metaconglomerate and metashale, and (5) volcanic rocks (Figures 8-9). The total thickness of the Arroyo Grande Group and its individual units is unknown due to structural complications and prevalent folding.

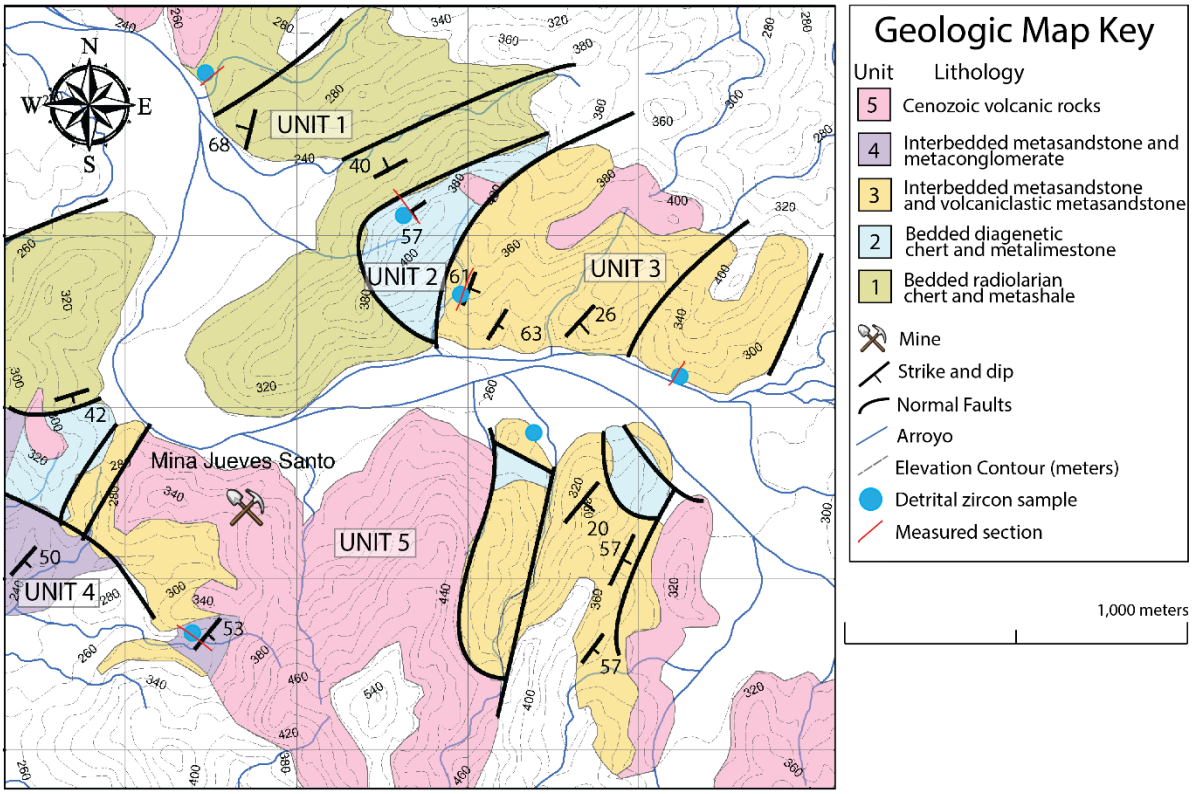


Figure 8. Geologic map of the Arroyo Grande Group showing detrital zircon sample locations and measured section lines. Geologic map (H. Morales, in prep.) created with M. Martini, H. Morales, and P. Navas-Parejo.

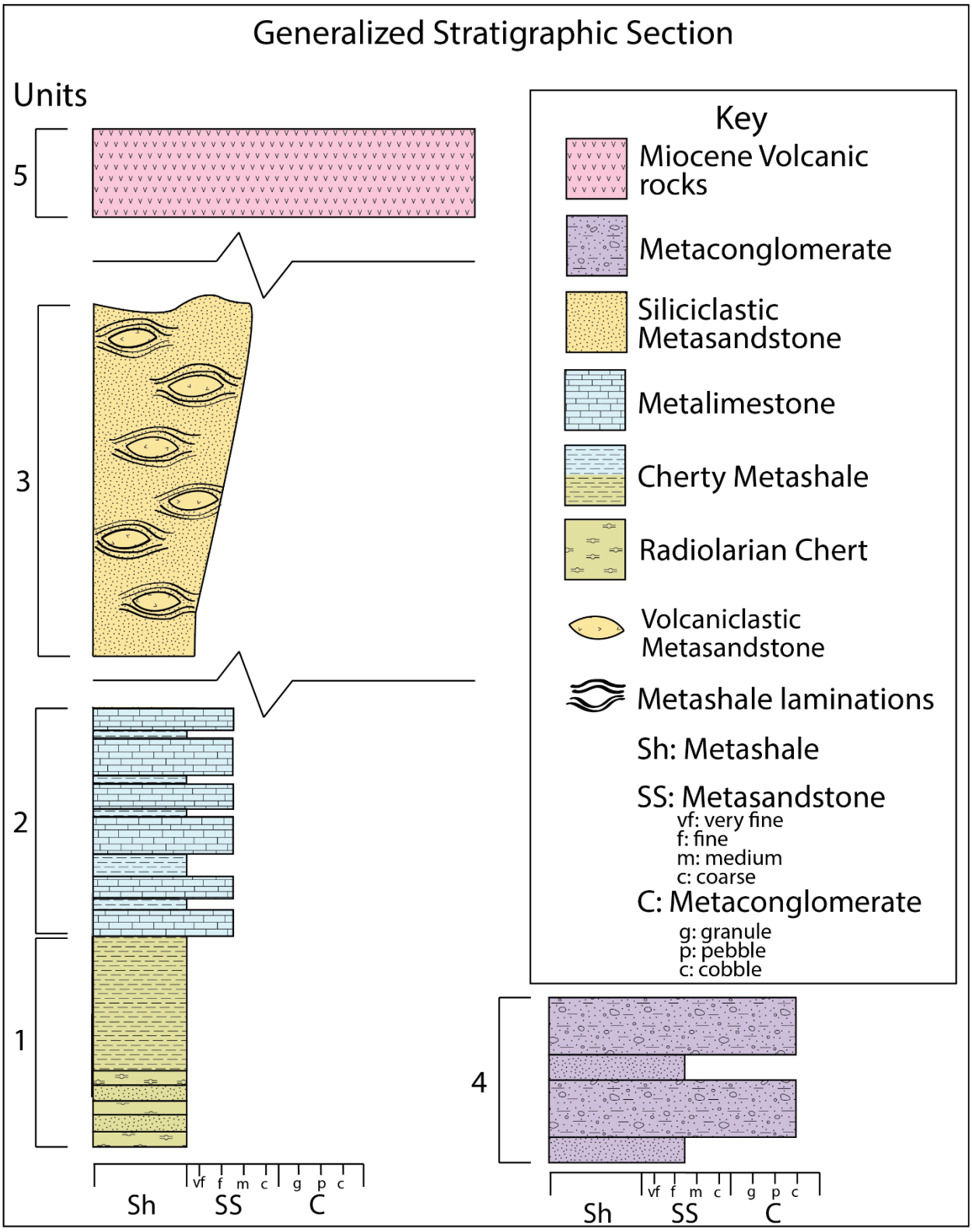

Generalized Stratigraphic Section
Units
5
3
2
1
4
Key
Miocene Volcanic rocks
Metaconglomerate
Siliciclastic Metasandstone
Metalimestone
Cherty Metashale
Radiolarian Chert
Volcaniclastic Metasandstone
Metashale laminations
Sh: Metashale
SS: Metasandstone
vf: very fine
f: fine
m: medium
c: coarse
C: Metaconglomerate
g: granule
p: pebble
c: cobble
vf f m c g p c
Sh
SS
C

Figure 9. Generalized stratigraphic section for all the units of the Arroyo Grande Group assuming strata are upright and young to the east. There is a fault contact between Units 2 and 3 and the stratigraphic relation between Unit 4 and other units is unknown. Grain-size subdivisions indicated along the x-axis (Sh - metashale, SS - metasandstone, vf – very fine, f - fine, m - medium, c - coarse, C - metaconglomerate, g - granular, p - pebble, c - cobble).

Unit 1 outcrop observations

Unit 1 is dark-brown to dark-gray radiolarian chert interbedded with light-gray to tan, fine-grained, siliciclastic metashale and metasandstone packages (Figure 10). The base of Unit 1 contains pervasive isoclinal folds (Figure 11D-E). The base of this unit is faulted against younger volcanic rocks. Radiolarian chert layers are typically 5-10 cm in thickness and alternate with 1-3-cm metashale beds (Figure 11A). Soft-sediment-deformation structures, slumping, sediment shearing, parallel laminations, syn-sedimentary faults and folds, and pinching out of very fine-grained metasandstone layers are common in the metashale layers (Figure 11B-C). Fine-grained metashale layers contain intraclasts of very fine-grained metasandstone (Figure 11B-C). The contact with Unit 2 is gradational as Unit 1 transitions into interbedded cherty metashale and metalimestone of Unit 2. Detrital zircon sample LP070120-1 was collected from the base of this unit; no thin sections were created (Figure 8).

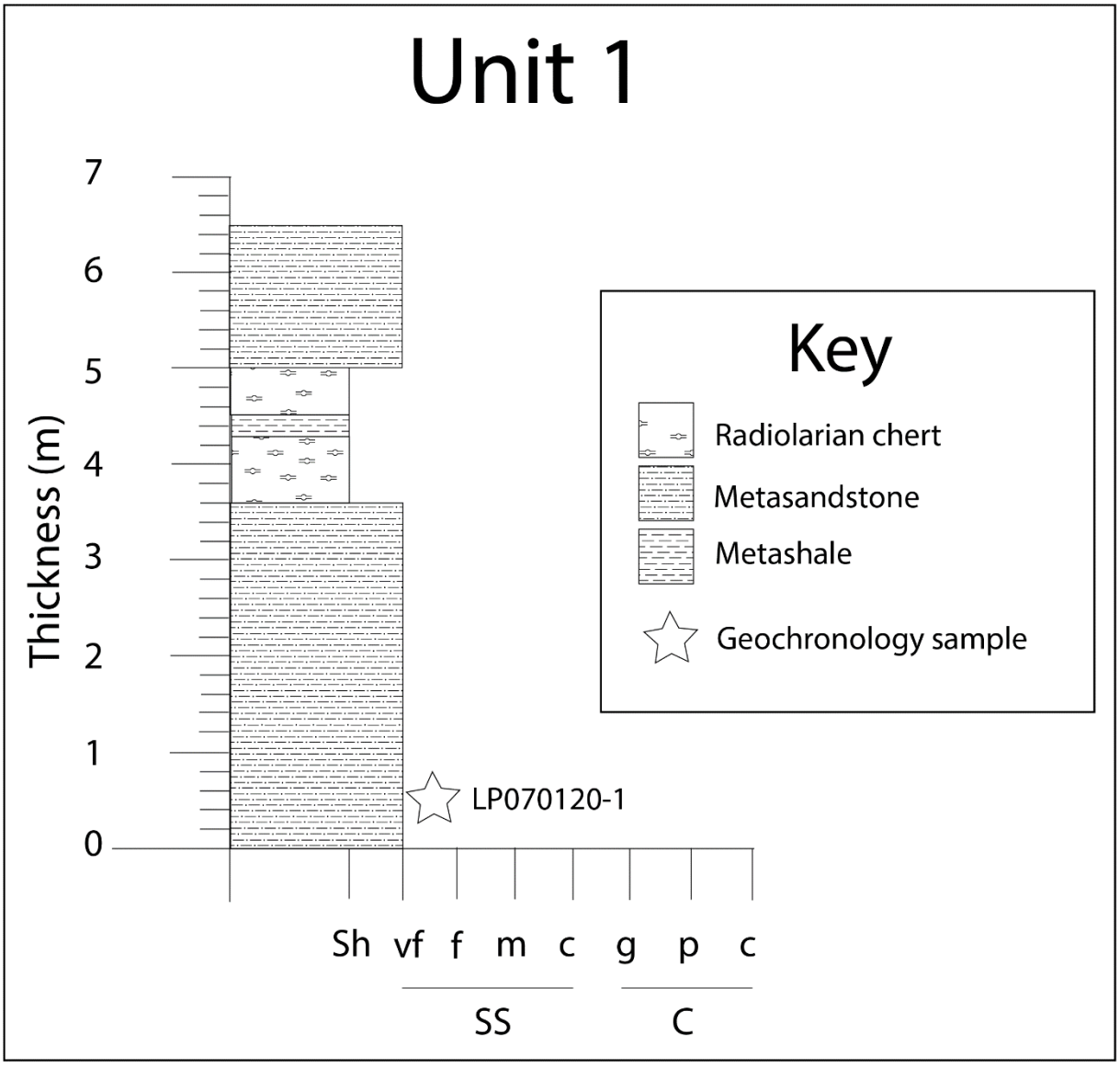


Figure 10. Measured stratigraphic section of Unit 1. Grain-size subdivisions indicated along the x-axis (Sh - metashale, SS - metasandstone, vf – very fine, f - fine, m - medium, c - coarse, C - metaconglomerate, g - granular, p - pebble, c - cobble).

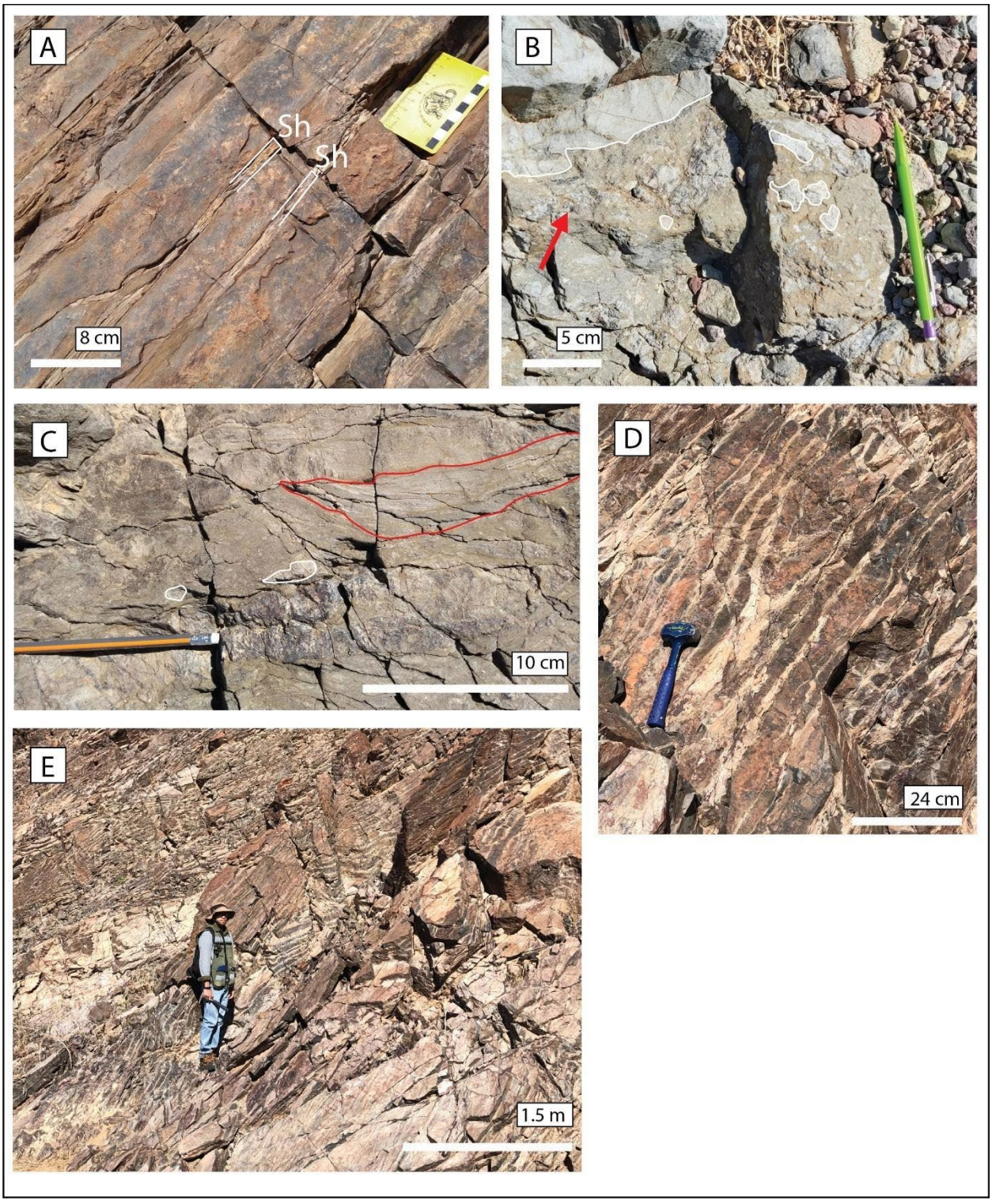


Figure 11. Outcrop photographs of Unit 1: **(A)** Alternating dark brown radiolarian chert (8-10 cm) and thin, parallel-laminated, gray metashale (Sh) layers (1-3 cm). Photo by P. Navas-Parejo. **(B)** Soft-sediment-deformation structures (red arrow) with rip-up clasts of metashale (outlined in white). Pencil approximately 14.5 cm. Photo by M. Martini. **(C)** Radiolarian chert with rip-up clasts (outlined in white) and beds of metashale containing parallel laminations that pinch out

(outlined in red). Photo by P. Navas-Parejo. **(D)** Isoclinal folds with competent chert layers interbedded with light-gray metashale layers. Hammer approximately 24 cm. Photo by M. Martini. **(E)** Large-scale isoclinal folds throughout the entire unit.

Unit 2 outcrop observations

Unit 2 contains recrystallized, light-gray to tan (orange weathered) metalimestone moderately to pervasively replaced by dark-gray diagenetic chert and interbedded with tan to gray cherty metashale and very fine-grained metasandstone (Figure 12). The base of Unit 2 is predominantly cherty metashale with a few large metalimestone packages interbedded with thin beds of metashale. Cherty metashale layers contain very-fine parallel laminations and soft-sediment-deformation structures (Figure 13A). Higher upsection, metalimestone packages increase and are pervasively replaced by diagenetic chert (5-20 cm in thickness) with metalimestone layers ranging from 5-10 cm in thickness (Figure 13B). Many faults and isoclinal folds are present throughout Unit 2 (Figure 13C). Detrital zircon sample LP070120-2 was collected from the base of this unit; no thin sections were made (Figure 8). Unit 2 is in fault contact with Unit 3.

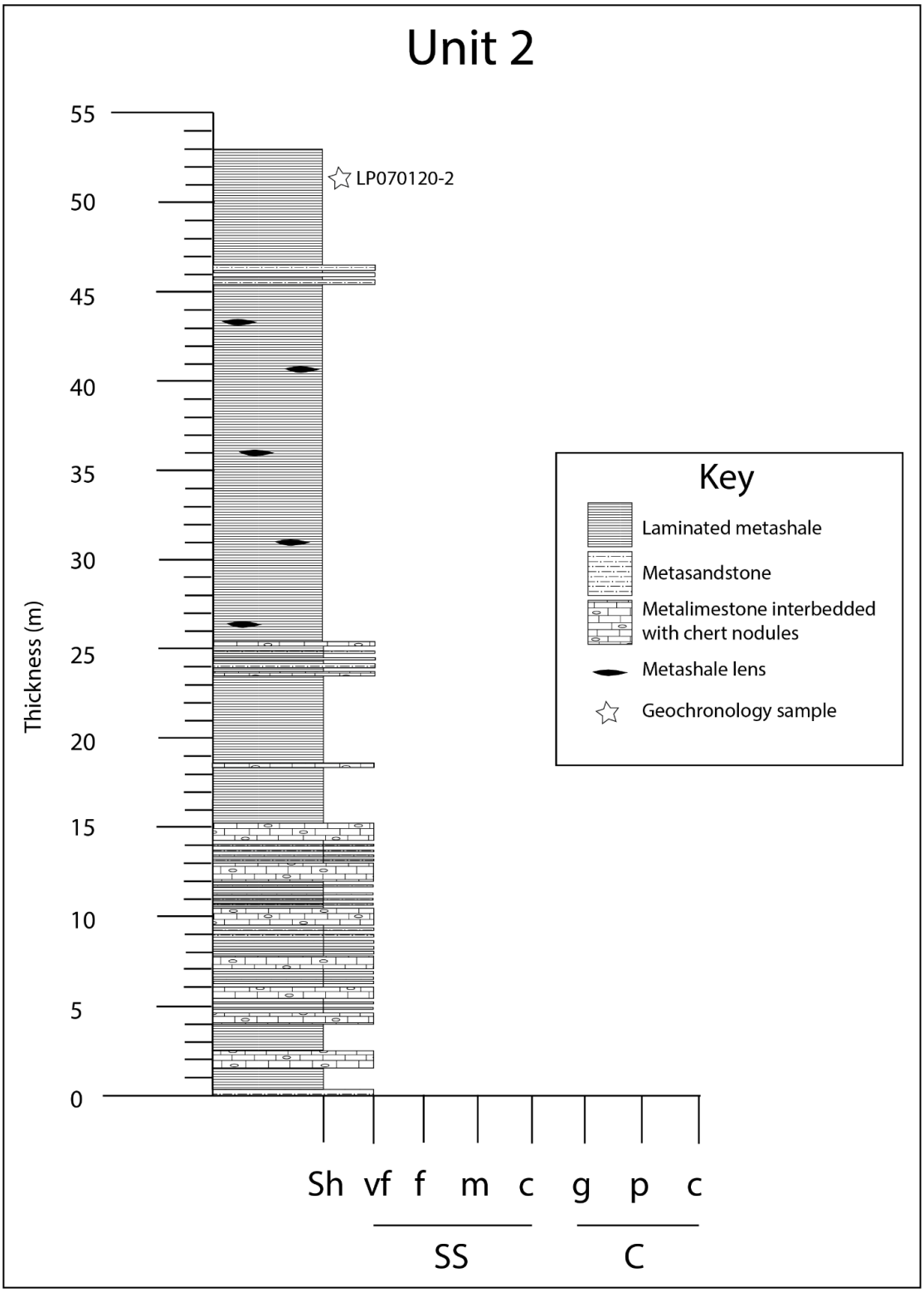


Figure 12. Measured stratigraphic section of Unit 2. Grain-size subdivisions indicated along the x-axis (Sh - metashale, SS - metasandstone, vf – very fine, f - fine, m - medium, c - coarse, C - metaconglomerate, g - granular, p - pebble, c - cobble).

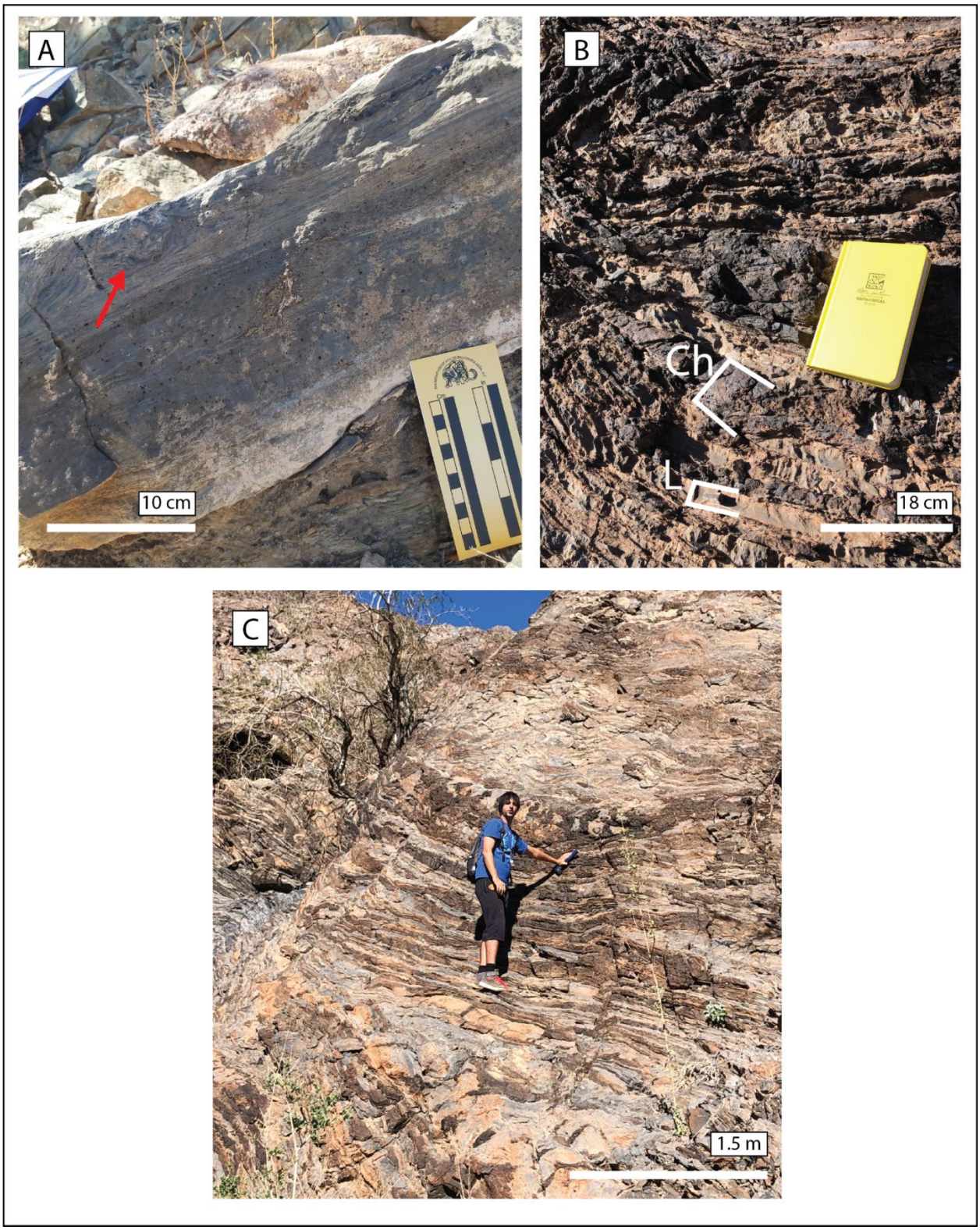

A
10 cm
B
Ch
L
18 cm
C
1.5 m

Figure 13. Outcrop photographs of Unit 2: **(A)** Cherty metashale containing soft-sediment-deformation structures (red arrow) and parallel laminations. Photo by M. Martini. **(B)** Metalimestone pervasively replaced by dark-gray, diagenetic chert. Notebook is 18- cm long. **(C)** Interbedded layers of cherty metashale (gray to tan), metalimestone (tan to light orange) and diagenetic chert (dark brown).

Unit 3 outcrop observations

Unit 3 is a metavolcaniclastic-siliciclastic sedimentary succession with alternating recrystallized and boudinaged volcaniclastic metasandstone lenses and recrystallized siliciclastic metasandstone packages, interbedded with metashale throughout. The siliciclastic metasedimentary packages range from metashale to coarse-grained metasandstone. The base of the unit is predominantly tan to dark-brown, siliciclastic metashale that contains light-green (tan to orange weathered) boudinaged very fine- to fine-grained volcaniclastic metasandstone interbedded with thin beds of very fine-grained siliciclastic metasandstone layers (5-20 cm in thickness) containing parallel laminations (Figure 14). Boudinaged volcaniclastic metasandstone lenses typically range from 20 cm to 1 m in thickness (Figure 16A). Often the boudins are encased in finely laminated metashale beds (Figure 16B). Sample LP080120-1 was collected from a volcaniclastic metasandstone lens near the base of the unit (Figure 8).

The base of the unit contains primarily very fine-grained volcaniclastic metasandstone lenses that progressively become more abundant, coarser-grained, and thicker packages upsection (Figure 15). Sedimentary structures such as parallel laminations and ripples are more common within siliciclastic metasandstones upsection. Partial turbidite sequences showing complete to incomplete Bouma sequences are observed within siliciclastic metasedimentary units (Figure 16C-D). Bouma sequence layers include massive, graded metasandstone (Ta), plane

parallel laminae (Tb), low-angle cross-beds (Tc) and parallel laminations (Td) within fine-grained metasandstone layers. Upsection, the volcaniclastic boudins (VC) are coarser- grained, more fractured, and typically weather dark brown to reddish orange while the bedded siliciclastic metasandstone (SS) is more compact, finer grained, weathers tan to light orange, and contains complete to incomplete Bouma sequences (16E). Samples LP080120-8 and LP080120-9 were collected from the siliciclastic metasandstone and the volcaniclastic boudinage lenses (respectively) toward the top of the unit. Sample LP130120-1 was also collected from a volcaniclastic boudinage lens on the southern side of the arroyo (Figure 8). Unit 3 is in fault contact with volcanic rocks of Unit 5 and the relation with Unit 4 could not be determined.

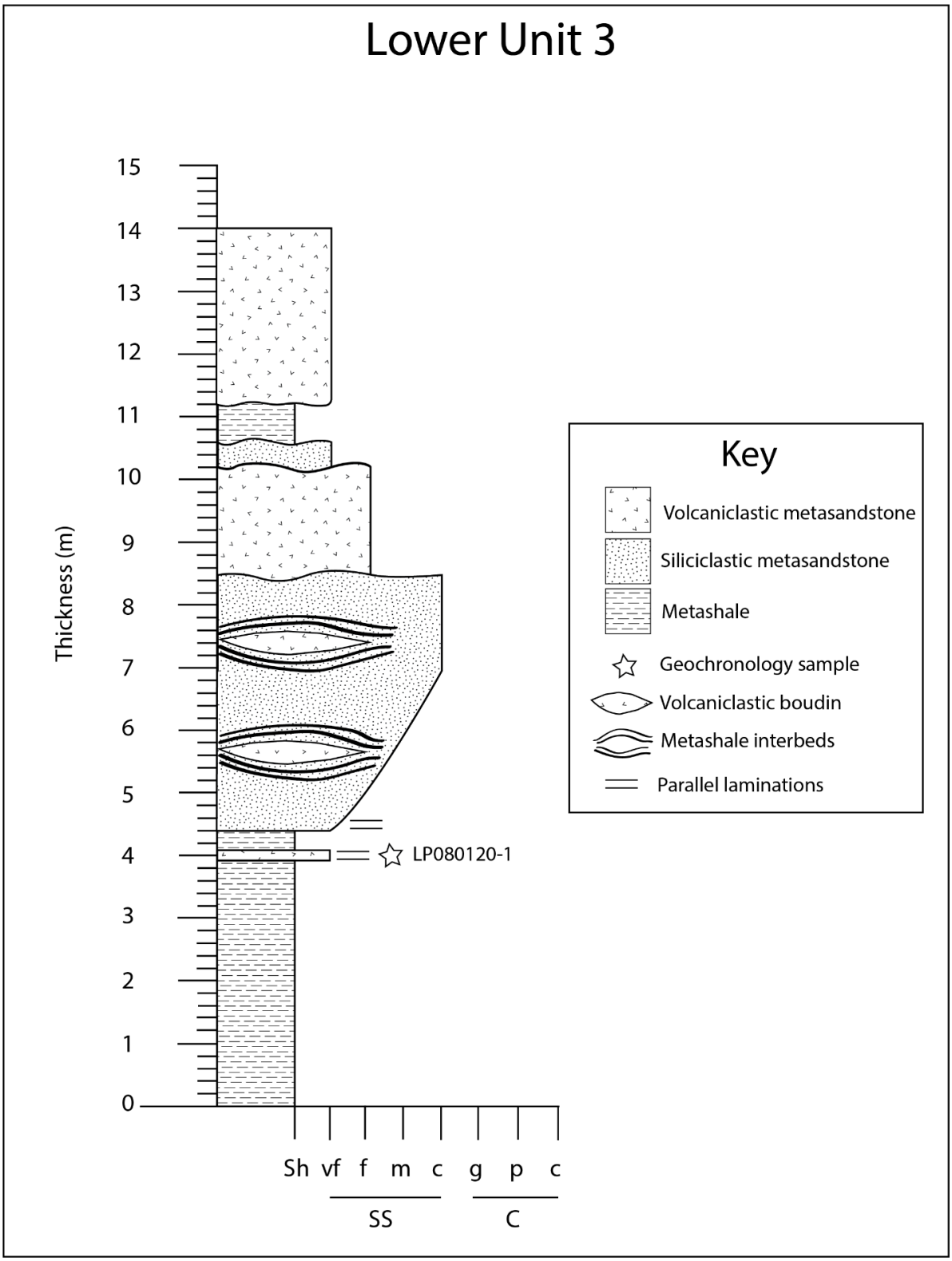


Figure 14. Measured stratigraphic section of the base of Unit 3 containing sample LP080120-1. Grain-size subdivisions indicated along the x-axis (Sh - metashale, SS - metasandstone, vf – very fine, f - fine, m - medium, c - coarse, C - metaconglomerate, g - granular, p - pebble, c - cobble).

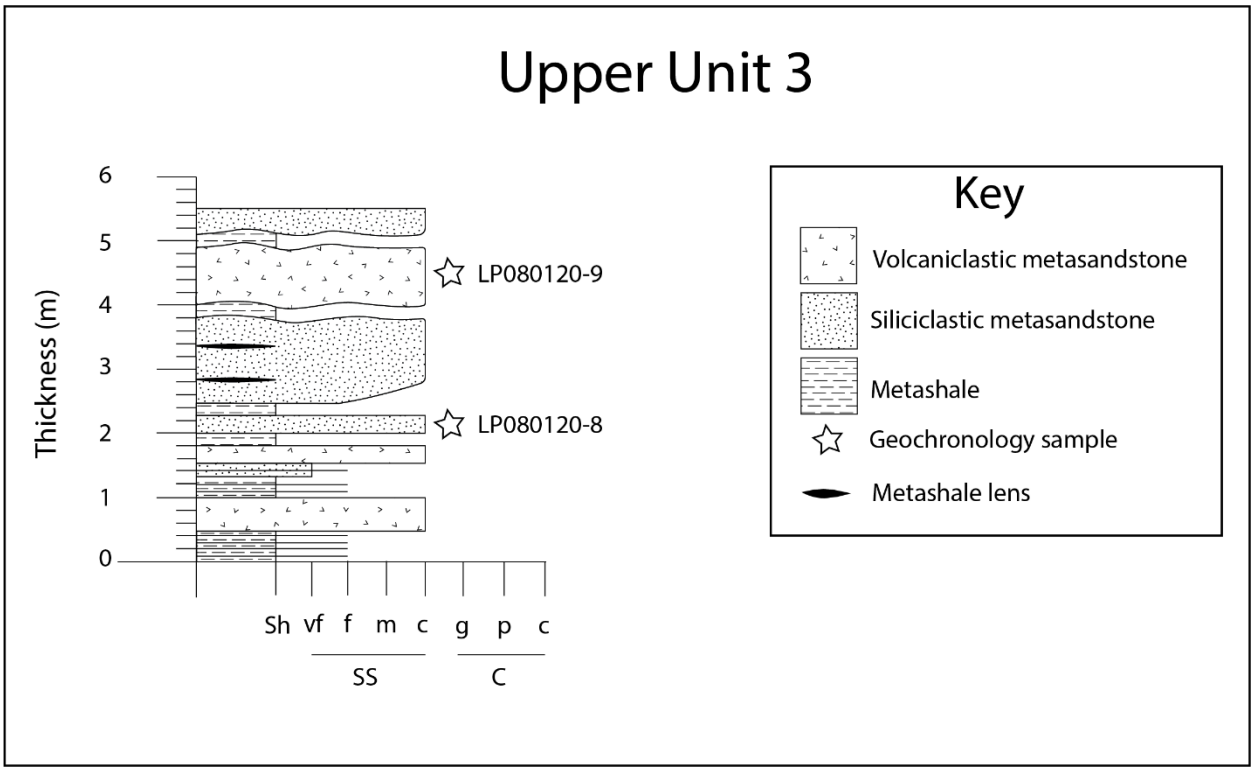


Figure 15. Measured stratigraphic section of the top of Unit 3. Grain-size subdivisions indicated along the x-axis (Sh - metashale, SS - metasandstone, vf – very fine, f - fine, m - medium, c - coarse, C - metaconglomerate, g - granular, p - pebble, c - cobble).


A
3 m

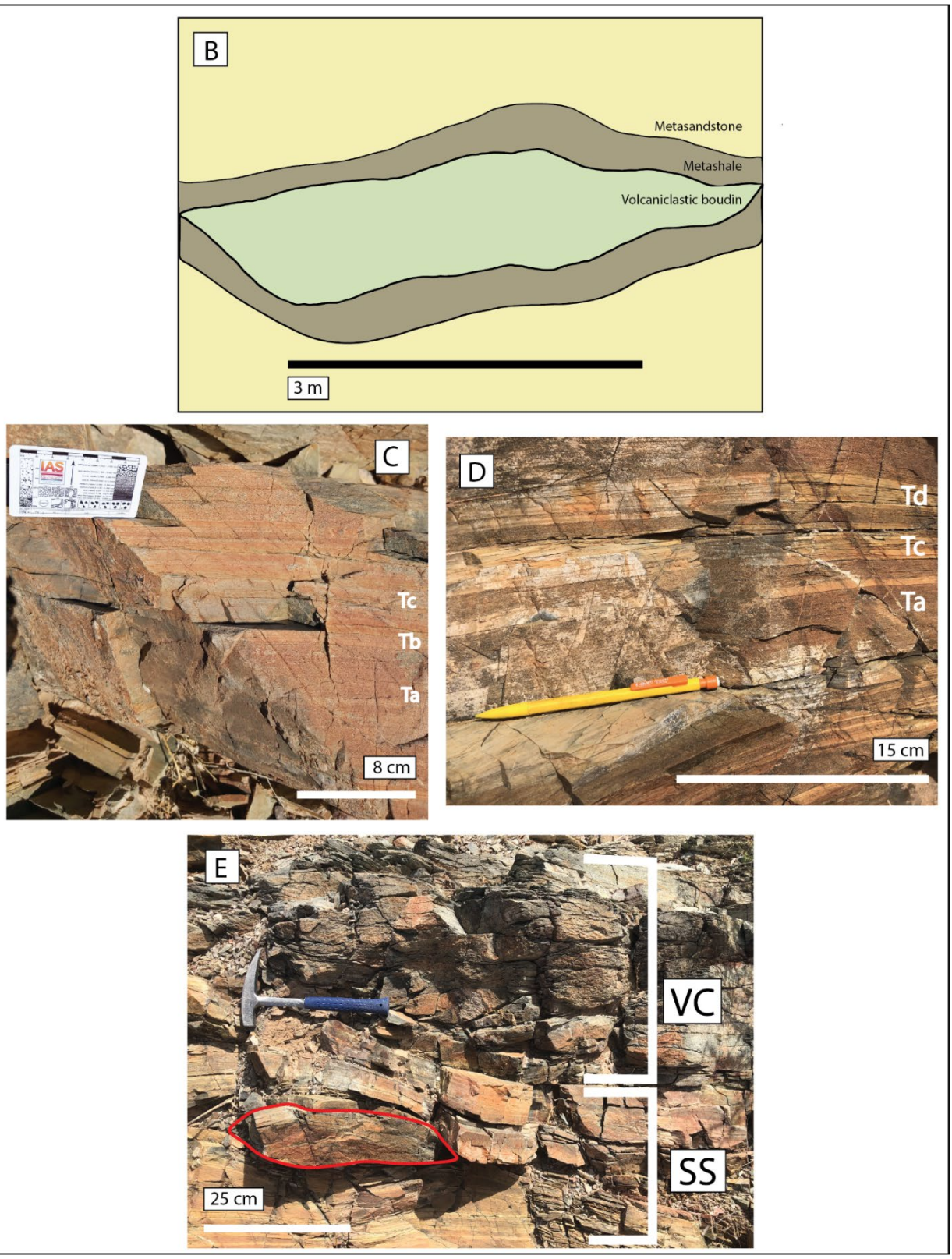

B
Metasandstone
Metashale
Volcaniclastic boudin
3 m
C
Tc
Tb
Ta
8 cm
D
Td
Tc
Ta
15 cm
E
VC
SS
25 cm

Figure 16. Outcrop photographs of Unit 3: **(A)** Type section of Unit 3 showing alternating tan to light-brown, fine- to coarse-grained siliciclastic metasandstone, laminated metashale layers (drawn in white) and volcaniclastic metasandstone boudins (outlined in red). Photo by M. Martini. **(B)** Cross-section sketch of volcaniclastic boudins surrounded by metashale layers within fine- to coarse-grained metasandstone packages. **(C-D)** Partial Bouma sequence within siliciclastic metasandstone packages including Bouma layers Ta, Tb, Tc and Td. Photo C by M. Martini. **(E)** Alternating layers of siliciclastic metasandstone (SS) and volcaniclastic metasandstone boudin lens (VC). A small volcaniclastic boudin (outlined in red) is present within the siliciclastic metasandstone.

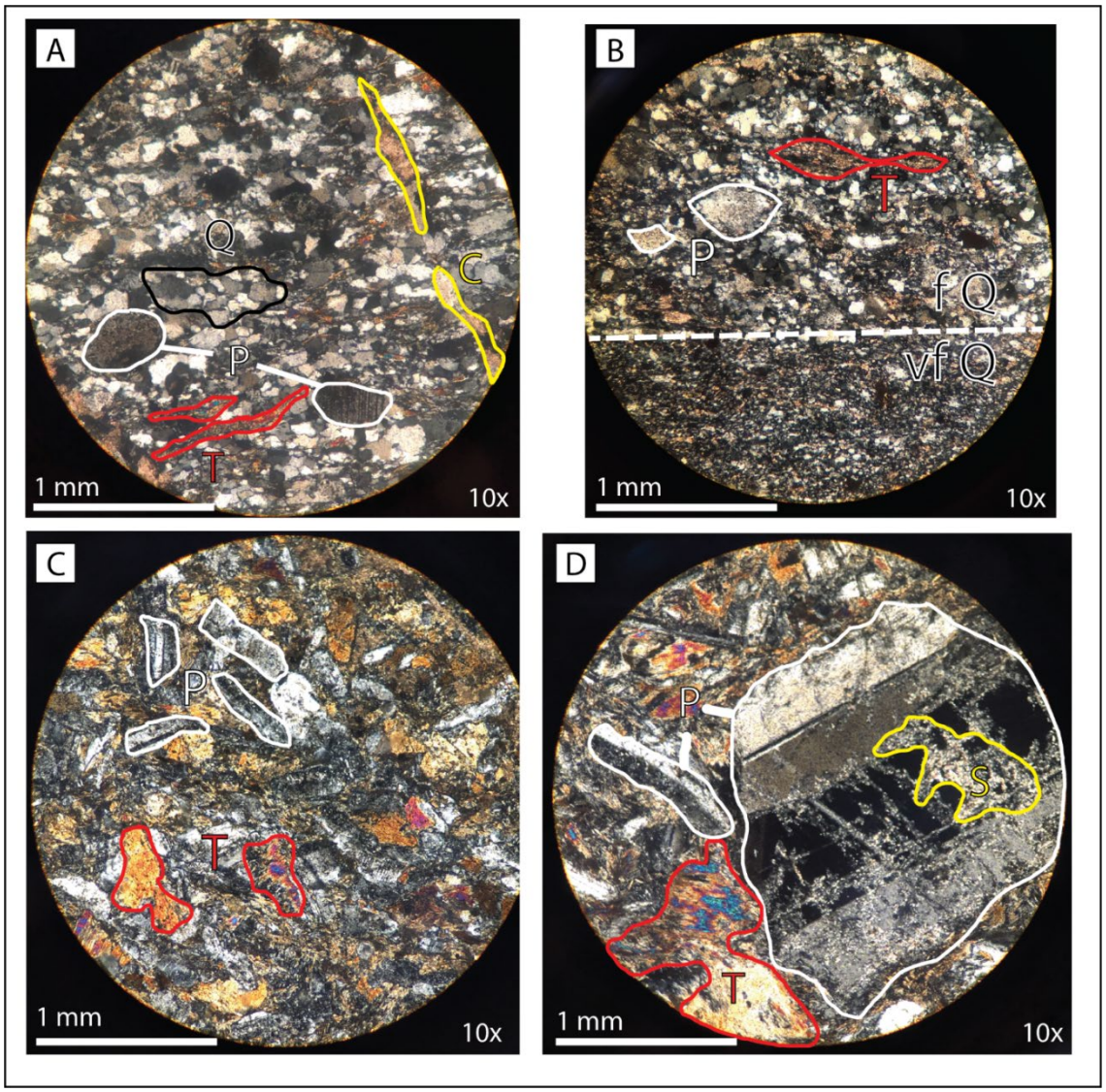
Unit 3 petrographic observations

Samples were collected for petrographic analysis of siliciclastic and volcaniclastic metasandstones throughout the entirety of the unit (Table 1). Samples collected from very fine- to coarse-grained siliciclastic metasandstones of Unit 3 are primarily composed of quartz-feldspars, amphibole, calcite, and muscovite. Common accessory minerals include oxides and lithic fragments. The metasandstones have undergone extensive metamorphism and are primarily composed of sub-rounded, fine- to coarse-grained quartz with sutured boundaries (Figure 17A). Quartz grains typically show undulatory extinction. The quartz grains are well sorted and the matrix contains bands of tremolite and muscovite. Some samples contain alternating beds of fine-grained and coarse-grained quartz (Figure 17B). Secondary calcite veins, oxides and rare, well-rounded plagioclase feldspars with albite twinning are present throughout the sample as well.

Samples collected from volcaniclastic metasandstones of Unit 3 (Table 1) are primarily composed of plagioclase feldspar, tremolite, actinolite, epidote, quartz, and volcanic lithic fragments. Most samples are predominantly feldspathic with extensive sericitization and epidote replacement. Replacement of feldspar and pyroxene minerals by tremolite, actinolite and epidote is prevalent throughout the samples as bands or intergrown with feldspar (Figure 17C-D). Within

some of the samples, the feldspar minerals have been altered to clay. Secondary calcite veins, volcanic lithic fragments, oxides, and hematite cement are also seen within the samples. Samples are typically very poorly sorted and plagioclase feldspar grains have often been sheared and stretched (Figure 17E-F). The matrix often contains bands of secondary tremolite (Figure 17F).

Extensive metamorphism throughout all of Unit 3 is evidenced by sericitized feldspars, amphibole replacement, calcite veins, and feldspar alteration to clay. Rare myrmekitic intergrowth is identified within plagioclase feldspars (Figure 17G).



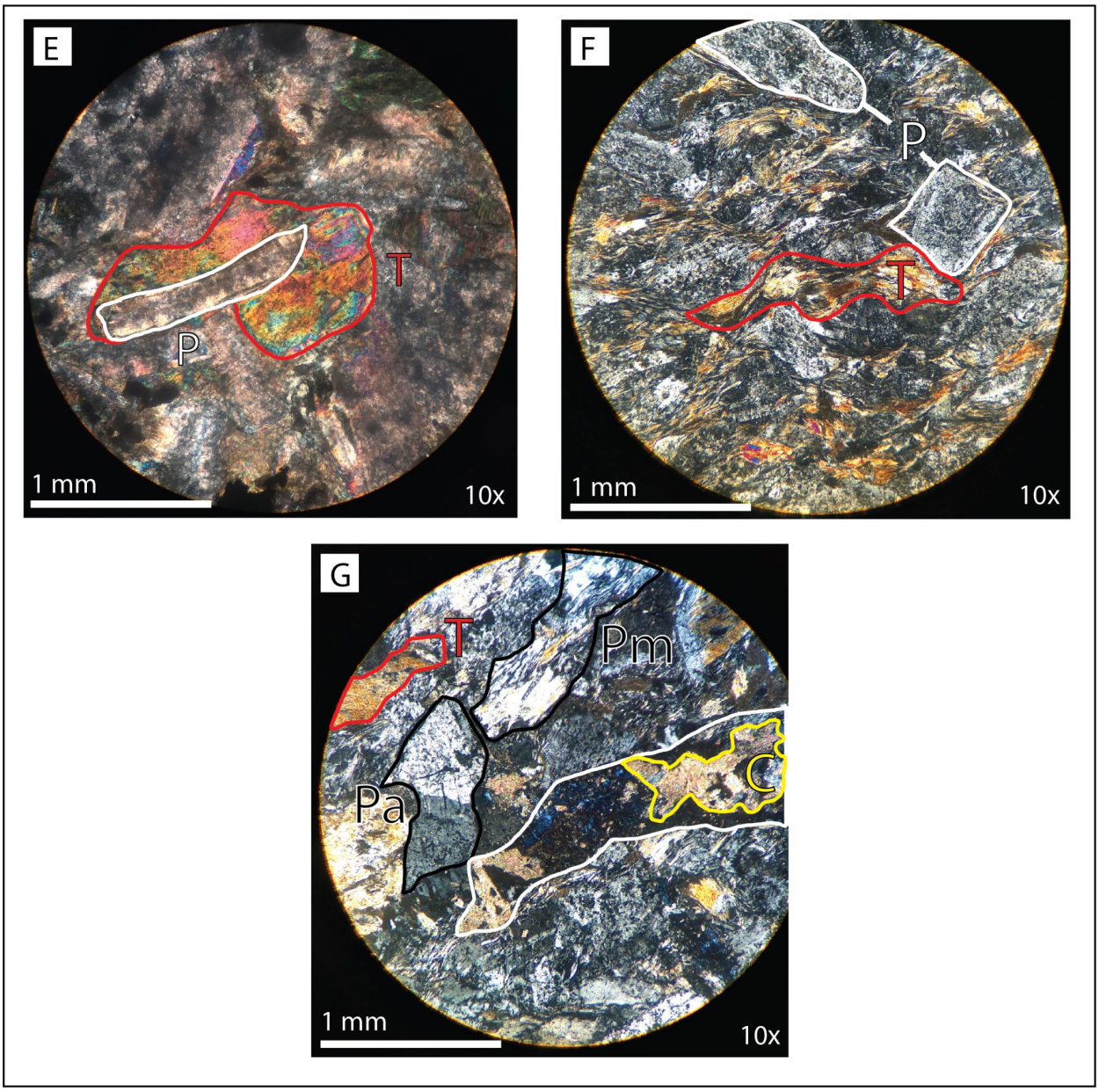


Figure 17. Photomicrographs of Unit 3 in cross-polarized light: **(A)** Metasandstone sample LP080120-8 composed primarily of coarse-grained quartz exhibiting undulatory extinction (Q), plagioclase feldspars (P) with twinning, tremolite bands (T), and secondary calcite veins (C). **(B)** Siliciclastic meatsandstone sample LP080120-4 showing alternating fine-grained (f Q) and very fine-grained (vf Q) quartz beds. Primarily composed of fine-grained quartz with scarce phenocrysts of plagioclase feldspar (P) and bands of secondary tremolite (T). **(C)** Sample LP080120-1 of a volcaniclastic boudin showing primarily plagioclase feldspar (P) with carlsbad twinning and pervasive tremolite (T) replacement. **(D)** Sample LP080120-3 containing large plagioclase feldspar phenocryst (P) with carlsbad-albite twinning, sericitization (S) within the feldspar and pervasive tremolite replacement (T). **(E)** Sample LP080120-9 containing highly

metamorphosed volcaniclastic boudin showing rare plagioclase feldspar phenocryst (P) that is being actively replaced by tremolite (T). **(F)** Sample LP140120-1 showing plagioclase feldspar phenocrysts (P) that have been stretched and sheared. The matrix contains bands of secondary tremolite (T). **(G)** Sample LP130120-1 is primarily composed of plagioclase feldspar and tremolite replacement (T), as well as calcite (C) precipitation outlined in yellow. Note the plagioclase feldspars display myrmekitic intergrowth of quartz (Pm) and albite twinning (Pa).

Unit 4 outcrop observations

Unit 4 is a coarse-grained metaconglomerate interbedded with metashale and very fine- to coarse-grained metasandstone (Figure 18). Within the eastern exposure of the metaconglomerate, the base of the unit contains light-brown, very fine-grained metasandstone layers with thin interbeds (5-10 cm) of metaconglomerate containing granular chert, limestone, and shale clasts (1-5 cm) as well as sedimentary and volcanic lithic fragments within a dark gray to purple matrix (Figure 19A). The metaconglomerate also contains sheared and stretched clasts of black chert (1-3 cm in thickness), white limestone (3-8 cm in thickness), and light-gray shale lenses (1-3 cm in thickness) (Figure 19B). The unit coarsens upward into fine- to medium-grained metasandstone with parallel laminations interbedded with much thicker metaconglomerate beds (10-40 cm) that contain cobble-size (6-40 cm) clasts (Figure 19C-D). The metaconglomerate contains soft-sediment-deformation structures and evidence of slumping (Figure 19E). The western exposure of the metaconglomerate is highly faulted, contains granular clasts of chert, limestone, and shale and is typically light gray to brown in color. Detrital zircon samples LP090120-2 and LP090120-3 were collected from the metasandstone and metaconglomerate (respectively) of the eastern exposure of this unit (Figure 8). Unfortunately, due to pervasive faulting throughout the area, the stratigraphic relation with Units 1-3 could not be established.

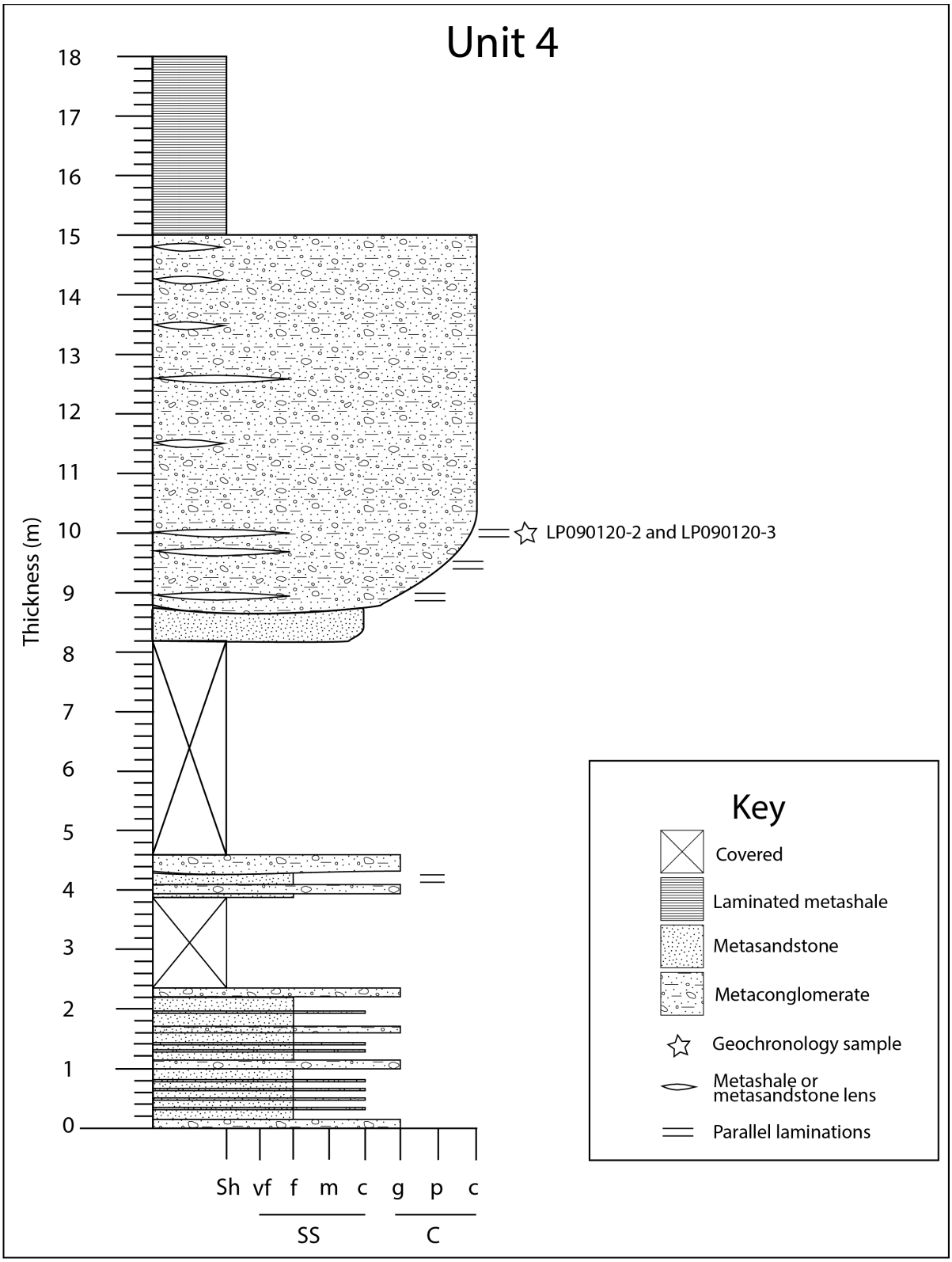


Figure 18. Measured stratigraphic section of Unit 4. Grain-size subdivisions indicated along the x-axis (Sh - metashale, SS - metasandstone, vf – very fine, f - fine, m - medium, c - coarse, C - metaconglomerate, g - granular, p - pebble, c - cobble).

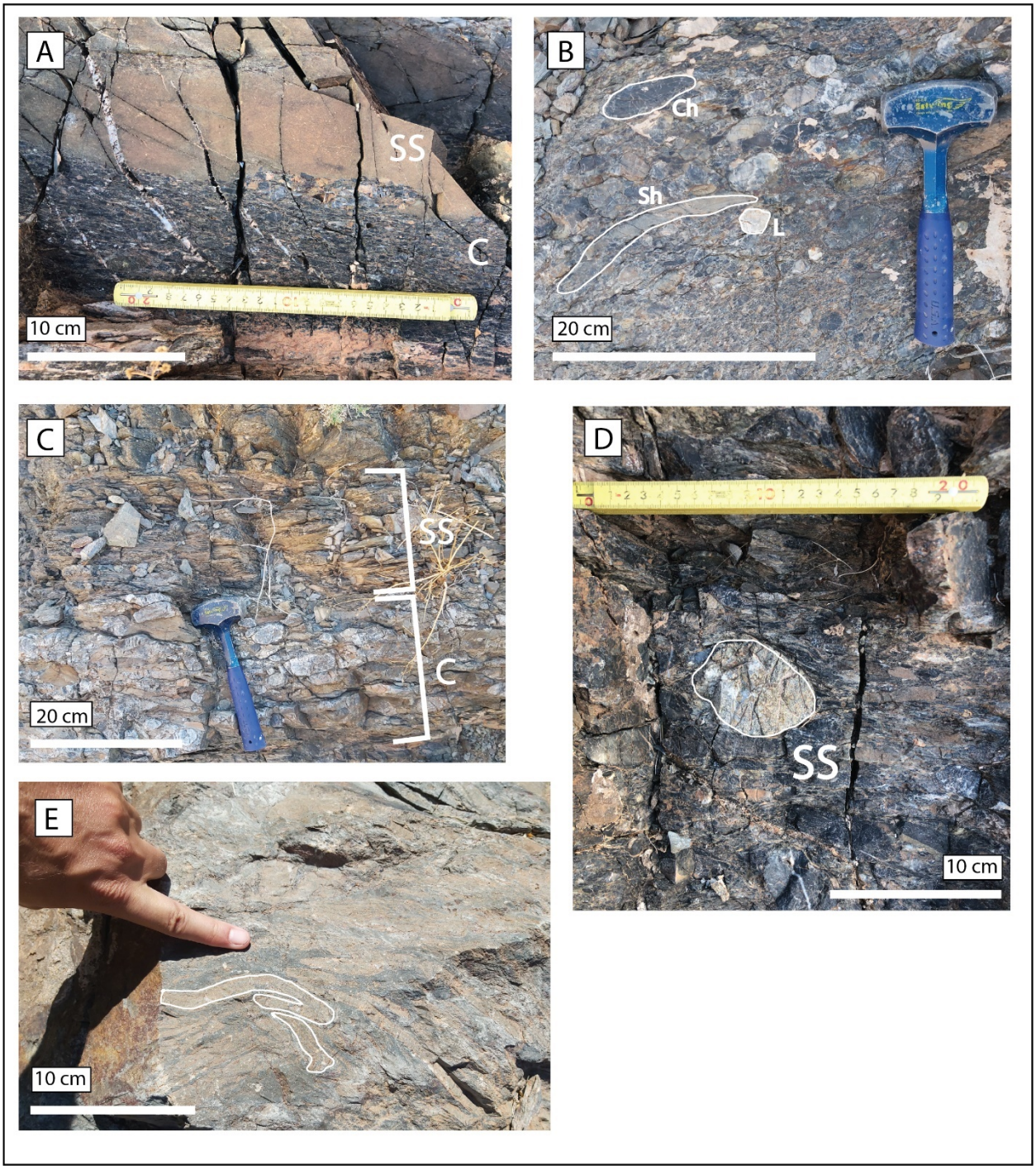


Figure 19. Outcrop photographs of Unit 4: **(A)** Base of Unit 4 is composed of interbedded metasandstone (SS) and metaconglomerate (C) packages with granule-size clasts. **(B)** Metaconglomerate containing sandstone, chert (Ch), and limestone (L) cobbles with deformed shale (Sh) lenses throughout. Hammer is approximately 24 cm in length. Photo by M. Martini. **(C)** Alternating highly fractured, medium-grained metasandstone beds (SS) with parallel laminations and metaconglomerate beds (C) with cobble-size clasts. Photo by M. Martini. **(D)**

Unit 4 composed of poorly-sorted metaconglomerate with 7.5-cm wide sandstone cobble (SS). **(E)** Metaconglomerate with soft-sediment-deformation structures and slumped shale lens (outlined in white). Photo by M. Martini.

Unit 4 petrographic observations

Thin sections were created from metasandstone and metaconglomerate samples for petrographic analysis (Table 1). Sample LP090120-2 was collected from a fine-grained metasandstone lens within a metaconglomerate package. The main mineral assemblage for the sample consists of monocrystalline quartz clasts, clasts of polycrystalline quartz, tremolite, and muscovite with secondary oxide minerals. The metasandstone has undergone extensive metamorphism and quartz grains are sub-rounded and stretched (Figure 20A). Quartz exhibits undulatory extinction. The metasandstone is well sorted and the matrix contains bands of tremolite and muscovite.

Sample LP090120-3 is a granular metaconglomerate that contains clasts of chert and shale, bands of muscovite, siltstone and sandstone lens within a polycrystalline quartz and micaceous matrix (Figure 20B). The metaconglomerate has undergone extensive metamorphism and the clasts are often stretched and sheared. Sedimentary and volcanic lithic fragments are present as well (Figure 20C-D). The metaconglomerate is poorly sorted and clasts are typically sub-rounded to angular.

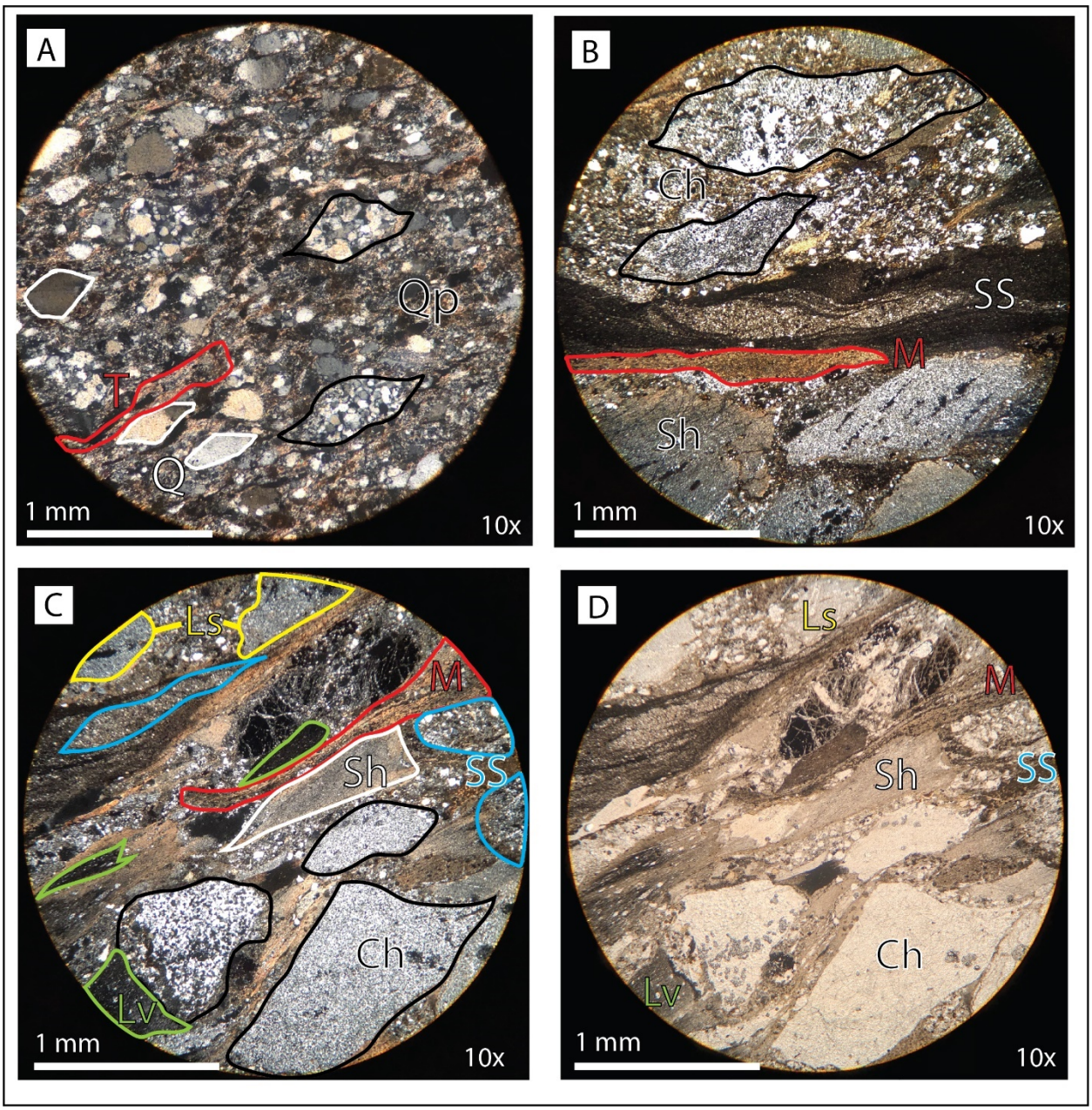


Figure 20. Photomicrographs of interbedded metasandstone and metaconglomerate packages of Unit 4: **(A)** Metasandstone sample LP090120-2 in cross-polarized light containing primarily monocrystalline quartz clasts (Q) outlined in white, clasts of polycrystalline quartz (Qp) outlined in black and secondary tremolite mineralization (T) outlined in red within a micaceous matrix. **(B)** Metaconglomerate sample LP090120-3 in cross-polarized light showing large chert nodules (Ch) outlined in black, sandstone lens (SS) in the center, clasts of shale (Sh) and micaceous bands (M) outlined in red. **(C)** Metaconglomerate sample LP090120-3 in cross-polarized light showing large clasts of chert (Ch) outlined in black, rounded and stretched clasts of sandstone (SS) outlined in blue, shale lenses (Sh) outlined in white, volcaniclastic lithic fragments (Lv) outlined in green and sedimentary lithics (Ls) outlined in yellow. Micaceous bands (M) outlined

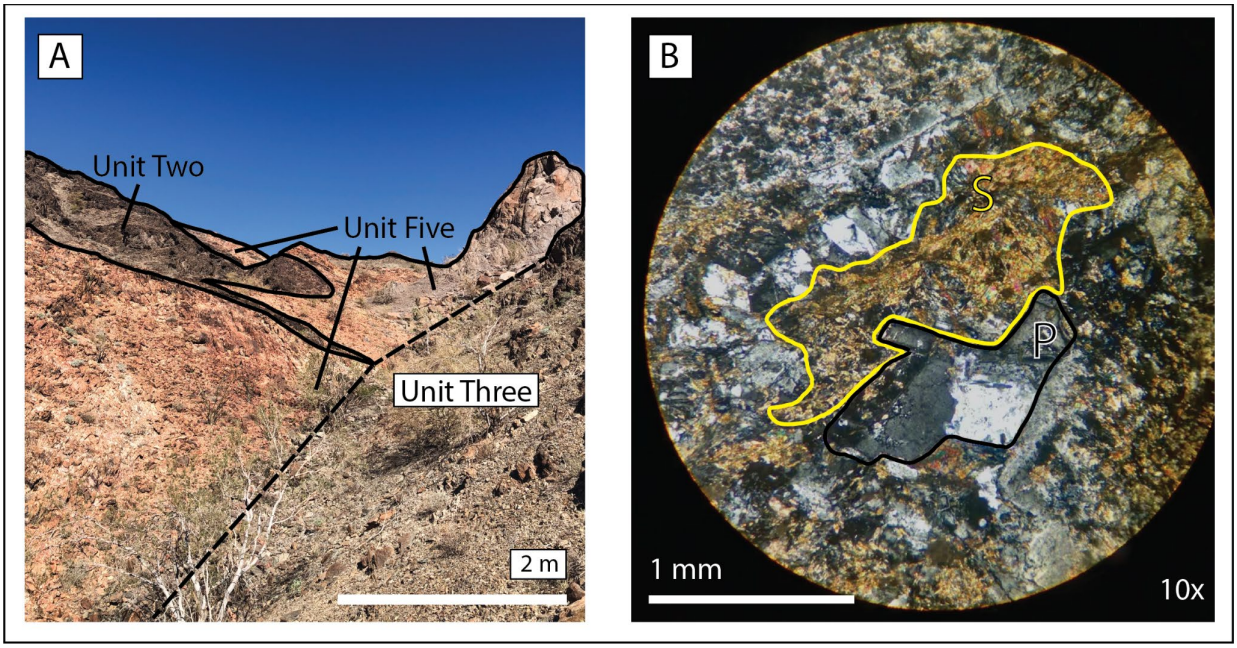
in red are present throughout the sample within a polycrystalline quartz and micaceous matrix. **(D)** Same photomicrograph as C but in plain-polarized light as a reference to note the various components of this sample.

Unit 5 outcrop observations

Unit 5 consists of volcanic rocks and felsic dikes that are interpreted to be Miocene in age (Leier-Engelhardt, 1993) (Figure 21A). The volcanic rocks are typically light pink to orange and present throughout the entirety of the Arroyo Grande Group (Figure 8). The felsic dikes intrude many of the units, creating stratigraphic contacts and baking the surrounding rocks in some places. No detrital zircon samples were collected from this unit for analysis.

Unit 5 petrographic observations

Sample LP130120-2 was collected from Unit 5 for petrographic analysis. The sample is primarily composed of interlocking plagioclase feldspar with albite twinning (Figure 21B). Large plagioclase grains have been altered by pervasive sericite mineralization and rare original feldspar shapes remain.



3.1.2 SIERRA LAS PINTAS GROUP

The lithologies originally described by Leier-Engelhardt (1993) for the Sierra Las Pintas Group and later updated by Navas-Parejo et al. (2018) are adopted for this study. The predominant lithologies for the area are (SP1) calcareous metasandstone and calcareous sandy metasandstone, (SP2) metasandstone interbedded with metashale and metaconglomerate, (SP3) crinoidal metalimestone, (SP4) basaltic metalava and metaconglomerate, (SP5) pillow lava flow, and (Q) undifferentiated Quaternary. From the Sierra Las Pintas Group, samples were collected from SP1, SP2, and SP4 for detrital zircon and petrographic analysis (Figure 5). The minimum thickness of the Sierra las Pintas Group is estimated to be approximately 520 m (Leier-Engelhardt, 1986).

SP1 outcrop observations

SP1 is primarily composed of packages of very fine- to medium-grained metasandstone interbedded with calcareous metashale. The metasandstone ranges from tan to light orange and is highly fractured and completely recrystallized. Sedimentary structures are not preserved except for parallel laminations in the metasandstone. At the base of the unit, alternating beds of very fine-grained metasandstone (10-40 cm in thickness) are interbedded with finely-laminated, thin metashale beds (5-10 cm) and range in color from light to dark brown (Figure 22A). The unit coarsens upsection into a fine-grained metasandstone and is interbedded with metashale (Figure 22B). Unit SP1 continues to coarsen into Unit SP2, forming a gradational contact. Detrital zircon sample LP100120-1 was collected from a very fine-grained metasandstone of Unit SP1.

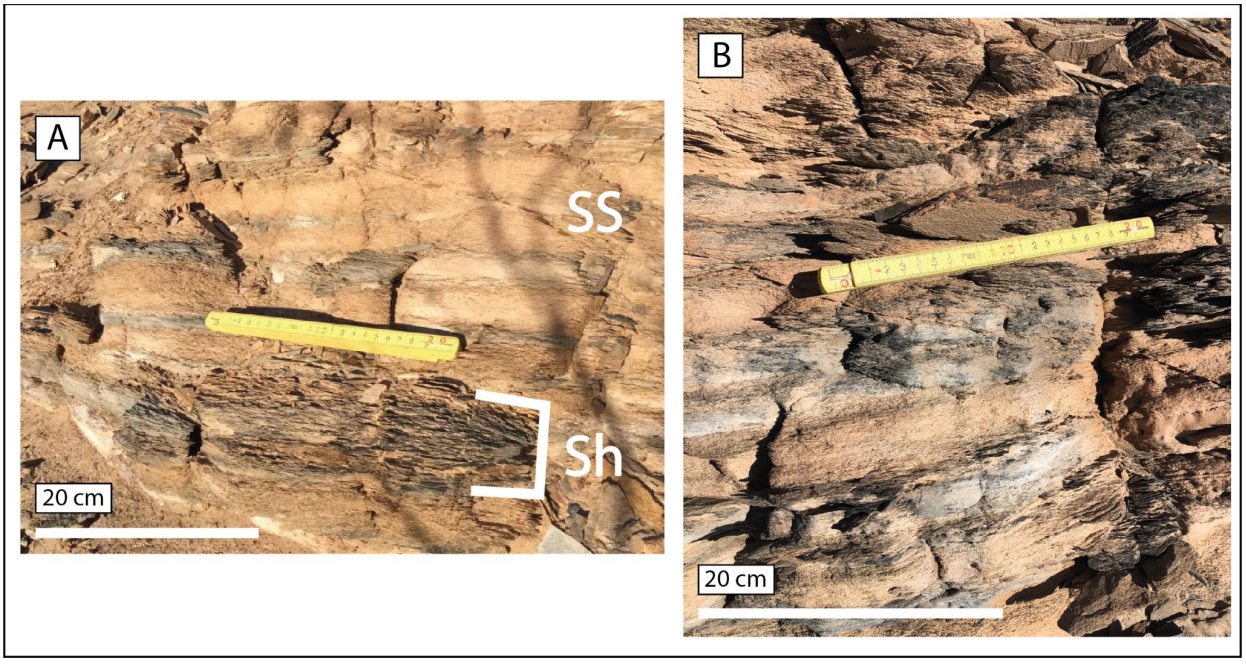
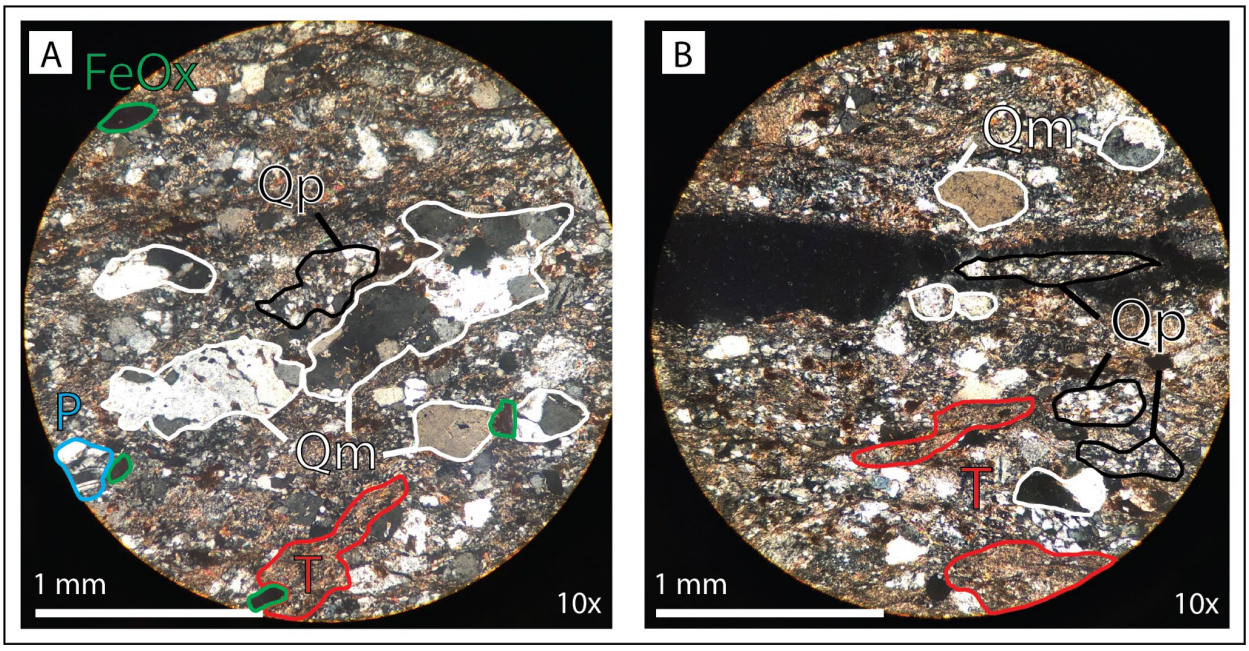


Figure 22. Outcrop photographs of the metasandstone of Unit SP1. **(A)** Very fine-grained metasandstone (SS) of SP1 interbedded with highly foliated, dark-brown beds of metashale (Sh) ranging from 5-10 cm in thickness. **(B)** Fine- to medium-grained metasandstone ranging from white to tan to light orange and showing foliation. Metasandstone is interbedded with thin metashale layers (dark brown).

SP1 petrographic observations

A thin section was made from the metasandstone of Unit SP1 (sample LP100120-1) that was utilized for petrographic analysis. The sample is composed of monocrystalline quartz, tremolite replacement, minor plagioclase feldspar with albite twinning and oxide minerals. The monocrystalline quartz grains have been stretched and sheared significantly and contain sutured boundaries due to pressure solution during compaction (Figure 23A). Quartz grains exhibit undulatory extinction. Pervasive sericite mineralization and tremolite banding are present throughout the matrix. The matrix is primarily micaceous and polycrystalline quartz (Figure 23B).



polycrystalline quartz. Thin bands of secondary tremolite (T) replacement (outlined in red) present throughout the matrix.

SP2 outcrop observations

SP2 is a calcareous very fine- to coarse-grained metasandstone interbedded with metashale and metaconglomerate beds. The entirety of the unit has undergone greenschist metamorphism and consequently, most of the sedimentary features have been obscured except for faint ripple bedding and fine parallel laminations within the metasandstone (Figure 25A). The entire unit is recrystallized and fractured (Figure 25B). The base of the unit is fine-grained, light-brown to orange metasandstone beds (5-10 cm thickness) interbedded with dark-brown, thin beds of metashale (1-3 cm thickness). The unit coarsens upsection to coarse-grained metasandstone where sample LP110120-1 was collected (Figure 24). Sample 18-LP-10 was also collected for detrital zircon geochronology by committee member Dr. Pilar Navas-Parejo from a very coarse-grained metasandstone. At the top of the unit, the section continues to coarsen into a tan, granular metaconglomerate containing gray crinoids, white quartz, and plagioclase feldspar (Figure 25C). Frequency of metashale beds decreases while moving upsection.

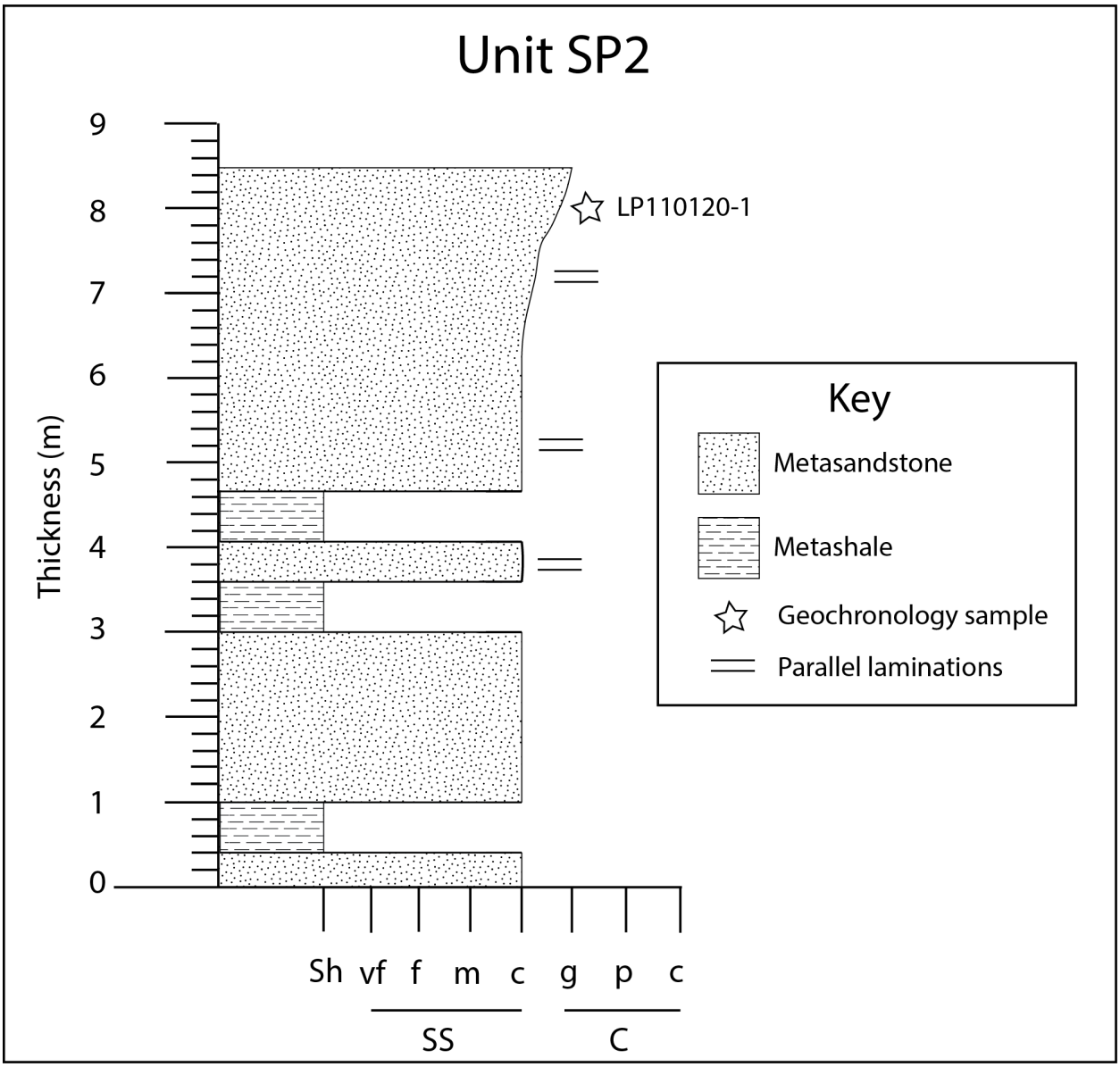


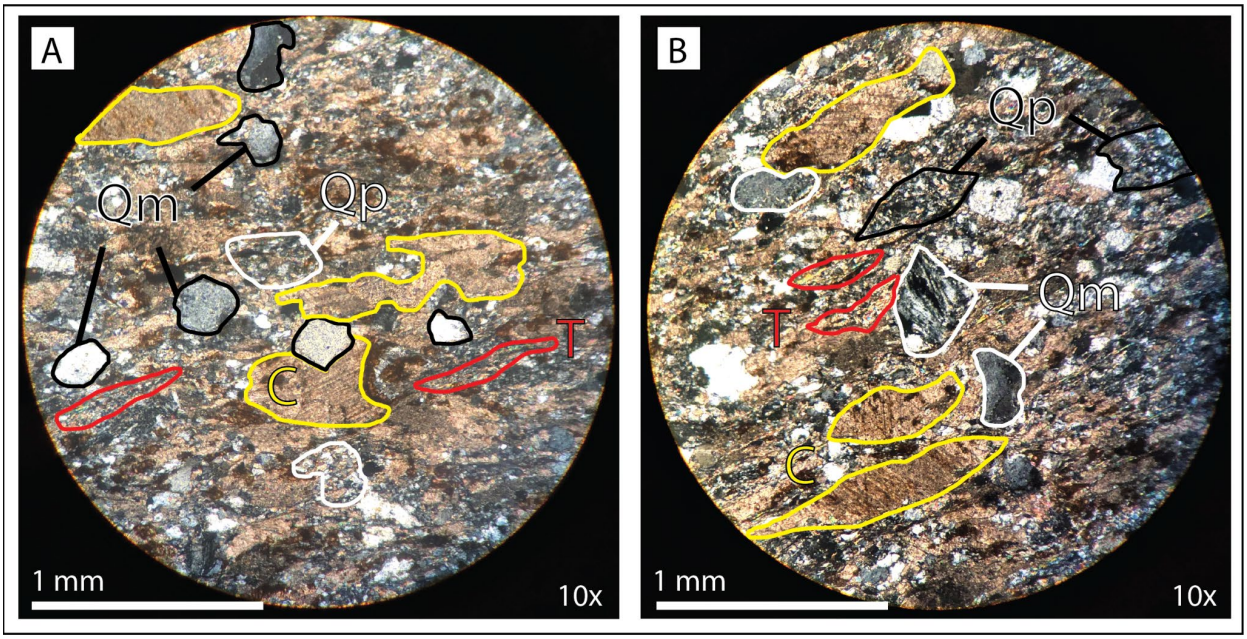
Figure 24. Measured section of Unit SP2 of the Sierra Las Pintas Group. Grain-size subdivisions indicated along the x-axis (Sh - metashale, SS - metasandstone, vf – very fine, f - fine, m - medium, c - coarse, C - metaconglomerate, g - granular, p - pebble, c - cobble).

Figure 25. Outcrop photographs of metasandstone of Unit SP2. **(A)** Rare ripples (R) and parallel laminations (P) within the metasandstone. **(B)** Highly fractured and recrystallized metasandstone outcrop of SP2. **(C)** Granular metaconglomerate of upper SP2.

SP2 petrographic observations

Sample LP110120-1 was collected from a very coarse-grained metasandstone of unit SP2. The main mineral assemblages of the sample include monocrystalline quartz, clasts of polycrystalline quartz, calcite plates, and tremolite banding within a micaceous matrix (Figure 26A). The quartz grains are well sorted and exhibit undulatory extinction. Rare plagioclase feldspars with carlsbad twinning are present throughout. Grains are sub-rounded, have been

stretched and flattened, and contain rare myrmekitic intergrowth and pervasive sericitization due to metamorphism (Figure 26B). Large bands of calcite are present throughout the sample and the metasandstone of SP2 contains a higher percentage of calcite than the metasandstone of SP1.



Unit SP4

One sample, X181218, was collected for detrital zircon geochronology from Unit SP4 by committee member, Dr. Nancy Riggs, as part of a reconnaissance study for the area. The sampled interval is described as metasandstone, metaconglomerate, and basaltic metalava that displays globular structures, resembling a pillow-lava flow (Figure 27).

Figure 27. Outcrop photograph of black basaltic metalava and metasandstone. Yellow measure stick is approximately 23- cm long. Photo by N. Riggs.

3.1.3 MINAS DE BARITA AREA

Central Sonora sample collection and field observations were documented by committee members Dr. Pilar Navas-Parejo and Dr. Michelangelo Martini in the Minas de Barita area (Figure 3). Stratigraphic columns were not created during sample collection as exposures from this area are described as very poor and discontinuous. However, a generalized stratigraphic section was created from the field descriptions (Figure 28).

Primary deposits for the Minas de Barita area include (1) carbonate-shelf rocks (Permian-Cambrian), (2) pre-orogenic deep-water black shale, turbidite deposits, and chert (Mississippian-Ordovician; Sonora allochthon), (3) syn-orogenic deep-water turbidite deposits (Upper Mississippian-Pennsylvanian; Rancho Nuevo Formation), (4) syn-orogenic foredeep turbidite deposits (Permian; Mina México Formation), (5) early Cenozoic (Laramide) plutons, and (6)

Quaternary gravels (Poole et al., 2008; Figure 5). Samples were collected for geochronology analysis from the Rancho Nuevo Formation and Mina México Formation.

Rancho Nuevo Formation

M. Martini described the sampled outcrop as a 10-m-thick exposure of stacked calcareous debris-flow deposits approximately 1 m or less in thickness. The debris-flow deposits show inverse grading, most of the framework grains are skeletal and mudstone intraclasts of fusulinids, and the base of these deposits are non-erosive. Upsection, the deposits are overlain by a granule- to pebble-debris-flow conglomerates dominated by extraclasts of chert, calcareous, and non-calcareous shale. Sample 13-11-SR2 was collected from poorly sorted sedimentary packages containing chert and shale. Another sample was collected from a 6-m-thick exposure of siltstone and claystone of a turbidite deposit from the lower Rancho Nuevo Formation but did not yield enough zircon for analysis.

Mina México Formation

The exposure is described as an interbedding of two different kinds of deposits: 1) quartz-rich, very fine- to fine-grained sandstone and shale that display typical structures of turbiditic deposits and 2) calcareous, sandy debris-flow deposits dominated by skeletal intraclasts mostly of fusulinids. Sample 12-11SR2 was collected from a quartz-rich sandstone of this sequence containing ripple marks, normal grading, and parallel laminations (Figure 28). Sample 13-11-SR3 was collected from a quartz-rich sandstone that was highly fractured and oxidized. Primary sedimentary structures preserved from this sequence include ripple marks and parallel laminations. A sample was also collected from fine- and very-fine-grained sandstone of the Mina

México Formation that contained some ichnofossils, fluidification structures and numerous cm-scale, normal, syn-sedimentary faults but did not yield enough zircon for analysis.

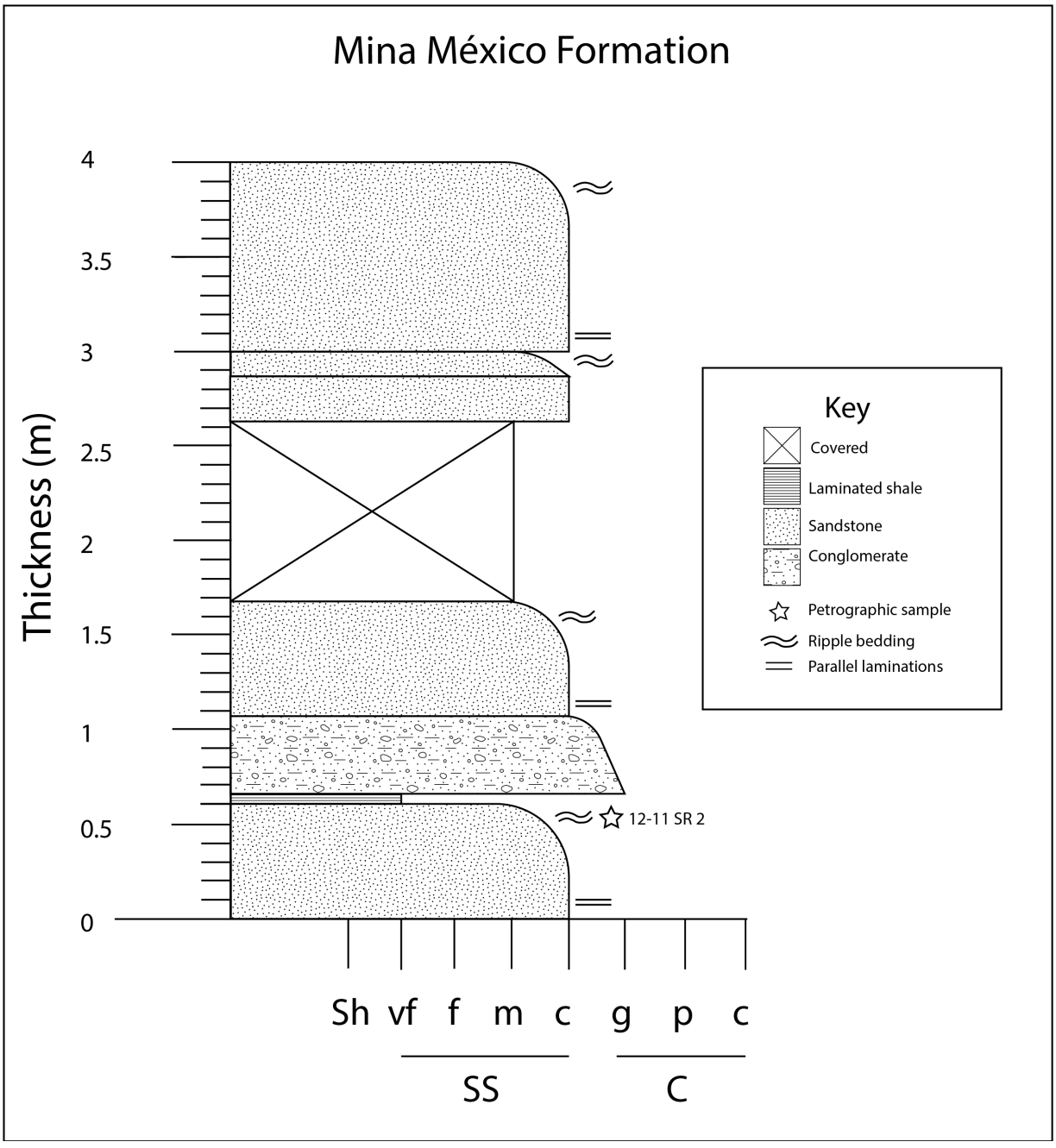


Figure 28. Generalized stratigraphic section of the Mina México Formation. Grain-size subdivisions indicated along the x-axis (Sh - shale, SS - sandstone, vf – very fine, f - fine, m - medium, c - coarse, C - conglomerate, g - granular, p - pebble, c - cobble).

3.2 DETRITAL ZIRCON U-PB GEOCHRONOLOGY AND TRACE ELEMENT GEOCHEMISTRY

Results Summary

A total of 15 samples were collected for geochronological analysis from this study; eight samples collected from the Arroyo Grande Group, four samples from the Sierra Las Pintas Group, and three from the Minas de Barita area (Table 1). A total of 1,968 zircon grains were processed and analyzed and 1,763 of those grains were concordant and are portrayed in the KDE plots (Figures 29-42). The zircons for this study range from sharp euhedral, well-rounded, to subhedral in shape and varied from yellow, pink, white, to clear. Trace-element concentrations were also plotted for each sample that contained two distinct age groups: Permo-Triassic grains with ages 275-240 Ma and Cretaceous grains with ages 140-90 Ma (Figures 43-48).

3.2.1 Arroyo Grande Group Detrital Ages

In total, 900 grains were concordant from the eight samples collected from the Arroyo Grande Group (Figure 8). In general, samples contained either a Cretaceous or Permian age MDA. Samples yielded age spectra with major age peaks at ca. 90-140 Ma, ca. 280-250 Ma, ca. 750-430 Ma, ca. 1750-1550 Ma, and ca. 2800-2600 Ma.

Unit 1

Sample LP070120-1 was collected from a 3-m interval of dark-gray, very fine-grained cherty siltstone of Unit 1 (Figure 10). The sample contained 138 concordant zircon grains with major age peaks at ca. 70-150 Ma (n = 57), ca. 650-430 Ma (n = 11), and ca. 1300-950 Ma (n = 18) (Figure 29A). The largest population of youngest zircon grains (n = 34) from the sample ranges from 104 to 73 Ma (Figure 29B). Within that population, a younger subset of zircon

grains (blue rectangles) has an average age of 75 ± 1 Ma and a calculated MSWD of 0.56, which is interpreted as the maximum depositional age for the sample (Figure 29C).

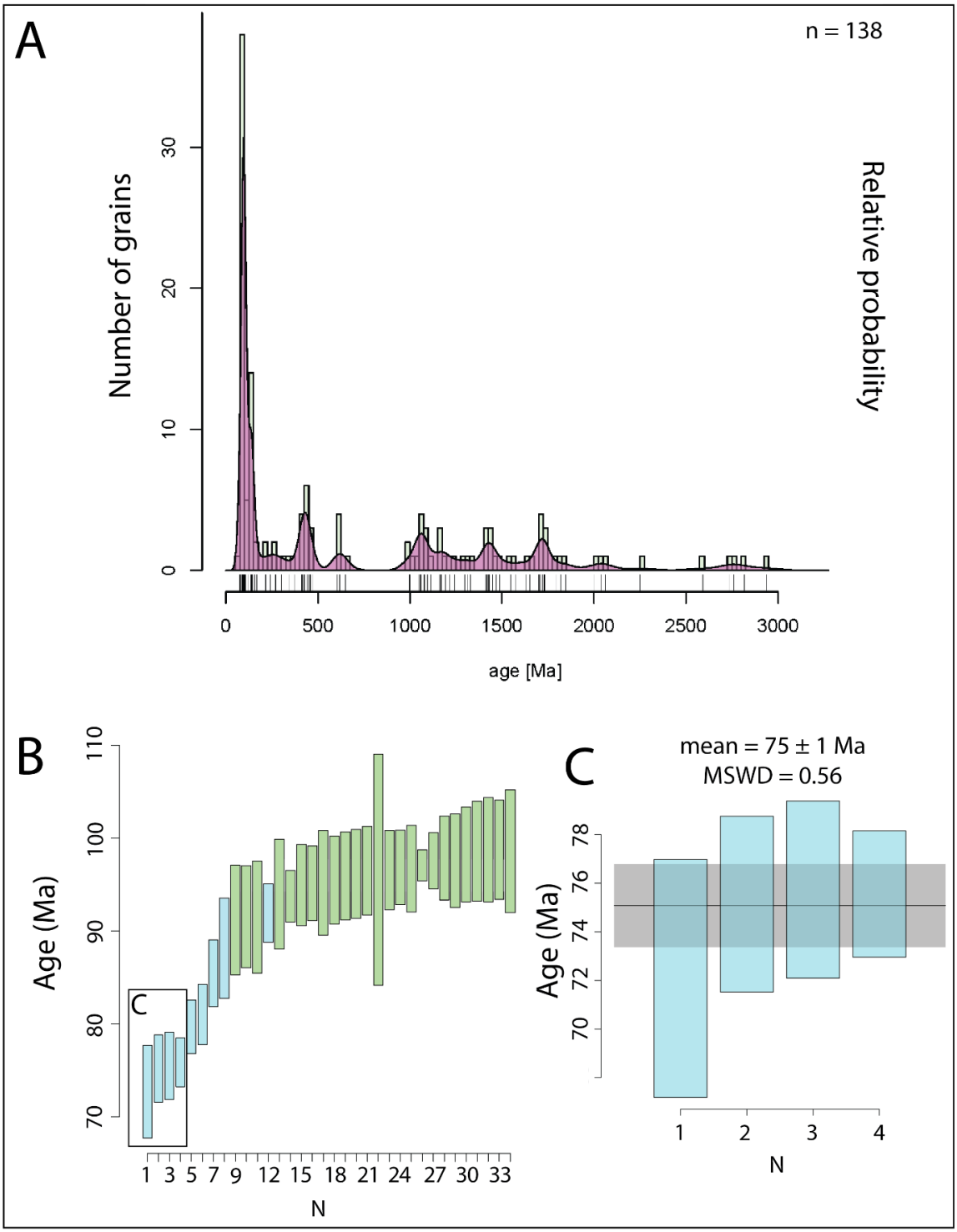


Figure 29. Detrital zircon age data for sample LP070120-1: **(A)** KDE plot shows major peaks at ca. 150-70 Ma, ca. 650-430 Ma, and ca. 1300-950 Ma. **(B)** Weighted mean plot showing the largest population of youngest zircon grains (n = 34). Blue rectangles indicate youngest zircon grains that do not fall within two-sigma uncertainty of the rest of the population. **(C)** Youngest subset of zircon from the sample (n = 4) with a mean age of 75 ± 1 Ma and MSWD = 0.56.

Unit 2

Sample LP070120-2 was collected from a 3-m interval of dark-brown to dark-gray, very fine-grained, cherty shale of Unit 2 (Figure 12). The sample yielded 61 concordant zircon grains with major age peaks at ca. 280-250 Ma (n = 9), ca. 650-450 Ma (n = 13), ca. 1300-1000 Ma (n = 12), and ca. 1700-1600 Ma (n = 7) (Figure 30). A trip occurred during isotopic analysis and 76 grains were not analyzed. Though the sample contains three Cretaceous grains at 91 Ma, 97 Ma, and 137 Ma, the grains do not fall within two-sigma uncertainty of each other and therefore are not considered related. The population of Permo-Triassic grains (n = 9) in the sample ranges from 279 to 249 Ma, but the grains also did not fall within error of each other and could not be considered when determining maximum depositional age for the sample; weighted mean plots were not created.

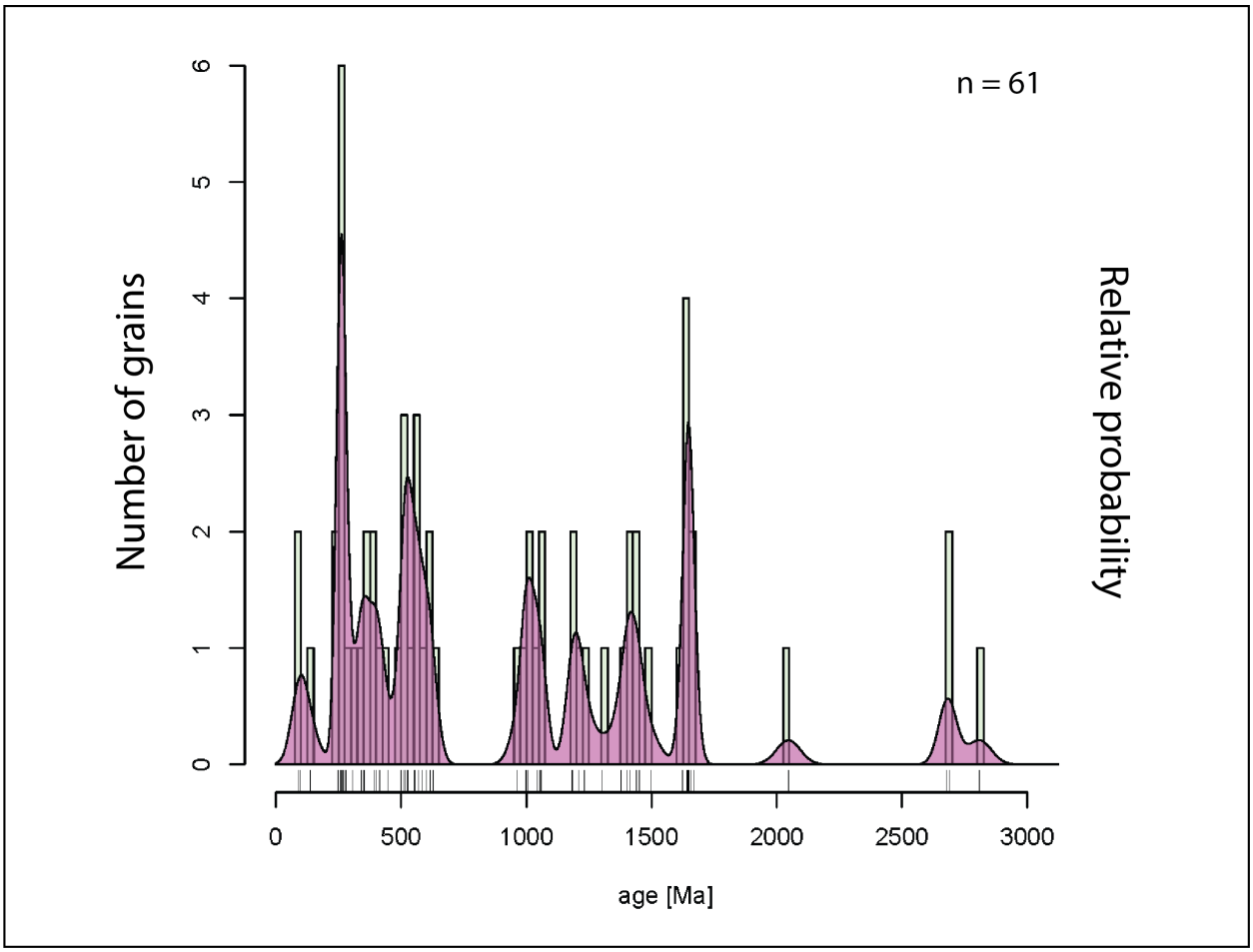


Figure 30. KDE plot for sample LP070120-2 shows major peaks at ca. 280-250 Ma, ca. 650-450 Ma, and ca. 1700-1600 Ma.

Unit 3

Four samples were collected from Unit 3, LP080120-1, LP080120-8, LP080120-9, and LP130120-1 (Figure 8). The samples were collected from siliciclastic metasandstone (LP080120-8) and volcaniclastic metasandstone boudins (LP080120-1, LP080120-9, LP130120-1). The siliciclastic metasandstone sample has a Permian MDA, while the volcaniclastic metasandstone boudin samples contain Cretaceous MDAs. The prominent age peaks for the

samples range from ca. 150-90 Ma, ca. 280-240 Ma, ca. 750-450 Ma, ca. 1300-750 Ma, and ca. 2800-2600 Ma.

Sample LP080120-1

Sample LP080120-1 was collected from a 60-cm interval of tan to orange (weathered) and light-green (fresh), very fine-grained volcaniclastic metasandstone boudin near the base of Unit 3 (Figure 8, 14). The sample yielded 32 concordant zircon grains with major age peaks at ca. 140-90 Ma (n = 14), ca. 1250-800 Ma (n = 5), and ca. 1550-1450 Ma (n = 4) (Figure 31A). The largest population of youngest zircon grains (n = 13) for the sample ranges from 140 to 89 Ma (Figure 31B). Within that population, a younger subset of zircon grains (blue rectangles) has an average age of 90 ± 1 Ma with a MSWD of 1.6, which is interpreted as the maximum depositional age (Figure 31C).

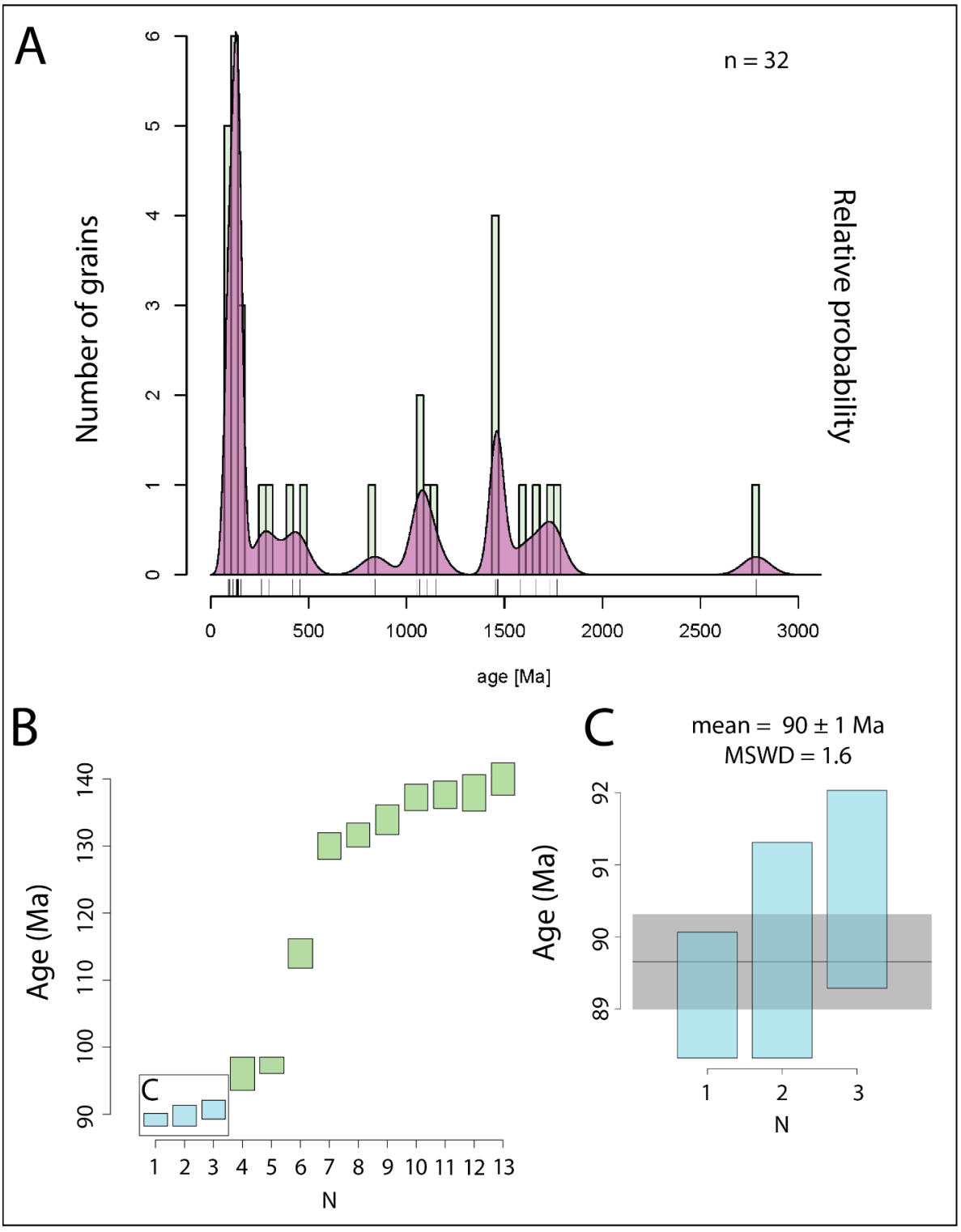


Figure 31. Detrital zircon age data for sample LP080120-1: **(A)** KDE plot shows major peaks at ca. 140-90 Ma, ca. 1250-800 Ma, and ca. 1550-1450 Ma. **(B)** Weighted mean plot showing the largest population of youngest zircon grains (n = 13). Blue rectangles indicate youngest zircon grains that do not fall within two-sigma uncertainty of the rest of the population. **(C)** Youngest subset of zircon from the sample (n = 3) with a mean age of 90 ± 1 Ma and MSWD = 1.6.

Sample LP080120-8

Sample LP080120-8 was collected from a 2-m interval of reddish-brown (weathered) and tan to orange (fresh), coarse-grained siliciclastic metasandstone (Figure 15). The sample yielded 197 concordant zircon grains with major age peaks at ca. 280-240 Ma (n = 74), ca. 800-450 Ma (n = 24), and ca. 1500-1300 Ma (n = 13), and Archean grains (n = 51) (Figure 32A). The youngest and most prominent zircon population (n = 66) for the sample ranges from 263 to 234 Ma (Figure 32B). Within that population, the youngest subset of zircon grains (n = 17) has an average age of 248 ± 2 Ma and MSWD of 0.65, which is interpreted as the maximum depositional age of the sample (Figure 32C).

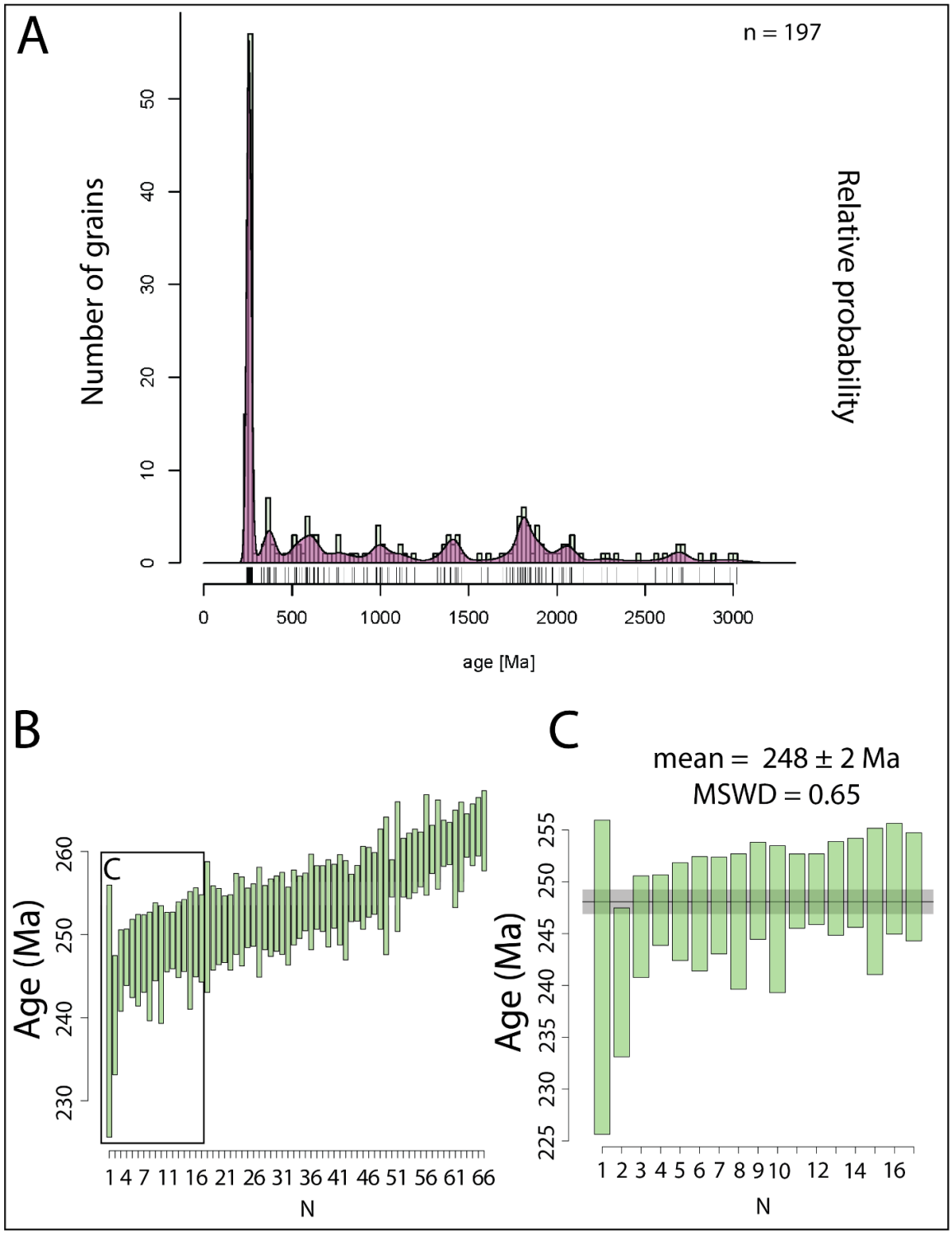


Figure 32. Detrital zircon age data for sample LP080120-8: **(A)** KDE plot shows major peaks at ca. 280-240 Ma, ca. 800-450 Ma, ca. 1500-1300 Ma, and Archean grains. **(B)** Weighted mean plot showing the youngest population of zircon grains (*n* = 66) ranging from 263 to 234 Ma. **(C)** Weighted mean plot showing the youngest subset of zircon grains (*n* = 17) with an average age of 248 ± 2 Ma and MSWD = 0.65.

Sample LP080120-9

Sample LP080120-9 was collected from a 3-m interval of reddish-brown to black (weathered) and dark gray to green (fresh), coarse-grained volcaniclastic metasandstone boudin (Figure 8, 15). The sample yielded 144 concordant zircon grains with major age peaks at ca. 140-70 Ma (n = 43), ca. 750-500 Ma (n = 12), ca. 1200-900 Ma (n = 22), and ca. 1750-1600 Ma (n = 16) (Figure 33A). The youngest population of zircon for the sample (n =33) ranges from 95 to 67 Ma (Figure 33B). Within that population, a younger subset of zircon grains (blue rectangles) has an average age of 82 ± 2 Ma and MSWD of 0.34, which is interpreted as the maximum depositional age for the sample (Figure 33C).

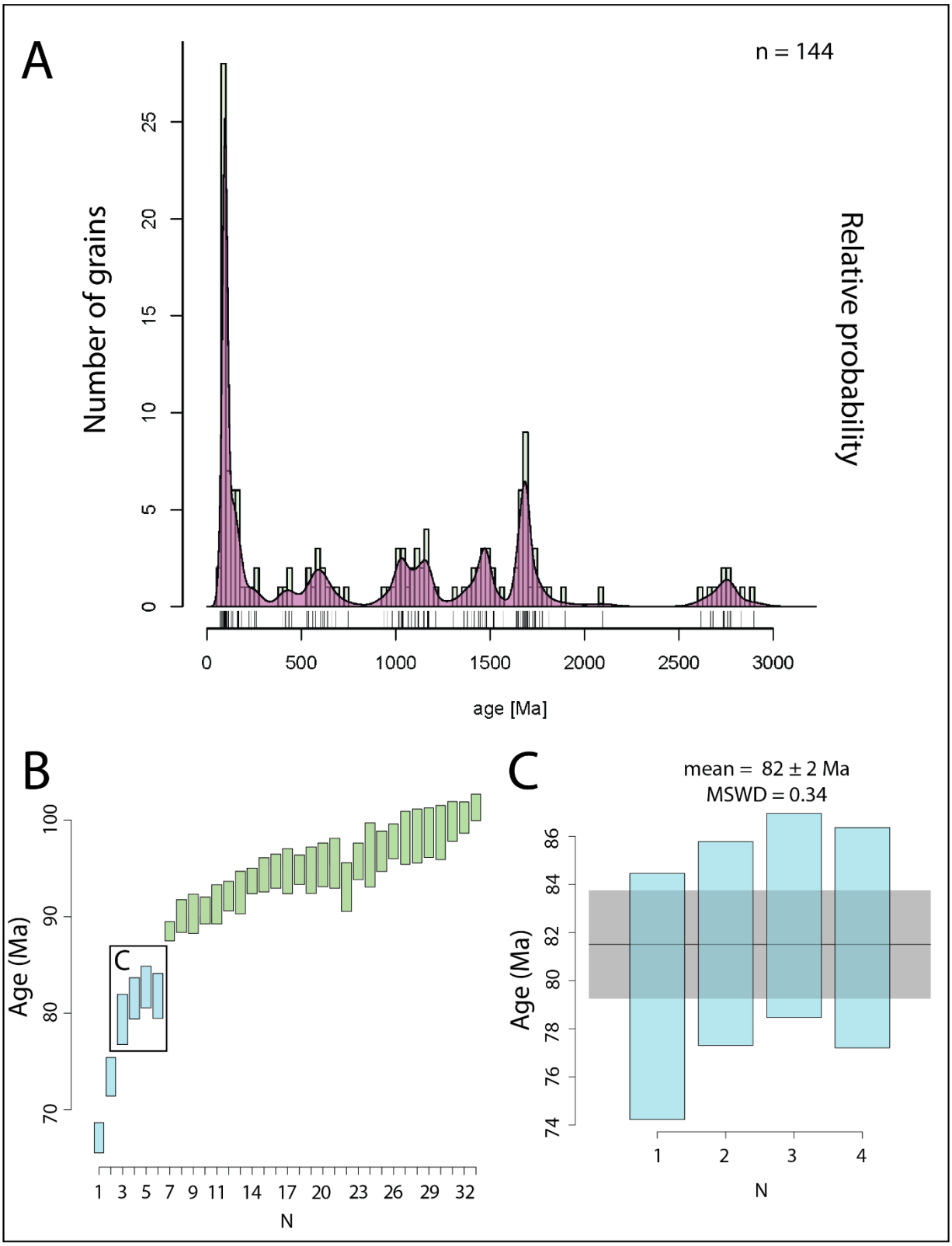


Figure 33. Detrital zircon age data for sample LP080120-9: **(A)** KDE plot shows major peaks at ca. 140-70 Ma, ca. 750-500 Ma, ca. 1200-900 Ma, and ca. 1750-1600 Ma. **(B)** Weighted mean

plot showing the youngest population of zircon grains (n = 33). Blue rectangles indicate youngest zircon grains that do not fall within two-sigma uncertainty of the rest of the population. **(C)** Youngest subset of zircon from the sample (n = 4) with an average age of 82 ± 2 Ma and MSWD = 0.34.

Sample LP130120-1

Sample LP130120-1 was collected from a 2.5-m interval of light-brown to orange (weathered) and light-green (fresh), very coarse-grained volcaniclastic metasandstone boudin. Only 10 zircon grains could be extracted and analyzed from this sample. Age peaks include ca. 100-90 Ma (n = 2), ca. 650-550 Ma (n = 2), ca. 1300-950 Ma (n = 3), and ca. 1500-1400 Ma (n = 3). LP130120-1 does not have enough data to create a KDE plot, determine the youngest population, or maximum depositional age of the sample.

Unit 4

Two samples were collected from Unit 4, LP090120-2 and LP090120-3 (Figure 8). The samples were collected from interbedded metasandstone (LP090120-2) and metaconglomerate layers (LP090120-3). The major age groups for the samples are ca. 280-250 Ma, ca. 750-450 Ma, ca. 1300-750 Ma, and ca. 2800-2600 Ma. Both samples had a youngest population of zircon ranging from 140-90 Ma with an average age of about ca. 95 Ma that could be used for MDA.

Sample LP090120-2

Sample LP090120-2 was collected from a 40-cm interval of dark-green metasandstone (Figure 8, 18). The sample yielded 141 concordant zircon grains with major age peaks at ca. 275-245 Ma (n = 41), ca. 750-450 Ma (n = 21), ca. 1300-900 Ma (n = 17), and Archean grains (n = 34) (Figure 34A). The sample contains a small population of Cretaceous grains (n = 6) with an

average age of 94 ± 1 Ma and a MSWD of 0.58 that is interpreted as the maximum depositional age (Figure 34B). The sample also contains a large population of Permo-Triassic grains (*n* = 40) that range from 274 to 246 Ma (Figure 34C).

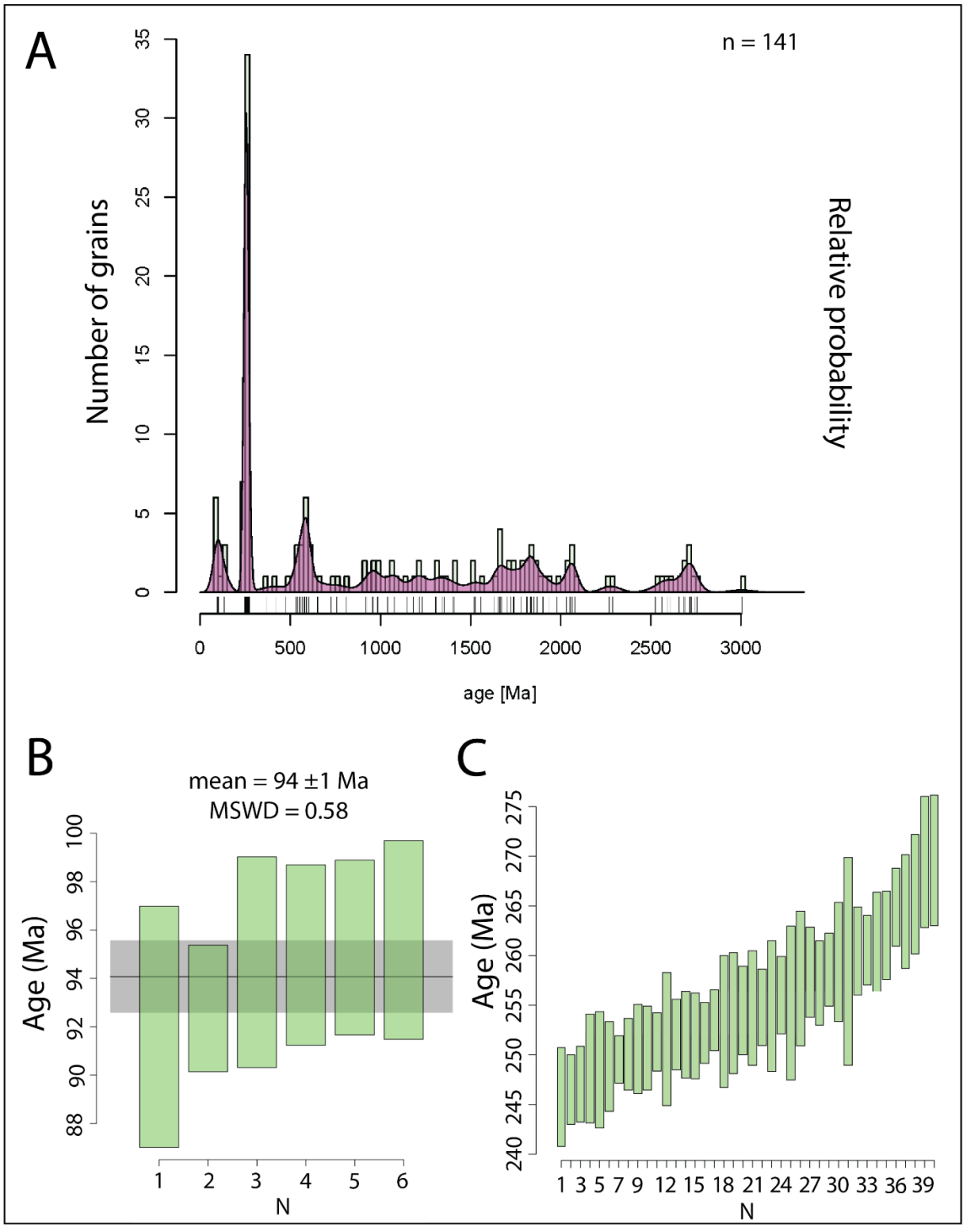
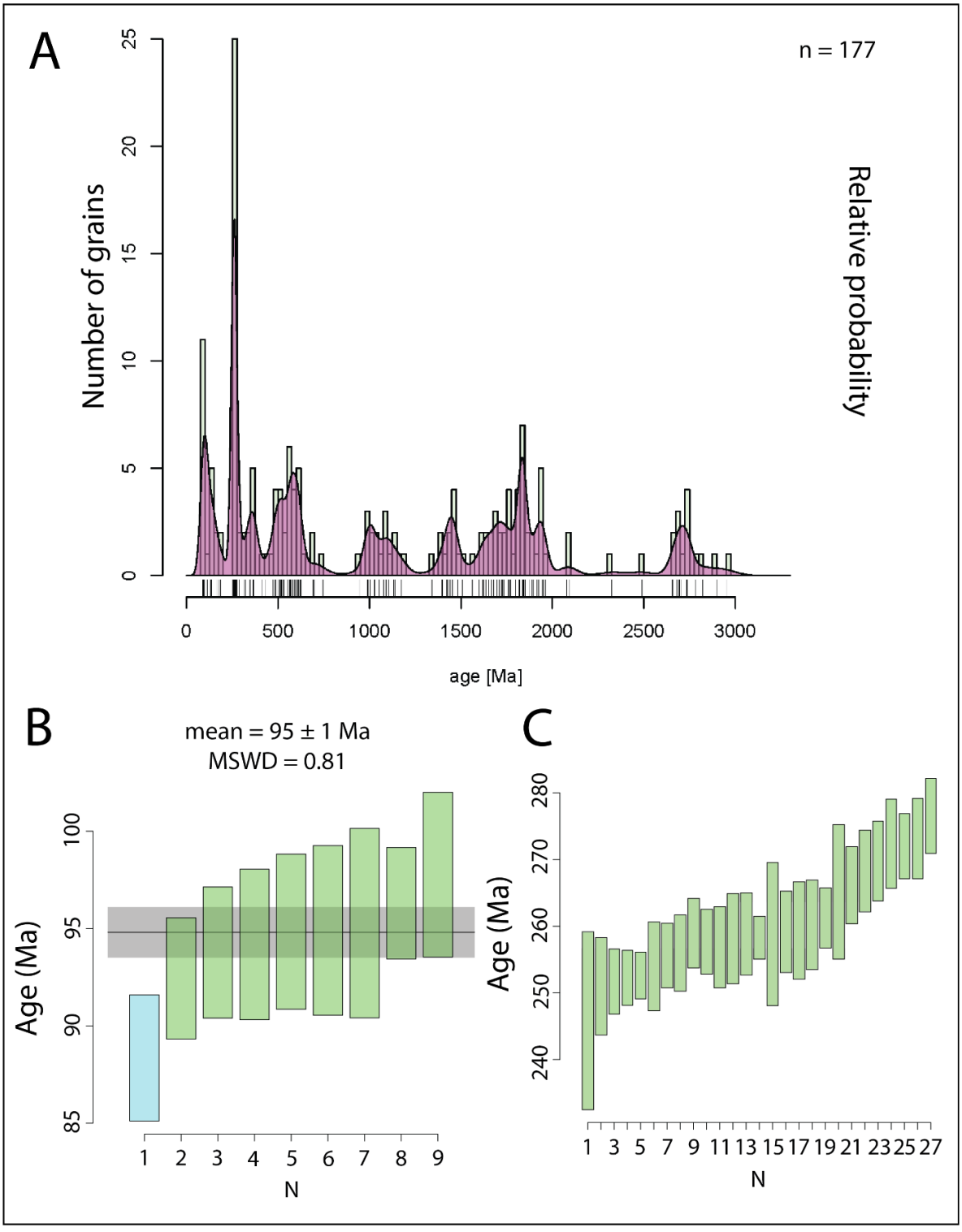


Figure 34. Detrital zircon age data for sample LP090120-2: **(A)** KDE plot shows major peaks at ca. 275-245 Ma, ca. 750-450 Ma, ca. 1300-900 Ma, and ca. 2800-2600 Ma. **(B)** Weighted mean plot showing the youngest population of zircon grains (n = 6) with an average age of 94 ± 1 Ma and MSWD = 0.58. **(C)** Weighted mean plots showing large Permian population of zircon grains (n = 40) ranging from 274-246 Ma.

Sample LP090120-3

Sample LP090120-3 was collected from a 3-m interval of dark-gray to purple metaconglomerate (Figure 8, 18). The sample yielded 177 concordant zircon grains with major age peaks at ca. 140-90 Ma (n = 17), ca. 280-250 Ma (n = 27), ca. 700-450 Ma (n = 30), ca. 1750-1550 Ma (n = 12), and Archean grains (n = 46) (Figure 35A). The youngest population of grains (n = 9) for the sample has an average age of 95 ± 1 Ma and a MSWD of 0.81, which is interpreted as the maximum depositional age (Figure 35B). The sample also contains a large population of Permo-Triassic grains (n = 27) ranging from 277 to 248 Ma (Figure 35C).


A
n = 177
Number of grains
Relative probability
0
5
10
15
20
25
0
500
1000
1500
2000
2500
3000
age [Ma]
B
mean = 95 ± 1 Ma
MSWD = 0.81
Age (Ma)
85
90
95
100
1
2
3
4
5
6
7
8
9
N
C
Age (Ma)
240
250
260
270
280
1
3
5
7
9
11
13
15
17
19
21
23
25
27
N

3.2.2 Sierra Las Pintas Group Detrital Ages

A total of 515 grains were concordant from the four samples collected from the Sierra Las Pintas Group (Figure 6). In general, the samples contain a youngest population of Cretaceous zircon as well as a larger population of Permian grains (except for one sample that has a Permian MDA). Prominent peaks from all the samples include ca. 150-70 Ma, ca. 280-240 Ma, ca. 750-430 Ma, and ca. 1750-1550 Ma.

Unit SP1

Sample LP100120-1

Sample LP100120-1 was collected from unit SP1 (Figure 6) from a 40-cm interval of light-brown to orange, very fine-grained metasandstone that is interbedded with thin beds of dark-gray to black metashale beds. The sample yielded 174 concordant zircon grains with major age peaks at ca. 150-70 Ma (n = 38), ca. 280-240 Ma (n = 55), ca. 1250-850 Ma (n = 21), and ca. 1550-1300 Ma (n = 19) (Figure 36A). The youngest population of zircon (n = 20) from the sample has an average age of 96 ± 1 Ma with a MSWD of 0.46 that is interpreted as the maximum depositional age (Figure 36B). Blue rectangles indicate youngest zircon grains that do not fall within two-sigma uncertainty of each other and cannot reasonably be considered as the maximum depositional age with a MSWD of 6 (Figure 36C). The sample also contains a large population of Permian grains (n = 54) that range from 279 to 260 Ma (Figure 36D).

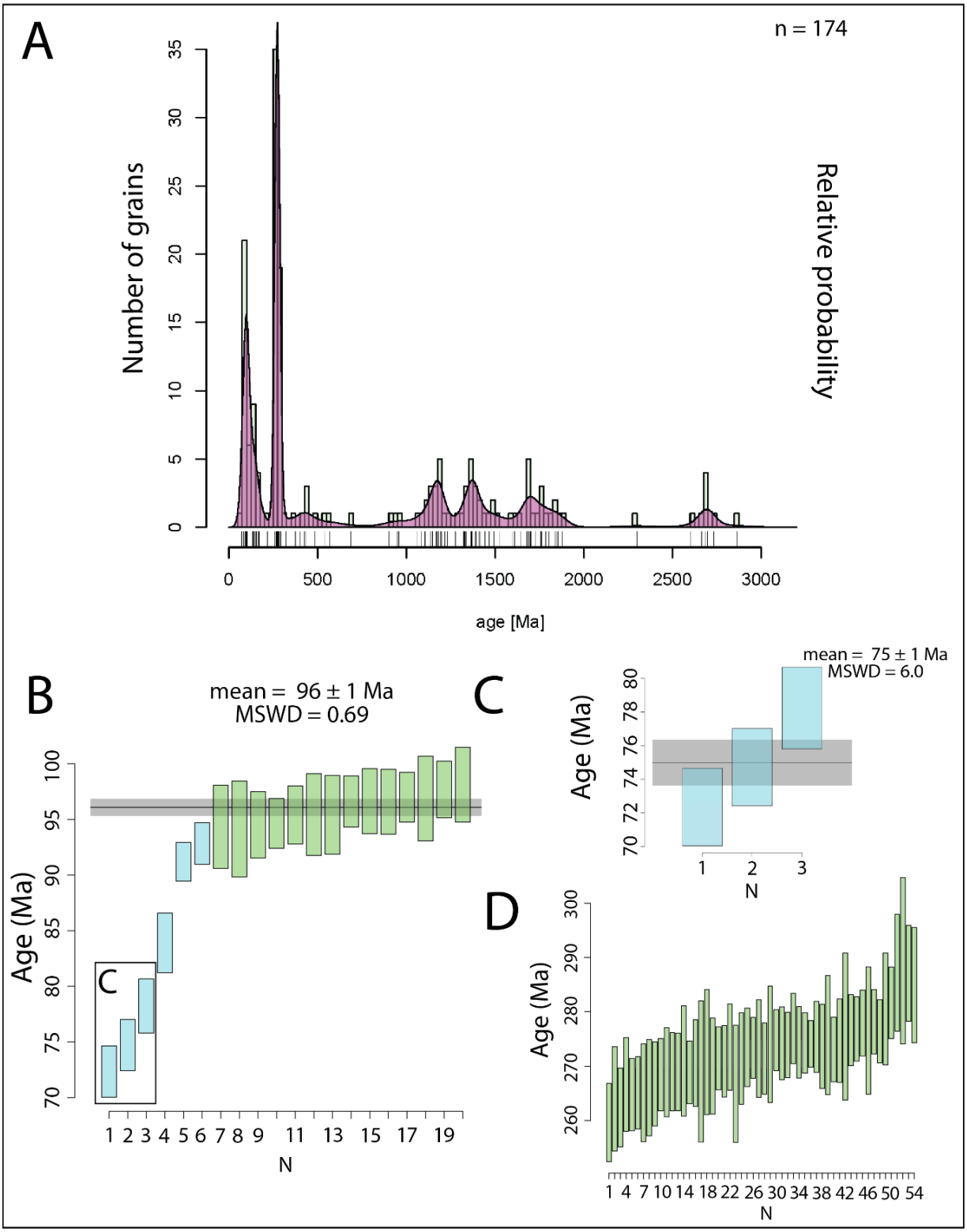


Figure 36. Detrital zircon age data for sample LP100120-1: **(A)** KDE plot shows major peaks at ca. 140-70 Ma and 280-240 Ma with minor age peaks at ca. 1250-850 Ma, ca. 1550-1300 Ma, and 1700-1600 Ma. **(B)** Weighted mean plot shows the youngest population of zircon grains (*n* =

20) with an average age of approximately 96 ± 1 Ma and MSWD = 0.69. Blue rectangles indicate the youngest zircon that are considered outliers for the sample. **(C)** Three youngest zircon grains from the sample that do not fall within two-sigma uncertainty of each other and have a MSWD of 6. **(D)** Weighted mean plot of a large Permian population of ages (*n* = 54) ranging from 279 to 260 Ma.

Unit SP2

Sample LP110120-1

Sample LP110120-1 was collected from a 3-m interval of tan to light-orange, very coarse-grained metasandstone of Unit SP2 (Figure 8, 24). The sample yielded 167 concordant zircon grains with major age peaks at ca. 140-90 Ma (*n* = 16), ca. 280-240 Ma (*n* = 58), ca. 1300-950 Ma (*n* = 34), and ca. 1550-1350 Ma (*n* = 20) (Figure 37A). The youngest population of zircon grains from the sample has an average age of 94 ± 1 Ma and a MSWD of 0.74 that is interpreted as the maximum depositional age (Figure 37B). Blue rectangle indicates an outlier in the population that is not included when calculating the maximum depositional age. The sample also contains a large Permian population of grains (*n* = 55) that ranges from 284 to 258 Ma (Figure 37C).

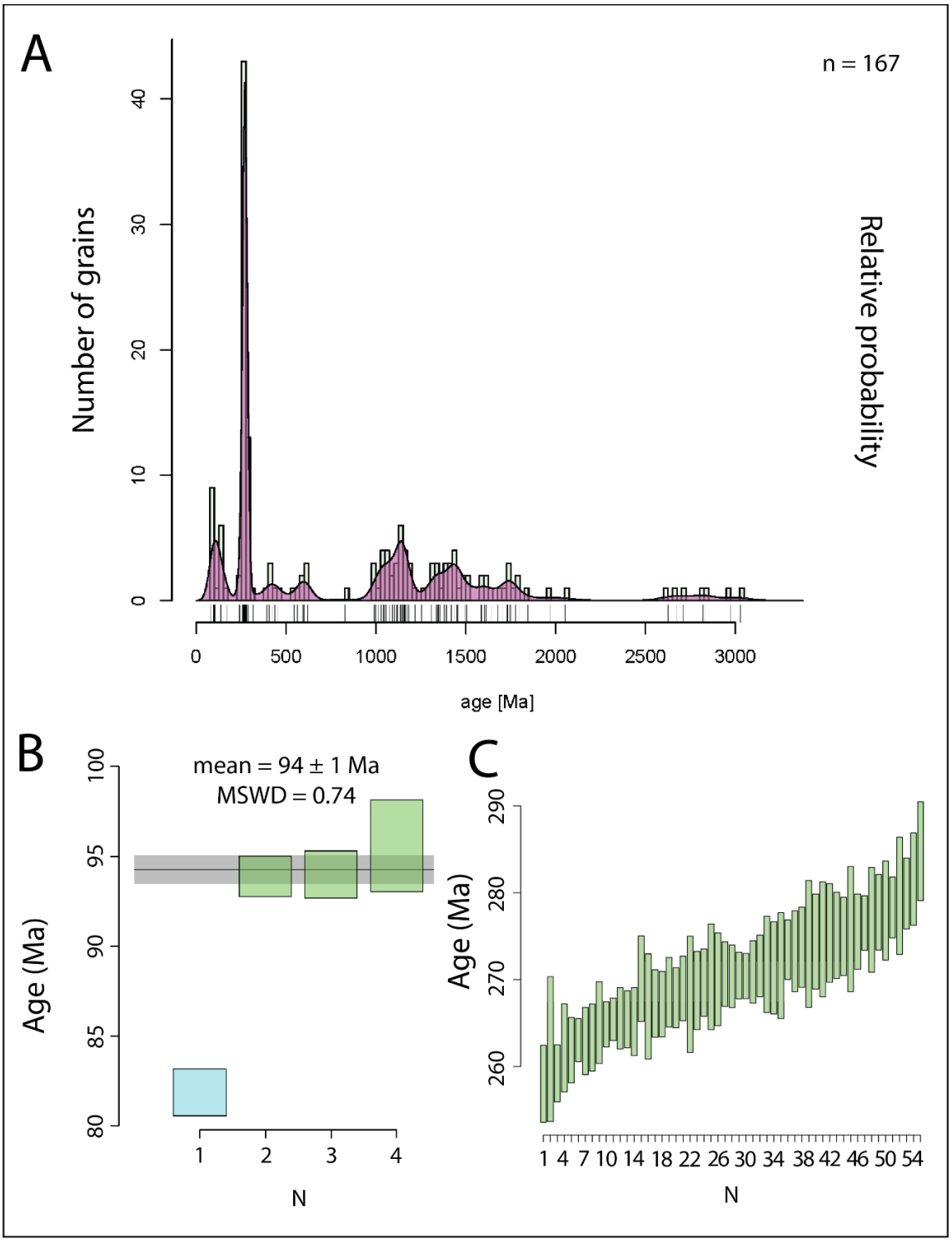


Figure 37. Detrital zircon age data for sample LP110120-1: **(A)** KDE plot shows major peaks at ca. 140-90 Ma, ca. 280-240 Ma, ca. 1300-950 Ma, and ca. 1550-1350 Ma. **(B)** Weighted mean plot of the youngest population of zircon grains (n = 7) with an average age of 94 ± 1 Ma and MSWD = 0.74. Blue rectangle indicates an outlier in the population. **(C)** Weighted mean plot of a large Permian population of zircon (n = 55) that ranges from 284 to 258 Ma.

Sample 18-LP-10

Sample 18-LP-10 was collected from a very coarse-grained metasandstone of Unit SP2 (Figure 6). The sample yielded 155 concordant zircon grains with major age peaks at ca. 280-250 Ma (n = 49), ca. 1250-1000 Ma (n = 50), ca. 1500-1300 Ma (n = 23), and ca. 1750-1600 Ma (n = 7) (Figure 38A). The youngest population of zircon grains (n = 49) ranges from 280 to 254 Ma (Figure 38B). Within that population, a younger subset of zircon grains has an average age of 266 ± 3 Ma and MSWD of 0.46, which is interpreted as the maximum depositional age for the sample (Figure 38C). Blue rectangle indicates an outlier in the population and is not included when calculating the maximum depositional age.

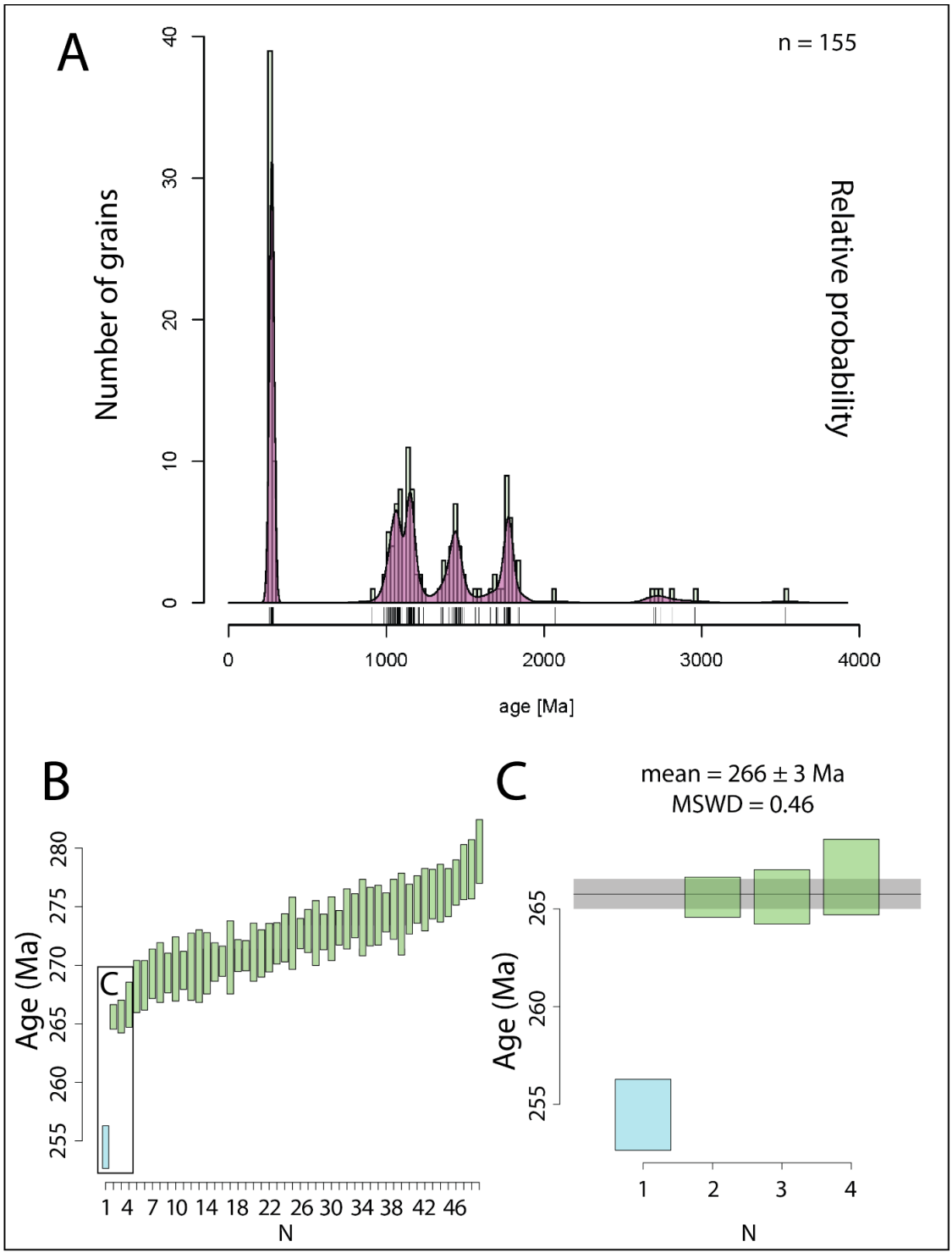


Figure 38. Detrital zircon age data for sample 18-LP-10: **(A)** KDE plot shows major peaks at ca. 280-250 Ma and minor age peaks at ca. 1250-1000 Ma, ca. 1500-1300 Ma, and ca. 1750-1600 Ma. **(B)** Weighted mean plot shows the youngest population of zircon grains (n = 49) ranges from 280 to 254 Ma. Blue rectangle indicates an outlier in the population. **(C)** Youngest subset of zircon from the sample (n = 4) with an average age of 266 ± 3 Ma and MSWD = 0.46.

Unit SP4

Sample X181218

Sample X181218 was collected from basaltic metalava of Unit SP4. The sample yielded 19 concordant zircon grains with major age peaks at ca. 140-90 Ma (*n* = 9), ca. 1100-850 Ma (*n* = 3), and ca. 1700-1600 Ma (*n* = 4) (Figure 39A). The youngest population of zircon grains has an average age of 98 ± 1 Ma and MSWD of 1.51 based on the weighted mean plot (Figure 39B). The blue rectangle indicates an outlier in the population that is not included when calculating the maximum depositional age. Although the MSWD is >1 and it is likely that the population contains multiple zircon sources, it is the most coherent population of youngest zircon from the sample and therefore is interpreted as the maximum depositional age.

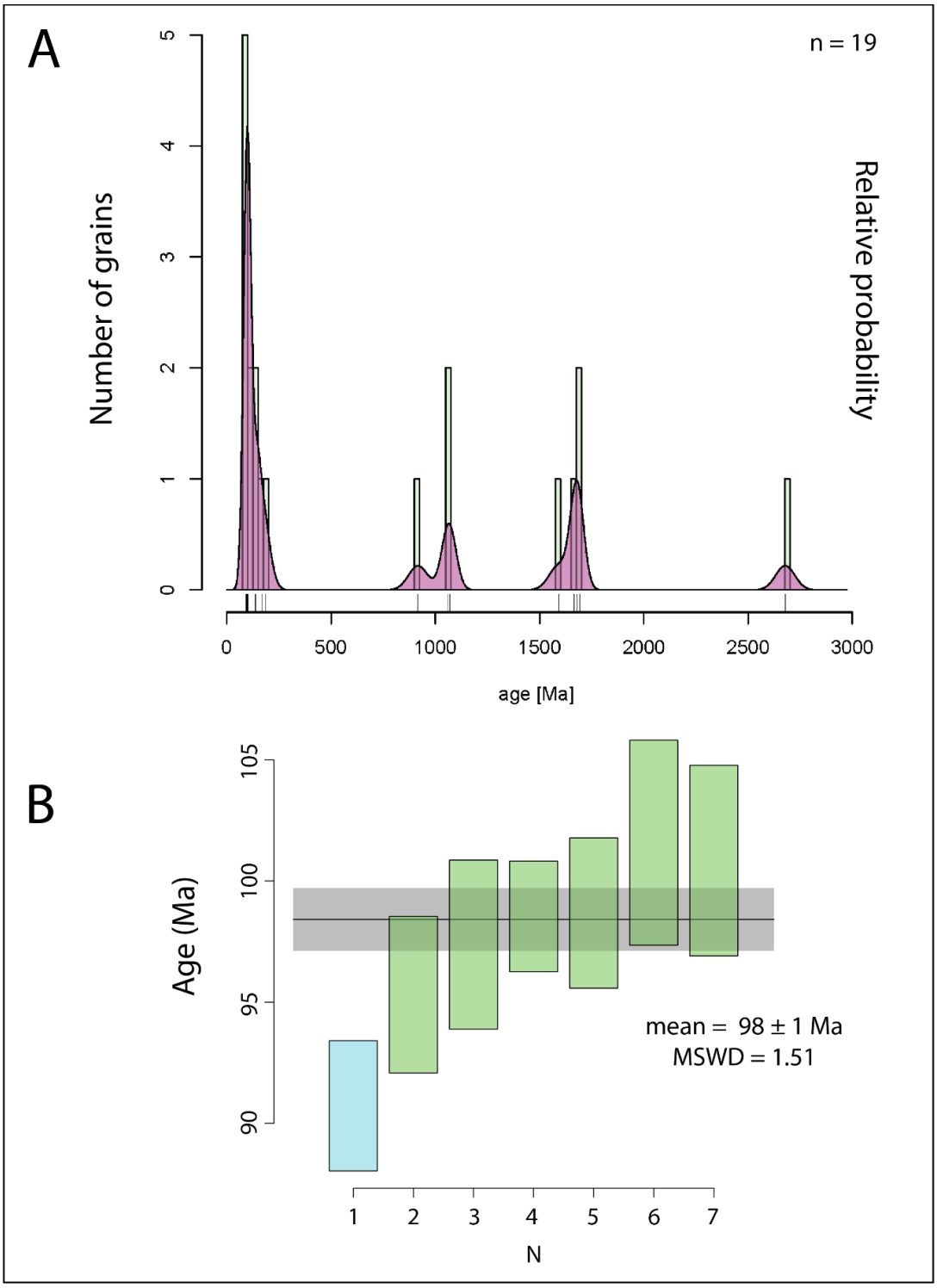


Figure 39. Detrital zircon age data for sample X181218: **(A)** KDE plot shows major peaks at ca. 140-90 Ma, ca. 1100-850 Ma, and ca. 1700-1600 Ma. **(B)** Weighted mean plot shows the youngest population of zircon grains (n = 7) with an average age of approximately 98 ± 1 Ma and MSWD = 1.51. Blue rectangle indicates an outlier in the spectra.

3.2.3 Minas de Barita Area Detrital Ages

A total of 256 grains were concordant from the three samples collected from the Mina México Formation and Rancho Nuevo Formation of the Minas de Barita area. Major age peaks are similar for each of the samples at ca. 400-250 Ma, ca. 720-500 Ma, and ca. 1750-900 Ma.

Rancho Nuevo Formation

13-11-SR2

Sample 13-11-SR2 was collected from the Rancho Nuevo Formation from a calcareous sandstone interbedded with chert and shale (Figure 5). The sample yielded 74 concordant zircon grains with major age peaks at ca. 430-300 Ma (n = 12), ca. 700-450 Ma (n = 22), ca. 1300-750 Ma (n = 20), and Archean grains (n = 12) (Figure 40A). The youngest population of zircon for the sample (n = 7) ranges from 381 to 310 Ma (Figure 40B). A younger subset of zircon grains (blue rectangles) has an average age of 314 ± 4 Ma with a MSWD of 0.84 and is interpreted as the maximum depositional age for the sample (Figure 40C).

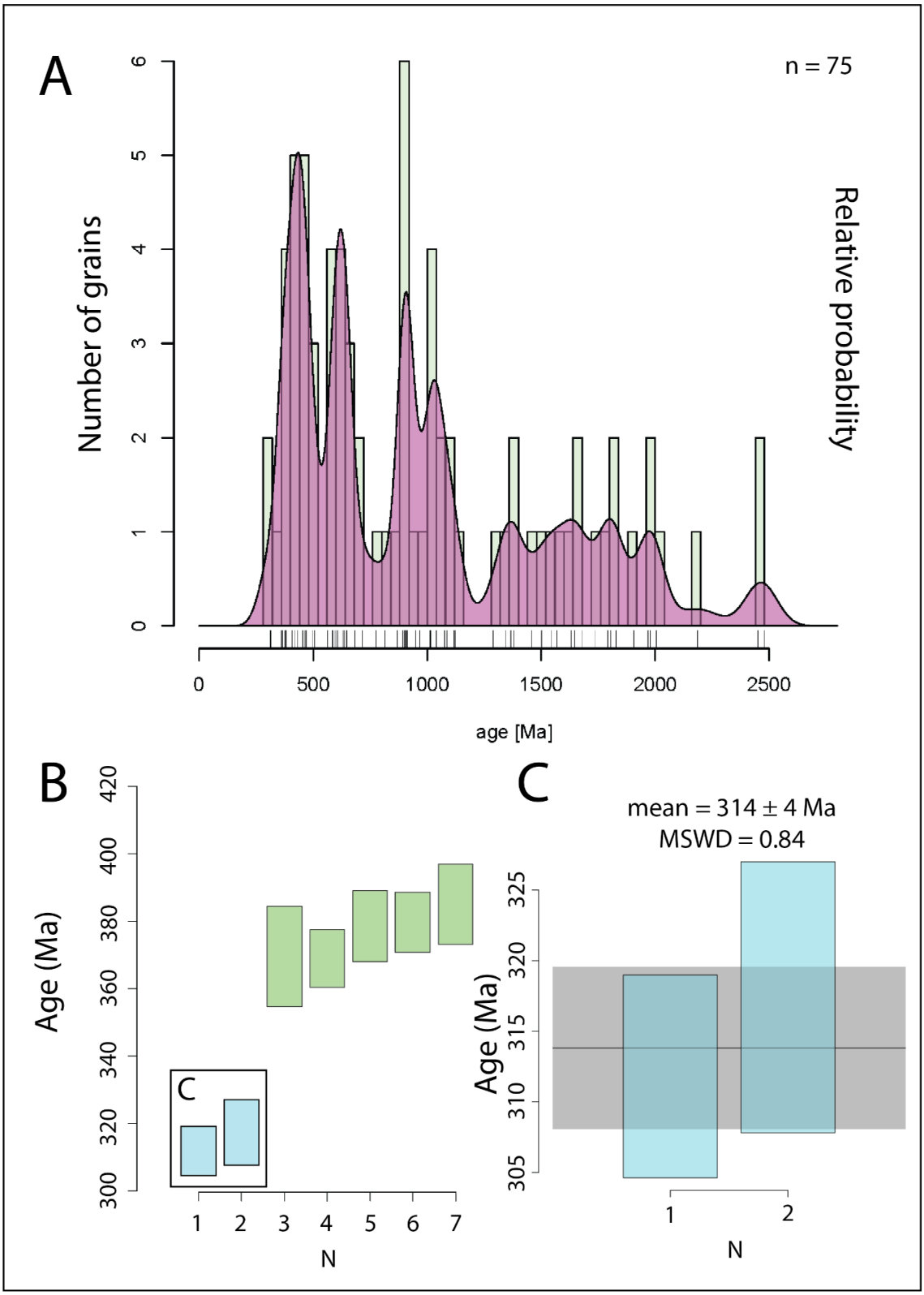


Figure 40. Detrital zircon age data for sample 13-11-SR2: **(A)** KDE plot shows major peaks at ca. 430-300 Ma, ca. 700-450 Ma, ca. 1300-750 Ma, and Archean grains. **(B)** Weighted mean

plot shows youngest population of zircon grains (n = 7) ranges from 381 to 310 Ma. Blue rectangles indicate outliers for the population. **(C)** Youngest subset of zircon from the sample (n = 2) with an average age of 314 ± 4 Ma and MSWD of 0.84.

Mina México Formation

13-11-SR3

Sample 13-11-SR3 was collected from a very fine- to fine-grained sandstone of the Mina México Formation (Figure 5). The sample yielded 92 concordant zircon grains with major age peaks at ca. 420-270 Ma (n = 23), ca. 750-500 Ma (n = 39), ca. 1300-900 Ma (n = 13), and Archean grains (n = 9) (Figure 41A). The youngest population of zircon grains (n = 11) ranges from 355 to 300 Ma (Figure 41B). A younger subset of zircon grains (blue rectangles) does not overlap with the majority of the population and are considered statistically distinct from the youngest set of grains. The younger subset of zircon grains has an average age of 311 ± 10 Ma with a MSWD of 0.52 and is interpreted as the maximum depositional age for the sample (Figure 41C).

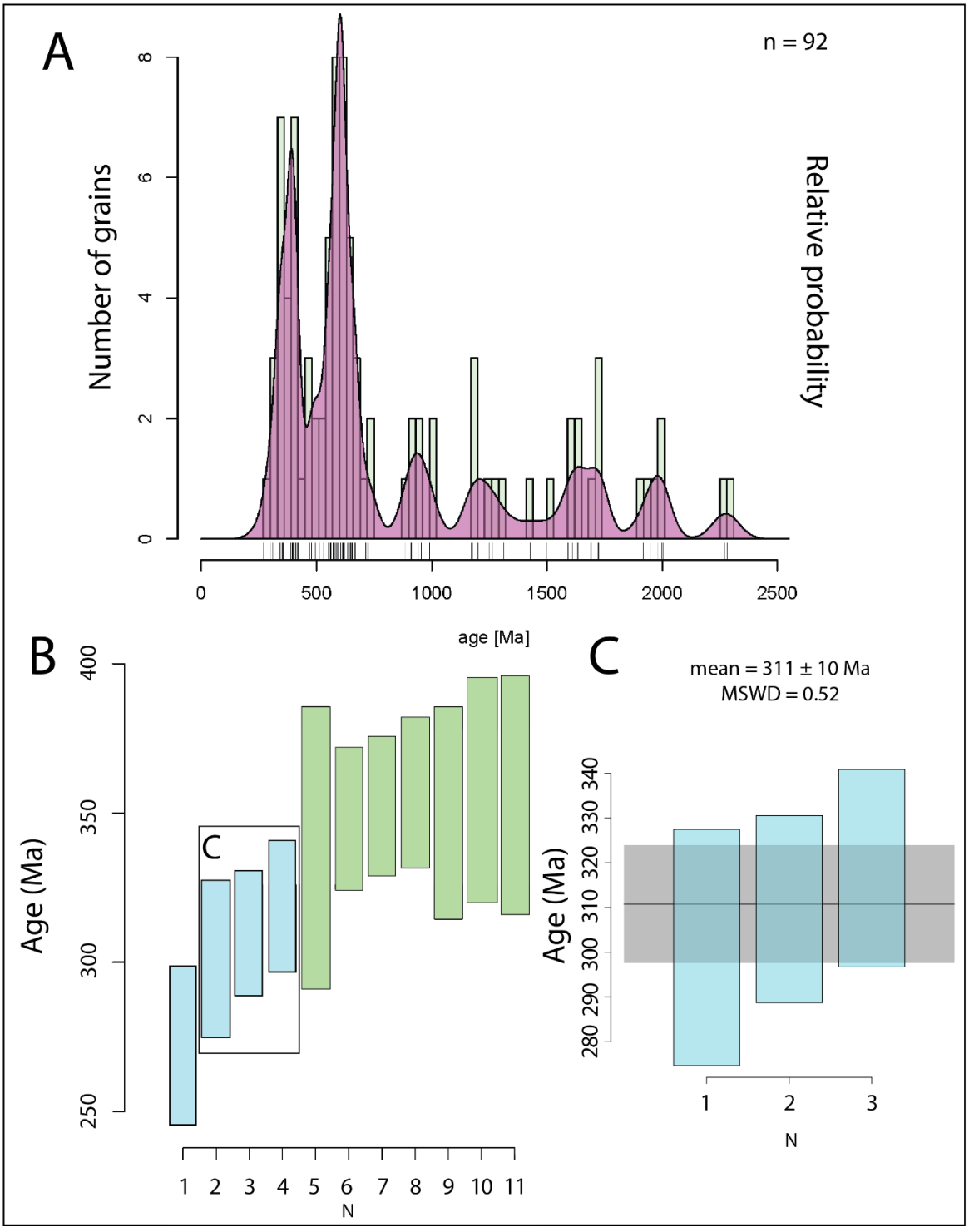


Figure 41. Detrital zircon age data for sample 13-11-SR3: **(A)** KDE plot shows major peaks at ca. 420-270 Ma, ca. 750-500 Ma, ca. 1300-900 Ma, and Archean grains. **(B)** Weighted mean plot shows youngest population of zircon grains (*n* = 11) ranging from 355 to 300 Ma. Blue rectangles indicate outliers for the population. **(C)** Youngest subset of zircon from the sample (*n* = 3) with an average age of 311 ± 10 Ma and MSWD of 0.52.

12-11-SR2

Sample 12-11-SR2 was collected from a quartz-rich, fine-grained sandstone of the Mina México Formation (Figure 5). The sample yielded 95 concordant zircon grains with major age peaks at ca. 430-280 Ma (n = 21), ca. 720-500 Ma (n = 22), ca. 1200-900 Ma (n = 24), and ca. 1750-1550 Ma (n = 12) (Figure 42A). The youngest population of zircon grains (n = 19) ranges from 402 to 289 Ma (Figure 42B). Within that population, a younger subset of zircon grains (blue rectangles) does not overlap with the majority of the population and are considered statistically distinct from the youngest set of grains. The younger subset of zircon grains has an average age of 295 ± 9 Ma with a MSWD of 0.23 and is interpreted as the maximum depositional age for the sample (Figure 42C).

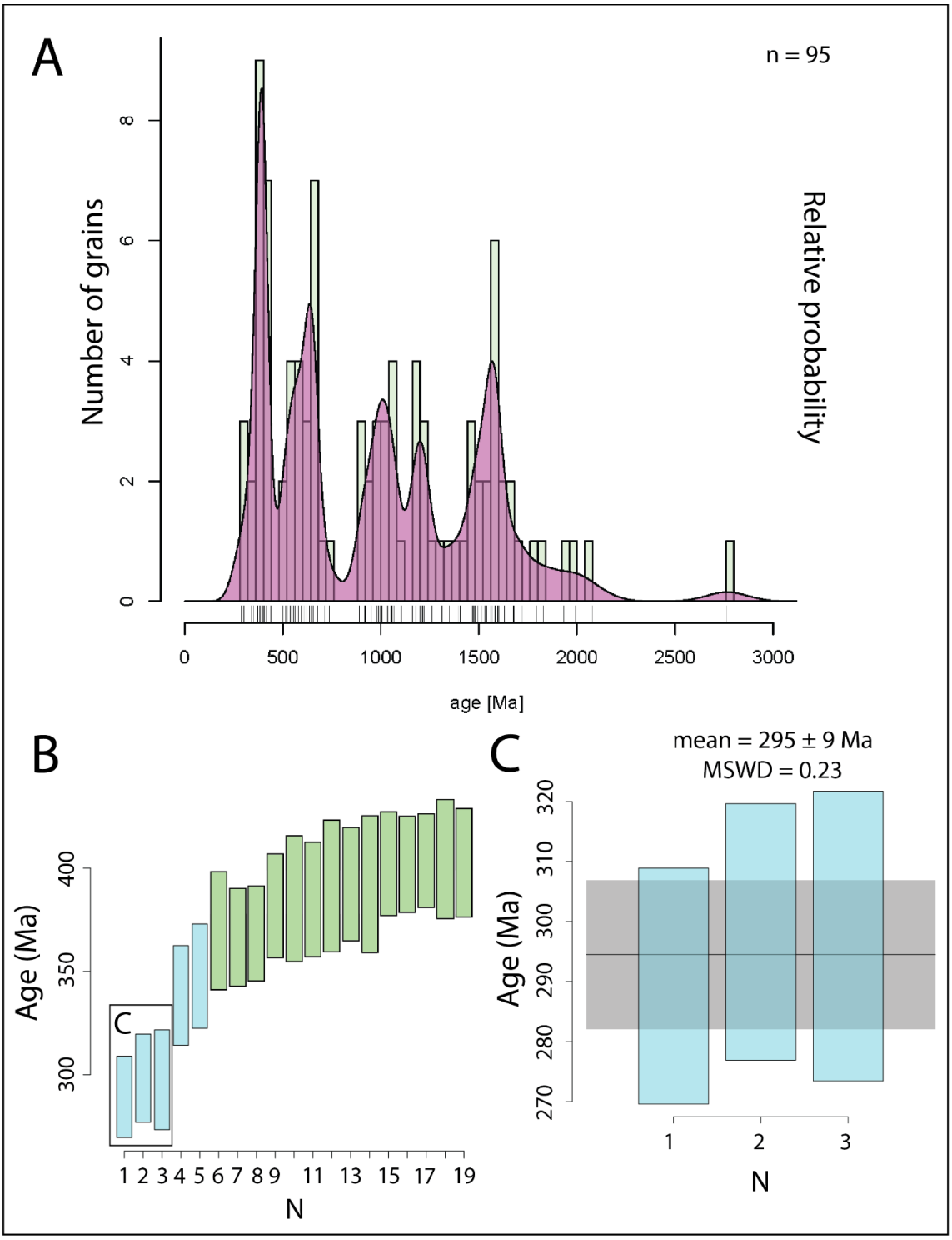


Figure 42. Detrital zircon age data for sample 12-11-SR2: **(A)** KDE plot shows major peaks at ca. 430-280 Ma, ca. 720-500 Ma, ca. 1200-900 Ma, and ca. 1750-1550 Ma. **(B)** Weighted mean plot shows youngest population of zircon grains (n = 19) ranging from 402 to 289 Ma. **(C)** Youngest subset of zircon from the sample (n = 3) with an average age of 295 ± 9 Ma and MSWD of 0.23.

3.2.4 Sierra Las Pintas Area Trace Element Geochemistry

Bivariate geochemical plots were created for Cretaceous and Permo-Triassic grains from the Arroyo Grande Group and Sierra Las Pintas Group of the Sierra Las Pintas (Figures 43-48). Four geochemical bivariate plots, U vs Yb, Hf vs U/Yb, Th/U vs age, and Yd/Gd vs age were created to further understand the source rock composition and aid in interpreting the provenance of zircon grains from this study.

Permo-Triassic Bivariate Plots

Permo-Triassic grains from the Arroyo Grande Group and the Sierra Las Pintas Group were plotted on geochemical bivariate diagrams and combined to determine if the geochemical characteristics were similar from each field area. Permo-Triassic grains from the Arroyo Grande Group all plot within the continental-arc array of Grimes et al. (2007; 2015). Th/U ratios range from approximately 0.25 to 1. Yb/Gd ratios vary dramatically and are widespread, ranging from approximately 20 to 100, with 83% of the grains greater than 30. (Figure 43). Permo-Triassic grains from the Sierra Las Pintas Group also plot within the continental-arc array of Grimes et al. (2007; 2015). Th/U ratios of zircon from the Sierra Las Pintas Group range from 0.25 to 1.2, with most of the zircon grains plotting around 0.4. Yb/Gd ratios for Sierra Las Pintas Group zircon range from 10 to 50 (Figure 44).

Bivariate trace element diagrams for 275-240 Ma grains of the Sierra Las Pintas Group and Arroyo Grande Group show many similarities (Figure 45). U vs Yb and U/Yb vs Hf plots of Permo-Triassic grains from both areas plot within the continental field. Th/U ratios for both field areas range from 0.2 to 1. The Yb/Gd ratios for the two fields generally range from 10-90, with

the Arroyo Grande Group zircon showing a slightly higher and more widespread range. The Arroyo Grande Group zircon suite is slightly older than Sierra Las Pintas Group zircon suite, but trace element ratios are consistent.

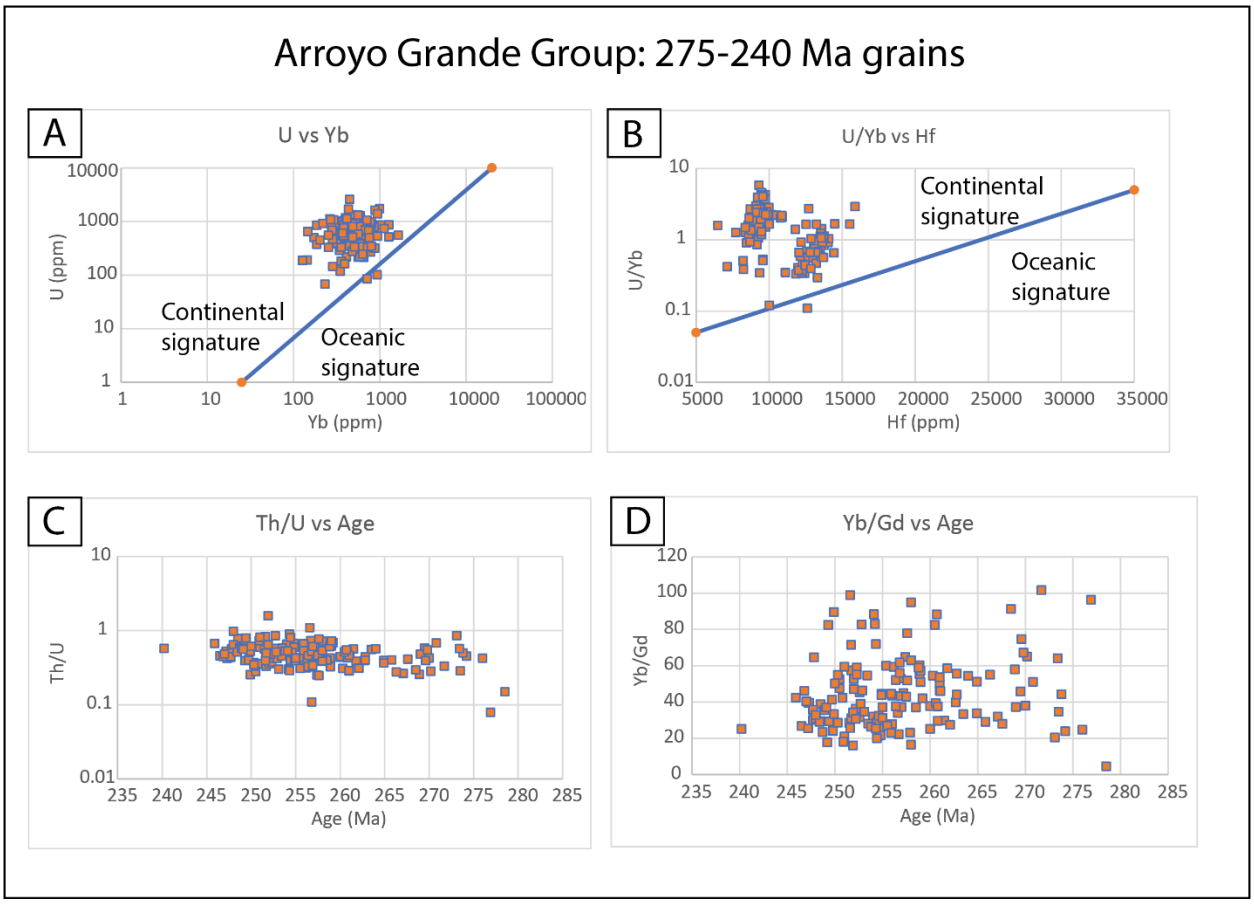


Figure 43. Geochemical bivariate plots of all 275-240 Ma age zircon grains from the Arroyo Grande Group. **A-B)** U vs Yb and Y/Yb vs Hf diagrams with grains plotting within the continental field. **C)** Th/ U vs Age plot showing Th/U ratios ranging from 0.25 to 1. **D)** Yb/Gd vs Age plot with Yb/Gd ratios between 20 and 100.

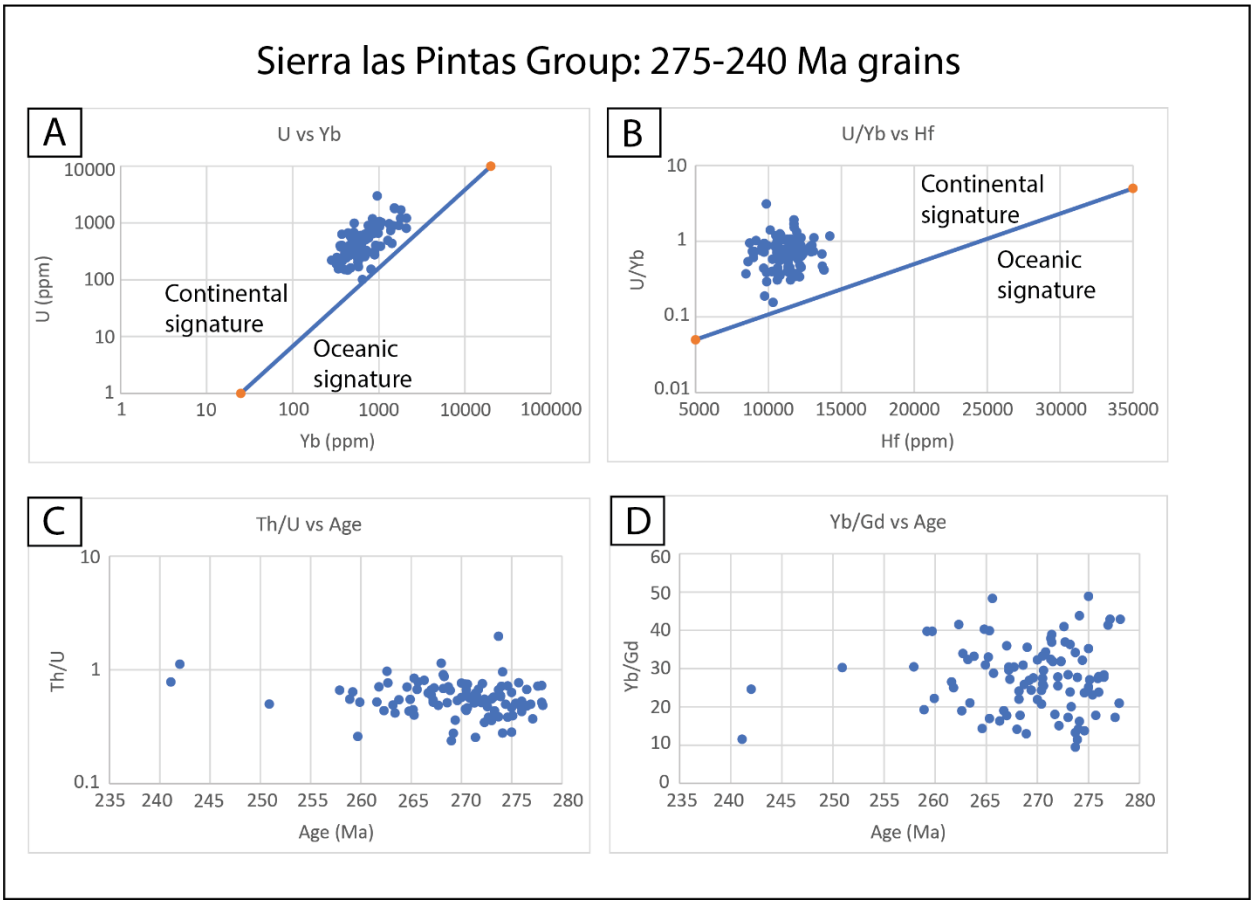


Figure 44. Geochemical bivariate plots for 275-240 Ma age zircon from all samples of the Sierra Las Pintas Group. **A-B)** U vs Yb and Y/Yb vs Hf diagrams with grains plotting within the continental field. **C)** Th/ U vs Age plot showing Th/U ratios ranging from 0.25-1.2. **D)** Yb/Gd vs Age plot with Yb/Gd ratios ranging from 10-50.

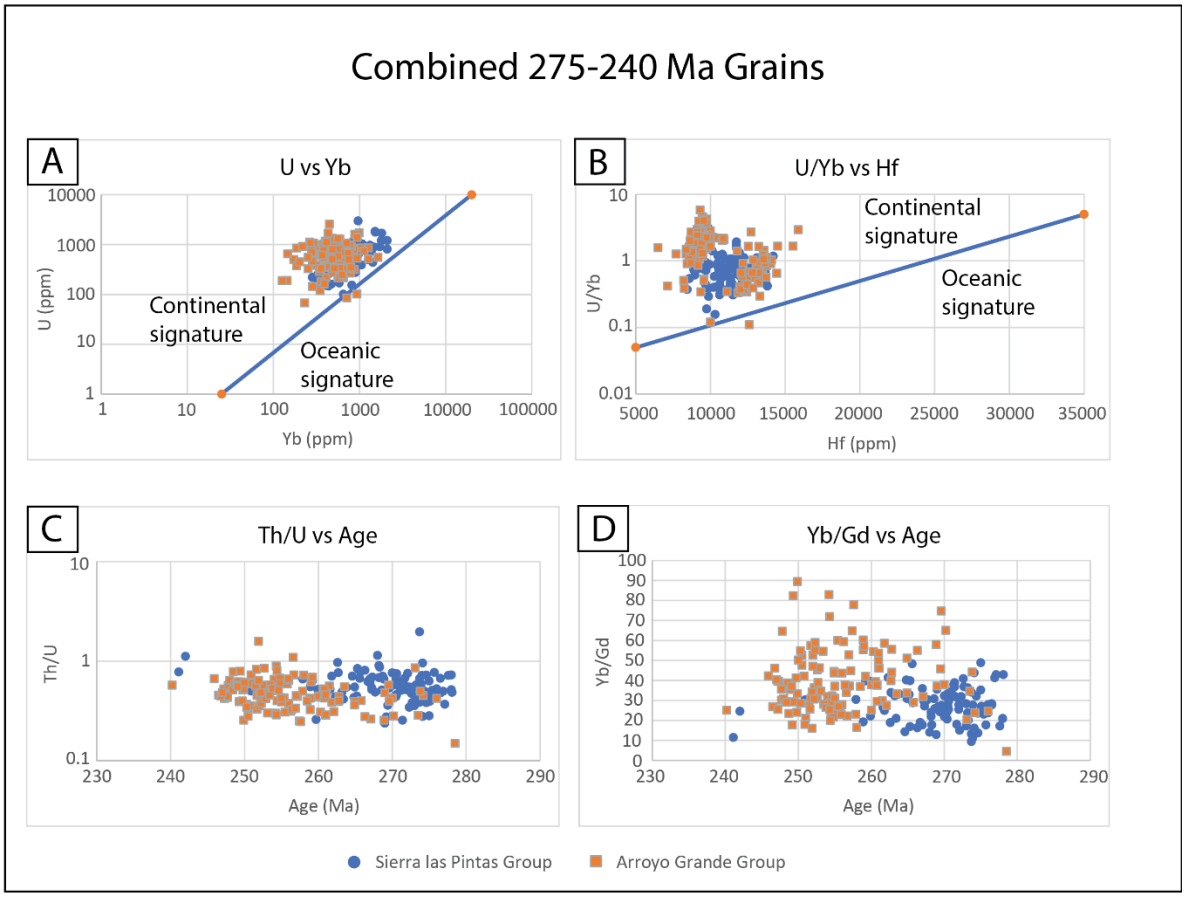


Figure 45. Geochemical bivariate plots for 275-240 Ma age zircon from samples collected from the Sierra Las Pintas Group and the Arroyo Grande Group. **A-B)** U vs Yb and Y/Yb vs Hf diagrams with grains plotting within the continental field. **C)** Th/ U vs Age plot showing Th/U ratios of 0.2-1. **D)** Yb/Gd vs Age plot showing Yb/Gd ratios of approximately 10-90.

Cretaceous Bivariate Plots

Cretaceous grains were plotted on geochemical bivariate diagrams from the Arroyo Grande Group, the Sierra Las Pintas Group and combined. The Cretaceous grains of the Arroyo Grande Group all plot within the continental arc arrays of Grimes et al. (2007; 2015) on U vs Yb and U/Yb diagrams. Th/U ratios of zircon from the Arroyo Grande Group range from 0.25 to 1. Yb/Gd ratios of the Cretaceous zircon range from 10 to 70, with 72% of the grains plotting below 30 (Figure 46). The Cretaceous grains of the Sierra Las Pintas Group also plot within the continental arc arrays of Grimes et al. (2007; 2015) on U vs Yb and U/Yb diagrams. Th/U ratios

of the Sierra Las Pintas Cretaceous zircon range from 0.15 to 1.2 and Yb/Gd ratios range from 10 to 30 (Figure 47).

Bivariate trace element diagrams for 140-90 Ma zircon grains of the Sierra Las Pintas Group and Arroyo Grande Group show similar characteristics (Figure 48). U vs Yb and U/Yb vs Hf plots of Cretaceous grains from both areas plot within the continental field, with the Arroyo Grande Group have a slightly higher U content. Th/U and Yb/Gd ratios for both field areas plot almost exactly the same, with Th/U ratios of 0.15 to 2 and Yb/Gd ratios of 10 to 70.

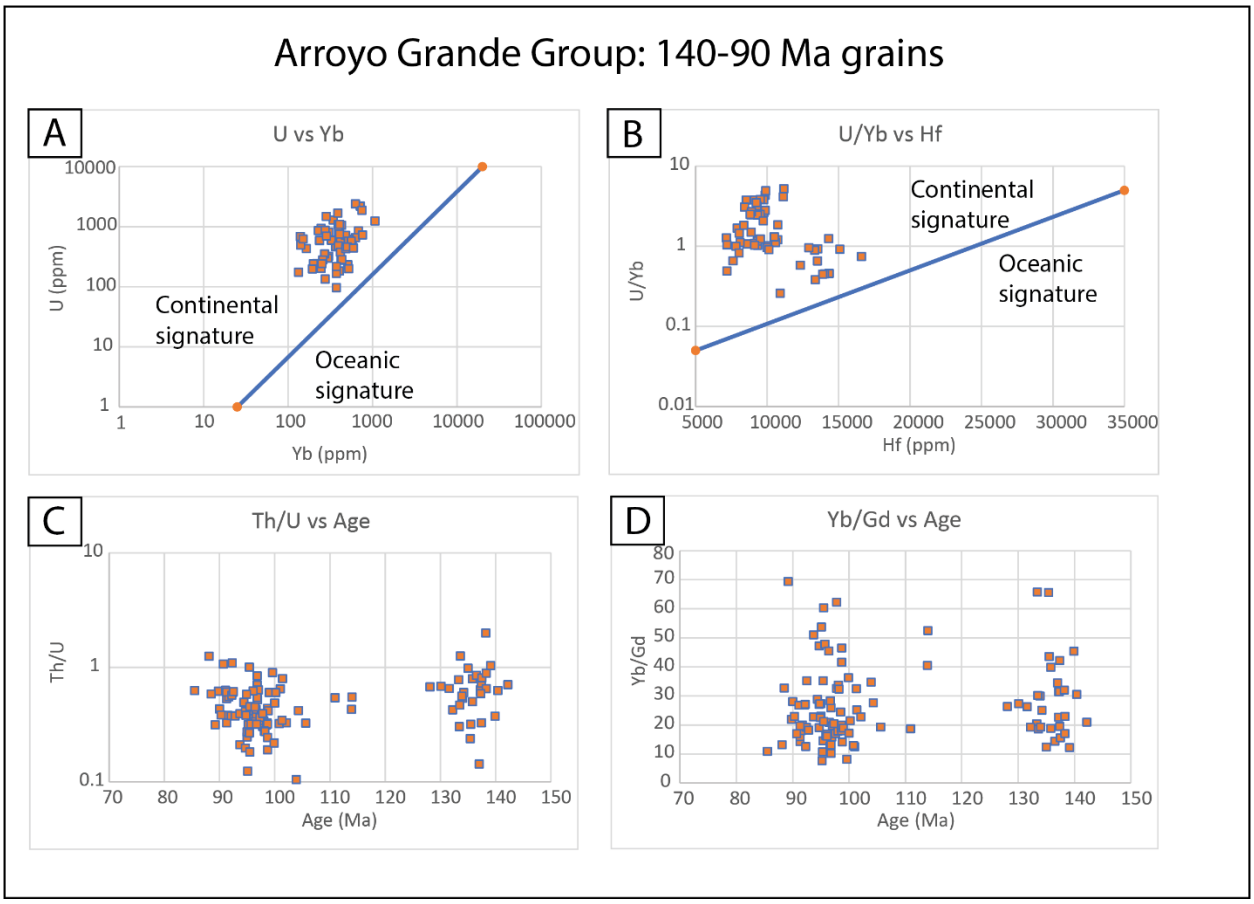


Figure 46. Geochemical bivariate plots of all 140-90 Ma zircon grains from the Arroyo Grande Group. **A-B)** U vs Yb and U/Yb vs Hf diagrams with grains plotting within the continental field. **C)** Th/ U vs Age plot showing Th/U ratios ranging from 0.1-2. **D)** Yb/Gd vs Age plot with Yb/Gd ratios ranging from 10-70.

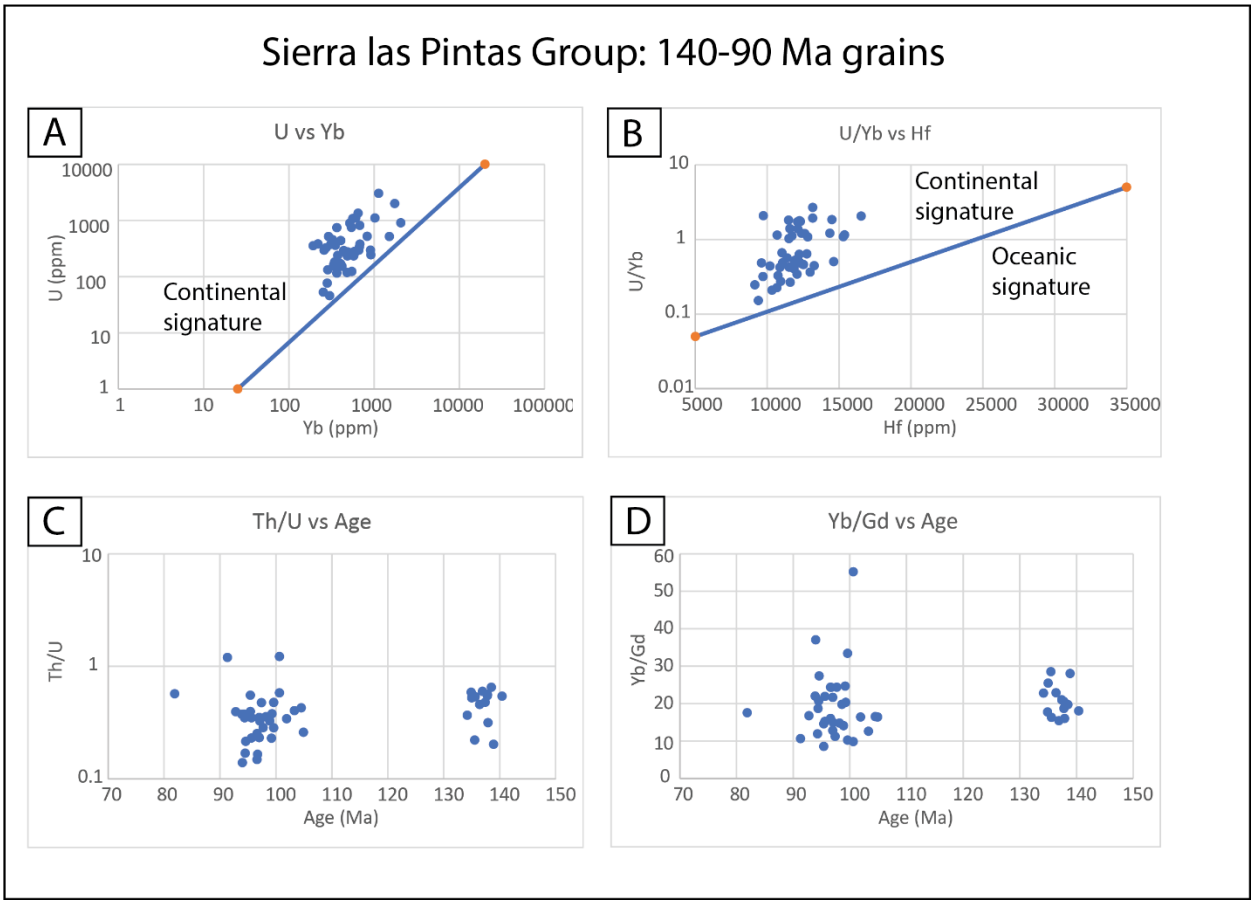


Figure 47. Geochemical bivariate plots for 140-90 Ma zircon from all samples of the Sierra Las Pintas Group. **A-B)** U vs Yb and Y/Yb vs Hf diagrams with grains plotting within the continental field. **C)** Th/ U vs Age plot showing Th/U ratios ranging from 0.15-1.2. **D)** Yb/Gd vs Age plot with Yb/Gd ratios ranging from 10-30.

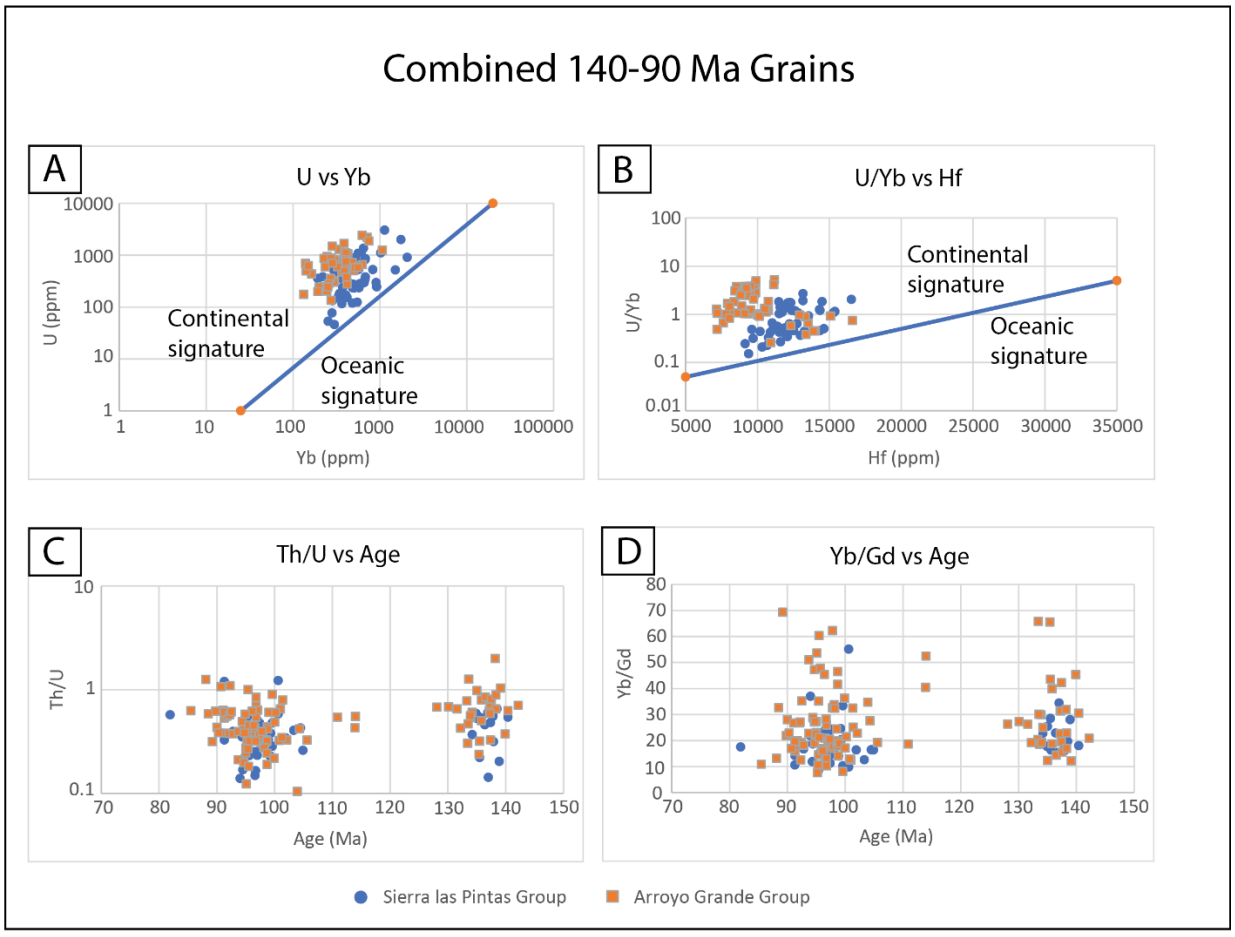


Figure 48. Geochemical bivariate plots for 140-90 Ma age zircon from samples collected from the Sierra Las Pintas Group and the Arroyo Grande Group. **A-B)** U vs Yb and Y/Yb vs Hf diagrams with grains plotting within the continental field. **C)** Th/ U vs Age plot showing similar Th/U ratios. **D)** Yb/Gd vs Age plot with both field areas indicating similar Yb/Gd ratios.

4.0 DISCUSSION

4.1 DETRITAL ZIRCON AGES AND PROVENANCE ANALYSIS

This study provides the first geochronological analysis of the proposed Sonora allochthon strata of the Sierra Las Pintas. While previous studies (Leier-Engelhardt, 1993; Poole et al., 2005; Poole et al., 2008; Navas-Parejo et al., 2018) hypothesized that similar stratigraphy and

biostratigraphic ages allow a correlation of the strata of the Sierra Las Pintas to Sonora allochthon stratigraphy of central Sonora, the results of this study suggest an alternative story.

Geochronology Re-analysis

Detrital zircon geochronological analysis of the Sierra Las Pintas Area yielded an unexpected Cretaceous MDA for various units of the Sierra Las Pintas Group and the Arroyo Grande Group. This depositional age is much younger than the hypothesized emplacement age for the Sonora allochthon strata and measures were taken to verify that the Cretaceous zircon did not undergo hydrothermal alteration or intense metamorphism from subsequent tectonic evolution of the area. Zircon is highly resistant to metamorphism, weathering, and partial melting and can preserve original crystallization ages and geochemical composition, but specific conditions could potentially affect the isotopic age of the grain. Zircon grains can be susceptible to elemental change under aqueous conditions at a range of temperatures. Van Lankvelt (2016) determined that the rims of zircon interacting with hydrothermal fluid can re-equilibrate, experience Pb- loss, and effectively reset the isotopic clock. Partial dissolution or recrystallization of zircon can result in geochronological ages that do not reflect the original crystallization age of the zircon. Partial dissolution typically results in recrystallized zircon rims that contain a younger age than the original detrital core of a zircon. In order to account for that possibility, a random selection of Cretaceous grains underwent U-Pb isotope re-analysis, taking care to analyze the cores of the zircon (Table 5). Every zircon that was re-analyzed yielded the same isotopic age, within error, as was originally determined with the exception of one grain, LP080120-9_144. Zircon LP080120-9_144 appears to have an altered metamorphic rim as the detrital core age of the zircon is 800 Ma upon re-analysis, as opposed to the rim age of 172 Ma from the original analysis. Discordant zircon grains are highlighted in red (Table 5).

Field Area	Unit	Sample	Spot #	Age (Ma) Run 1	Age (Ma) Run 2	Run 2 Concordance
Arroyo Grande Group	1	LP070120-1	LP070120_1s_70	71	72	0.8
			LP070120_1s_96	91	97	0.93
			LP070120_1s_108	95	96	1
			LP070120_1L_17	96	94	0.97
			LP070120_1s_118	97	99	0.99
			LP070120_1s_74	99	101	0.98
			LP070120_1s_33	100	96	1
			LP070120_1s_36	113	102	0.94
			LP070120_1L_21	140	135	0.99
			LP070120_1L_15	165	164	0.99
			LP070120_1L_37	80	67	0.28
			LP070120_1s_67	86	71	0.2
	3	LP080120-9	LP080120_9s_137	81	81	0.99
			LP080120_9s_40	92	93	0.95
			LP080120_9L_8	95	96	0.99
			LP080120_9s_167	95	101	1.03
			LP080120_9s_2	96	98	0.99
			LP080120_9s_68	99	99	1.02
			LP080120_9s_38	104	118	0.99
			LP080120_9s_30	136	139	1.01
			LP080120_9s_156	141	142	1
			LP080120_9s_144	172	800	0.88
			LP080120_9s_51	90	93	0.76
			LP080120_9s_74	97	94	0.59
	4	LP090120-3	LP090120_3s_111	88	97	0.98
			LP090120_3L_36	94	96	1.01
			LP090120_3L_50	95	96	1
			LP090120_3s_10	115	117	1
			LP090120_3L_26	136	134	0.97
			LP090120_3L_48	164	167	1.02
Sierra Las Pintas Group	SP 1	LP100120-1	LP100120_1L_40	73	77	1
			LP100120_1s_44	76	77	0.89
			LP100120_1s_36	95	98	0.96
			LP100120_1s_70	97	95	0.91
			LP100120_1s_56	98	102	0.93
			LP100120_1L_73	100	101	1.02
			LP100120_1s_46	102	103	1.02
			LP100120_1L_21	135	136	0.99
			LP100120_1L_34	138	138	1
			LP100120_1L_89	140	117	0.98
			LP100120_1s_54	160	168	1.02
			LP100120_1L_62	115	94	0.22
	SP 2	LP110120-1	LP110120_1L_4	83	83	0.96
			LP110120_1s_10	97	99	1
			LP110120_1L_73	99	97	0.98
			LP110120_1s_13	138	135	1.01
			LP110120_1L_61	140	137	0.99

Table 5. Summary of the re-analysis of grains selected from samples that contained a large population of Cretaceous zircon. Discordant zircon grains are highlighted in red and the zircon grain highlighted in green contains an older core.

Cathodoluminescence

Cathodoluminescence images were also taken of samples containing large suites of Cretaceous zircon to identify any characteristics indicative of metamorphic textures, hydrothermal alteration, or any identifiable patterns in zircon morphology (Figure 49). Igneous zircon will display typical oscillatory zoning that is parallel to the crystal face. Zircon that has experienced hydrothermal alteration may show complex internal textures where secondary domains cut across primary growth zones (Hoskin and Schaltegger, 2003). Zircon crystals that have been affected by hydrothermal alteration have also shown bright resorption shadows in cathodoluminescence, indicating a distinct chemical change such as elevated U and LREE concentrations (Van Lankvelt, 2016). All re-analyzed Cretaceous grains from samples LP070120-1, LP080120-9, LP100120-1, and LP110120-1 were identified from analysis maps and labelled in the cathodoluminescence images. The Cretaceous zircon grains range in size from approximately 50 μm to 160 μm in length and in shape from well-rounded (LP080120-9_156) to euhedral (LP080120-9_137) to fractured (LP080120-9_167) (Figure 49). The majority of the grains contain oscillatory-zoned or sector-zoned (LP080120-9_156) growth with a few exhibiting overprint by replacement zones due to metamorphism. For the rest of the re-analyzed grains, no strong indication of altered metamorphic rims or hydrothermal alteration was apparent. All cathodoluminescence images of the re-analyzed grains are in Appendix V.

No convincing data show that Cretaceous grains within a Paleozoic succession of the Arroyo Grande Group and the Sierra Las Pintas Group have been altered due to intense

metamorphism or hydrothermal alteration. Alternative explanations for the presence of the Cretaceous grains were investigated in order to determine the provenance of the Sierra Las Pintas strata.

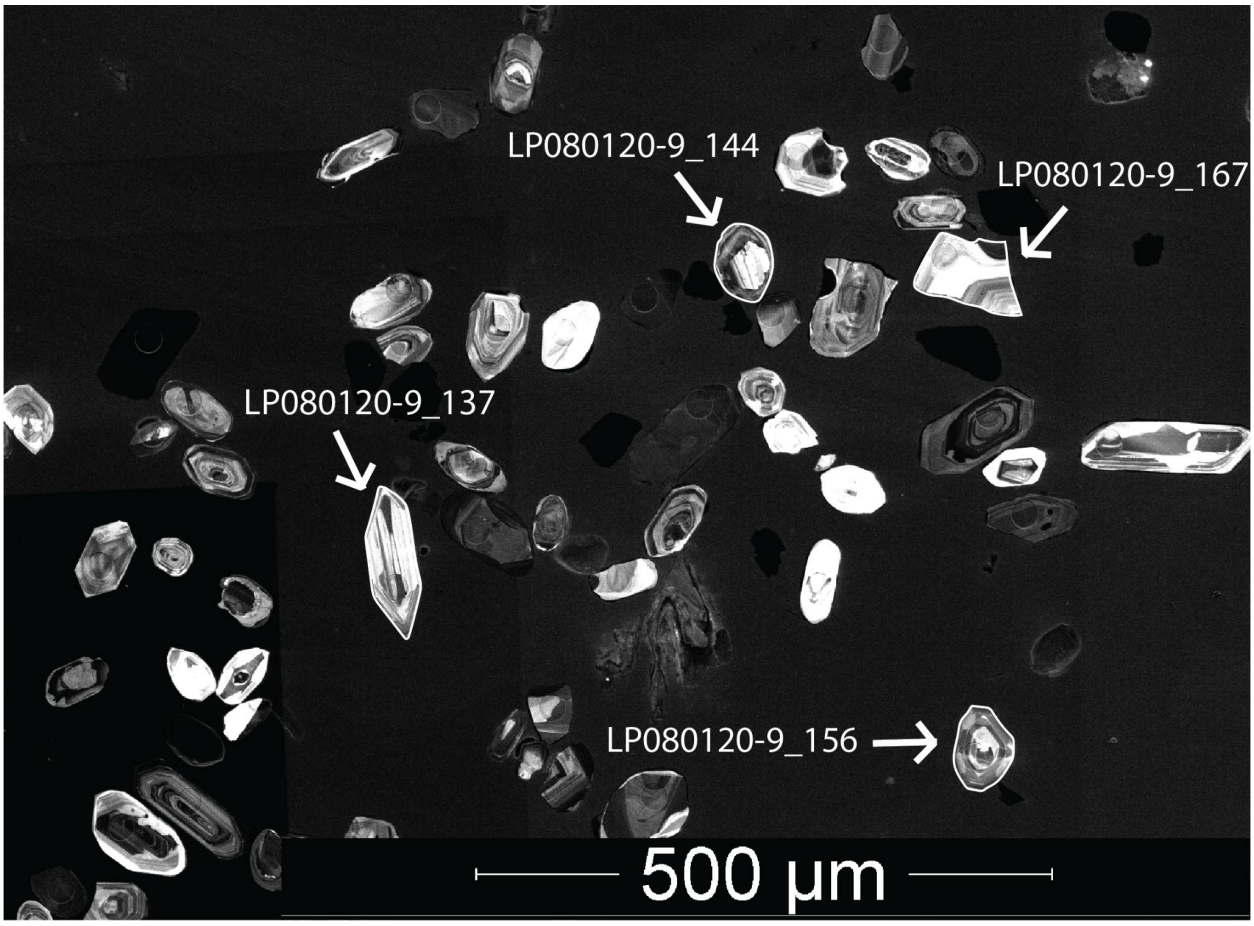


Figure 49. Cathodoluminescence image of sample LP080120-9 with one grain (LP080120-9_144) containing an older detrital core and metamorphic rim. Other zircon grains exhibit oscillatory rings and range from euhedral to anhedral. The length of the zircon grains ranges from approximately 50 microns to 160 microns.

4.1.1 Provenance Interpretations of the Arroyo Grande Group

Detrital zircon geochronological analysis from the Arroyo Grande Group indicates two distinct source areas for the samples. From the eight samples collected, four samples contain a dominant Permo-Triassic population of zircon (ca. 275-240 Ma), while the other four samples contain a dominant Cretaceous population of zircon (ca. 140-90 Ma) with rare Permo-Triassic zircon (Figure 50). The following discussion of detrital zircon ages and associated provenance for the Arroyo Grande Group is split into the samples that contain a dominant Permo-Triassic zircon population and the samples that contain a dominant Cretaceous zircon population.

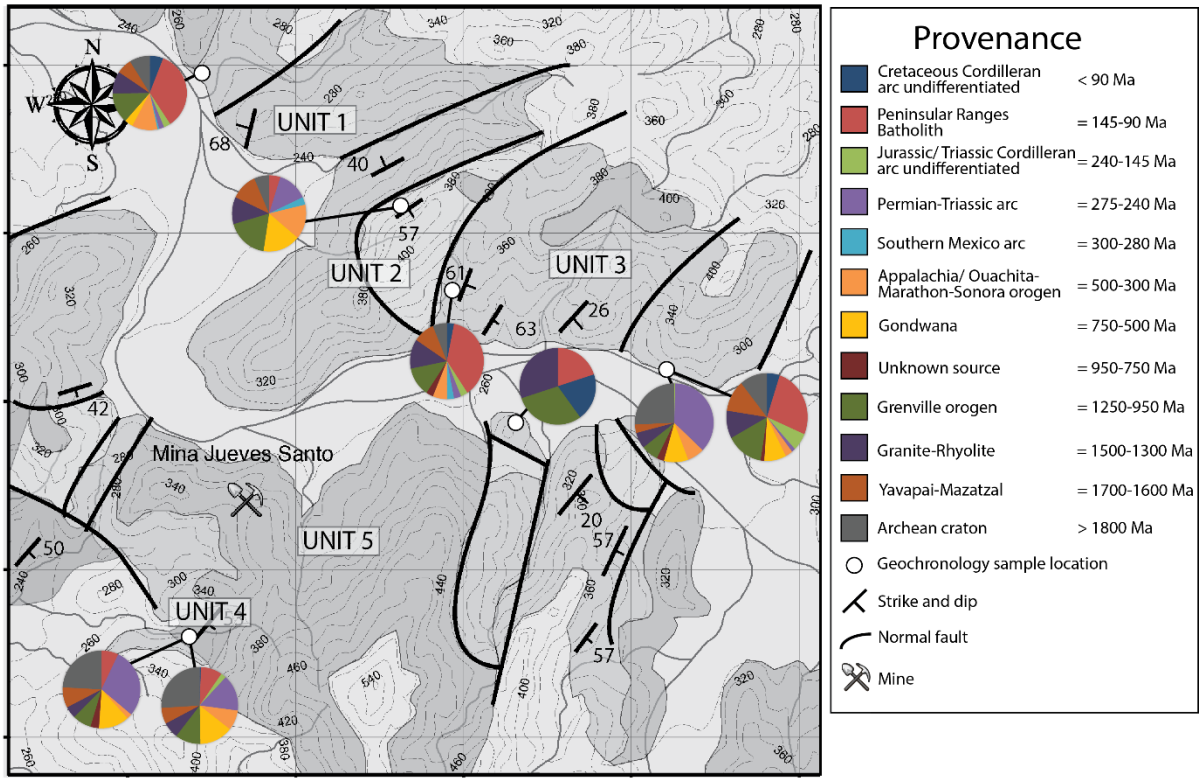


Figure 50. Geologic map of the Arroyo Grande Group with location of geochronological samples. Pie charts indicate provenance percentages of each sample.

Permo-Triassic Samples

Samples containing a dominant Permo-Triassic population of zircon include LP070120-2 of Unit 2, sample LP080120-8 of Unit 3, and samples LP090120-2 and LP090120-3 of Unit 4 (Table 1; Figure 50-51). Grains ranging from 275-240 Ma make up the largest population of zircon from each sample and are most likely derived from the Cordilleran Permo-Triassic arc (Figures 30, 32, 34-35). The samples also include major age peaks at ca. 750-500 Ma, that could indicate grains derived from a Gondwanan source such as the Pan-African/Brasiliano region. Several other potential sources that could provide Gondwanan-age zircon including Avalon, Carolina, and Suwannee terranes that accreted to North America during the Appalachian orogeny and contain magmatism ranging from 550-650 Ma (Heatherington et al., 1996; Soto-Kerans et al., 2020). Sediment could have been recycled from Peri-Gondwanan terranes such as the Yucatan, Coahuila, and Oaxauia terranes that accreted to the continent during the Ouachita-Marathon-Sonora orogeny (Dickinson and Lawton, 2001; Poole et al., 2005). Rodinian syn-rift volcanic rocks are another potential source of sediment with volcanic pulses between 780 and 540 Ma (Dickinson and Gehrels, 2009; Soto-Kerans et al., 2020).

Except for LP080120-8, the samples contain a small population of 140-90 Ma zircon, suggesting derivation from the Peninsular Ranges batholith. Other minor age peaks include ca. 1250-1000 Ma, indicating derivation from the Grenville orogen, ca. 1500-1300 Ma grains are likely from the Granite-Rhyolite province, and ca. 1700-1600 Ma grains are likely derived from the Yavapai-Mazatzal province. Archean zircon grains are also present in the samples, with a peak at 3000-2500 Ma, indicating possible sediment recycling from the Archean craton and Wyoming-Slave source region. It is also possible that Archean and Paleoproterozoic grains could have been recycled from Archean crust identified in northeastern Brazil including the Amazonia

Craton (greater than 2.6 Ga), the Maroni-Itacaiunas region (2.25-1.95 Ga), or the Ventuari-Tapajós region (1.98-1.81 Ga), suggesting derivation from Gondwana (Cordani et al., 2009; Soto-Kerans et al., 2020).

Provenance analysis by Poole et al. (2008) of Sonora allochthon strata and the Mina Mexico foredeep of central Sonora indicates primary derivation from the Grenville, Granite-Rhyolite, Yavapai-Mazatzal, and Archean Wyoming provinces. The Sonora allochthon was formed due to the collision of Gondwana and Laurentia and, although a Gondwana source was not present in previous analysis, it is expected for the provenance of the Sonora allochthon. Analyses of samples from this study provide similar potential source regions identified for Sonora allochthon strata, as well as the presence of Gondwanan-age zircon. It is possible that the samples contain reworked detritus that is eroded from Sonora allochthon strata, including evidence of Gondwana. The samples also indicate a major source area from the Permo-Triassic arc. The major source areas for the samples suggest that most of the detritus was eroded from southwestern United States and northwestern Mexico (Figure 1). Small populations of zircon suggesting derivation from the Peninsular Ranges batholith establishes a Cretaceous maximum depositional age and minor sediment input from the Cretaceous Cordilleran arc to the west.

Bivariate trace element plots were created of 275-240 Ma zircon from the Arroyo Grande Group to aid in interpreting the provenance of the Permo-Triassic population (Figure 43). Permo-Triassic grains fall within the continental-arc arrays of Grimes et al. (2007; 2015) on U vs Yb and U/Yb plots. This supports the hypothesis that 275-240 Ma grains were crystallized in a continental-arc setting, likely the Cordilleran Permo-Triassic magmatic arc that developed along the Laurentian continental margin. Barth et al. (2013) observed that zircon with relatively high Th/U ratios suggest incorporation of fertile crustal sources to the host magma or an episode of

crustal thickening beneath an arc. Th/U ratios from Cordilleran arc zircon increased over time as crustal thickening occurred beneath the Cordilleran arc. Permo-Triassic grains from the Arroyo Grande Group all have Th/U ratios ranging from 0.25 to 1. Th/U ratios are all >0.07 indicating primary petrogenetic origin for the zircon was magmatic. Barth et al. (2013) observed Yb/Gd ratios from Triassic and Jurassic Cordilleran arc magmas range from 30 to 60. Yb/Gd ratios from this study range from 20 to 100 and are consistent with values for arc magmas (Barth et al., 2013).

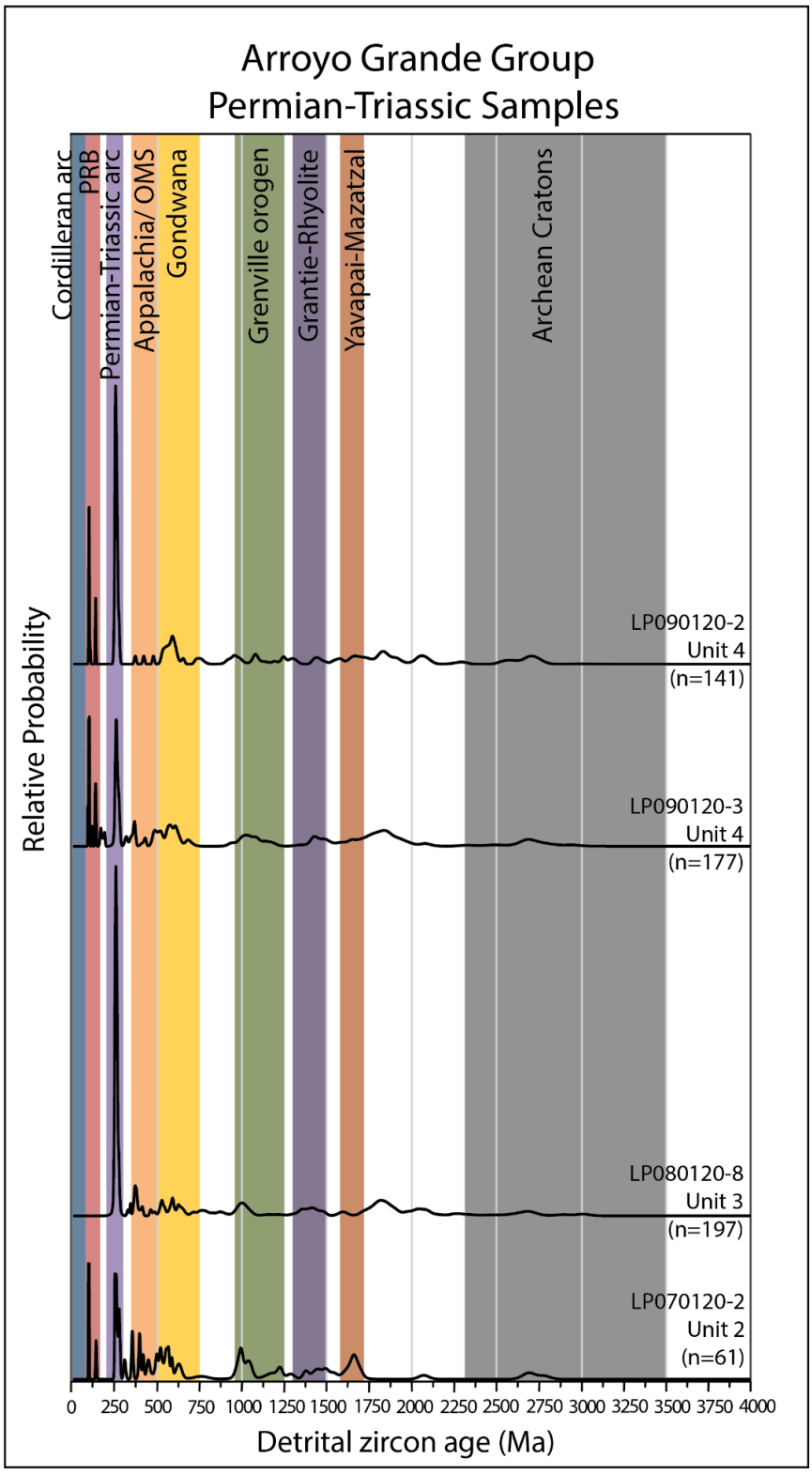


Figure 51. Normalized probability density plots of samples collected from the Arroyo Grande Group that contain a dominant Permo-Triassic zircon population.

Cretaceous Samples

Samples containing a dominant Cretaceous population include LP070120-1 of Unit 1, and samples LP080120-1, LP080120-9, and LP130120-1 of Unit 3 (Table 1; Figures 50, 52). It should be noted that LP080120-1 and LP130120-1 were sampled from volcaniclastic material and only yielded 32 and 10 zircon grains, respectively. The youngest and the most robust suite of zircon for each sample is overwhelmingly Cretaceous grains ranging from 90-105 and 130-140 Ma, indicating a Peninsular Ranges batholith origin (Figures 29, 31, 33). Samples LP070120-1 and LP080120-9 also contain a small suite of 90-70 Ma zircon that are most likely sourced from elsewhere in the Cretaceous Cordilleran arc. The samples contain small populations of ca. 1250-950 Ma zircon grains that were probably derived from the Grenville orogeny, ca. 1500-1300 Ma zircon likely sourced from the Granite-Rhyolite province, and a suite of ca. 1700-1600 Ma zircon likely sourced from the Yavapai-Mazatzal provinces. Archean zircon grains are also present in the samples with a minor age peak from ca. 3000-2600 Ma, suggesting potential recycling from the Laurentian Archean craton or from the Amazonian craton of Gondwana. It is likely that the sediment was locally derived from foreland deposits of the Ouachita-Marathon-Sonora segments containing cratonal source areas that have been accreted to the orogen. Detrital zircon geochronology samples are enriched in quartz and durable minerals such as zircon, suggesting multiple-cycle sediment. It is interesting to note that Permo-Triassic zircon grains are rare in the samples. Zircon grains ranging from ca. 750-500 Ma, suggesting derivation from a Gondwanan source, are rare or absent in the samples as well. Provenance analysis of the Cretaceous samples indicates a primary detritus source area from the Peninsular Ranges batholith to the west, with minor input from crustal provinces and granitoid bodies of the Laurentian craton to the north.

Bivariate trace element plots were created for the 90-140 Ma zircon of the Arroyo Grande Group (Figure 46). The Cretaceous grains fall within the continental-arc arrays of Grimes et al. (2007; 2015) on U vs Yb and U/Yb plots. This indicates that Cretaceous grains of the Arroyo Grande Group crystallized in a continental-arc setting, reinforcing the Cretaceous source is likely the Peninsular Ranges batholith. Bell and Kirkpatrick (2021) determined characteristic trace element ratios of the western and eastern Peninsular Ranges batholith. The western zone is characterized by Th/U ratios from 0.27-0.62, Yb/Gd from 11-34, and U/Yb from 0.4-2.1, with most values <1. The eastern zone is characterized by Th/U ratios from 0.05-0.64, Yb/Gd ratios from 10-45, and U/Yb ratios from 0.4-8 with most values >1. In this study, Th/U ratios of Cretaceous grains range from 0.1-2 and Yb/Gd ratios range from 10-70, with 72% of the grains plotting below 30. These ratios are consistent with values observed in the western Peninsular Ranges batholith.

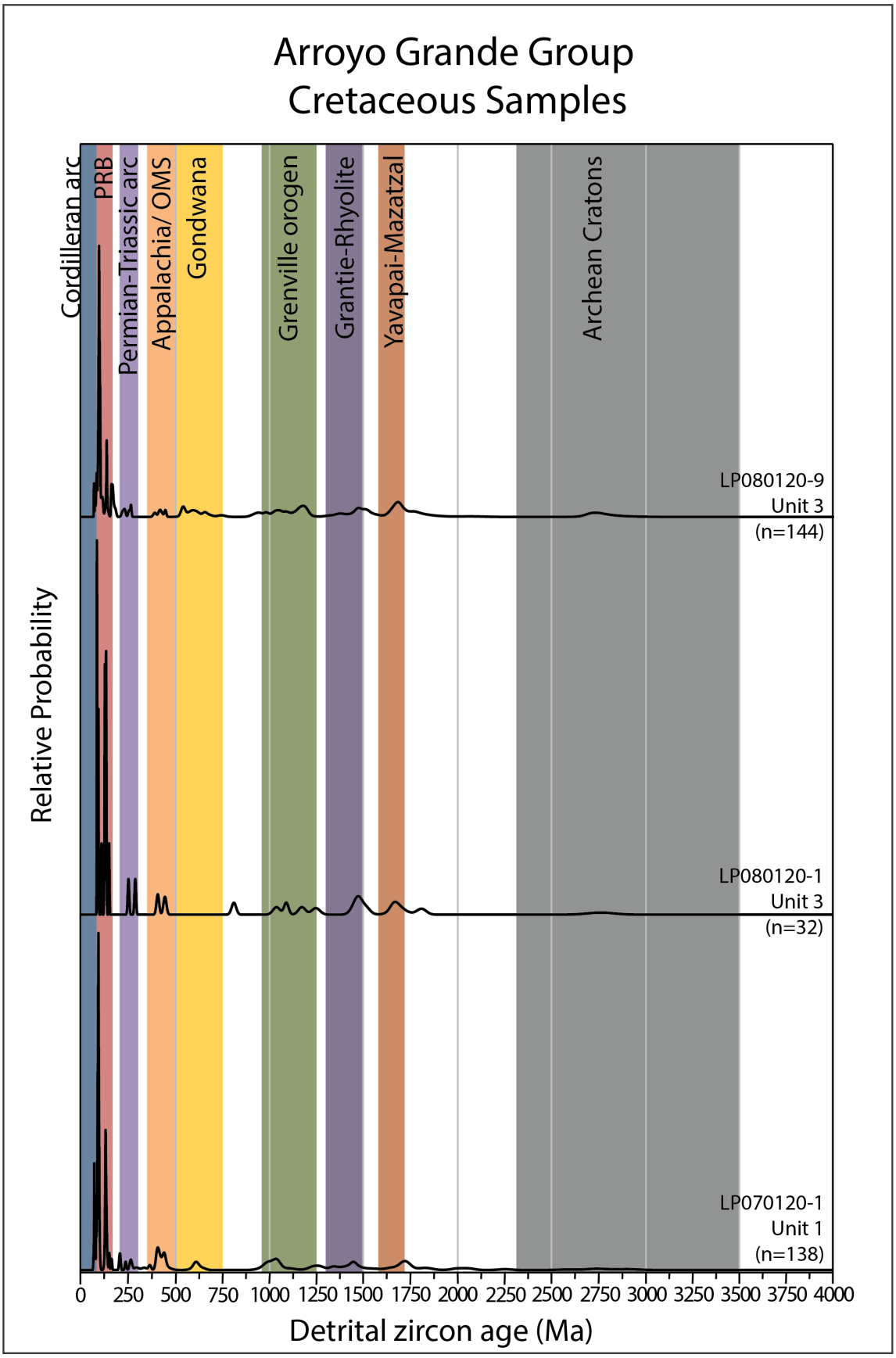

Arroyo Grande Group
Cretaceous Samples
Cordilleran arc
PRB
Permian-Triassic arc
Appalachia/ OMS
Gondwana
Grenville orogen
Grantie-Rhyolite
Yavapai-Mazatzal
Archean Cratons
LP080120-9
Unit 3
(n=144)
LP080120-1
Unit 3
(n=32)
LP070120-1
Unit 1
(n=138)
Relative Probability
0 250 500 750 1000 1250 1500 1750 2000 2250 2500 2750 3000 3250 3500 3750 4000
Detrital zircon age (Ma)

Figure 52. Normalized probability density plots of samples collected from the Arroyo Grande Group that contain a dominant Cretaceous zircon population. LP130120-1 was not included as only 10 zircon grains were analyzed; however, the sample also indicated a strong Cretaceous signature.

4.1.2 Provenance Interpretation of the Sierra Las Pintas Group

Geochronological analysis of the Sierra Las Pintas Group indicates two distinct maximum depositional ages and a range of source regions for the samples (Figure 53). Three of the four samples contain a Cretaceous maximum depositional age and one sample contains a Permian maximum depositional age.

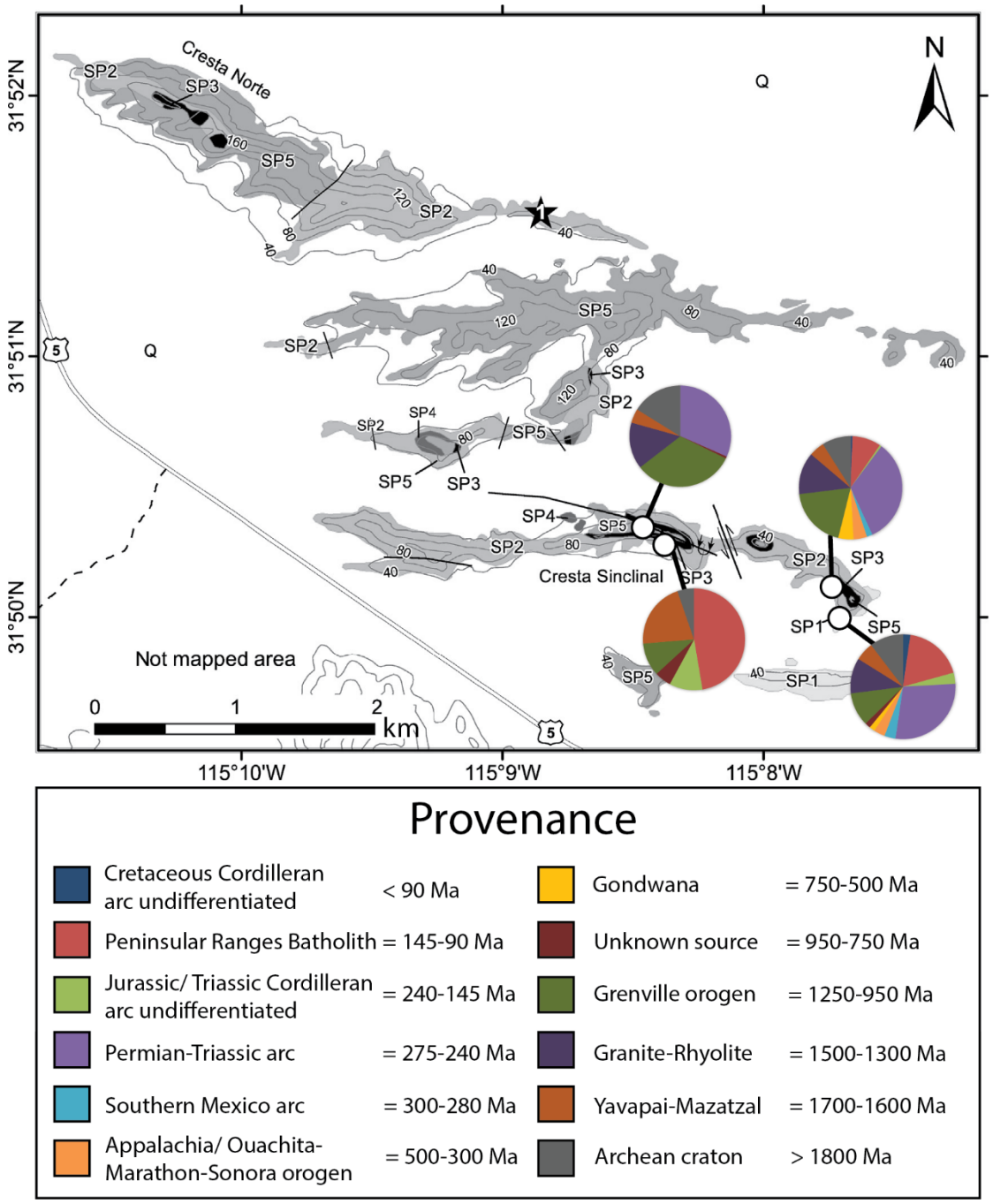


Figure 53. Simplified geologic map of the Sierra Las Pintas Group with location of geochronological samples. Pie charts indicate provenance percentages of each sample.

Samples LP100120-1 of Unit SP1, LP110120-1 of Unit SP2 and X181218 of Unit SP4 contain suites of zircon grains ranging from ca. 105-90 Ma and ca. 140-135 Ma (Figure 53-54). X181218 was sampled from a basalt and only yielded 19 zircon grains. Major age peaks from the

samples are synonymous with the eastern and western Peninsular Ranges batholith magmatism. The averaged maximum depositional age for the samples is approximately 96 Ma (Figures 36, 37, 39). The youngest grains from sample 18-LP-10 from SP2 range from 280-255 Ma and are likely derived from the Permo-Triassic arc (Figure 38). Samples LP100120-1 and LP110120-1 also contain a large suite of 280-240 Ma indicating a source region from the Permo-Triassic arc. All samples include minor age peaks at ca. 1250-1000 Ma indicating sediment derived from the Grenville orogen. The 1500-1300 Ma grains are probably recycled from the Granite-Rhyolite province and a suite of ca. 1700-1600 Ma grains probably originated from the Yavapai-Mazatzal province (Figure 54). Reworking of sediment from a locally derived source, such as the Ouachita-Marathon-Sonora segments, rather than derivation directly from cratonal basement complexes is also a possibility for Paleozoic zircon grains. Gondwanan-age zircon grains are rare or completely absent in samples from the Sierra Las Pintas Group. Provenance analysis of the Sierra Las Pintas Group suggests detritus was primarily eroded from the Peninsular Ranges batholith to the west, from the Permo-Triassic arc to the northeast and from Laurentia to the north.

Bivariate plots were created for both the ca. 90-140 Ma suite of zircon, as well as the ca. 275-240 Ma suite of zircon for all samples of the Sierra Las Pintas Group (Figures 44, 47). Cretaceous and Permo-Triassic grains from the Sierra Las Pintas group all plot within the continental-arc array of Grimes et al. (2007; 2015) on U vs Yb and U/Yb plots. The Th/U ratios of the Cretaceous grains range from 0.15-1.2 and the Permo-Triassic spectrum plot slightly higher at 0.25-1.2, with the majority of the zircon grains plotting around 0.4. Both zircon populations contain Th/U ratios above 0.07, indicating that the primary petrogenetic origin of the zircon grains was magmatic. While trace element ratios are overall similar from the Cretaceous

and Permo-Triassic populations of the samples, Yb/Gd ratios vary slightly and can be used when determining provenance. The Yb/Gd ratios for Cretaceous zircon are primarily 10-30, while the Permo-Triassic grains show a greater range of 10-50. Barth et al. (2013) observed Yb/Gd ratios from Triassic and Jurassic Cordilleran arc magmas range from 30 to 60 while Bell and Kirkland (2021) identified Yb/Gd ratios from the western Peninsular Ranges batholith 11-34 and the eastern zone 10-45. These Yb/Gd ratios support the hypothesis that Cretaceous zircon of the Sierra Las Pintas group are derived from the Peninsular Ranges batholith while Permo-Triassic zircon are derived from the Cordilleran Permo-Triassic arc.

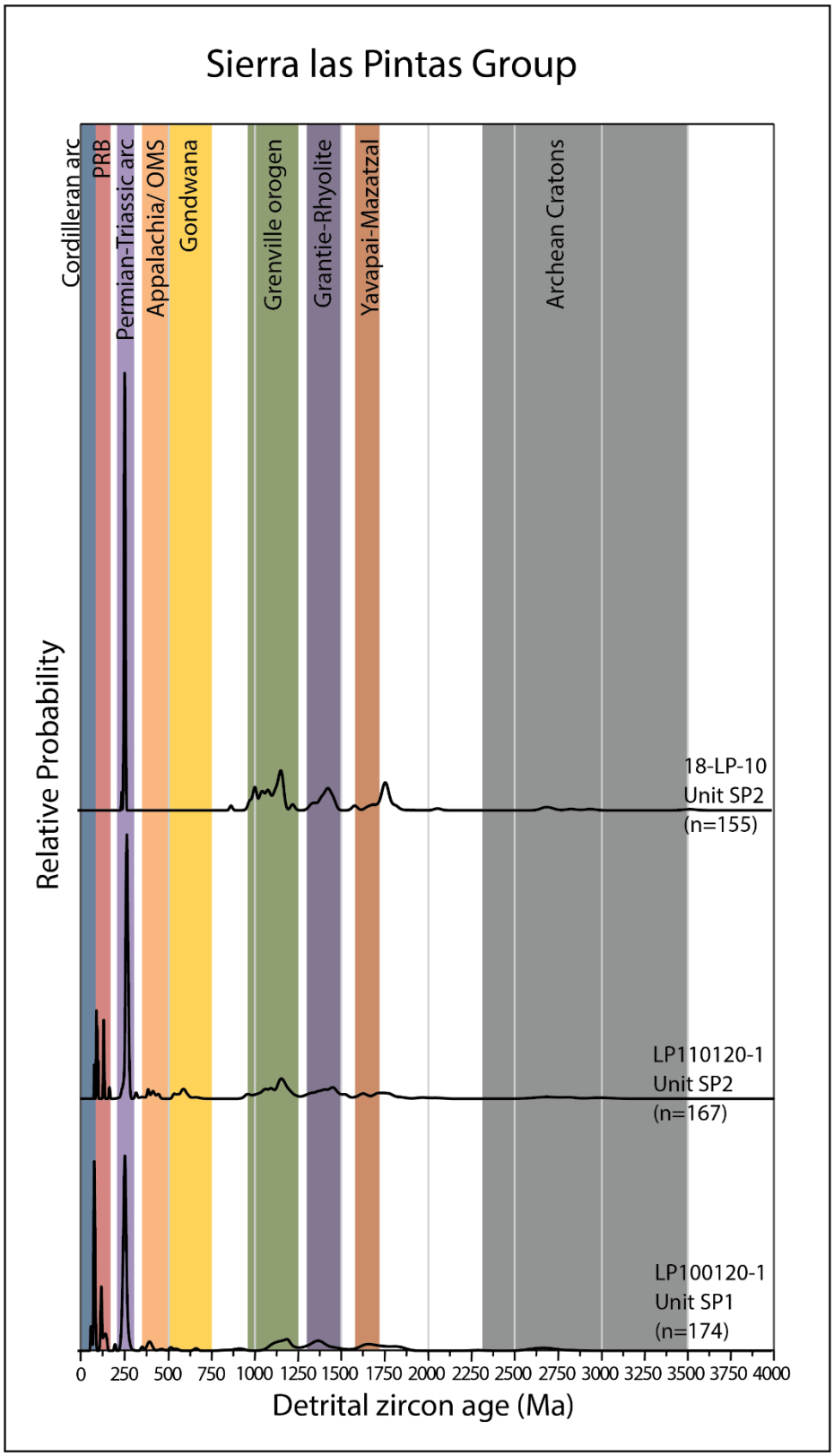


Figure 54. Normalized probability density plots of samples collected from the Sierra Las Pintas Group. Sample X181218 was not included as only 19 zircon grains were analyzed.

4.1.3. Provenance Interpretation of the Minas de Barita Area

Provenance analysis of the Minas de Barita area includes a youngest population of Carboniferous grains and similar major age peaks throughout the three samples collected (Figure 55). Detrital zircon geochronology indicates that detritus in all the samples is recycled from Gondwana and Laurentian source regions.

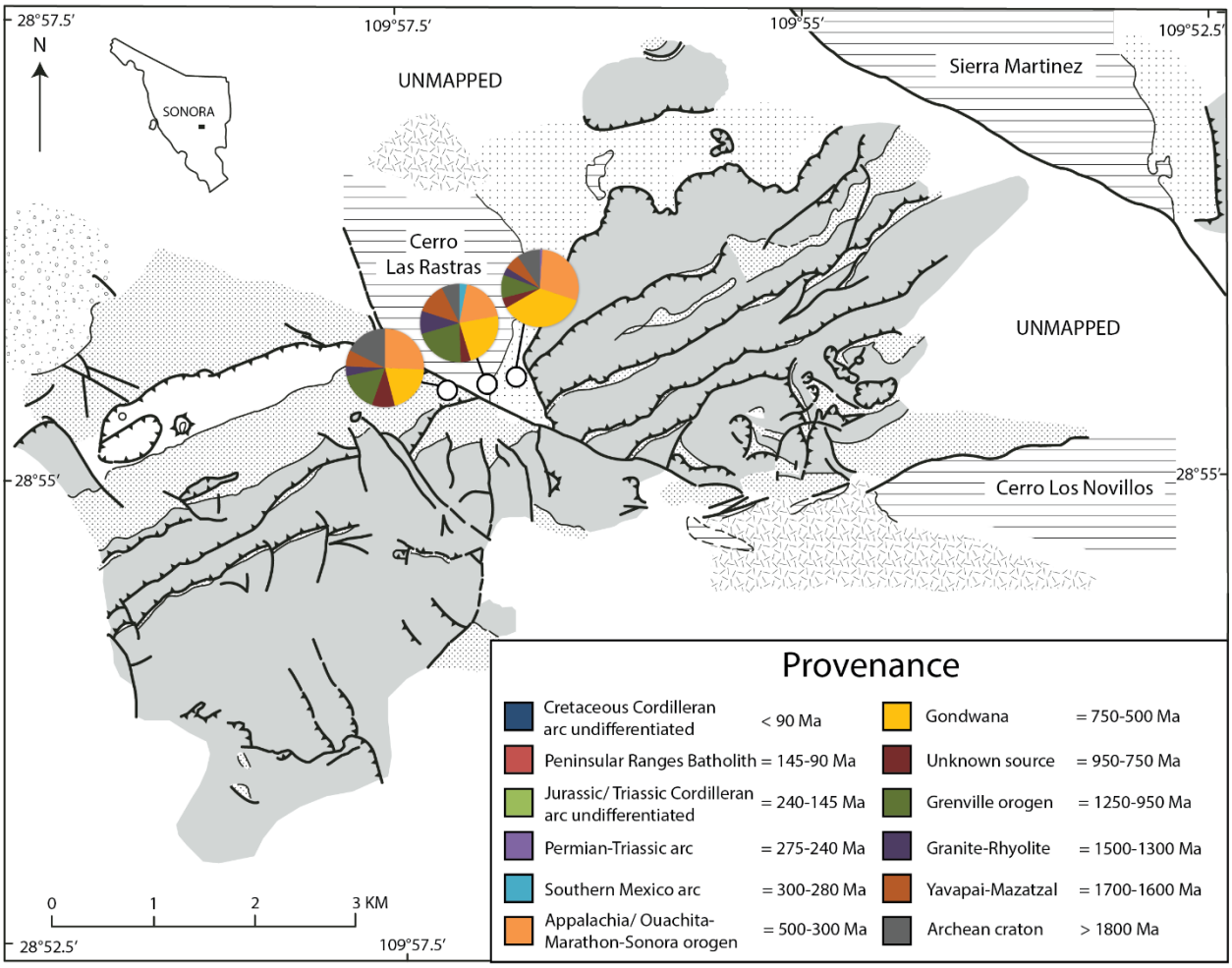


Figure 55. Simplified geologic map of the Minas de Barita area with location of geochronological samples. Pie charts indicate provenance percentages of each sample.

Samples from the Rancho Nuevo Formation and Mina México Formation of the Minas de Barita area include rare, early Permian grains but the largest population of youngest grains for the samples range from Late Pennsylvanian to Early Mississippian with no clear maximum depositional age (Figures 40-42). Previous studies show an earliest Late Pennsylvanian age for

the strata of the Rancho Nuevo Formation and middle Permian age for the Mina México Formation (Poole et al., 2005; 2008). Samples from this study do not provide a more precise emplacement age for the Sonora allochthon strata of the Rancho Nuevo Formation or the Mina México foredeep. The samples include major age peaks at ca. 500-300 Ma and ca. 750-500 Ma, indicating the main source regions are coming from the Appalachian / OMS orogen and Gondwana (Figure 56). The large suite of Gondwanan zircon is very significant for this study as Gondwanan source regions are rare in previous geochronologic analysis of Sonora allochthon strata. Gondwanan-age zircon could have been derived from the reworking of sediments with a cratonal source, such as the Avalon, Carolina, or Suwannee terranes that were accreted during the Appalachian orogeny. Peri-Gondwanan terranes such as the Yucatan, Coahuila, and Oaxaquia terranes accreted during the OMS orogeny contain cratonal sources. Other age populations for the samples include ca. 1250-950 Ma suggesting sediment derived from the Grenville orogen and ca. 1700-1600 Ma zircon likely sourced from the Yavapai-Mazatzal province. Cretaceous and Permo-Triassic zircon populations are absent in the Minas de Barita samples.

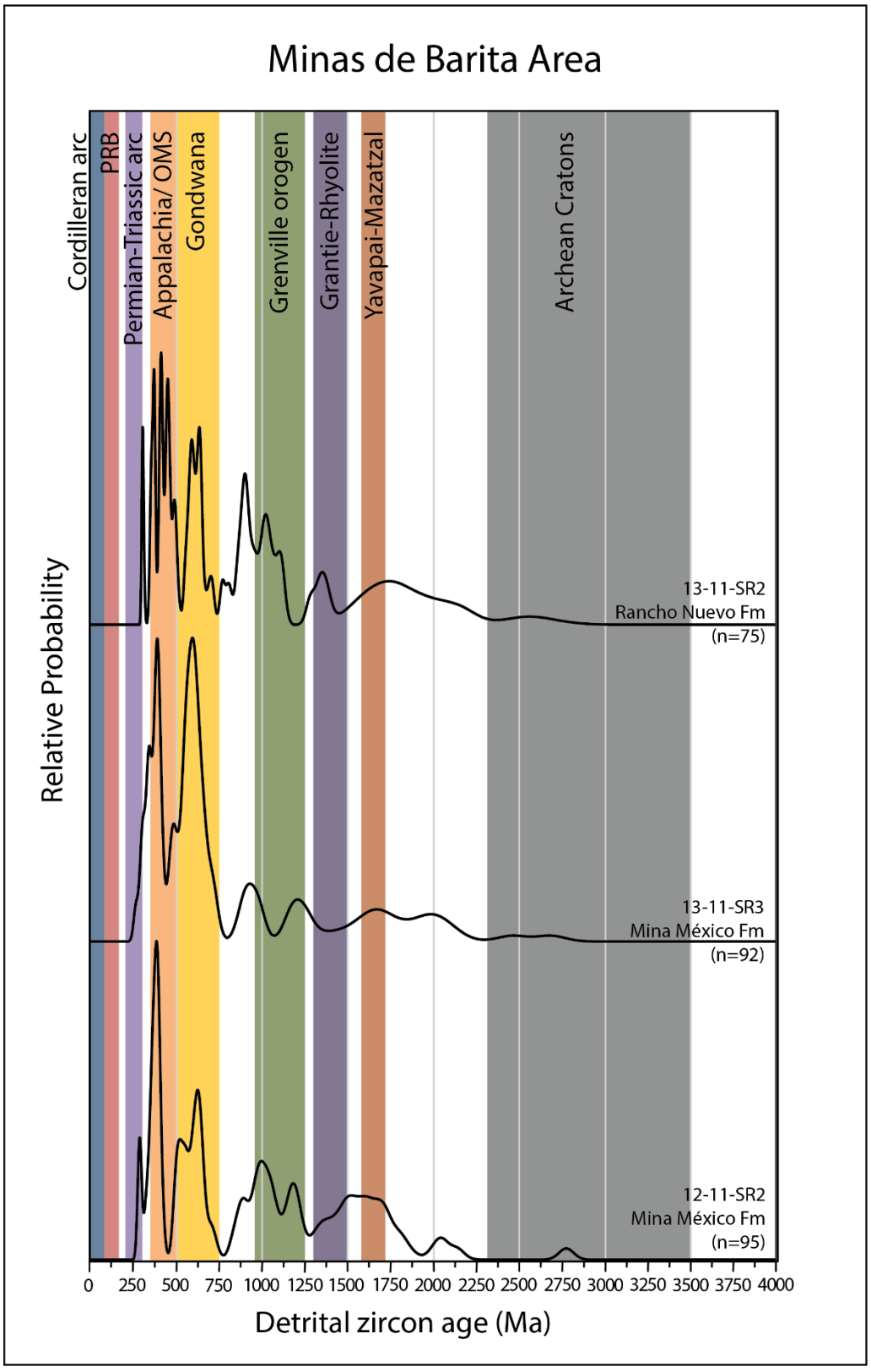


Figure 56. Normalized probability density plots of samples collected from the Minas de Barita area.

4.1.4 Comparison of Field Areas

Provenance analyses are compared for the Sierra Las Pintas Group, Arroyo Grande Group and Minas de Barita area to determine how strata of the Sierra Las Pintas in Baja California, Mexico, compare to Sonora allochthon strata of the Minas de Barita area in Sonora, Mexico. Previous work by Gastil (1993), Poole et al. (2005), and Navas-Parejo et al., (2018) has generally correlated Paleozoic rocks of the Sonora allochthon of central Sonora and Baja California based on biostratigraphic and lithological correlations. This study provides the first geochronologic analysis for the Sierra Las Pintas. All geochronological analyses are combined for each field area (the Arroyo Grande Group is divided into samples showing dominant Cretaceous or Permo-Triassic source areas) and plotted on the map as pie charts to show relative percentages (Figure 57). All samples were combined in the same fashion and plotted against each other as KDE plots for each field area (Figure 58) and compared to data from previous studies (Figure 59).

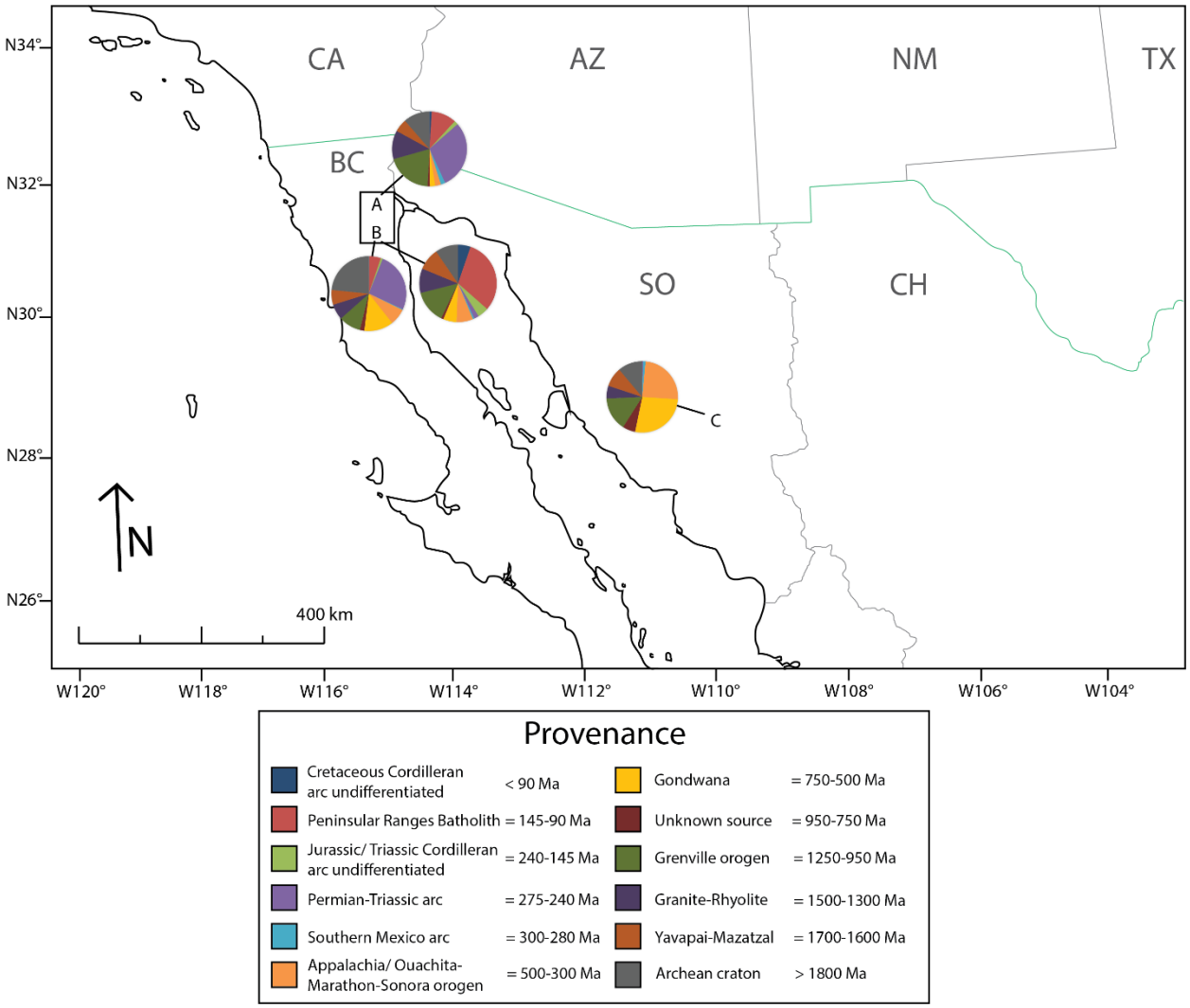


Figure 57. Index map including all field areas (A: Sierra Las Pintas Group, B: Arroyo Grande Group, and C: Minas de Barita) that show overall provenance percentages. The Arroyo Grande Group is divided into two pie charts to represent samples with a dominant Cretaceous source area vs a dominant Permo-Triassic source area.

Pie charts and provenance plots for samples from the Arroyo Grande Group and Sierra Las Pintas Group indicate two distinct source regions (Figure 57-58). Provenance analysis of the Arroyo Grande Group suggests that samples are primarily derived from either the Permo-Triassic arc to the northeast or the Peninsular Ranges batholith to the west (Figure 1). Samples that contain a dominant Permo-Triassic source area also contain minor source areas suggesting derivation from Gondwana and the Laurentian craton or secondary recycling from clastic

successions that previously formed from these cratons. Source areas for these samples are synonymous with the expected provenance of the Sonora allochthon and suggest possible derivation from Sonora allochthon strata. Samples that contain a dominant Cretaceous source area contain very rare Permo-Triassic zircon and Gondwanan-age zircon, suggesting detritus is primarily derived from the western Peninsular Ranges batholith with rare sediment input from the east or the south. Samples from the Sierra Las Pintas Group contain major source areas from the Permo-Triassic arc and the Peninsular Ranges batholith, indicating a mixing of source regions. The Sierra Las Pintas Group also contains minor source areas from crustal provinces and granitoids of the Laurentian continent, suggesting derivation from the north.

Provenance analyses of the Minas de Barita area samples indicate different source areas from those identified in the Sierra Las Pintas samples. The Rancho Nuevo Formation and Mina México Formation contain major age peaks that indicate detritus dominantly being sourced from the Appalachian/OMS orogen and Gondwana. Other minor source areas include the Grenville orogen and Yavapai-Mazatzal orogen. Provenance analysis indicates primary derivation from Gondwana to the south and Laurentian source areas to the north. Major source areas identified in the Minas de Barita samples support the expected provenance for Sonora allochthon strata and potentially record the Gondwanan- Laurentian suture zone of final Pangea formation.

Detrital zircon data from the Mina México Formation of Gehrels and Pecha (2014) are compared to detrital zircon data from this study (Figure 59). All samples from the Arroyo Grande Group are combined into one probability density plot to compare overall source areas interpreted for each field area. Overall, the Sierra Las Pintas Group and Arroyo Grande Group indicate very similar source regions. Both field areas contain similar major age peaks indicating zircon grains likely being sourced from the Peninsular Ranges batholith and Permo-Triassic arc

with minor age peaks indicating derivation from the Grenville orogen, Granite-Rhyolite province, and the Yavapai-Mazatzal orogen. Source areas interpreted for the Sierra Las Pintas vary from major source areas identified in the Minas de Barita area. The Minas de Barita samples contain major source areas from the Appalachian / OMS orogen and Gondwana. Gehrels and Pecha (2014) reanalyzed a sample from the Mina Mexico foredeep, originally reported by Poole et al. (2008). Detrital zircon data from this study align well with Mina México analyses from Gehrels and Pecha (2014) and further support provenance interpretations for the Sonora allochthon of Sonora, Mexico.

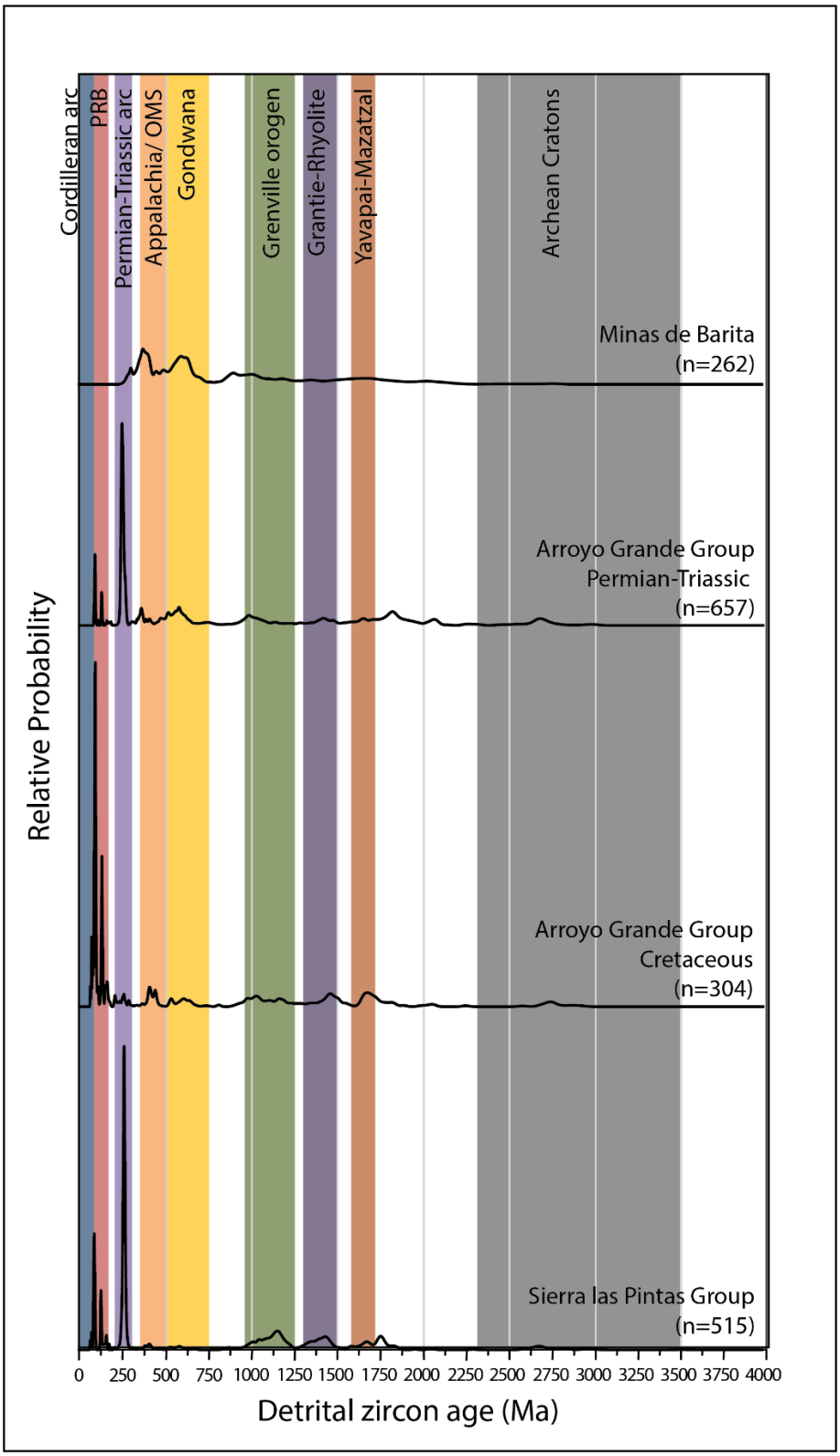


Figure 58. Normalized probability density plots for all samples from this study, separated by field area.

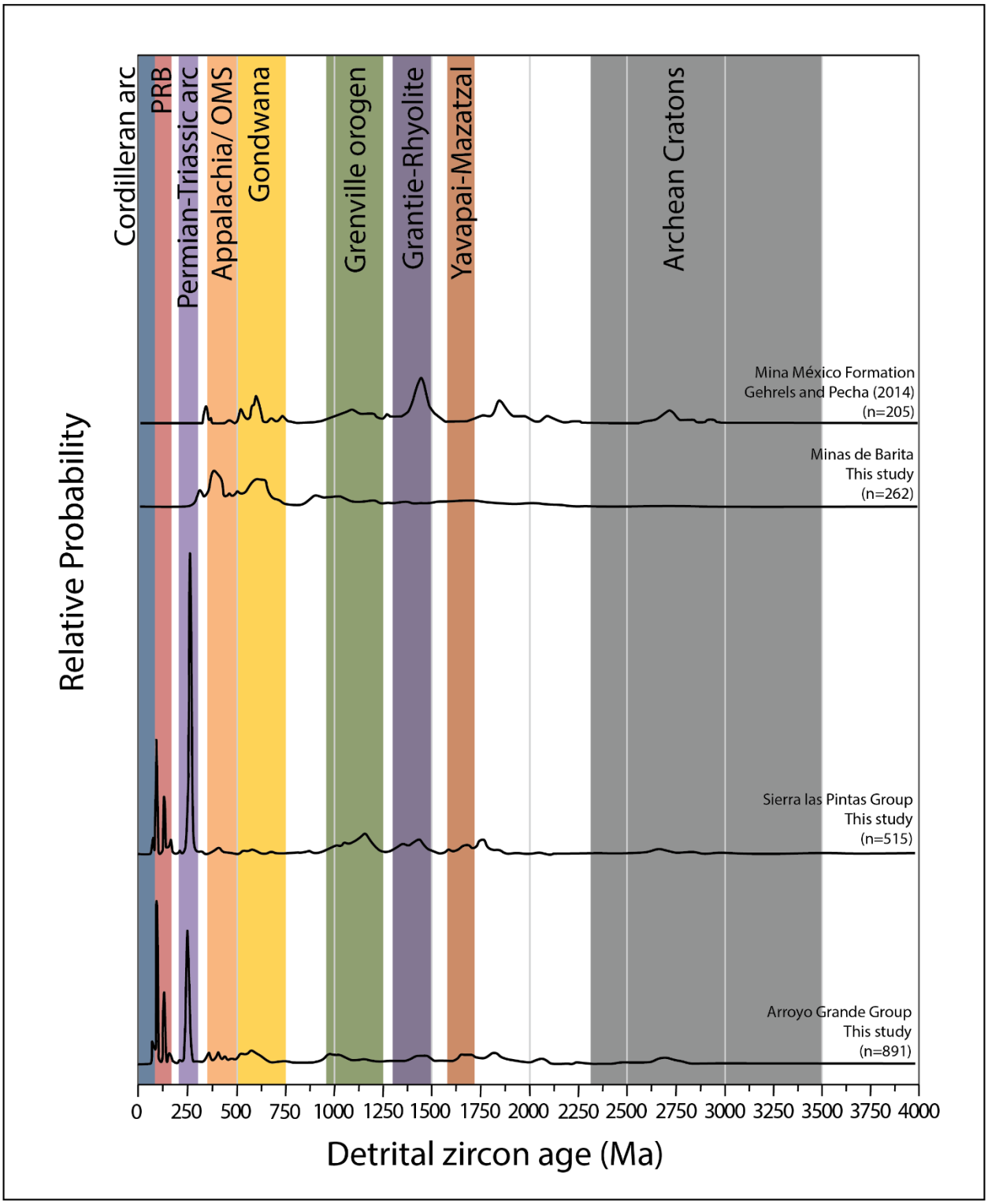


Figure 59. Normalized probability density plots for all samples from this study, separated by field area and plotted against previous geochronologic analysis of the Mina México Formation by Gehrels and Pecha (2014).

4.2 LITHOLOGIES AND DEPOSITIONAL HISTORY

Sonora allochthon strata of Sonora, Mexico, are interpreted as continental-rise and ocean basin rocks that were thrust onto the shallow, continental Laurentian carbonate shelf and foredeep basin rocks of Mina México during collision of Gondwana with Laurentia (Stevens, 2014; Poole et al., 2005; 2008). Paleozoic outcrops of the Sierra Las Pintas have been interpreted as the westernmost exposure of the Sonora allochthon, composed of deep-water succession deposited on the continental slope (Gastil et al., 1993; Leier-Engelhardt, 1993; Poole et al., 2005; Navas-Parejo et al., 2018). Provenance analysis from this study indicates primary derivation from Laurentia and Gondwana source areas. The Arroyo Grande Group and Sierra Las Pintas Group also contain dominant source areas from the Peninsular Ranges batholith and the Permo-Triassic arc. Detritus from the Permo-Triassic arc was likely derived from the northeast and detritus from the Peninsular Ranges batholith was likely derived from the west (Figure 1).

4.2.1. Depositional History of the Arroyo Grande Group

The geochronological and lithological analyses of the Arroyo Grande Group indicate a complex emplacement history. The main lithologies and sedimentary features for the Arroyo Grande Group are summarized in Table 3, but they are reviewed here in order to interpret the depositional environment of the succession. Geologic interpretations and provenance analysis of the Arroyo Grande Group suggest overall deposition along the continental slope and ocean basin within the forearc of the Peninsular Ranges batholith (Figure 60). A chronostratigraphic column of the Arroyo Grande Group was created based on maximum depositional ages for each unit (Figure 61).

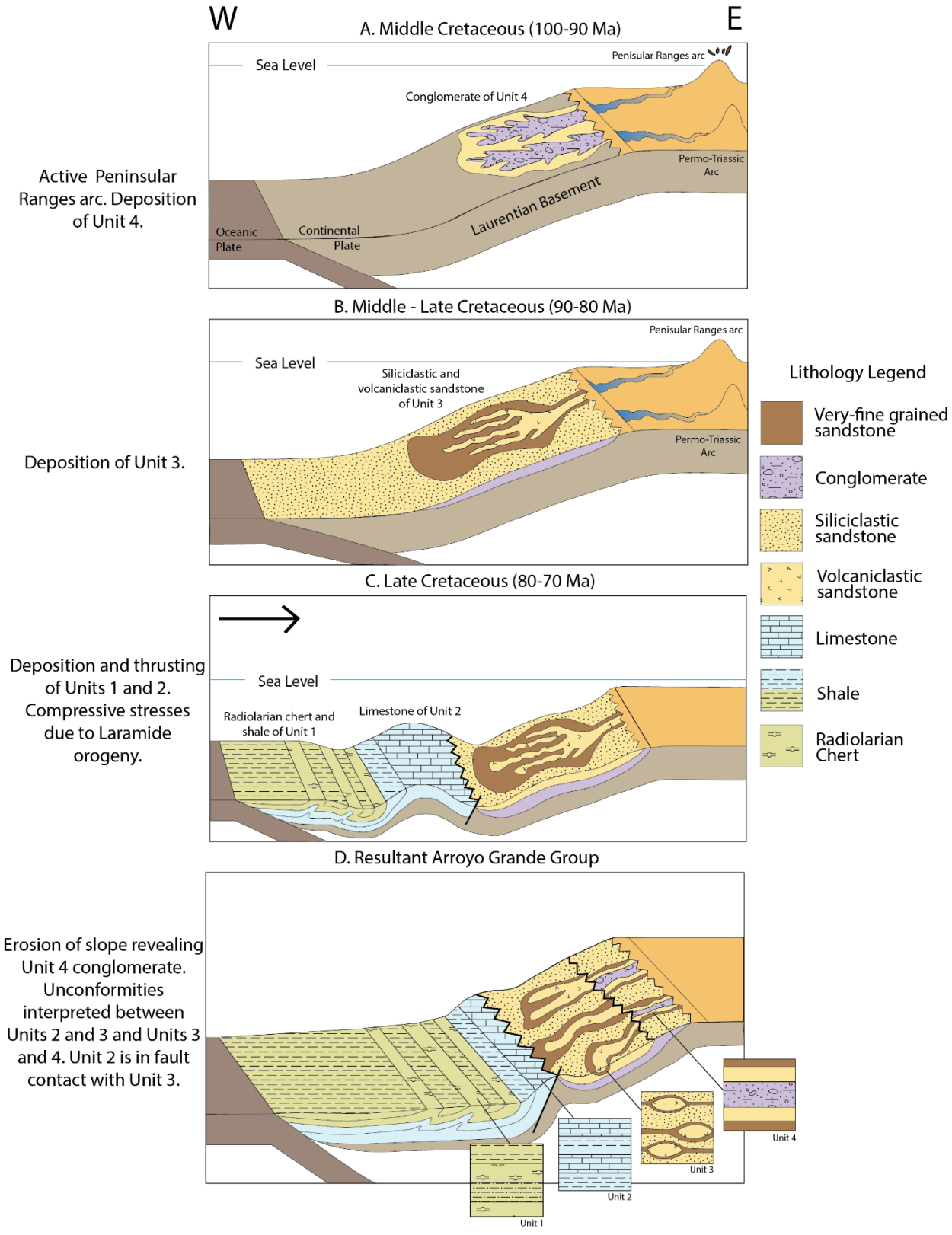


Figure 60. Cretaceous depositional history of the Arroyo Grande Group along the continental slope. Insets show a cross-sectional view of each unit.

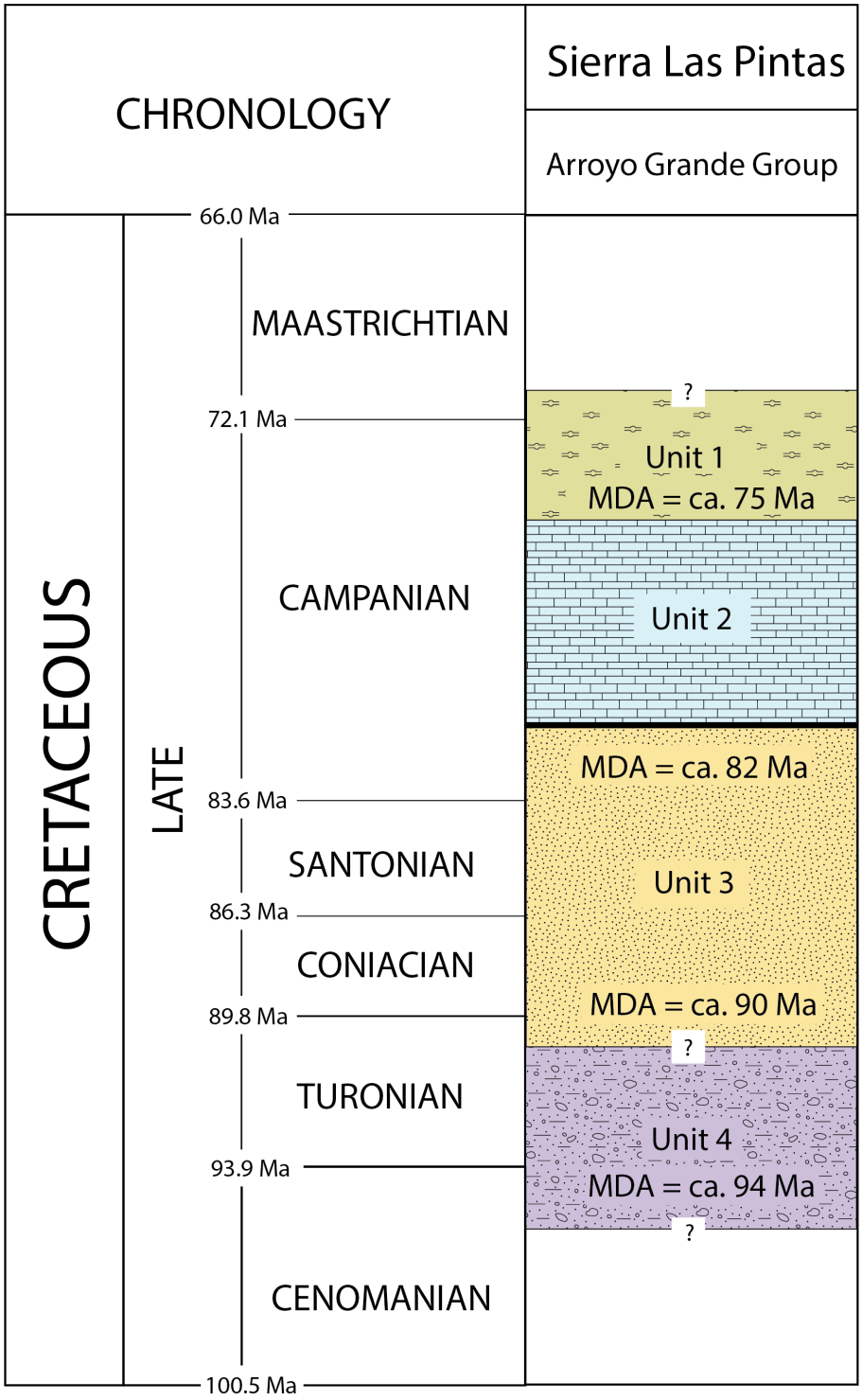


Figure 61. Chronostratigraphic column of the Arroyo Grande Group based on maximum depositional ages for each unit. Heavy line between Units 2 and 3 indicates a fault contact.

Unit 1 is composed of radiolarian chert that is interbedded with metashale and metasandstone packages (Figure 10). Syn-sedimentary liquefaction, pinching-out of layers, and soft-sediment-deformation structures such as slumping and convolute laminations suggest deposition on or at the base of a slope, likely emplaced by turbidity currents. Bedded metashale and radiolarian chert indicate deposition in the ocean basin, as a quiet, deep-marine environment would be expected where shale and radiolaria could settle. Unit 1 contains rare Late Cretaceous grains and large suites of zircon ranging from 105-90 and 140-130 Ma, likely indicating a Peninsular Ranges Batholith provenance and maximum depositional age of 75 ± 1 Ma (Figures 29 and 61). Unit 1 contains pervasive isoclinal folds throughout the unit and a gradational contact with Unit 2 (Figure 60).

Unit 2 is cherty metashale interbedded with metalimestone and thin beds of metasandstone (Figure 12). The metalimestone is increasingly replaced by diagenetic chert upsection. The unit includes parallel laminations and soft-sediment-deformation structures such as convolute laminations, slumping, and flame structures that are common characteristics of turbidity currents deposited on a slope. Unit 2 was likely deposited by turbidity currents higher on the continental slope than Unit 1 as indicated by an increase in grain size and the presence of limestone. Unit 2 contains rare, Lower Cretaceous grains and a major age peak at ca. 275-240 Ma, indicating primarily Permo-Triassic arc provenance (Figure 30). The sample contains three Cretaceous grains between 137 and 91 Ma that do not fall within two-sigma uncertainty of each other and no viable youngest population of zircon that could reasonably be interpreted as the maximum depositional age for the unit. Similar to Unit 1, pervasive isoclinal folds are present throughout Unit 2, suggesting post-deposition tectonism. Unit 2 is in fault contact with Unit 3, which may represent an unconformity. It is likely that the units 1 and 2 are part of a separate

succession from the other units of the Arroyo Grande Group. Because the maximum depositional age of Unit 2 could not be established, the unit is interpreted to have been deposited along with Unit 1 based on field evidence, and the stratigraphy of Units 1 and 2 appears to be inverted (Figures 60-61).

Unit 3 is composed of two distinct lithologies, siliciclastic metasandstone and volcaniclastic metasandstone, that each contain unique geochronologic provenance and suggest a complex depositional history. The base of Unit 3 is primarily siliciclastic metashale containing boudinaged very fine- to fine-grained volcaniclastic metasandstone lenses (Figure 14). The volcaniclastic metasandstone lenses coarsen upsection and become thicker and more abundant (Figure 15). The volcaniclastic metasandstone lenses are interpreted as channeled deposits emplaced on the continental slope. The increase in frequency and coarsening upsection of volcanic metasandstone lenses indicates a more proximal portion of the channel.

The siliciclastic metasandstones coarsen upsection as well. Within the siliciclastic metasandstone, the frequency of sedimentary features, such as cross-bedding and parallel laminations, increases upsection. Complete to incomplete Bouma sequences are identified within the siliciclastic metasandstone including layers Ta (massive sandstone), Tb (parallel laminations), and Tc (cross-bedding). The presence of Bouma sequences within the siliciclastic metasandstone supports the hypothesis that the sediment was deposited by turbidity currents, likely on the continental slope, and indicates a higher-energy environment than the volcaniclastic metasandstone lenses. It is important to note that Unit 3 does not contain any folding, as opposed to the severely folded nature of Units 1 and 2, further supporting the hypothesis that Units 1 and 2 are part of a separate succession from Unit 3 (Figure 60).

Petrographic analysis of siliciclastic metasandstone samples indicates primarily sub-rounded, quartz-rich samples with rare, well-rounded feldspars and lithic fragments, suggesting sediment recycled from a continental provenance (Figure 17). The volcaniclastic metasandstone samples are predominantly feldspathic, suggesting a volcanic-arc provenance (Figure 17). The feldspars are pervasively replaced by amphibole and contain extensive sericitization, indicating greenschist metamorphism.

The siliciclastic metasandstone sample contains a major age peak at ca. 275-240 Ma, indicating a Permo-Triassic arc source area and maximum depositional age of 248 Ma ± 2 Ma (Figure 32). The volcaniclastic metasandstone samples contain major age peaks at 105-90 and 140-130 Ma indicating a Peninsular Ranges batholith origin (Figures 31 and 33). Two samples collected from the volcaniclastic metasandstone suggest maximum depositional ages of 90 ± 1 Ma and 82 ± 2 Ma, which are interpreted as the maximum depositional ages for the unit (Figures 31, 33, and 61). The age, compositional, and sedimentological differences between the siliciclastic and volcaniclastic metasandstones suggest that each was derived from a distinct source. The siliciclastic metasandstone sediments were eroded primarily from a Permo-Triassic arc source and likely deposited by turbidity currents on the continental slope. The volcaniclastic metasandstones were primarily sourced from the Peninsular Ranges batholith and were likely formed as channeled deposits within the siliciclastic metasandstone (Figure 60). The volcaniclastic metasandstones deposits were likely boudinaged in subsequent tectonic events.

Unit 4 contains interbedded metaconglomerate, metashale, and very fine-grained metasandstone layers that coarsen upsection into medium-grained metasandstone layers (Figure 18). The metaconglomerate packages thicken upward and clast size increases as well. The

metasandstone contains parallel laminations and the metaconglomerate contains flattened and sheared clasts, as well as evidence of slumping.

Petrographic analysis reveals a quartz-rich composition similar to the metasandstone of Unit 3 (Figure 20). The analysis suggests that the metasandstone contains detritus that was recycled from a continental source as the sample is primarily composed of stable minerals such as quartz that are sub- to well-rounded and well sorted (Dickinson et al., 1983). The metaconglomerate is composed of poorly sorted, sub-rounded to angular clasts of chert, shale, and very-fine-grained sandstone. It also contains rare volcaniclastic and sedimentary lithic fragments.

The metasandstone and metaconglomerate of Unit 4 both indicate very similar source regions with major age peaks at ca. 105-90 Ma, ca. 140-130 Ma, and ca. 275-240 Ma (Figures 34-35). The unit includes significant geochronologic signatures indicating major source regions from the Peninsular Ranges Batholith and the Permo-Triassic arc. The maximum depositional age of unit is interpreted as 94 ± 2 Ma (Figures 34-35) suggesting that Unit 4 is the oldest unit of the Arroyo Grande Group (Figure 61). Although the chert, shale, and sandstone clasts identified within Unit 4 appear similar to the rocks that compose Units 1-3, it is possible the clasts do not originate from these units. The clasts may have been derived from higher on the continental shelf or further inland.

Unit 4 was likely deposited by debris flows on the continental slope that incorporate mixed source regions (Figure 60). Unit 4 was likely deposited near the top of the continental slope, potentially near the feeder channel as it is very coarse grained, contains cobble-sized clasts and is poorly sorted. Unfortunately, the stratigraphic relation of Unit 4 to Units 1-3 could not be

determined so it is difficult to establish with confidence how this unit is incorporated in the overall succession of the Arroyo Grande Group. The disconnected outcrops of the metasandstone could be due to Unit 4 representing channeled deposits from an anastomosing channel system, explaining why it is so difficult to identify the relation with other units of the Arroyo Grande Group.

Unit 5 is composed of overlying Cenozoic volcanic rocks and felsic dikes. This unit is not discussed as it does not appear to affect the Arroyo Grande Group depositional history interpretation

4.2.2. Depositional History of the Sierra Las Pintas Group

The strata of the Sierra Las Pintas Group have previously been interpreted as a flysch-like succession that was deposited on a continental slope (Poole et al., 2005). Navas-Parejo et al. (2018) suggest that the Sierra Las Pintas Group succession was emplaced on the continental slope in a deep-marine environment and locally received calcareous bioclastic debris from a shallow-water platform dominated by crinoid meadows. Field observations made during this study agree with these previous interpretations.

Unit SP1 contains metasandstone interbedded with finely laminated, calcareous metashale layers. The metasandstone coarsens upsection from very fine-grained to medium-grained metasandstone. The unit is heavily altered by greenschist metamorphism and most sedimentary features have not been preserved, except for rare parallel laminations. Petrographic analysis indicates the unit is quartz-rich with rare feldspar. Geochronological analysis indicates a maximum depositional age of 96 ± 1 Ma for the unit and includes major age peaks of ca. 105-90 Ma, ca. 140-130 Ma, and 280-240 Ma, suggesting derivation from the Peninsular Ranges

batholith and the Permo-Triassic arc (Figure 36). Units SP1 and SP2 contain a gradational contact, suggesting that the units are part of the same succession.

SP2 is composed of fine-grained metasandstone interbedded with metashale layers. The unit shows an overall coarsening upsection, from fine- to coarse-grained metasandstone. The metasandstone is interbedded with metaconglomerate containing crinoids, quartz, and feldspar. Sedimentary structures, which include parallel and ripple-cross laminations, are not obvious due to pervasive metamorphism. Petrographic analysis of Unit SP2 indicates that the unit is quartz-rich and includes a higher percentage of calcareous minerals than Unit SP1. Geochronologic analysis of Unit SP2 includes two samples, one with a major age peak at ca. 280-250 Ma and the other with major age peaks at ca. 140-90 Ma and 280-240 Ma, suggesting derivation from the Peninsular Ranges batholith and Permo-Triassic arc (Figures 37-38). The crinoid fauna identified in Unit SP2 by Navas-Parejo et al. (2018) suggest a Middle Pennsylvanian-early Permian age for the unit, however geochronologic analysis of Unit SP2 indicates a maximum depositional age of 94 ± 1 Ma (Figure 37). The much younger MDA than was previously interpreted for the unit suggests that the crinoids could have been reworked and later deposited within the strata of the Sierra las Pintas Group.

Geologic and petrographic analysis of Units SP1 and SP2 support previous interpretations of deposition in a deep-marine environment on the continental slope. The metaconglomerate packages, decrease in metashale beds, and presence of parallel laminations observed in upper SP2 suggest a higher-energy depositional environment than SP1. Geochronological analysis suggests that the units record an interfingering of source regions from the Peninsular Ranges batholith and Permo-Triassic arc.

Unit SP4 is composed of basaltic metalava and metaconglomerate. Geochemical analysis of the basalts by Leier-Engelhardt (1986, 1993) indicated a transitional tectonic setting characterized by an attenuated continental crust. Geochronologic analysis of the basalt yielded 19 concordant zircon grains that contained major age peaks at ca. 105-90 and 140-130 Ma, ages consistent with Peninsular Ranges batholith magmatism. Previous interpretations and geochronologic analysis suggest that the basalt was formed from fissures on the continental slope. Leier-Engelhardt (1993) and Navas-Parejo et al. (2018) identified pillow lava flows in Unit SP5. It is likely that the metabasalt and metaconglomerate of Unit SP4 were eroded from basalt lava flows higher on the continental slope.

4.2.3. Depositional History of the Minas de Barita area

Samples from the Minas de Barita area were collected from the Mina México Formation and Rancho Nuevo Formation. Poole et al. (2005; 2008) described the Rancho Nuevo Formation as syn-orogenic deep-water black shale, turbidite, and chert and the Mina México Formation as syn-orogenic turbidites and deep-water flysch sequence deposited in a foredeep in front of the evolving Sonora allochthon. While field data for the samples collected for this study were limited, the lithology and sedimentary structures support depositional environment interpretations from previous studies (Poole et al., 2005).

M. Martini described the sampled outcrop from the Rancho Nuevo Formation as primarily composed of calcareous sandstone, shale, and chert that are massive to inversely graded and poorly sorted. The calcareous debris-flow deposits are overlain by granule to cobble debris-flow conglomeratic deposits. Field observations suggest deposition by a debris- flow on the continental slope. The Mina México Formation was interpreted as an interfingering of

siliciclastic sandstone and shale that display typical turbidite characteristics with calcareous sandy-debris-flow deposits. The turbidite sequence contains parallel laminations, ripple marks, fluidification structures, and syn-sedimentary faults. Field observations suggest deposition by turbidity currents and debris flows on a continental slope, which agrees with previous interpretations for the depositional environment of the Mina México Formation.

Provenance analysis from this study indicates major source regions from the Appalachian / OMS orogen and Gondwana, with minor source regions from the Grenville orogen and Yavapai-Mazatzal province. While the youngest population of zircon from the samples range from Early Mississippian to Late Pennsylvanian age, the samples do not contain a coherent youngest population of zircon and maximum depositional age could not be determined. The results of this study agree with previous provenance interpretations for the Minas de Barita area and provide evidence of Gondwana source.

4.3 TECTONIC EVOLUTION

The results of this study provide an interesting addition to the provenance analysis of the Sierra Las Pintas. While the observations and geochronologic analyses of the Minas de Barita area agree with previous studies, the analyses of the Sierra Las Pintas strata do not support the presence of the Sonora allochthon as was previously interpreted. The most unexpected result from this study is the presence of Cretaceous zircon grains identified within many of the Sierra Las Pintas samples. Multiple theories for the presence of Cretaceous zircon grains are discussed along with the most likely scenario and associated basin model.

4.3.1 Origin of Cretaceous Zircon

Contamination

The first scenario considered was that the Cretaceous grains were the result of contamination of the samples. Great care was taken during processing of the samples and all 15 geochronologic samples were processed in the same manner at the Northern Arizona University mineral-separation lab. This troubling possibility was quickly dismissed as the number of Cretaceous grains was far greater than could be reasonably expected from residue of a previous sample remaining on any of the mineral-separation machines. The same idea applies when considering that alluvium or younger Cretaceous soil was coating the samples collected in the field as Cretaceous zircon present in geochronologic analysis due to soil contamination would be diminutive. Finally, Cretaceous zircon grains were not present in samples such as LP080120-8 (Figure 32). Because samples were processed in the exact same manner, the Cretaceous zircon present in some samples and not others had to be considered as part of the provenance of the rocks and not due to contamination of the samples.

Altered U/Pb Ages

The next scenario explored was that Cretaceous ages are due to a high-pressure / temperature metamorphic event that resulted in Pb-loss or hydrothermal alteration. A random selection of Cretaceous grains was reanalyzed to determine if the grains contained altered metamorphic rims from five of the samples that contain strong Cretaceous signatures. The geochronologic analysis was repeated, taking care to analyze the core of the grains as opposed to the rims. As was discussed at the beginning of this chapter, only one grain indicated an older core and cathodoluminescence images of the re-analyzed grains indicated normal, oscillatory

patterns of growth on the majority of the Cretaceous-age zircon (Table 4; Figure 49). Trace element geochemistry also indicates primary petrogenic origin for the Cretaceous zircon was magmatic as all Th/U ratios are >0.07 (Figures 46-48).

Intrusive Bodies

A third possibility considered was that the Cretaceous volcaniclastic metasedimentary lenses of Unit 3 from the Arroyo Grande Group are not boudins, but younger, intrusive volcanic bodies. Petrographic analysis of the volcaniclastic boudins from Unit 3 indicates that the lenses are composed of well-rounded plagioclase feldspar grains, extensively replaced by tremolite and seritization, indicative of eroded and weathered volcaniclastic sediment (Figure 62A). This is different from the petrographic analysis of Unit 5, which indicates the felsic dike is composed primarily of interlocking plagioclase feldspar with pervasive seritization (Figure 62B). This scenario also does not explain the presence of Cretaceous grains within Units 1 and 4, as well as within the samples collected from the Sierra Las Pintas Group.

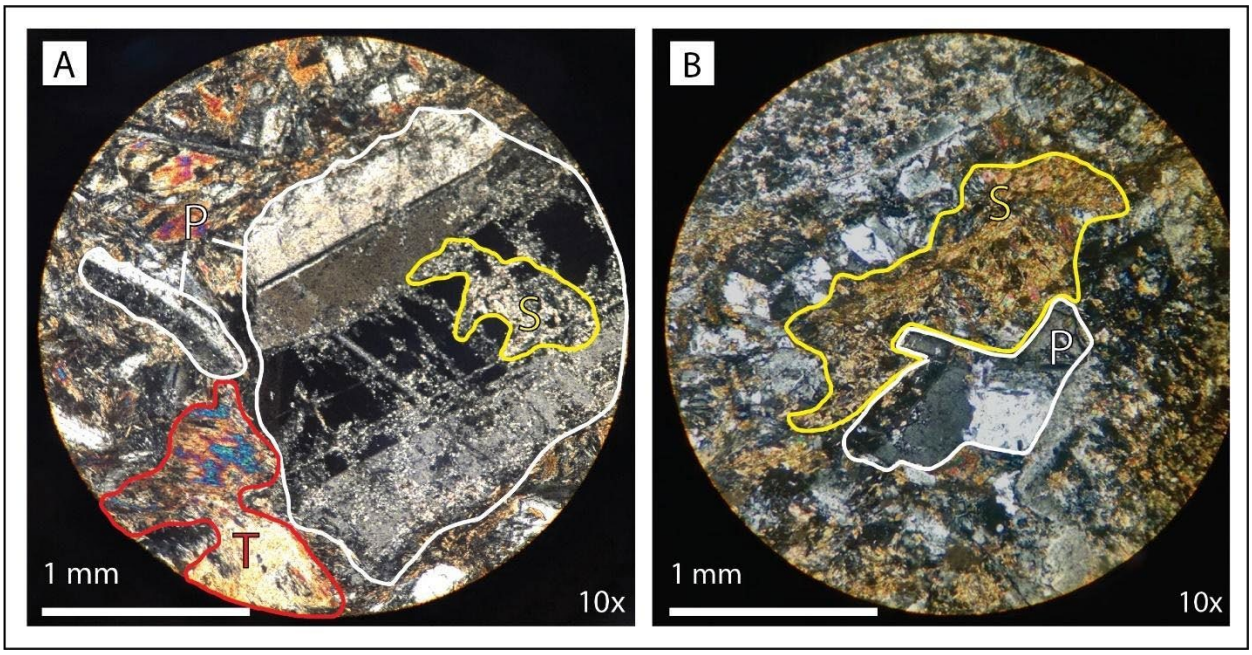


Figure 62. Comparison of volcaniclastic metasandstone boudin of Unit 3 **(A)** and felsic dike of Unit 5 **(B)** of the Arroyo Grande Group. Plagioclase feldspar (P) are outlined in white, tremolite (T) in red and sericite (S) in yellow.

4.3.2 Cretaceous Sierra Las Pintas Area

The final, and most likely, scenario is that the Arroyo Grande Group and the Sierra Las Pintas Group of the Sierra Las Pintas are Cretaceous in age. This scenario does not support the hypothesis that the Sonora allochthon is present within the Sierra Las Pintas area. Provenance analysis suggests an earliest Late Cretaceous emplacement age for the strata of the Sierra Las Pintas area with two primary source regions from the Peninsular Ranges batholith and the Permo-Triassic arc.

The units of the Arroyo Grande Group contain a range of MDAs that suggests a complex depositional history. Geochronological data from Unit 4 indicates the oldest MDAs for the area at 94 ± 1 Ma and 95 ± 1 Ma, suggesting that Unit 4 was most likely deposited while the eastern Peninsular Ranges arc was still active. Unit 4 deposits of bedded metasandstone and poorly sorted metaconglomerates suggest deposition by debris flows (Figure 60A). Provenance analysis from Unit 4 suggests sediment derivation from the Peninsular Ranges batholith and Permo-Triassic arc. The unit likely records input of deltaic systems on the continental shelf that transported eroded Peninsular Ranges batholith sediment, as well as sediment derived from the Permo-Triassic arc, which were deposited in the active channel near the shelf edge.

Geochronological analyses of Unit 3 indicate two distinct MDAs at 248 ± 1 Ma for the siliciclastic metasandstone and 82 ± 2 Ma for the larger volcaniclastic metasandstone sample. Unit 3 was likely deposited on the continental slope during middle Cretaceous time (Figure 60B). The siliciclastic and volcaniclastic metasandstone deposits suggest sediment derivation

from two distinct source areas. Sedimentary structures and provenance analysis of the siliciclastic metasandstone suggest primary erosion from the Permo-Triassic arc and deposition by turbidity currents on the continental slope. Gondwana and Laurentian craton sources identified in samples containing a strong Permo-Triassic signature could indicate derivation from Sonora allochthon strata. Cretaceous volcaniclastic metasandstones are interpreted as interbedded lobes of distributary channels that are fed by sediment derived from the Peninsular Ranges batholith (4; Figure 60). The volcaniclastic metasandstone lenses are often found surrounded by metashale to very-fine grained metasandstone beds, which are commonly observed as levees surrounding distributary channels.

Units 1 and 2 contain a gradational contact, which suggests that the units are part of the same succession. Although the MDA for Unit 2 could not be established with confidence, the MDA of Unit 1 is interpreted as 75 ± 2 Ma. Units 1 and 2 at the base of the continental slope and the ocean basin during Late Cretaceous time (Figure 60C). Unit 1 deposits consist of bedded radiolarian chert and metashale containing parallel laminations and soft-sediment-deformation structures, suggesting emplacement by low-density turbidity currents in the ocean basin. The gradual increase in grain size from Unit 1 to Unit 2, presence of limestone, soft-sediment deformation and parallel laminations suggest Unit 2 was deposited by turbidity currents higher on the continental slope. Units 1 and 2 contain pervasive isoclinal folds, while the other units of the Arroyo Grande Group do not contain any folds. Units 1 and 2 likely represent a laterally removed succession that was later faulted against Unit 3, possibly due to compressive stresses of the Laramide orogeny.

The range in MDAs identified in each unit of the Arroyo Grande Group suggest that the units were likely emplaced at different times and are separated by unconformities (Figure 60D).

The stratigraphic relation between Unit 4 and the other units could not be identified. Unit 4 contains the oldest MDA and was likely later revealed due to erosion of the continental slope. The difference in MDAs and absence of folding in Units 3 and 4, as opposed to the severely folded nature of Units 1 and 2, support the hypothesis that an unconformity is present between Units 2 and 3 as well.

4.3.3 Outstanding Research Problems and Recommended Future Work

Geochronological analyses of the Sierra Las Pintas area provide important detrital zircon ages that establish a Cretaceous maximum depositional age for the strata. The results from this research do not support the presence of the Sonora allochthon in the Sierra Las Pintas and introduce many unknowns for the area.

The proposed tectonic evolution of the Arroyo Grande Group includes many inferences about the modes of emplacement and relative stratigraphy of the units based on geochronologic and field data. Unit 4 is interpreted as the oldest unit but contains clasts of chert, shale, and sandstone that are the same rock types as the strata of Units 1-3. It is possible that the clasts were derived from elsewhere on the continent as they could not be eroded from younger units. Another possibility is that Unit 4 does not record the emplacement age of the unit and is much younger than the MDA suggests. Unit 4 also contains rare volcaniclastic lithics that would be expected from the active Peninsular Ranges arc. It is possible that sea level was higher during the time of deposition and erosion of the arc was much lower than during the emplacement of Unit 3, which contains a large amount of volcaniclastic sediment. Detailed facies analysis and extensive fault mapping can be utilized to further test the proposed depositional history of the area.

While sedimentological analysis of the Sierra Las Pintas Group supports previous interpretations for deposition on the continental slope, the timing of emplacement is controversial. Navas-Parejo et al. (2018) identified crinoid fauna in Unit SP2 that suggest a Middle Pennsylvanian-early Permian age for the unit, however, geochronologic analysis indicates two unique MDAs for Unit SP2. One sample contains an MDA of 266 ± 3 Ma while another sample for the unit contains an MDA of 94 ± 1 Ma. Although the Permian MDA agrees with previous interpretations for a late Permian Sonora allochthon emplacement, other samples from Units SP1 and SP4 also contain Cretaceous MDAs that suggest the Sierra Las Pintas Group is, in fact, Cretaceous. More detailed geochronologic sampling within the units could potentially reveal where the Cretaceous source was cut off and provide a more in-depth understanding for the timing of basin fill.

Provenance analysis is powerful tool that can determine the tectonic and paleogeographic history for an area. This study presents detrital zircon ages for each sample and the associated source area interpretation, primarily based on established provenance determinations and zircon population size. A multitude of potential sources exist for zircon populations, including primary derivation from cratonal sources and sediment that has experienced multiple recycling events. Whether the sediment is locally derived from nearby sources or far travelled cannot be constrained by the available data and future work in the Sierra Las Pintas area should focus on retracing the sediment-routing pathways for potential source areas.

5.0 CONCLUSIONS

The Sonora allochthon, the westernmost segment of the Ouachita-Marathon-Sonora orogenic belt, has been well documented in Sonora, Mexico, and studies have proposed the presence of the Sonora allochthon in the Sierra Las Pintas of Baja California, Mexico (Leier-Engelhardt,

1993; Poole et al., 2005; Poole et al., 2008; Navas-Parejo et al., 2018). Proposed Sonora allochthon strata of the Sierra Las Pintas have been correlated to known Sonora allochthon strata of central Sonora primarily by biostratigraphic and stratigraphic similarities (Leier-Engelhardt, 1993; Poole et al., 2008; Navas-Parejo et al., 2018). The main purpose of this study was to test the hypothesis that correlations can be made between the Sonora allochthon strata identified in the Minas de Barita area of central Sonora and proposed Sonora allochthon strata of the Arroyo Grande Group and Sierra Las Pintas Group of Baja California, Mexico (Figure 1).

Detrital zircon geochronology indicates significant differences between the Arroyo Grande Group and Sierra Las Pintas Group of the Sierra Las Pintas and the Minas de Barita area, suggesting that the strata of each field area cannot be correlated. Provenance analysis of the Arroyo Grande Group indicates a Late Cretaceous maximum depositional age and identifies two major source areas, the Peninsular Ranges batholith and the Permo-Triassic arc. Other major sources of zircon indicated by the study include Gondwanan source, as well as the Grenville, Granite-Rhyolite, Yavapai-Mazatzal provinces and the Archean craton (Figure 58). Provenance analysis of the Sierra Las Pintas Group indicates the same major source regions as the Arroyo Grande Group as well as a Late Cretaceous maximum depositional age. Stratigraphic analysis indicates that the Arroyo Grande Group was deposited on the continental slope and ocean basin within the forearc of the Peninsular Ranges batholith (Figure 60). Cretaceous maximum depositional ages identified in most units of Sierra Las Pintas strata contradict the proposed late Permian emplacement age of the Sonora allochthon strata. However, provenance analyses of Sierra Las Pintas strata suggest derivation from Gondwana and the Laurentian continent with prominent peaks indicating major sources from the Peninsular Ranges batholith and the Permo-

Triassic arc, as well as from Grenville, Granite-Rhyolite, Yavapai-Mazatzal provinces and the Archean craton.

Provenance analysis of the Rancho Nuevo Formation and Mina México Formation of the Minas de Barita area agrees with previous literature and also provides strong detrital zircon evidence of Gondwanan source in the Sonora allochthon (Figure 59). Gondwanan source has rarely been identified in previous literature and this study provides a major contribution to the Sonora allochthon provenance discussion. Other major source areas suggest derivation from the Appalachian / OMS orogen, the Grenville orogen and the Yavapai-Mazatzal province. Sedimentary features identified in the Rancho Nuevo Formation and Mina México Formation indicate deposition by turbidity currents and debris-flows on the continental slope. Overall, the Minas de Barita area results from this study agree with previous interpretations of provenance and depositional history of the Sonora allochthon strata.

Provenance analysis from this study does not support the hypothesis that Sonora allochthon strata are present in the Sierra Las Pintas and therefore cannot be correlated to the Sonora allochthon strata identified within the Minas de Barita area. Geochronologic and stratigraphic analysis of the Sierra Las Pintas strata indicates a mixed provenance of Laurentian and Gondwanan source regions, as well as Cretaceous Cordilleran arc activity.

REFERENCES

Barth, A., Wooden, J., Jacobson, C., and Economos, R., 2013, Detrital zircon as a proxy for tracking the magmatic arc system: The California arc example: Geology, v. 41, no. 2, p. 223-226.

Becker, T.P., Thomas, W.A. and Gehrels, G.E., 2006, Linking late Paleozoic sedimentary provenance in the Appalachian basin to the history of Alleghanian deformation: American Journal of Science, v. 306, no. 10, p. 777-798.

Bell, E.A. and Kirkpatrick, H.M., 2021, Effects of crustal assimilation and magma mixing on zircon trace element relationships across the Peninsular Ranges Batholith: Chemical Geology, v. 586, p. 1-16.

Blakey, R.C., 2007, Carboniferous-Permian paleogeography of the assembly of Pangaea *in* Wong, T.E., eds., Fifteenth International congress on Carboniferous and Permian Stratigraphy, Royal Netherlands Academy of Arts and Sciences: Amsterdam, p. 443-465.

Bottjer, D.J., 1984, A Synthesis of late Cretaceous Southern California and Northern Baja California Paleogeography *in* Crouch, J.K., and Bachman, S.B., eds., Tectonics and Sedimentation along the California Margin: Pacific Section S.E.P.M., v. 38, p. 171-188.

Busby, C., 2004, Continental growth at convergent margins facing large ocean basins: a case study from Mesozoic convergent-margin basins of Baja California, Mexico: Tectonophysics, v. 392, p. 241-277.

Busby-Spera, C.J. and Boles, J.R., 1986, Sedimentation and subsidence styles in a Cretaceous forearc basin, southern Vizcaino Peninsula, Baja California, Mexico *in* Abbott, P.L. (Ed.), Cretaceous Stratigraphy, Western North America Pacific Section, Society of Economic Paleontologists and Mineralogists, Los Angeles, p. 79-90.

Cawood, P.A. and Buchan, C., 2007, Linking accretionary orogenesis with supercontinent assembly: Earth-Science Reviews, v. 82, p. 217-256.

Cawood, P.A., Hawkesworth, C.J., and Dhuime, B., 2012, Detrital zircon record and tectonic setting: Geology, v. 40, no. 10, p. 875-878.

Cecil, M.R., Ferrer, M.A., Riggs, N.R., Marsaglia, K., Kylander-Clark, A., Ducea, M.N., and Stone, P., 2018, Early arc development recorded in Permian-Triassic plutons of the northern Mojave Desert region, California, USA: Geological Society of America Bulletin, v. 131, n. 5-6, p. 749-765.

Cordani, U.G., Teixeira, W., D'Agrella-Filho, M., and Trindade, R., 2009, The position of the Amazonian Craton in supercontinents: Gondwana Research, v. 15, no. 3-4, p. 396-407.

Davis, D., Williams, I.S., and Krogh, T.E., 2003, Historical development of zircon geochronology: Reviews in Mineralogy and Geochemistry, v. 53, p. 145-181.

Dickinson, W.R., Beard, L.S., Brakenridge, G.R., Erjavec, J., Ferguson, R., Inman, K., Knepp, R., Lindberg, F., and Ryberg, P., 1983, Provenance of North American Phanerozoic sandstones in relation to tectonic setting: Geological Society of America Bulletin, v. 94, no. 2, p. 222-235.

Dickinson, W.R., and Gehrels, G.E., 2003, U-Pb ages of detrital zircons from Permian and Jurassic eolian sandstones of the Colorado Plateau, USA: paleogeographic implications: Sedimentary Geology, v. 163, no. 1-2, p. 29-66.

Dickinson, W.R., and Lawton, T.F., 2001, Carboniferous to cretaceous assembly and fragmentation of Mexico: GSA Bulletin, v. 113, n. 9, p. 1142-1160.

Dickinson, W.R., 2004, Evolution of the North American cordillera: Annual Review of Earth and Planetary Science, v. 32, p. 13-45.

Dickinson, W.R., and Gehrels, G.E., 2009, Use of U–Pb ages of detrital zircons to infer maximum depositional ages of strata: a test against a Colorado Plateau Mesozoic database: Earth and Planetary Science Letters, v. 288, no. 1, p. 115-125.

Dobbs, S., 2017, The middle Permian Monos Formation: Stratigraphic and detrital zircon evidence for Permian Cordilleran arc development along the southwest margin of Laurentia (northwest Sonora, Mexico), M.S. thesis, Northern Arizona University, Department of Geological Sciences, Flagstaff, Arizona.

Folk, Robert, L., 1951, A comparison chart for visual percentage estimation: Journal of Sedimentary Research, v. 21, n. 1, p. 32-33.

Gastil, R.G., 1993, Prebatholithic history of peninsular California, *in* Gastil, R.G., and Miller, R.H., eds., The prebatholithic stratigraphy of peninsular California: Geological Society of America Special Paper 279, p. 145–156.

Gastil, G., Miller, R., Anderson, P., Crocker, J., Campbell, M., Buch, P., Lothringer, C., Leier-Engelhardt, P., DeLattre, M., Hoobs, J., and Roldan-Quitana, J., 1991, The relation between the Paleozoic strata on opposite sides of the Gulf of California *in* Perez-Segura, E., Jacques-Ayala, C., eds., Studies of Sonoran Geology: Boulder, Colorado, Geological Society of America Special Paper 254, p. 7-17.

Gehrels, G. E., Dickinson, W. R., Ross, G. M., Stewart, J. H., & Howell, D. G., 1995, Detrital zircon reference for Cambrian to Triassic miogeoclinal strata of western North America: Geology, v. 23, no. 9, p. 831-834.

Gehrels, G.E., and Stewart, J.H., 1998, Detrital zircon geochronology of Cambrian to Triassic miogeoclinal and eugeoclinal strata of Sonora, Mexico: Journal of Geophysical Research, v. 103, p. 2471-2487.

Gehrels, G.E., 2000, Introduction to detrital zircon studies of Paleozoic and Triassic strata in western Nevada and northern California *in* Gehrels, G.E., and Soreghan, M.J., eds., Paleozoic

and Triassic Paleogeography and Tectonics of Western Nevada and Northern California: Boulder, Colorado, Geological Society of America Special Paper 347, p. 1-17.

Gehrels, G.E., 2012, Detrital zircon U-Pb geochronology: current methods and new opportunities in Busby, C. and Azor, A., eds., Tectonics of Sedimentary Basins: Recent Advances, p. 47-62.

Gehrels, G., and Pecha, M., 2014, Detrital zircon U-Pb geochronology and Hf isotope geochemistry of Paleozoic and Triassic passive margin strata of western North America: Geosphere, v. 10, n. 1, p. 49-65.

Grimes, C.B., John, B.E., Kelemen, P.B., Mazdab, F.K., Wooden, J.L., Cheadle, M.J., Hanghoj, K., and Schwartz, J.J., 2007, Trace element chemistry of zircons from oceanic crust: A method for distinguishing detrital zircon provenance: Geology, v. 35, no. 7, p. 643-646.

Grimes, C. B., Wooden, J. L., Cheadle, M. J., and John, B. E., 2015, ‘‘Fingerprinting’’ tectono-magmatic provenance using trace elements in igneous zircon: Contributions to Mineral and Petrology, v. 170, no. 5–6, p. 46.

Hatcher, R.D., 2002, Alleghanian (Appalachian) orogeny, a product of zipper tectonics: rotational transpressive continent–continent collision and closing of ancient oceans along irregular margins *in* Martinez Catalan, J.R., Hatcher, R.D., Arenas, R. & Diaz Garcia, F. (eds): Variscan–Appalachian dynamics: the building of the late Paleozoic basement: Geological Society of America Special Paper 364, p. 199–208.

Hatcher, R.D., Jr., Thomas, W.A., and Viele, G.W., eds., 1989, The Appalachian-Ouachita orogen in the United States: Boulder, Colorado, Geological Society of America, The Geology of North America, v. F-2, 30 chapters, 12 plates, 767 p.

Hatcher, R.D., 2002, Alleghanian (Appalachian) orogeny, a product of zipper tectonics: rotational transpressive continent-continent collision and closing of ancient oceans along irregular margins *in* Martinez Catalan, J.R., Hatcher, R.D., Arenas, R. and Diaz Garcia, F., eds., Variscan-Appalachian dynamics: the building of the late Paleozoic basement: Geological Society of America Special Paper 364, p. 199-208.

Handschy, J.W., Keller, G.R., and Smith, K.J., 1987, The Ouachita system in northern Mexico: Tectonics, v. 6, n. 3, p. 323-330.

Heatherington, A., Mueller, P., and Nutman, A., 1996, Neoproterozoic magmatism in the Suwannee terrane: Implications for terrane correlation, in Nance, R.D., and Thompson, M.D., eds., Avalonian and Related Peri-Gondwanan Terranes of the Circum–North Atlantic: Geological Society of America Special Paper 304, p. 257–268.

Hoffman, P.F., 1989, Precambrian geology and tectonic history of North America *in* Bally, A.W., and Palmer, A.R., eds., The Geology of North America: An Overview: Boulder, Colorado, Geological Society of America, The Geology of North America, v. A, p. 447–512.

Horstwood, M.S., Košler, J., Gehrels, G., Jackson, S.E., McLean, N.M., Paton, C., Pearson, N.J., Sircombe, K., Sylvester, P., Vermeesch, P., and Bowring, J.F., 2016, Community-derived standards for LA-ICP-MS U-(Th-) Pb geochronology–Uncertainty propagation, age interpretation and data reporting: Geostandards andGeoanalytical Research, v. 40, no. 3, p. 311-332.

Hoskin, P.W.O., and Schaltegger, U., 2003, The composition of zircon and igneous and metamorphic petrogenesis: Mineralogical Society of America Reviews in Mineralogy, v. 53, p. 27-62.

James, A.H., 1973, Structure and stratigraphy of the southern Sierra de Pintas, Baja California, Mexico, M.Sc. thesis, San Diego State University, Department of Geological Sciences, San Diego, California, p. 56.

Kirkland, C.L., Smithies, R.H., Taylor, R.J.M., Evans, N., and McDonald, B. 2015, Zircon Th/U ratios in magmatic environs: Lithosphere, v. 212, p. 397-414.

Kimbrough, D.L., Smith, D.P., Mahoney, J.B., Moore, T.E., Grove, M., Gastil, R.G., Ortega-Rivera, A., and Fanning, C.M., 2001, Forearc-basin sedimentary response to rapid Late Cretaceous batholith emplacement in the Peninsular Ranges of southern and Baja California: Geology, v. 29, no. 6, p. 491-494.

Kroner, U., Roscher, M., and Romer, R.L., 2016, Ancient plate kinematics derived from the deformation pattern of continental crust: Paleo- and Neo- Tethys opening coeval with prolonged Gondwana-Laurussia convergence: Tectonophysics, v. 681, p. 220-233.

Kylander-Clark, A.R., Hacker, B.R., and Cottle, J.M., 2013, Laser-ablation split-stream ICP petrochronology: Chemical Geology, v. 345, p. 99-112.

La Borde, R.T., 1967, Reconnaissance geology of the northern Sierra de Pintas, Baja California, Senior report, vol. 11, San Diego State University, Department of Geological Sciences, San Diego, California, 22.

Lara-Peña, R.A., Navas-Parejo, P., and Amaya-Martinez, R., 2020, New conodont data related to the western Ouachita-Marathon-Sonora orogen: Age of the autochthonous Laurentian deformation: Journal of South American Earth Sciences, v. 103, p. 1-8.

Leier-Engelhardt, P., 1986, Middle Paleozoic Strata of the Sierra Las Pinta, Northeastern Baja California Norte, Mexico, M.Sc. thesis, San Diego State University, Department of Geological Sciences, San Diego, California.

Leier-Engelhardt, P., 1993, Middle Paleozoic strata of the Sierra Las Pintas, northeastern Baja California Norte, Mexico, *in* Gastil, R.G., and Miller, R.H., eds., The Prebatholithic Stratigraphy of Peninsular California: Boulder, Colorado, Geological Society of America Special Paper 279, p. 23-41.

Lodes, E., 2019, Geochronologic and stratigraphic evidence of Laurentian subduction initiation (Inyo Mountains, Eastern California), M.Sc. thesis, Northern Arizona University, Department of Geological Sciences, Flagstaff, Arizona, p. 1-133.

Meert, Joseph G., and Van Der Voo, R, 1997, The assembly of Gondwana 800-550 Ma: Journal of Geodynamics, v. 23, no. 3-4, p. 223-235.

McEldowney, R.C., 1970, Geology of Northern Sierra Pinta, Baja California, Mexico, M.Sc. thesis, San Diego State University, Department of Geological Sciences, San Diego, California, p. 78.

Morales, H., in prep., Cartografía y Estratigrafía de la Sierra Las Pintas, B.Sc. thesis, Universidad Nacional Autónoma de México, Departamento de Geología, Hermosillo, Mexico.

Murphy, J.B., and Nance, R.D., 1991, Supercontinent model for the contrasting character of Late Proterozoic orogenic belts: Geology, v. 19, no. 5, p. 469-472.

Navas-Parejo, P., Lara-Pena, R., Torres-Martinez, M.A., and Martini, M., 2018, Biostratigraphy and petrography of upper Paleozoic rocks of Sierra Las Pintas, northern Baja California: Journal of South American Earth Sciences, p. 160-171.

Ortega-River, A., 2003, Geochronological constraints on the tectonic history of the Peninsular Ranges batholith of Alta and Baja California: Tectonic implications for western Mexico, *in* Johnson, S.E., Paterson, S.R., Fletcher, J.M., Girty, G.H., Kimbrough, D.L., Martin-Barajas, A., eds., Tectonic Evolution of Northwestern Mexico and the Southwestern USA: Geological Society of America Special Paper 374.

Poole, F.G. and Amaya-Martínez, R., 2000, Silurian and Devonian carbonate-shelf rocks and Lower Jurassic sequence near Rancho Placeritos, west-central Sonora: Field guide for Field Trip 2 (March 4, 2000), Fourth symposium on the geology of northwest Mexico and adjacent areas (March 6–8, 2000), Center for the Arts, University of Sonora, Hermosillo, Mexico, p. 24.

Poole, F.G., and Perry, W.J., Jr., 1997, The late Paleozoic Ouachita-Marathon-Sonora orogenic system along the southern margin of North America: Geologic Society of America Abstracts with Programs, v. 29, no. 2, p. 43.

Poole, F.G., Perry, W.J., Jr., Madrid, R.J., and Amaya-Martínez, R., 2005, Tectonic synthesis of the Ouachita-Marathon-Sonora orogenic margin of southern Laurentia: Stratigraphic and structural implications for timing of deformational events and plate-tectonic model, *in* Anderson, T.H., Nourse, J.A., McKee, J.W., and Steiner, M.B., eds., The Mojave-Sonora megashear hypothesis: Development, assessment, and alternatives: Geological Society of America Special Paper 393, p. 543-596.

Poole, F.G., Gehrels, G.E., and Stewart, J.H., 2008, Significance of detrital zircons in Upper Devonian ocean-basin strata of the Sonora allochthon and Lower Permian synorogenic strata of the Mina Mexico foredeep, central Sonora, Mexico, *in* Blodgett, R.B., and Stanley, G.D., Jr., eds., The terrane puzzle: New perspectives on paleontology and stratigraphy from the North American Cordillera: Geological Society of America Special Paper 442, p. 121-131.

Riggs, N.R., Barth, A.P, Wooden, J., and Walker, J.D., 2010, Use of zircon geochemistry to tie volcanic detritus to source plutonic rocks: an example from Permian northwestern Sonora, Mexico: Geological Society of America Abstracts with Programs, v. 42, no. 5, p. 267.

Ross, C.A., 1986, Paleozoic evolution of southern margin of Permian basin: Geological Society of America Bulletin, v. 97, no. 5, p. 536-554.

Rubatto, D., 2002, Zircon trace element geochemistry: Partitioning with garnet and the link between U-Pb ages and metamorphism: Chemical Geology, v. 184, p. 123–138.

Saleeby, J.B., Busby-Spera, C., Oldow, J.S., Dunne, G.C., Wright, J.E., Cowan, D.S., Walker, N.W., Allmendinger, R.W., 1992, Early Mesozoic tectonic evolution of the western U.S. Cordillera: The Cordilleran Orogen: Conterminous U.S. The Geology of North America, no. G-3, Geological Society of America, Boulder, CO, p. 107-168

Saleeby, J., and Dunn, G., 2015, Temporal and tectonic relations of early Mesozoic arc magmatism, southern Sierra Nevada, California: Geological Society of America Special Papers, v. 513, SPE513-05.

Sedlock, R.L., 2003, Geology and tectonics of the Baja California peninsula and adjacent areas, *in* Johnson, S.E., Paterson, S.R., Fletcher, J.M., Girty, G.H., Kimbrough, D.L., Martin-Barajas, A., eds., Tectonic Evolution of Northwestern Mexico and the Southwestern USA: Geological Society of America Special Paper 374, p. 1-292.

Silver, L.T., and Chappell, B.W., 2011, The Peninsular Ranges Batholith: an insight into the evolution of the Cordilleran batholiths of southwestern North America: Earth and Environmental Science Transactions of the Royal Society Edinburgh, v. 79, no. 2-3, pg. 105-121.

Soto-Kerans, G.M., Stockli, D.F., Janson, X., Lawton, T.F., and Covault, J.A., 2020, Orogen proximal sedimentation in the Permian foreland basin: Geosphere, v. 16, no. 2, p. 567-593.

Sláma, J., Košler, J., Condon, D.J., Crowley, J.L., Gerdes, A., Hanchar, J.M., Horstwood, M.S., Morris, G.A., Nasdala, L., Norberg, N., and Schaltegger, U., 2008, Plešovice zircon—a new natural reference material for U–Pb and Hf isotopic microanalysis: Chemical Geology, v. 249, no. 1-2, p. 1-35.

Stamplfi, G.M., von Raumer, J.F. and Borel, G.D., 2002a. Paleozoic evolution of pre-Variscan terranes: from Gondwana to the Variscan collision, *in* Martinez Catalan, J.R., Hatcher, R.D.,

Arenas, R. and Diaz Garcia, F., eds., Variscan-Appalachian dynamics: the building of the late Paleozoic basement: Geological Society of America Special Paper 364, p. 263-280.

Stevens, C.H., Poole, F.G., and Amaya-Martínez, R., 2014, Late Paleozoic fusulinds from Sonora, México: Importance for interpretation of depositional settings, biogeography, and paleotectonics: Revista Mexicana de Ciencias Geológicas, v. 31, no. 1, p. 14-27.

Stewart, J.H., and Poole, F.G., 2002 Inventory of Neoproterozoic and Paleozoic strata in Sonora, Mexico: USGS Open-File Report, 02-97, p. 1-50.

Van Lankvelt, A., Schneider, D.A., Biczok, J., McFarlane, C.R.M., Hattori, K., 2016, Decoding zircon geochronology of igneous and alteration events based on chemical and microstructural features: a study from the Western Superior Province, Canada: Journal of Petrology, v. 57, no. 7, pg. 1309-1334.

Vermeesch, P., 2018, IsoplotR: a free and open toolbox for geochronology: Geoscience Frontiers, v.9, p.1479-1493, doi:10.1016/j.gsf.2018.04.001.

Vermeesch, P., 2012, On the visualisation of detrital age distributions: Chemical Geology, v. 312, p. 190-194.

Whitmeyer, S.J., and Karlstrom, K.E., 2007, Tectonic model for the Proterozoic growth of North America: Geosphere, v. 3, p. 220–259.

Wiedenbeck, M.A.P.C., Alle, P., Corfu, F., Griffin, W.L., Meier, M., Oberli, F.V., Quadt, A.V., Roddick, J.C., and Spiegel, W., 1995, Three natural zircon standards for U-Th-Pb, Lu-Hf, trace element and REE analyses: Geostandards newsletter, v. 19, no. 1, p.1-23.

Ziegler, P.A., 1992, Plate tectonics, plate moving mechanisms and rifting *in* Ziegler, P.A., eds., Geodynamics of Rifting: Tectonophysics, v. 3, no. 215, p. 9-34.

APPENDIX Ia: Uranium, lead, and thorium isotope data for samples collected from the Arroyo Grande Group. Best age: $^{207}Pb/^{206}Pb$ ages used for grains older than 1.0 Ga and $^{206}Pb/^{238}U$ ages for grains younger than 1.0 Ga with 2 sigma uncertainty.

Sample LP070120-1																							
				Measured isotopic ratios										Isotopic ages and errors (Ma)									
Grain	Unit	U (ppm)	Th (ppm)	$^{207}Pb/^{235}U$	2σ	$^{206}Pb/^{238}U$	2σ	Error Correlation	$^{238}Pb/^{206}Pb$	2σ	$^{207}Pb/^{206}Pb$	2σ	Error Correlation	$^{207}Pb/^{235}U$	2σ	$^{206}Pb/^{238}U$	2σ	$^{207}Pb/^{206}Pb$	2σ	discordance	best age (Ma)	2σ	internal error
LP070120-1s-70	AGG 1	142.1	135.3	0.086	0.011	0.011	0.000	0.303	88.028	3.100	0.056	0.006	-0.008	84	10	73	3	360	230	0.87	73	3	3%
LP070120-1s-91	AGG 1	1634	1620	0.077	0.003	0.012	0.000	0.678	85.251	2.108	0.048	0.001	0.049	75	3	75	2	93	62	1.00	75	2	2%
LP070120-1s-61	AGG 1	430	794	0.075	0.005	0.012	0.000	0.534	84.890	2.090	0.047	0.002	-0.141	74	5	76	2	50	100	1.02	76	2	2%
LP070120-1L-50	AGG 1	242	259.5	0.084	0.006	0.012	0.000	-0.174	84.459	1.498	0.051	0.004	0.399	82	6	76	1	220	160	0.93	76	1	2%
LP070120-1s-23	AGG 1	875	524	0.085	0.003	0.012	0.000	0.377	80.386	1.486	0.050	0.002	0.143	82	3	80	1	174	71	0.97	80	1	2%
LP070120-1s-66	AGG 1	467	485	0.089	0.007	0.013	0.000	0.588	79.051	1.625	0.051	0.003	-0.324	87	6	81	2	240	130	0.93	81	2	2%
LP070120-1s-75	AGG 1	1640	1150	0.088	0.003	0.013	0.000	0.636	74.963	1.630	0.048	0.001	0.054	86	3	85	2	103	53	1.00	85	2	2%
LP070120-1s-68	AGG 1	278	348	0.088	0.006	0.014	0.000	0.549	72.622	2.268	0.047	0.003	-0.055	86	5	88	3	50	110	1.03	88	3	3%
LP070120-1s-80	AGG 1	1287	683	0.099	0.004	0.014	0.000	0.866	70.077	2.308	0.050	0.001	-0.053	96	4	91	3	210	47	0.96	91	3	3%
LP070120-1s-96	AGG 1	780	297	0.097	0.003	0.014	0.000	0.821	69.930	2.152	0.050	0.001	-0.035	94	3	92	3	173	64	0.98	92	3	3%
LP070120-1L-35	AGG 1	432.4	239	0.101	0.004	0.014	0.000	0.425	69.832	2.341	0.051	0.002	0.351	98	4	92	3	252	88	0.94	92	3	3%
LP070120-1s-63	AGG 1	2200	2400	0.107	0.004	0.014	0.000	0.714	69.348	1.202	0.054	0.001	-0.294	103	4	92	2	363	58	0.90	92	2	2%
LP070120-1s-90	AGG 1	322	194.3	0.094	0.006	0.014	0.000	0.597	69.252	1.679	0.047	0.003	-0.110	91	6	92	2	60	100	1.01	92	2	2%
LP070120-1L-59	AGG 1	1681	354	0.099	0.003	0.015	0.000	0.481	68.259	1.025	0.048	0.001	0.142	96	2	94	1	119	51	0.98	94	1	1%
LP070120-1s-129	AGG 1	940	231	0.097	0.004	0.015	0.000	0.680	67.385	1.589	0.047	0.001	-0.125	94	4	95	2	66	61	1.01	95	2	2%
LP070120-1s-22	AGG 1	1480	183	0.099	0.003	0.015	0.000	0.834	67.295	1.449	0.049	0.001	-0.354	96	3	95	2	126	46	0.99	95	2	2%
LP070120-1L-29	AGG 1	687	217	0.099	0.005	0.015	0.000	0.669	67.250	2.035	0.049	0.002	0.011	96	5	95	3	129	80	0.99	95	3	3%
LP070120-1s-104	AGG 1	465	466	0.102	0.006	0.015	0.000	0.765	67.024	1.707	0.049	0.002	-0.385	98	5	95	2	158	91	0.97	95	2	3%
LP070120-1s-10	AGG 1	244	87	0.100	0.005	0.015	0.000	0.283	66.711	1.691	0.048	0.002	0.254	97	4	96	2	102	96	0.99	96	2	3%
LP070120-1L-52	AGG 1	816	342	0.104	0.004	0.015	0.000	0.638	66.578	1.684	0.049	0.001	0.161	100	3	96	2	164	61	0.96	96	2	2%
LP070120-1s-108	AGG 1	864	292	0.106	0.004	0.015	0.000	0.612	66.269	1.669	0.051	0.002	-0.018	102	4	97	2	236	75	0.94	97	2	2%
LP070120-1L-41	AGG 1	1100	430	0.100	0.008	0.015	0.001	0.818	66.225	4.386	0.048	0.002	-0.020	97	7	97	6	91	88	1.00	97	6	7%
LP070120-1s-122	AGG 1	656	282	0.099	0.003	0.015	0.000	0.584	66.269	1.493	0.048	0.002	-0.007	95	3	97	2	95	70	1.01	97	2	2%
LP070120-1s-78	AGG 1	1060	741	0.101	0.003	0.015	0.000	0.545	66.094	1.398	0.049	0.001	0.184	98	3	97	2	140	59	0.99	97	2	2%
LP070120-1s-97	AGG 1	720	606	0.099	0.004	0.015	0.000	0.642	66.138	1.618	0.048	0.002	-0.180	96	4	97	2	86	72	1.01	97	2	2%
LP070120-1s-2	AGG 1	591	375	0.111	0.004	0.015	0.000	-0.112	65.920	0.565	0.052	0.002	0.324	107	4	97	1	286	87	0.91	97	1	1%
LP070120-1L-56	AGG 1	240.8	91.1	0.106	0.005	0.015	0.000	0.337	65.574	1.032	0.050	0.002	0.068	103	4	98	2	183	91	0.95	98	2	2%
LP070120-1s-40	AGG 1	2401	731	0.106	0.003	0.015	0.000	0.459	65.402	1.540	0.050	0.001	0.350	102	3	98	2	200	52	0.96	98	2	2%
LP070120-1L-43	AGG 1	595	203	0.116	0.006	0.015	0.000	0.664	65.317	1.707	0.055	0.002	-0.219	111	5	98	3	380	92	0.88	98	3	3%
LP070120-1L-31	AGG 1	872	272.3	0.121	0.009	0.015	0.000	0.466	64.935	1.729	0.057	0.004	-0.126	115	8	99	3	460	130	0.85	99	3	3%
LP070120-1s-33	AGG 1	590	193.5	0.101	0.004	0.015	0.000	0.490	64.893	1.811	0.048	0.002	0.205	98	4	99	3	97	81	1.01	99	3	3%
LP070120-1L-17	AGG 1	198.5	86.9	0.103	0.008	0.015	0.000	0.431	64.809	1.890	0.049	0.003	-0.035	99	7	99	3	140	140	0.99	99	3	3%
LP070120-1s-118	AGG 1	502	159.9	0.103	0.004	0.015	0.000	0.599	64.809	1.806	0.049	0.002	0.149	100	4	99	3	133	71	0.99	99	3	3%
LP070120-1s-93	AGG 1	700	292	0.097	0.005	0.015	0.001	0.743	64.725	2.220	0.046	0.002	0.045	94	5	99	3	32	69	1.05	99	3	3%
LP070120-1L-55	AGG 1	1099	662	0.106	0.004	0.015	0.000	0.545	64.599	1.502	0.049	0.001	0.187	103	3	99	2	151	62	0.97	99	2	2%
LP070120-1s-79	AGG 1	608	546	0.105	0.005	0.016	0.000	0.847	64.226	1.567	0.049	0.001	-0.520	102	4	100	2	159	62	0.98	100	2	2%
LP070120-1s-74	AGG 1	202.4	98.4	0.110	0.008	0.016	0.000	0.415	63.980	1.474	0.051	0.003	-0.118	106	7	100	2	230	140	0.95	100	2	2%
LP070120-1s-5	AGG 1	134.4	87.2	0.115	0.020	0.016	0.000	0.784	63.291	1.602	0.052	0.008	-0.647	110	18	101	3	190	250	0.92	101	3	3%
LP070120-1s-110	AGG 1	1868	1486	0.114	0.003	0.016	0.000	0.513	63.091	1.314	0.053	0.001	0.354	110	3	101	2	303	50	0.92	101	2	2%
LP070120-1L-9	AGG 1	495	162	0.106	0.007	0.016	0.000	0.519	62.617	1.725	0.048	0.003	-0.092	102	6	102	3	110	110	1.00	102	3	3%
LP070120-1L-1	AGG 1	175	73.4	0.122	0.009	0.016	0.001	0.251	61.275	2.027	0.054	0.004	0.194	117	8	104	3	340	150	0.89	104	3	3%
LP070120-1L-45	AGG 1	301	234	0.144	0.006	0.021	0.001	0.554	47.847	1.969	0.050	0.002	0.511	137	5	133	5	186	84	0.97	133	5	4%
LP070120-1s-85	AGG 1	624	189.2	0.139	0.007	0.021	0.001	0.759	47.801	1.165	0.048	0.002	-0.394	132	6	133	3	109	72	1.01	133	3	2%
LP070120-1s-71	AGG 1	1244	1563	0.141	0.004	0.021	0.000	0.774	47.755	1.003	0.049	0.001	-0.068	134	4	134	3	157	43	1.00	134	3	2%
LP070120-1s-41	AGG 1	617.1	605	0.148	0.004	0.021	0.000	0.863	47.237	0.692	0.051	0.001	-0.457	140	4	135	2	238	53	0.96	135	2	1%
LP070120-1s-120	AGG 1	720	572	0.141	0.004	0.021	0.000	0.769	46.948	0.904	0.048	0.001	-0.166	134	4	136	3	106	43	1.01	136	3	2%
LP070120-1L-28	AGG 1	577	490	0.146	0.008	0.021	0.001	0.769	46.707	1.287	0.049	0.002	-0.252	138	7	137	4	150	72	0.99	137	4	3%
LP070120-1L-16	AGG 1	353.8	216.9	0.146	0.008	0.022	0.001	0.700	46.468	1.317	0.050	0.002	-0.210	138	7	137	4	170	84	0.99	137	4	3%
LP070120-1L-40	AGG 1	817	519	0.147	0.005	0.022	0.000	0.796	46.490	1.059	0.050	0.001	-0.183	139	4	137	3	166	51	0.99	137	3	2%
LP070120-1s-42	AGG 1	280	202.4	0.155	0.010	0.022	0.000	0.513	46.404	1.034	0.052	0.003	-0.177	146	9	137	3	280	120	0.94	137	3	2%
LP070120-1L-34	AGG 1	482.4	390	0.145	0.006	0.022	0.000	0.598	46.382	1.011	0.049	0.002	-0.109	137	5	138	3	138	70	1.00	138	3	2%
LP070120-1L-14	AGG 1	243	158	0.140	0.006	0.022	0.001	0.680	46.104	2.041	0.046	0.002	-0.052	133	5	138	6	26	92	1.04	138	6	4%
LP070120-1L-39	AGG 1	377	335	0.149	0.007	0.022	0.001	0.668	46.104	1.318	0.050	0.002	-0.055	141	6	138	4	177	73	0.98	138	4	3%
LP070120-1L-47	AGG 1	578	598	0.150	0.009	0.022	0.001	0.946	45.872	2.104	0.049	0.001	-0.171	141	8	139	7	163	62	0.98	139	7	5%
LP070120-1L-21	AGG 1	753	532	0.146	0.005	0.022	0.001	0.597	44.843	1.086	0.048	0.001	0.230	139	4	142	3	105	57	1.03	142	3	2%
LP070120-1s-29	AGG 1	333.9	613	0.167	0.006	0.024	0.000	0.489	40.967	0.738	0.050	0.002	0.043	156	5	156	3	178	78	0.99	156	3	2%
LP070120-1L-15	AGG 1	608	854	0.179	0.008	0.026	0.001	0.790	38.081	0.914	0.050	0.002	-0.447	167	7	167	4	173	68	1.00	167	4	2%
LP070120-1s-31	AGG 1	494.3	605	0.247	0.008	0.033	0.001	0.530	29.922	0.609	0.053	0.002	0.389	224	6	212	4	340	63	0.95	212	4	2%
LP070120-1s-7	AGG 1	312.9	425	0.247	0.010	0.034	0.001	0.663	29.780	0.612	0.053	0.002	-0.173	224	8	213	4	307	70	0.95	213	4	2%
LP070120-1s-28	AGG 1	241	330	0.297	0.011	0.038	0.001	0.601	26.137	0.478	0.056	0.002	-0.059	264	9	242	4	447	65	0.92	242	4	2%
LP070120-1L-25	AGG 1	376.3	388	0.306	0.011	0.042	0.001	0.768	23.585	0.556	0.053	0.001	-0.134	271	9	268	7	315	54	0.99	268	7	2%
LP070120-1s-81	AGG 1	257.7	308	0.318	0.012	0.043	0.001	0.677	23.148	0.536	0.054	0.002	-0.102	280	10	273	6	347	67	0.97	273	6	2%
LP070120-1s-52	AGG 1	1133	614	0.348	0.017	0.048	0.002	0.973	21.053	0.931	0.054	0.001	-0.235	303	12	299	13	349	28	0.99	299	13	4%
LP070120-1L-38	AGG 1	68.8	58.4	0.414	0.031	0.054	0.002	0.529	18.382	0.777	0.055	0.003	-0.010	350	22	341	14	400	130	0.97	341	14	4%
LP070120-1s-57	AGG 1	439.1	275	0.438	0.011	0.059	0.001	0.820	16.863	0.341	0.054	0.001	-0.021	369	8	372	8	365	35	1.01	372	8	2%
LP070120-1s-13	AGG 1	174.7	91	0.523	0.018	0.066	0.001	0.427	15.244	0.325	0.058	0.002	0.242	427	12	409	8	510	65	0.96	409	8	2%
LP070120-1s-25	AGG 1	445	396	0.499	0.012	0.066	0.001	0.643	15.244	0.279	0.056	0.001	0.109	411	9	410	8	427	43	1.00	410	8	2%
LP070120-1s-87	AGG 1	357.1	154.3	0.544	0.026	0.066	0.001	0.335	15.129	0.320	0.060	0.003	0.109	440	17	413	9	584	92	0.94	413	9	2%
LP070120-1s-37	AGG 1	672	89.7	0.530	0.012	0.067	0.001	0.748	15.015	0.293	0.058	0.001	0.236	432	8	416	8	530	32	0.96	416	8	2%
LP070120-1s-124	AGG 1	466	358.7	0.501	0.015	0.067	0.002	0.812	15.015	0.383	0.054	0.001	0.119	412	10	416	10	383	40	1.01	416	10	2%
LP070120-1s-20	AGG 1	85.2	90	0.552	0.024	0.068	0.001	0.465	14.641	0.300	0.059	0.002	-0.002	446	16	426	9	546	85	0.95	426	9	2%
LP070120-1L-4	AGG 1	256.1	316.9	0.521	0.023	0.069	0.003	0.894	14.577	0.552	0.055	0.001	0.019	425	15	428	15	405	43	1.01	428	15	4%
LP070120-1L-10	AGG 1	725	503.1	0.540	0.016	0.070	0.002	0.900	14.265	0.407	0.056	0.001	0.073	438	10	437	12	451	28	1.00	437	12	3%
LP070120-1s-127	AGG 1	385.7	369	0.564	0.018	0.072	0.002	0.696	13.966	0.312	0.057	0.001	-0.034	453	12	446	10	477	48	0.98	446	10	2%
LP070120-1s-32	AGG 1	307.8	279.3	0.590	0.021	0.072	0.001	0.338	13.889	0.251	0.060	0.002	0.287	470	13	448	8	588	66	0.95	448	8	2%
LP070120-1s-11	AGG 1	433	351	0.578	0.020	0.072	0.002	0.869	13.850	0.326	0.058	0.001	-0.372	463	13	449	10	517	37	0.97	449	10	2%
LP070120-1L-33	AGG 1	301	387	0.575	0.026	0.073	0.003	0.859	13.643	0.558	0.057	0.001	0.074	460	17	456	18	491	51	0.99	456	18	4%
LP070120-1L-11	AGG 1	335	430	0.582	0.028	0.075	0.004	0.888	13.333	0.747	0.057	0.002	0.494	465	18	466	25	477	58	1.00	466	25	5%
LP070120-1L-24	AGG 1	147	95	0.807	0.037	0.098	0.004	0.850	10.163	0.444	0.060	0.002	0.229	599	21	605	25	603	54	1.01	605	25	4%
LP070120-1s-69	AGG 1	251	451	0.859	0.027	0.100	0.002	0.687	10.000	0.210	0.063	0.002	-0.023	629	15	615	12	692	51	0.98	615	12	2%
LP070120-1s-51	AGG 1	325	489	0.838	0.028	0.100	0.003	0.755	9.980	0.289	0.061	0.001	0.060	618	16	616	17	637	51	1.00	616	17	3%
LP070120-1L-36	AGG 1	230.3	351	0.839	0.029	0.101	0.003	0.681	9.881	0.264	0.060	0.002	0.127	618	16	621	16	609	56	1.00	621	16	3%
LP070120-1L-22	AGG 1	87.8	132.4	0.879	0.039	0.107	0.003	0.681	9.390	0.291	0.060	0.002	-0.026	639	21	652	19	610	70	1.02	652	19	3%
LP070120-1s-121	AGG 1	606	188.1	1.619	0.063	0.160	0.005	0.952	6.238	0.210	0.073	0.001	-0.271	976	24	958	30	1014	24	0.98	958	30	3%
LP070120-1s-113	AGG 1	474	114.4	1.793	0.047	0.167	0.004	0.920	5.988	0.147	0.078	0.001	0.110	1042	17	995	23	1146	20	0.95	995	23	2%
LP070120-1s-59	AGG 1	651	135.5	1.924	0.050	0.167	0.004	0.913	5.974	0.146	0.084	0.001	0.006	1088	17	998	23	1289	21	0.92	998	23	2%
LP070120-1s-109	AGG 1	162.5	79.2	1.676	0.050	0.168	0.005	0.825	5.963	0.167	0.073	0.001	0.202	998	19	999	26	1003	35	1.00	999	26	3%
LP070120-1s-117	AGG 1	136.7	56.5	1.679	0.051	0.168	0.005	0.857	5.938	0.162	0.072	0.001	0.042	999	19	1003	25	993	30	1.00	1003	25	2%
LP070120-1s-44	AGG 1	199.3	108.7	2.014	0.073	0.169	0.004	0.807	5.928	0.155	0.086	0.002	-0.091	1118	24	1005	24	1346	33	0.90	1005	24	2%
LP070120-1s-9	AGG 1	141.8	70	2.133	0.061	0.175	0.004	0.826	5.711	0.130	0.087	0.001	-0.062	1158	20	1040	22	1358	25	0.90	1040	22	2%
LP070120-1s-27	AGG 1	182.3	109.2	1.782	0.041	0.176	0.004	0.832	5.695	0.114	0.074	0.001	0.001	1038	15	1043	19	1041	26	1.00	1043	19	2%
LP070120-1s-39	AGG 1	181.1	276	1.812	0.043	0.176	0.003	0.865	5.692	0.104	0.075	0.001	-0.190	1049	16	1043	18	1074	22	0.99	1043	18	2%
LP070120-1s-94	AGG 1	190.7	97.3	1.818	0.052	0.176	0.004	0.758	5.685	0.133	0.075	0.001	0.175	1051	18	1044	22	1070	37	0.99	1044	22	2%
LP070120-1s-56	AGG 1	265.8	424	1.836	0.042	0.178	0.003	0.827	5.634	0.098	0.076	0.001	-0.087	1058	15	1053	17	1081	26	1.00	1053	17	2%
LP070120-1L-12	AGG 1	433	188	1.835	0.056	0.179	0.005	0.954	5.580	0.168	0.075	0.001	0.151	1057	20	1062	30	1059	19	1.00	1062	30	3%
LP070120-1L-20	AGG 1	58	107	1.900	0.120	0.183	0.013	0.852	5.464	0.388	0.077	0.003	0.386	1079	43	1080	70	1103	74	1.00	1080	70	6%
LP070120-1s-48	AGG 1	727	211.8	1.980	0.071	0.188	0.005	0.964	5.333	0.148	0.077	0.001	-0.594	1107	24	1107	28	1119	24	0.99	1119	24	2%
LP070120-1s-17	AGG 1	197.9	145.5	2.228	0.062	0.194	0.004	0.757	5.165	0.104	0.083	0.002	-0.066	1189	20	1141	21	1276	35	0.89	1276	35	3%
LP070120-1s-98	AGG 1	827	557	2.193	0.046	0.195	0.003	0.949	5.133	0.087	0.082	0.001	-0.406	1178	14	1147	18	1241	14	0.92	1241	14	1%
LP070120-1s-38	AGG 1	814	467	2.305	0.035	0.196	0.003	0.957	5.105	0.089	0.086	0.001	-0.191	1214	11	1153	18	1347	12	0.86	1347	12	1%
LP070120-1s-3	AGG 1	108.1	74.8	2.260	0.059	0.200	0.004	0.819	5.008	0.108	0.081	0.001	0.134	1199	18	1174	23	1219	30	0.96	1219	30	2%
LP070120-1s-50	AGG 1	537	569	2.348	0.059	0.206	0.004	0.923	4.850	0.096	0.083	0.001	-0.261	1226	18	1209	22	1269	20	0.95	1269	20	2%
LP070120-1s-55	AGG 1	1444	112.2	2.750	0.033	0.221	0.003	0.937	4.527	0.055	0.091	0.000	-0.075	1342	9	1287	14	1452	9	0.89	1452	9	1%
LP070120-1s-92	AGG 1	123.2	268	2.679	0.087	0.224	0.006	0.831	4.470	0.114	0.087	0.002	-0.037	1321	24	1301	30	1360	34	0.96	1360	34	3%
LP070120-1L-32	AGG 1	215.3	134.1	2.676	0.087	0.231	0.006	0.938	4.338	0.117	0.085	0.001	-0.263	1320	24	1336	33	1304	21	1.02	1304	21	2%
LP070120-1s-82	AGG 1	187	174.5	2.994	0.085	0.243	0.006	0.867	4.120	0.107	0.090	0.001	0.088	1405	22	1400	33	1420	27	0.99	1420	27	2%
LP070120-1s-111	AGG 1	349	271	3.050	0.110	0.245	0.008	0.927	4.078	0.140	0.090	0.001	-0.007	1417	28	1413	43	1431	25	0.99	1431	25	2%
LP070120-1s-86	AGG 1	206.3	105.5	3.060	0.091	0.246	0.007	0.914	4.073	0.111	0.091	0.001	0.078	1421	22	1415	35	1439	23	0.98	1439	23	2%
LP070120-1s-119	AGG 1	143	250.6	3.084	0.096	0.250	0.007	0.911	3.995	0.109	0.089	0.001	-0.021	1427	23	1439	35	1410	24	1.02	1410	24	2%
LP070120-1L-51	AGG 1	247	232	3.205	0.059	0.250	0.004	0.841	3.994	0.056	0.092	0.001	-0.201	1458	15	1440	18	1461	19	0.99	1461	19	1%
LP070120-1s-62	AGG 1	139.6	123.9	3.210	0.110	0.254	0.007	0.885	3.943	0.104	0.092	0.001	-0.184	1458	26	1456	35	1474	29	0.99	1474	29	2%
LP070120-1s-128	AGG 1	557	329	3.450	0.100	0.258	0.008	0.969	3.882	0.118	0.096	0.001	0.174	1515	24	1477	40	1555	11	0.95	1555	11	1%
LP070120-1s-49	AGG 1	212	134.4	3.307	0.081	0.260	0.007	0.869	3.848	0.102	0.093	0.001	0.359	1482	19	1489	35	1485	26	1.00	1485	26	2%
LP070120-1L-8	AGG 1	294	168.2	3.711	0.093	0.260	0.008	0.937	3.840	0.121	0.104	0.001	0.652	1572	20	1491	42	1688	21	0.88	1688	21	1%
LP070120-1s-102	AGG 1	351	119.8	3.650	0.140	0.271	0.011	0.962	3.690	0.150	0.098	0.001	0.475	1557	30	1547	57	1582	22	0.98	1582	22	1%
LP070120-1s-24	AGG 1	939	471	4.025	0.093	0.277	0.006	0.978	3.608	0.074	0.106	0.001	-0.359	1638	19	1577	29	1728	9	0.91	1728	9	1%
LP070120-1s-73	AGG 1	429	207	4.140	0.130	0.288	0.008	0.954	3.473	0.094	0.105	0.001	-0.120	1660	25	1630	39	1710	15	0.95	1710	15	1%
LP070120-1s-58	AGG 1	395	69	4.048	0.081	0.291	0.005	0.935	3.436	0.061	0.102	0.001	-0.127	1643	16	1646	26	1653	13	1.00	1653	13	1%
LP070120-1s-72	AGG 1	593	486	4.251	0.085	0.295	0.006	0.965	3.391	0.068	0.105	0.001	0.123	1683	16	1666	29	1716	11	0.97	1716	11	1%
LP070120-1s-88	AGG 1	620	617	4.350	0.075	0.297	0.004	0.899	3.362	0.050	0.106	0.001	-0.079	1702	14	1678	22	1739	14	0.96	1739	14	1%
LP070120-1s-1	AGG 1	368.9	239	4.369	0.079	0.298	0.004	0.884	3.360	0.046	0.105	0.001	-0.286	1706	15	1679	20	1713	16	0.98	1713	16	1%
LP070120-1s-8	AGG 1	496.9	156.6	4.433	0.083	0.299	0.005	0.920	3.347	0.052	0.106	0.001	-0.270	1718	16	1685	23	1740	14	0.97	1740	14	1%
LP070120-1s-125	AGG 1	1089	283.8	4.580	0.130	0.301	0.009	0.971	3.328	0.099	0.110	0.001	-0.020	1743	24	1693	44	1799	10	0.94	1799	10	1%
LP070120-1s-34	AGG 1	321.4	301	4.496	0.082	0.309	0.005	0.944	3.236	0.053	0.106	0.001	0.071	1729	15	1736	25	1734	13	1.00	1734	13	1%

LP070120-1s-101	AGG 1	162.9	265	4.790	0.150	0.310	0.010	0.945	3.226	0.104	0.112	0.001	0.189	1781	27	1741	50	1835	19	0.95	1835	19	1%
LP070120-1s-43	AGG 1	231.2	377.7	5.130	0.100	0.332	0.006	0.913	3.016	0.057	0.113	0.001	-0.027	1841	17	1846	31	1846	14	1.00	1846	14	1%
LP070120-1s-21	AGG 1	556	115.1	6.360	0.120	0.361	0.007	0.935	2.769	0.050	0.128	0.001	0.018	2025	17	1987	31	2072	12	0.96	2072	12	1%
LP070120-1L-7	AGG 1	499	282.5	6.330	0.170	0.365	0.009	0.980	2.741	0.066	0.126	0.001	-0.266	2021	23	2004	41	2040	9	0.98	2040	9	0%
LP070120-1s-114	AGG 1	178.6	375.3	6.190	0.130	0.365	0.006	0.857	2.741	0.048	0.123	0.001	-0.042	2001	19	2004	30	2001	20	1.00	2001	20	1%
LP070120-1s-6	AGG 1	302	257	8.040	0.160	0.404	0.008	0.944	2.477	0.050	0.143	0.001	0.266	2235	18	2185	38	2261	11	0.97	2261	11	0%
LP070120-1s-16	AGG 1	1409	1122	12.910	0.340	0.457	0.014	0.967	2.188	0.067	0.205	0.002	0.555	2671	25	2424	61	2866	13	0.85	2866	13	0%
LP070120-1s-83	AGG 1	435	486	11.680	0.300	0.490	0.012	0.970	2.041	0.050	0.174	0.001	0.031	2577	24	2567	53	2593	9	0.99	2593	9	0%
LP070120-1s-4	AGG 1	82.9	92.5	13.990	0.230	0.524	0.011	0.919	1.908	0.040	0.189	0.001	0.273	2748	15	2716	48	2736	11	0.99	2736	11	0%
LP070120-1s-95	AGG 1	380	304	15.800	0.400	0.536	0.013	0.969	1.866	0.045	0.215	0.001	-0.065	2863	24	2766	54	2941	8	0.94	2941	8	0%
LP070120-1s-60	AGG 1	92.8	226.8	14.170	0.310	0.540	0.012	0.938	1.852	0.041	0.192	0.002	0.276	2760	21	2780	52	2757	13	1.01	2757	13	0%
Rejected Grains																							
LP070120-1s-105	AGG 1	2810	4290	0.004	0.000	0.000	0.000	0.006	2493.766	80.845	0.079	0.006	0.363	4	0	3	0	1120	160	0.60	3	0	3%
LP070120-1s-116	AGG 1	1496	664	0.004	0.001	0.001	0.000	0.205	1536.098	56.630	0.050	0.007	0.059	4	1	4	0	140	250	0.97	4	0	4%
LP070120-1s-54	AGG 1	1599	2270	0.005	0.000	0.001	0.000	0.450	1497.006	51.544	0.057	0.006	-0.163	5	1	4	0	410	210	0.85	4	0	3%
LP070120-1L-62	AGG 1	581	314	0.008	0.001	0.001	0.000	-0.068	905.797	36.101	0.052	0.006	0.374	8	1	7	0	310	270	0.85	7	0	4%
LP070120-1s-106	AGG 1	1640	1682	0.008	0.001	0.001	0.000	0.135	899.281	25.070	0.051	0.005	0.269	8	1	7	0	220	190	0.90	7	0	3%
LP070120-1L-6	AGG 1	3430	2440	0.008	0.000	0.001	0.000	0.559	881.057	27.945	0.050	0.002	0.118	8	0	7	0	190	91	0.94	7	0	3%
LP070120-1L-23	AGG 1	257	210.5	0.011	0.003	0.002	0.000	0.090	636.537	26.742	0.053	0.013	0.023	12	3	10	0	220	450	0.88	10	0	4%
LP070120-1L-2	AGG 1	397.3	365	0.012	0.002	0.002	0.000	0.307	610.501	19.008	0.051	0.009	-0.163	12	2	11	0	150	300	0.91	11	0	3%
LP070120-1s-26	AGG 1	523	585.8	0.011	0.002	0.002	0.000	0.169	604.595	19.373	0.047	0.009	0.057	11	2	11	0	10	320	1.00	11	0	3%
LP070120-1L-13	AGG 1	208	146	0.017	0.004	0.002	0.000	-0.218	581.395	37.182	0.075	0.021	0.341	17	4	11	1	630	530	0.66	11	1	6%
LP070120-1L-61	AGG 1	156.8	206.7	0.014	0.006	0.002	0.000	-0.148	566.893	24.103	0.060	0.024	0.192	14	6	11	0	160	650	0.79	11	0	4%
LP070120-1L-53	AGG 1	17830	12220	0.013	0.000	0.002	0.000	0.508	546.747	8.071	0.051	0.001	0.235	13	0	12	0	240	43	0.90	12	0	1%
LP070120-1L-26	AGG 1	322	197.6	0.017	0.002	0.003	0.000	0.246	398.089	15.214	0.049	0.007	0.118	17	2	16	1	100	250	0.96	16	1	4%
LP070120-1L-49	AGG 1	626	504	0.018	0.002	0.003	0.000	0.147	396.511	11.320	0.052	0.005	0.157	18	2	16	0	260	200	0.88	16	0	3%
LP070120-1s-12	AGG 1	136.6	102.6	0.020	0.005	0.003	0.000	0.067	390.625	16.785	0.058	0.013	0.015	20	5	16	1	340	430	0.81	16	1	4%
LP070120-1L-48	AGG 1	131.2	87.7	0.019	0.006	0.003	0.000	0.260	388.803	14.814	0.052	0.017	-0.098	19	6	17	1	50	550	0.89	17	1	4%
LP070120-1L-19	AGG 1	349.4	251.4	0.018	0.002	0.003	0.000	-0.110	384.025	14.305	0.051	0.007	0.411	18	2	17	1	210	260	0.93	17	1	4%
LP070120-1s-46	AGG 1	289.2	212.5	0.018	0.003	0.003	0.000	-0.232	383.289	12.047	0.052	0.010	0.395	18	3	17	1	190	350	0.92	17	1	3%
LP070120-1L-42	AGG 1	158.8	132	0.024	0.005	0.003	0.000	0.252	381.679	21.852	0.066	0.014	-0.004	24	5	17	1	580	390	0.70	17	1	6%
LP070120-1L-46	AGG 1	395	205.5	0.020	0.003	0.003	0.000	0.495	378.788	15.783	0.055	0.007	-0.178	21	3	17	1	360	240	0.83	17	1	4%
LP070120-1L-60	AGG 1	173.5	142.8	0.024	0.005	0.003	0.000	-0.050	378.788	14.348	0.067	0.014	0.171	24	5	17	1	610	460	0.70	17	1	4%
LP070120-1s-107	AGG 1	222	112.3	0.020	0.004	0.003	0.000	-0.024	367.647	17.571	0.054	0.011	0.232	20	4	18	1	250	370	0.88	18	1	5%
LP070120-1s-18	AGG 1	280.7	186.1	0.044	0.007	0.003	0.000	0.692	358.423	16.701	0.113	0.015	-0.422	44	7	18	1	1710	280	0.41	18	1	5%
LP070120-1s-126	AGG 1	108.2	129.7	0.045	0.008	0.005	0.000	0.157	189.036	8.576	0.062	0.011	0.027	45	8	34	2	520	320	0.76	34	2	5%
LP070120-1L-27	AGG 1	330.1	225.2	0.047	0.004	0.007	0.000	0.237	140.647	3.561	0.048	0.004	0.112	47	4	46	1	120	150	0.98	46	1	2%
LP070120-1s-115	AGG 1	556.9	364	0.054	0.003	0.008	0.000	0.178	131.406	2.763	0.051	0.003	0.256	53	3	49	1	220	110	0.92	49	1	2%
LP070120-1s-103	AGG 1	176	75.3	0.155	0.025	0.012	0.000	0.613	84.531	2.858	0.094	0.013	-0.465	145	21	76	3	1400	210	0.52	76	3	3%
LP070120-1L-37	AGG 1	240	1317	0.259	0.011	0.013	0.000	0.371	79.177	1.818	0.149	0.006	0.205	234	9	81	2	2327	73	0.35	81	2	2%
LP070120-1s-67	AGG 1	224.3	58.5	0.349	0.015	0.014	0.000	0.568	73.529	1.784	0.187	0.007	0.032	304	11	87	2	2712	59	0.29	87	2	2%
LP070120-1s-89	AGG 1	697	279.2	0.132	0.005	0.014	0.000	0.136	69.061	1.383	0.067	0.003	0.331	126	5	93	2	806	88	0.74	93	2	2%
LP070120-1s-112	AGG 1	355	114	0.128	0.009	0.015	0.000	0.463	65.359	1.538	0.061	0.004	-0.088	122	8	98	2	590	140	0.80	98	2	2%
LP070120-1s-30	AGG 1	517	417	0.247	0.028	0.016	0.000	0.839	61.050	1.416	0.109	0.010	-0.766	223	23	105	2	1710	190	0.47	105	2	2%
LP070120-1s-77	AGG 1	740	493	0.288	0.078	0.017	0.001	0.899	58.241	3.019	0.115	0.025	-0.840	246	58	110	6	1580	350	0.45	110	6	5%
LP070120-1s-36	AGG 1	688	255.7	0.216	0.015	0.018	0.000	0.427	56.883	1.132	0.090	0.006	-0.213	198	12	112	2	1390	110	0.57	112	2	2%
LP070120-1s-45	AGG 1	523	358	0.157	0.006	0.019	0.000	0.494	52.549	1.270	0.060	0.002	0.132	148	5	122	3	607	72	0.82	122	3	2%
LP070120-1s-99	AGG 1	141.2	153.2	1.450	0.260	0.024	0.003	0.988	41.841	4.552	0.414	0.045	-0.953	870	120	152	17	3880	200	0.17	152	17	11%
LP070120-1L-57	AGG 1	60.4	28.5	1.360	0.130	0.025	0.003	-0.101	40.650	4.462	0.397	0.062	0.825	869	55	156	17	3890	230	0.18	156	17	11%
LP070120-1L-18	AGG 1	267.8	334	0.570	0.300	0.027	0.003	0.972	36.630	3.757	0.121	0.051	-0.924	370	160	174	17	1060	590	0.47	174	17	10%
LP070120-1s-53	AGG 1	1392	124.7	0.312	0.011	0.029	0.001	0.927	33.910	0.851	0.076	0.001	-0.187	275	9	187	5	1101	26	0.68	187	5	3%
LP070120-1s-14	AGG 1	278	215.3	0.789	0.078	0.031	0.001	0.873	31.939	0.836	0.180	0.015	-0.811	584	47	199	5	2660	140	0.34	199	5	3%
LP070120-1L-30	AGG 1	915	1650	0.651	0.032	0.034	0.002	0.891	29.240	1.624	0.140	0.003	0.368	508	20	217	12	2218	41	0.43	217	12	6%
LP070120-1s-19	AGG 1	535	477	1.330	0.290	0.058	0.003	0.937	17.241	0.803	0.160	0.027	-0.885	810	120	363	16	2230	340	0.45	363	16	4%
LP070120-1s-100	AGG 1	626	323	0.575	0.042	0.059	0.003	0.793	17.065	0.845	0.071	0.003	-0.166	459	27	367	18	947	82	0.80	367	18	5%
LP070120-1s-84	AGG 1	1408	244	0.743	0.064	0.061	0.005	0.996	16.313	1.251	0.088	0.001	-0.729	560	37	383	28	1377	23	0.68	383	28	7%
LP070120-1s-76	AGG 1	711	260.9	0.965	0.028	0.081	0.002	0.926	12.376	0.322	0.087	0.001	-0.248	685	14	501	12	1362	23	0.73	501	12	2%
LP070120-1L-58	AGG 1	1810	373	2.350	0.550	0.117	0.024	0.998	8.547	1.753	0.140	0.004	-0.654	1160	140	700	130	2224	43	0.60	700	130	19%
LP070120-1s-15	AGG 1	846	1697	1.762	0.043	0.138	0.004	0.866	7.262	0.227	0.093	0.002	0.659	1031	16	831	24	1483	33	0.81	831	24	3%
LP070120-1L-44	AGG 1	1160	482	2.940	0.260	0.192	0.018	0.999	5.208	0.488	0.111	0.001	0.884	1380	64	1127	97	1815	16	0.62	1127	97	9%
LP070120-1s-47	AGG 1	217.2	145.5	3.870	0.120	0.259	0.006	0.972	3.858	0.095	0.109	0.002	0.006	1606	26	1485	33	1780	26	0.83	1485	33	2%
LP070120-1s-123	AGG 1	1960	233.6	4.560	0.110	0.266	0.007	0.687	3.764	0.092	0.124	0.003	0.028	1740	20	1519	33	2014	35	0.75	1519	33	2%
LP070120-1s-35	AGG 1	1130	670	9.190	0.910	0.357	0.034	0.999	2.801	0.267	0.188	0.001	-0.483	2334	87	1950	160	2722.2	9	0.72	1950	160	8%

Sample LP070120-2

				Measured isotopic ratios										Isotopic ages and errors (Ma)									
Grain	Unit	U (ppm)	Th (ppm)	$^{207}Pb/^{235}U$	2σ	$^{206}Pb/^{238}U$	2σ	Error Correlation	$^{238}Pb/^{206}Pb$	2σ	$^{207}Pb/^{206}Pb$	2σ	Error Correlation	$^{207}Pb/^{235}U$	2σ	$^{206}Pb/^{238}U$	2σ	$^{207}Pb/^{206}Pb$	2σ	discordance	best age (Ma)	2σ	internal error
LP070120-2L-20	AGG 2	531	174	0.097	0.004	0.014	0.000	0.372	70.077	0.982	0.049	0.002	-0.056	94	4	91	1	137	93	0.97	91	1	1%
LP070120-2s-42	AGG 2	852	444	0.106	0.003	0.015	0.000	0.185	66.007	0.871	0.050	0.002	0.224	103	3	97	1	187	82	0.94	97	1	1%
LP070120-2L-10	AGG 2	233	33.3	0.147	0.007	0.021	0.001	0.281	46.533	1.234	0.050	0.002	0.159	139	6	137	4	173	91	0.98	137	4	3%
LP070120-2s-16	AGG 2	553	433	0.281	0.008	0.039	0.000	0.235	25.445	0.291	0.051	0.002	0.227	251	7	249	3	253	66	0.99	249	3	1%
LP070120-2s-6	AGG 2	1538	920	0.280	0.007	0.039	0.000	0.748	25.439	0.311	0.052	0.001	-0.458	250	5	249	3	270	36	0.99	249	3	1%
LP070120-2s-5	AGG 2	858	507	0.314	0.008	0.040	0.001	0.286	24.704	0.317	0.056	0.001	0.118	277	6	256	3	452	49	0.92	256	3	1%
LP070120-2L-23	AGG 2	791	299	0.290	0.009	0.041	0.001	0.752	24.691	0.445	0.052	0.001	-0.216	259	7	256	5	269	45	0.99	256	5	2%
LP070120-2L-15	AGG 2	599	265	0.294	0.006	0.041	0.001	0.589	24.570	0.453	0.052	0.001	0.187	262	5	257	5	294	44	0.98	257	5	2%
LP070120-2L-5	AGG 2	900	499	0.298	0.007	0.042	0.001	0.807	23.964	0.494	0.052	0.001	0.074	265	6	264	5	283	32	1.00	264	5	2%
LP070120-2L-17	AGG 2	345	199	0.308	0.010	0.043	0.001	0.756	23.419	0.603	0.052	0.001	-0.160	273	8	270	7	262	61	0.99	270	7	2%
LP070120-2L-2	AGG 2	516	442	0.312	0.006	0.043	0.001	0.696	23.105	0.326	0.053	0.001	-0.089	276	5	273	4	308	35	0.99	273	4	1%
LP070120-2s-9	AGG 2	504	75.5	0.323	0.009	0.044	0.001	0.301	22.645	0.379	0.053	0.002	0.292	284	7	279	5	332	62	0.98	279	5	2%
LP070120-2s-13	AGG 2	239.4	271.6	0.356	0.012	0.049	0.001	0.546	20.534	0.464	0.053	0.002	0.025	309	9	306	7	302	68	0.99	306	7	2%
LP070120-2s-19	AGG 2	469	229	0.433	0.011	0.056	0.001	0.504	17.857	0.220	0.057	0.001	0.031	365	8	351	4	475	47	0.96	351	4	1%
LP070120-2s-33	AGG 2	1350	820	0.413	0.008	0.056	0.001	0.721	17.794	0.317	0.053	0.001	0.298	351	6	352	6	347	28	1.00	352	6	2%
LP070120-2s-18	AGG 2	1062	284.6	0.478	0.010	0.063	0.001	0.763	15.853	0.186	0.055	0.001	-0.326	396	7	394	5	410	31	1.00	394	5	1%
LP070120-2s-26	AGG 2	1172	305	0.495	0.012	0.063	0.001	0.537	15.848	0.327	0.056	0.001	0.293	408	8	394	8	466	47	0.97	394	8	2%
LP070120-2s-3	AGG 2	395	172	0.503	0.014	0.067	0.001	0.524	15.035	0.215	0.055	0.001	0.054	413	10	415	6	387	49	1.00	415	6	1%
LP070120-2L-12	AGG 2	82.6	37.3	0.545	0.023	0.072	0.001	0.613	13.966	0.273	0.056	0.002	-0.294	445	16	446	9	425	82	1.00	446	9	2%
LP070120-2s-41	AGG 2	478	548	0.606	0.028	0.073	0.004	0.919	13.736	0.755	0.062	0.001	0.294	480	18	453	24	655	42	0.94	453	24	5%
LP070120-2s-24	AGG 2	785	305.2	0.657	0.015	0.080	0.001	0.716	12.484	0.203	0.060	0.001	-0.073	512	9	497	8	588	38	0.97	497	8	2%
LP070120-2s-2	AGG 2	1458	327	0.666	0.024	0.081	0.003	0.958	12.361	0.413	0.060	0.001	-0.274	518	14	501	16	590	21	0.97	501	16	3%
LP070120-2s-40	AGG 2	500	70.1	0.673	0.013	0.084	0.001	0.763	11.976	0.158	0.059	0.001	-0.332	523	8	517	7	554	35	0.99	517	7	1%
LP070120-2s-8	AGG 2	326.9	251.9	0.710	0.018	0.086	0.002	0.756	11.696	0.219	0.060	0.001	-0.219	545	11	529	10	608	40	0.97	529	10	2%
LP070120-2s-20	AGG 2	337	478.2	0.730	0.018	0.089	0.002	0.749	11.249	0.190	0.060	0.001	-0.002	556	11	549	9	596	32	0.99	549	9	2%
LP070120-2s-1	AGG 2	348.5	238.7	0.740	0.015	0.090	0.001	0.377	11.123	0.148	0.059	0.001	0.269	562	9	555	7	580	37	0.99	555	7	1%
LP070120-2s-12	AGG 2	306	64.3	0.775	0.016	0.092	0.001	0.252	10.897	0.090	0.062	0.001	0.194	582	9	566	5	656	49	0.97	566	5	1%
LP070120-2L-14	AGG 2	1200	73	0.990	0.270	0.093	0.022	0.999	10.753	2.544	0.069	0.005	-0.984	640	150	570	130	850	170	0.89	570	130	23%
LP070120-2s-36	AGG 2	517.4	226.6	0.789	0.017	0.095	0.001	0.601	10.537	0.122	0.060	0.001	-0.100	591	10	585	6	596	34	0.99	585	6	1%
LP070120-2s-21	AGG 2	174.1	143.8	0.950	0.042	0.102	0.003	0.845	9.804	0.279	0.068	0.002	-0.284	677	22	626	17	875	57	0.92	626	17	3%
LP070120-2L-16	AGG 2	120.5	77.5	0.844	0.044	0.102	0.003	0.604	9.785	0.259	0.061	0.002	-0.119	619	24	627	16	617	74	1.01	627	16	3%
LP070120-2L-4	AGG 2	596	140	1.260	0.110	0.125	0.007	0.984	8.013	0.456	0.072	0.002	-0.852	820	48	758	41	988	60	0.92	758	41	5%
LP070120-2L-19	AGG 2	193.1	59.9	1.607	0.042	0.163	0.003	0.834	6.139	0.124	0.071	0.001	0.036	972	16	972	18	957	26	1.00	972	18	2%
LP070120-2s-22	AGG 2	237.4	102.4	1.683	0.027	0.164	0.003	0.683	6.090	0.093	0.075	0.001	0.349	1004	10	980	14	1065	29	0.98	980	14	1%
LP070120-2s-27	AGG 2	1133	1476	1.684	0.025	0.167	0.002	0.859	5.992	0.068	0.074	0.001	-0.144	1002	10	995	10	1030	14	0.99	995	10	1%
LP070120-2s-7	AGG 2	125.1	238.4	1.711	0.044	0.167	0.002	0.333	5.988	0.082	0.073	0.002	0.322	1012	17	996	13	1031	46	0.98	996	13	1%
LP070120-2s-29	AGG 2	412	182.6	1.798	0.027	0.172	0.003	0.815	5.821	0.091	0.076	0.001	0.281	1044	10	1022	15	1101	19	0.98	1022	15	1%
LP070120-2L-6	AGG 2	350	217	1.950	0.170	0.175	0.014	0.988	5.714	0.457	0.081	0.001	-0.535	1118	52	1035	79	1214	25	0.93	1035	79	8%
LP070120-2s-38	AGG 2	206.6	286	1.788	0.032	0.175	0.003	0.783	5.724	0.098	0.074	0.001	0.088	1041	12	1038	16	1048	26	1.00	1038	16	2%
LP070120-2s-23	AGG 2	255.1	82.3	1.840	0.029	0.177	0.003	0.658	5.647	0.086	0.075	0.001	0.287	1059	10	1051	15	1086	26	0.99	1051	15	1%
LP070120-2L-24	AGG 2	73.9	44.9	2.234	0.095	0.200	0.006	0.779	5.000	0.155	0.081	0.002	-0.074	1189	30	1175	33	1204	52	0.98	1204	52	4%
LP070120-2L-22	AGG 2	86.6	35.2	2.211	0.093	0.205	0.006	0.885	4.880	0.145	0.079	0.001	-0.288	1182	29	1201	33	1166	38	1.03	1166	38	3%
LP070120-2s-11	AGG 2	276.3	192.7	2.319	0.036	0.205	0.003	0.622	4.876	0.062	0.081	0.001	0.355	1218	11	1203	14	1225	29	0.98	1225	29	2%
LP070120-2s-35	AGG 2	213.5	196	2.548	0.075	0.224	0.005	0.914	4.458	0.089	0.084	0.001	-0.573	1291	23	1304	23	1288	33	1.01	1288	33	3%
LP070120-2s-39	AGG 2	148	109.4	2.880	0.130	0.232	0.011	0.894	4.310	0.204	0.092	0.002	0.813	1373	35	1345	60	1458	44	0.92	1458	44	3%
LP070120-2L-9	AGG 2	235.9	122	2.930	0.058	0.235	0.005	0.857	4.257	0.096	0.091	0.001	0.160	1389	15	1360	27	1446	26	0.94	1446	26	2%
LP070120-2L-1	AGG 2	205.3	112.6	2.875	0.053	0.239	0.003	0.881	4.193	0.054	0.088	0.001	-0.208	1375	14	1379	16	1376	19	1.00	1376	19	1%
LP070120-2s-28	AGG 2	175.4	142.3	3.179	0.059	0.242	0.004	0.597	4.131	0.072	0.095	0.002	0.341	1451	14	1398	22	1540	32	0.91	1540	32	2%
LP070120-2s-31	AGG 2	120.1	95.2	3.124	0.069	0.249	0.006	0.822	4.011	0.092	0.091	0.001	0.327	1438	17	1434	29	1444	27	0.99	1444	27	2%
LP070120-2s-4	AGG 2	434	121.8	3.384	0.045	0.262	0.003	0.879	3.820	0.047	0.093	0.001	0.026	1500	10	1499	17	1496	10	1.00	1496	10	1%
LP070120-2s-15	AGG 2	1308	154	3.742	0.057	0.268	0.004	0.960	3.731	0.053	0.102	0.000	-0.062	1580	12	1531	20	1659	8.6	0.92	1659	9	1%
LP070120-2L-21	AGG 2	316	107.2	4.059	0.084	0.286	0.004	0.897	3.492	0.052	0.102	0.001	0.021	1645	17	1623	22	1662	11	0.98	1662	11	1%
LP070120-2s-34	AGG 2	168.2	69	4.144	0.092	0.288	0.004	0.790	3.473	0.045	0.104	0.002	-0.299	1662	18	1631	18	1696	26	0.96	1696	26	2%
LP070120-2s-37	AGG 2	280.4	71.6	3.982	0.070	0.290	0.005	0.912	3.446	0.053	0.100	0.001	0.126	1630	14	1642	23	1619	14	1.01	1619	14	1%
LP070120-2L-13	AGG 2	207	149.4	4.085	0.063	0.292	0.003	0.928	3.429	0.032	0.102	0.000	-0.157	1651	13	1650	13	1663	9	0.99	1663	9	1%
LP070120-2L-7	AGG 2	54.1	54.4	4.120	0.150	0.293	0.009	0.900	3.409	0.103	0.101	0.002	-0.027	1663	31	1657	45	1633	31	1.01	1633	31	2%
LP070120-2L-8	AGG 2	54.3	52.4	4.360	0.190	0.305	0.010	0.914	3.279	0.107	0.102	0.002	-0.267	1709	33	1716	51	1659	28	1.03	1659	28	2%
LP070120-2L-18	AGG 2	291.1	142.3	6.020	0.110	0.340	0.006	0.923	2.940	0.054	0.128	0.001	0.242	1978	16	1887	30	2074	10	0.91	2074	10	0%
LP070120-2s-14	AGG 2	534	107.8	12.160	0.240	0.481	0.008	0.945	2.079	0.036	0.184	0.002	-0.209	2616	18	2531	37	2684	14	0.94	2684	14	1%
LP070120-2s-32	AGG 2	287	242.8	13.130	0.380	0.490	0.008	0.919	2.040	0.033	0.195	0.002	-0.613	2687	27	2571	35	2785	17	0.92	2785	17	1%
LP070120-2s-30	AGG 2	102.9	36.3	12.800	0.250	0.502	0.008	0.883	1.991	0.032	0.186	0.002	0.031	2664	18	2623	34	2704	16	0.97	2704	16	1%
Rejected Grains																							

LP070120-2L-3	AGG 2	13.6	3	1.950	0.210	0.028	0.003	0.865	35.714	4.082	0.512	0.046	0.537	1089	70	178	20	4250	140	0.16	178	20	11%
LP070120-2L-11	AGG 2	5.6	-1.7	1.850	0.330	0.025	0.003	0.860	40.486	5.245	0.546	0.030	-0.162	1060	120	157	20	4368	78	0.15	157	20	13%
LP070120-2s-10	AGG 2	385.5	375	0.343	0.011	0.040	0.001	0.613	25.265	0.364	0.063	0.002	-0.180	301	9	250	4	702	69	0.83	250	4	1%
LP070120-2s-17	AGG 2	1922	433	1.808	0.088	0.118	0.002	-0.009	8.511	0.174	0.115	0.007	0.513	1046	31	716	14	1860	100	0.68	716	14	2%
LP070120-2s-25	AGG 2	389	107.9	2.170	0.240	0.145	0.010	0.962	6.897	0.476	0.106	0.004	-0.753	1156	72	872	58	1717	64	0.75	872	58	7%

Sample LP080120-1

				Measured isotopic ratios										Isotopic ages and errors (Ma)									
Grain	Unit	U (ppm)	Th (ppm)	$^{207}Pb/^{235}U$	2σ	$^{206}Pb/^{238}U$	2σ	Error Correlation	$^{238}Pb/^{206}Pb$	2σ	$^{207}Pb/^{206}Pb$	2σ	Error Correlation	$^{207}Pb/^{235}U$	2σ	$^{206}Pb/^{238}U$	2σ	$^{207}Pb/^{206}Pb$	2σ	discordance	best age (Ma)	2σ	internal error
LP080120-1s-12	AGG 3	1597	503	0.094	0.002	0.014	0.000	0.700	71.788	0.721	0.049	0.001	-0.345	91	2	89	1	127	35	0.98	89	1	1%
LP080120-1L-13	AGG 3	214.9	132.7	0.093	0.004	0.014	0.000	0.285	71.276	1.219	0.048	0.002	0.192	90	3	90	2	92	71	1.00	90	2	2%
LP080120-1L-4	AGG 3	1007	1076	0.095	0.002	0.014	0.000	0.436	70.621	1.097	0.049	0.001	0.261	93	2	91	1	137	48	0.98	91	1	2%
LP080120-1s-10	AGG 3	457	283	0.102	0.004	0.015	0.000	0.561	66.622	1.731	0.049	0.002	0.069	99	4	96	3	155	72	0.97	96	3	3%
LP080120-1L-10	AGG 3	262.8	95.6	0.103	0.004	0.015	0.000	0.546	65.746	0.821	0.049	0.002	-0.290	99	4	97	1	142	80	0.98	97	1	1%
LP080120-1s-17	AGG 3	190.8	105	0.123	0.007	0.018	0.000	0.253	56.054	0.974	0.050	0.003	0.034	117	7	114	2	180	120	0.97	114	2	2%
LP080120-1s-18	AGG 3	253.2	173	0.149	0.006	0.020	0.000	0.244	49.068	0.770	0.053	0.002	0.123	141	6	130	2	316	88	0.92	130	2	2%
LP080120-1s-5	AGG 3	338.7	221.3	0.143	0.006	0.021	0.000	0.414	48.473	0.681	0.050	0.002	-0.070	136	5	132	2	199	79	0.97	132	2	1%
LP080120-1L-3	AGG 3	131	73.2	0.143	0.007	0.021	0.000	0.045	47.642	0.817	0.050	0.003	0.310	136	6	134	2	170	120	0.99	134	2	2%
LP080120-1s-9	AGG 3	262	154.1	0.145	0.006	0.022	0.000	0.203	46.468	0.691	0.049	0.002	0.122	137	6	137	2	132	89	1.00	137	2	1%
LP080120-1s-3	AGG 3	2660	870	0.148	0.003	0.022	0.000	0.850	46.425	0.711	0.050	0.000	0.023	140	2	137	2	187	22	0.98	137	2	2%
LP080120-1s-21	AGG 3	276	550	0.164	0.005	0.022	0.000	0.129	46.147	0.937	0.055	0.002	0.510	154	5	138	3	398	80	0.90	138	3	2%
LP080120-1L-9	AGG 3	240	89.6	0.152	0.006	0.022	0.000	0.262	45.558	0.809	0.050	0.002	0.122	143	6	140	2	190	92	0.98	140	2	2%
LP080120-1s-20	AGG 3	237	61.9	0.186	0.016	0.024	0.000	0.510	41.203	0.713	0.056	0.004	-0.331	173	13	155	3	390	140	0.89	155	3	2%
LP080120-1L-7	AGG 3	213	89.2	0.294	0.011	0.041	0.001	0.362	24.528	0.397	0.052	0.002	0.083	261	8	258	4	284	73	0.99	258	4	2%
LP080120-1s-24	AGG 3	114	190	0.378	0.020	0.047	0.001	-0.026	21.445	0.317	0.059	0.003	0.344	325	14	294	4	540	110	0.90	294	4	1%
LP080120-1s-8	AGG 3	204.8	71.5	0.527	0.014	0.066	0.001	0.665	15.106	0.297	0.058	0.001	0.076	430	10	413	8	515	45	0.96	413	8	2%
LP080120-1s-25	AGG 3	293	125.2	0.574	0.013	0.073	0.002	0.710	13.793	0.285	0.057	0.001	0.277	461	9	451	9	505	36	0.98	451	9	2%
LP080120-1s-27	AGG 3	420.6	35.2	1.371	0.028	0.135	0.002	0.819	7.391	0.115	0.073	0.001	-0.161	876	12	818	12	1025	23	0.93	818	12	1%
LP080120-1L-6	AGG 3	275.6	85.2	1.857	0.026	0.177	0.002	0.810	5.656	0.070	0.076	0.001	0.084	1066	9	1049	12	1097	16	0.96	1097	16	1%
LP080120-1s-16	AGG 3	45.2	28.4	1.820	0.053	0.177	0.004	0.437	5.637	0.111	0.074	0.002	0.290	1052	19	1053	19	1045	56	1.01	1045	56	5%
LP080120-1L-8	AGG 3	121.5	10.2	1.991	0.047	0.182	0.003	0.789	5.507	0.103	0.079	0.001	-0.122	1112	16	1075	19	1180	28	0.91	1180	28	2%
LP080120-1s-6	AGG 3	110.9	32.4	2.168	0.054	0.190	0.004	-0.355	5.252	0.113	0.083	0.004	0.813	1170	17	1123	22	1254	75	0.90	1254	75	6%
LP080120-1s-22	AGG 3	254	162	3.055	0.081	0.240	0.005	0.938	4.172	0.092	0.092	0.001	-0.116	1420	20	1385	28	1473	17	0.94	1473	17	1%
LP080120-1L-1	AGG 3	349	179.5	3.178	0.045	0.248	0.004	0.801	4.032	0.062	0.093	0.001	0.319	1452	11	1428	19	1484	17	0.96	1484	17	1%
LP080120-1s-7	AGG 3	89.6	35.2	3.260	0.065	0.249	0.004	0.653	4.014	0.068	0.095	0.002	0.196	1471	15	1434	22	1522	30	0.94	1522	30	2%
LP080120-1L-11	AGG 3	544	237	3.590	0.170	0.250	0.010	0.992	4.000	0.160	0.104	0.001	-0.675	1543	39	1435	52	1696	14	0.85	1696	14	1%
LP080120-1L-5	AGG 3	129.1	133.6	3.228	0.049	0.254	0.005	0.749	3.932	0.070	0.092	0.001	0.499	1463	12	1461	23	1466	21	1.00	1466	21	1%
LP080120-1s-23	AGG 3	52.02	36.4	3.710	0.110	0.259	0.006	0.791	3.868	0.090	0.104	0.002	-0.105	1573	24	1482	31	1696	32	0.87	1696	32	2%
LP080120-1L-2	AGG 3	276.1	248.8	4.072	0.066	0.288	0.004	0.875	3.476	0.051	0.103	0.001	-0.109	1648	13	1630	21	1670	12	0.98	1670	12	1%
LP080120-1L-12	AGG 3	169.9	98.8	4.455	0.080	0.290	0.005	0.859	3.444	0.059	0.111	0.001	0.093	1722	15	1643	25	1817	15	0.90	1817	15	1%
LP080120-1s-1	AGG 3	134	152.7	12.610	0.500	0.472	0.016	0.982	2.119	0.072	0.193	0.001	-0.475	2647	38	2489	71	2770	12	0.90	2770	12	0%
Rejected Grains																							
LP080120-1s-13	AGG 3	742	376	0.017	0.001	0.003	0.000	0.262	397.298	7.734	0.050	0.003	-0.021	17	1	16	0	180	140	0.93	16	0	2%
LP080120-1s-2	AGG 3	516	201.2	0.038	0.005	0.005	0.000	0.875	214.133	19.717	0.058	0.003	-0.206	38	5	30	3	500	120	0.80	30	3	9%
LP080120-1s-15	AGG 3	126.7	123.9	0.261	0.010	0.013	0.000	0.594	79.872	1.786	0.151	0.004	-0.048	235	8	80	2	2351	49	0.34	80	2	2%
LP080120-1s-26	AGG 3	135.2	48	0.129	0.014	0.015	0.000	-0.036	65.574	1.505	0.062	0.007	0.263	123	12	98	2	590	200	0.79	98	2	2%
LP080120-1s-14	AGG 3	180	20	1.290	0.080	0.105	0.005	0.956	9.542	0.446	0.089	0.002	-0.565	838	35	642	28	1398	48	0.77	642	28	4%
LP080120-1s-11	AGG 3	602	48.5	2.248	0.034	0.189	0.003	0.890	5.285	0.075	0.086	0.001	-0.110	1196	11	1117	15	1339	13	0.83	1339	13	1%
LP080120-1s-19	AGG 3	1142	196.3	5.650	0.320	0.266	0.015	0.806	3.759	0.212	0.154	0.005	0.440	1917	49	1519	77	2387	62	0.64	2387	62	5%
LP080120-1s-4	AGG 3	675	40.7	4.500	0.075	0.273	0.004	0.916	3.660	0.048	0.119	0.001	-0.403	1730	14	1557	18	1944	11	0.80	1944	11	1%

Sample LP080120-8

				Measured isotopic ratios										Isotopic ages and errors (Ma)									
Grain	Unit	U (ppm)	Th (ppm)	$^{207}Pb/^{235}U$	2σ	$^{206}Pb/^{238}U$	2σ	Error Correlation	$^{238}Pb/^{206}Pb$	2σ	$^{207}Pb/^{206}Pb$	2σ	Error Correlation	$^{207}Pb/^{235}U$	2σ	$^{206}Pb/^{238}U$	2σ	$^{207}Pb/^{206}Pb$	2σ	discordance	best age (Ma)	2σ	internal error
LP080120-8s-100	AGG 3	1120	463	0.262	0.016	0.037	0.003	0.942	27.027	1.826	0.052	0.001	0.352	236	13	234	15	295	40	0.99	234	15	6%
LP080120-8s-110	AGG 3	1170	672	0.267	0.008	0.038	0.001	0.843	26.316	0.831	0.051	0.001	0.432	240	6	240	7	233	41	1.00	240	7	3%
LP080120-8s-54	AGG 3	872	398	0.273	0.008	0.039	0.001	0.835	25.767	0.538	0.052	0.001	-0.170	248	6	247	5	260	42	1.00	247	5	2%
LP080120-8s-34	AGG 3	739	335	0.284	0.009	0.039	0.001	0.608	25.589	0.367	0.052	0.001	-0.034	254	7	247	4	302	53	0.97	247	4	1%
LP080120-8s-78	AGG 3	915	481	0.281	0.009	0.039	0.001	0.757	25.582	0.510	0.051	0.001	0.120	251	7	247	5	250	46	0.98	247	5	2%
LP080120-8s-147	AGG 3	686	289	0.276	0.007	0.039	0.001	0.813	25.569	0.601	0.051	0.001	0.088	247	6	247	6	228	38	1.00	247	6	2%
LP080120-8s-107	AGG 3	191.3	83.1	0.277	0.012	0.039	0.001	0.648	25.523	0.502	0.051	0.002	-0.177	248	9	248	5	229	75	1.00	248	5	2%
LP080120-8s-63	AGG 3	704	313	0.268	0.008	0.039	0.001	0.739	25.510	0.716	0.050	0.001	0.207	241	7	248	7	180	48	1.03	248	7	3%
LP080120-8s-82	AGG 3	2580	1472	0.279	0.007	0.039	0.001	0.859	25.510	0.508	0.052	0.000	-0.190	250	6	248	5	277	21	0.99	248	5	2%
LP080120-8s-88	AGG 3	1170	750	0.271	0.007	0.039	0.001	0.784	25.510	0.781	0.050	0.001	0.308	244	5	248	7	208	40	1.02	248	7	3%
LP080120-8s-38	AGG 3	1289	762	0.285	0.006	0.039	0.001	0.695	25.426	0.381	0.052	0.001	0.016	254	5	249	4	300	32	0.98	249	4	1%
LP080120-8s-50	AGG 3	594	370	0.302	0.010	0.039	0.001	0.701	25.374	0.361	0.055	0.002	-0.251	268	7	249	4	435	56	0.93	249	4	1%
LP080120-8s-126	AGG 3	651.4	255.4	0.278	0.005	0.039	0.001	0.696	25.361	0.482	0.051	0.001	0.420	249	4	249	5	252	36	1.00	249	5	2%
LP080120-8s-65	AGG 3	1319	1046	0.279	0.006	0.039	0.001	0.759	25.349	0.456	0.052	0.001	0.188	250	4	249	4	286	35	1.00	249	4	2%
LP080120-8s-130	AGG 3	980	503	0.274	0.011	0.040	0.001	0.887	25.316	0.769	0.050	0.001	-0.205	245	9	250	8	212	37	1.02	250	8	3%
LP080120-8s-114	AGG 3	720	377.8	0.280	0.007	0.040	0.001	0.881	25.304	0.570	0.052	0.001	0.051	251	6	250	6	262	29	1.00	250	6	2%
LP080120-8s-68	AGG 3	635	162	0.277	0.008	0.040	0.001	0.768	25.297	0.557	0.051	0.001	-0.082	248	7	250	5	232	35	1.01	250	5	2%
LP080120-8s-40	AGG 3	409	151.2	0.284	0.011	0.040	0.001	0.882	25.253	0.829	0.052	0.001	-0.274	254	9	250	8	290	48	0.99	250	8	3%
LP080120-8s-57	AGG 3	616	172	0.280	0.007	0.040	0.001	0.741	25.240	0.535	0.052	0.001	0.166	251	6	251	5	270	40	1.00	251	5	2%
LP080120-8s-59	AGG 3	920	304	0.284	0.008	0.040	0.001	0.875	25.233	0.484	0.052	0.001	0.173	254	6	251	5	270	24	0.99	251	5	2%
LP080120-8s-149	AGG 3	667	238	0.279	0.006	0.040	0.001	0.846	25.208	0.419	0.051	0.001	0.001	249	5	251	4	236	37	1.01	251	4	2%
LP080120-8s-91	AGG 3	952	567	0.268	0.009	0.040	0.001	0.797	25.183	0.476	0.050	0.001	-0.168	241	7	251	5	207	37	1.04	251	5	2%
LP080120-8s-39	AGG 3	851	280	0.281	0.006	0.040	0.001	0.875	25.107	0.511	0.052	0.001	-0.143	252	5	252	5	270	24	1.00	252	5	2%
LP080120-8s-87	AGG 3	216	342	0.271	0.014	0.040	0.001	0.294	25.094	0.554	0.049	0.002	0.167	246	11	252	6	140	110	1.02	252	6	2%
LP080120-8s-67	AGG 3	949	338.1	0.281	0.006	0.040	0.001	0.704	25.088	0.371	0.051	0.001	-0.009	251	5	252	4	256	33	1.00	252	4	1%
LP080120-8L-13	AGG 3	430.3	181.1	0.286	0.008	0.040	0.001	0.565	25.063	0.389	0.052	0.001	0.043	255	6	252	4	285	54	0.99	252	4	2%
LP080120-8s-138	AGG 3	633	239	0.277	0.010	0.040	0.001	0.721	25.063	0.691	0.050	0.001	-0.030	248	8	252	7	206	54	1.02	252	7	3%
LP080120-8s-21	AGG 3	837	357.3	0.282	0.006	0.040	0.001	0.648	25.050	0.402	0.051	0.001	-0.057	252	5	252	4	216	44	1.00	252	4	2%
LP080120-8L-43	AGG 3	1029	489	0.281	0.007	0.040	0.001	0.835	25.025	0.482	0.051	0.001	-0.062	251	6	253	5	230	39	1.01	253	5	2%
LP080120-8s-132	AGG 3	528	303	0.281	0.006	0.040	0.001	0.730	25.025	0.470	0.051	0.001	0.072	252	5	253	5	245	42	1.00	253	5	2%
LP080120-8s-81	AGG 3	217.7	185	0.273	0.012	0.040	0.001	0.382	25.006	0.507	0.050	0.002	0.087	245	10	253	5	171	97	1.03	253	5	2%
LP080120-8s-18	AGG 3	850	357	0.269	0.008	0.040	0.001	0.783	24.988	0.487	0.049	0.001	-0.215	242	6	253	5	146	53	1.05	253	5	2%
LP080120-8s-42	AGG 3	384	115.9	0.287	0.009	0.040	0.001	0.499	24.969	0.461	0.052	0.001	0.039	256	7	253	5	270	62	0.99	253	5	2%
LP080120-8s-7	AGG 3	1121	510	0.285	0.006	0.040	0.001	0.769	24.944	0.386	0.051	0.001	0.063	254	5	253	4	247	27	1.00	253	4	2%
LP080120-8L-56	AGG 3	1098	722.8	0.286	0.006	0.040	0.001	0.234	24.888	0.353	0.051	0.001	0.438	255	4	254	4	248	42	1.00	254	4	1%
LP080120-8s-49	AGG 3	827	249	0.283	0.009	0.040	0.001	0.769	24.863	0.587	0.051	0.001	-0.139	253	7	254	6	232	50	1.01	254	6	2%
LP080120-8L-25	AGG 3	1344	388.5	0.289	0.006	0.040	0.001	0.661	24.851	0.389	0.052	0.001	0.085	258	5	254	4	264	33	0.99	254	4	2%
LP080120-8s-55	AGG 3	373.7	149.3	0.279	0.008	0.040	0.001	0.341	24.845	0.401	0.051	0.001	0.197	250	7	254	4	239	57	1.02	254	4	2%
LP080120-8s-146	AGG 3	615	311	0.283	0.010	0.040	0.001	0.784	24.826	0.536	0.050	0.001	-0.267	253	8	255	5	205	48	1.01	255	5	2%
LP080120-8s-23	AGG 3	468	315	0.280	0.012	0.040	0.001	0.568	24.802	0.388	0.050	0.002	-0.117	250	9	255	4	194	70	1.02	255	4	2%
LP080120-8s-64	AGG 3	1070	638	0.281	0.009	0.040	0.001	0.858	24.795	0.559	0.051	0.001	0.135	252	7	255	6	233	32	1.01	255	6	2%
LP080120-8s-104	AGG 3	919	395	0.271	0.011	0.040	0.001	0.796	24.814	0.616	0.049	0.001	0.186	244	9	255	6	161	52	1.05	255	6	2%
LP080120-8s-20	AGG 3	687	276	0.280	0.005	0.040	0.000	0.699	24.795	0.289	0.050	0.001	0.253	251	4	255	3	220	26	1.02	255	3	1%
LP080120-8L-8	AGG 3	846	329.4	0.287	0.007	0.040	0.001	0.551	24.783	0.338	0.051	0.001	0.058	256	6	255	3	259	43	1.00	255	3	1%
LP080120-8s-32	AGG 3	1075	461.5	0.290	0.008	0.040	0.001	0.713	24.746	0.502	0.052	0.001	0.122	258	6	255	5	269	38	0.99	255	5	2%
LP080120-8s-136	AGG 3	745	478	0.293	0.007	0.041	0.001	0.749	24.685	0.420	0.052	0.001	0.149	261	5	256	4	279	36	0.98	256	4	2%
LP080120-8L-11	AGG 3	494.6	155.4	0.283	0.007	0.041	0.001	0.412	24.661	0.371	0.051	0.001	0.091	253	6	256	4	236	53	1.01	256	4	1%
LP080120-8L-51	AGG 3	118.9	130.2	0.292	0.015	0.041	0.001	0.229	24.624	0.600	0.052	0.003	0.156	259	12	257	6	280	120	0.99	257	6	2%
LP080120-8s-76	AGG 3	1730	1260	0.285	0.010	0.041	0.001	0.936	24.631	0.849	0.051	0.001	0.219	254	8	257	9	240	39	1.01	257	9	4%
LP080120-8L-6	AGG 3	1695	766	0.285	0.005	0.041	0.000	0.803	24.582	0.224	0.051	0.000	-0.235	255	4	257	2	236	20	1.01	257	2	1%
LP080120-8s-41	AGG 3	950	474	0.289	0.009	0.041	0.001	0.800	24.510	0.781	0.052	0.001	0.311	258	7	258	8	266	43	1.00	258	8	3%
LP080120-8L-22	AGG 3	289.6	208.9	0.295	0.010	0.041	0.001	0.370	24.486	0.348	0.052	0.002	-0.052	262	8	258	4	310	84	0.98	258	4	1%
LP080120-8s-33	AGG 3	555.6	180.9	0.286	0.008	0.041	0.001	0.635	24.402	0.387	0.050	0.001	-0.033	257	6	259	4	203	42	1.01	259	4	2%
LP080120-8s-69	AGG 3	993	422.1	0.286	0.007	0.041	0.001	0.726	24.402	0.375	0.051	0.001	-0.013	255	6	259	4	262	34	1.01	259	4	2%
LP080120-8s-129	AGG 3	1080	669	0.292	0.007	0.041	0.001	0.851	24.390	0.321	0.051	0.001	-0.289	260	5	259	3	259	36	1.00	259	3	1%
LP080120-8s-47	AGG 3	956	416	0.295	0.010	0.041	0.001	0.823	24.272	0.589	0.052	0.001	0.013	262	8	260	6	286	43	0.99	260	6	2%
LP080120-8L-20	AGG 3	837	258	0.293	0.005	0.041	0.000	0.607	24.266	0.283	0.051	0.001	-0.071	261	4	260	3	245	42	1.00	260	3	1%
LP080120-8L-41	AGG 3	834	438	0.299	0.007	0.041	0.001	0.816	24.237	0.523	0.052	0.001	0.032	266	6	261	6	266	33	0.98	261	6	2%
LP080120-8L-38	AGG 3	807	230	0.291	0.006	0.041	0.000	0.712	24.201	0.269	0.051	0.001	-0.139	259	5	261	3	256	36	1.01	261	3	1%
LP080120-8L-9	AGG 3	497	143.6	0.291	0.008	0.041	0.000	0.491	24.201	0.246	0.051	0.001	-0.042	259	7	261	3	239	49	1.01	261	3	1%
LP080120-8s-80	AGG 3	906	455	0.285	0.006	0.041	0.001	0.780	24.196	0.580	0.050	0.001	0.313	255	5	261	6	211	33	1.03	261	6	2%
LP080120-8s-102	AGG 3	1620	913	0.289	0.008	0.041	0.001	0.864	24.149	0.525	0.051	0.001	-0.130	258	6	262	6	227	35	1.01	262	6	2%
LP080120-8L-4	AGG 3	760	293.4	0.297	0.006	0.041	0.000	0.484	24.125	0.250	0.052	0.001	0.256	264	5	262	3	308	46	0.99	262	3	1%
LP080120-8s-24	AGG 3	1319	518	0.292	0.004	0.042	0.001	0.560	24.038	0.358	0.051	0.001	0.462	260	3	263	4	217	32	1.01	263	4	1%
LP080120-8L-23	AGG 3	181.3	80.2	0.306	0.011	0.042	0.001	0.390	24.027	0.335	0.053	0.002	-0.028	271	9	263	4	348	87	0.97	263	4	1%
LP080120-8s-125	AGG 3	452	180.7	0.293	0.009	0.042	0.001	0.664	24.033	0.462	0.051	0.001	-0.087	260	7	263	5	243	51	1.01	263	5	2%
LP080120-8s-89	AGG 3	528	212	0.301	0.009	0.042	0.001	0.558	23.753	0.480	0.052	0.001	0.116	267	7	266	5	283	49	1.00	266	5	2%
LP080120-8s-109	AGG 3	163.3	43	0.303	0.015	0.042	0.001	0.657	23.635	0.436	0.052	0.002	-0.120	268	11	267	5	259	72	1.00	267	5	2%
LP080120-8L-39	AGG 3	189	48.3	0.343	0.018	0.043	0.001	0.543	23.480	0.458	0.058	0.003	-0.243	299	14	269	5	500	95	0.90	269	5	2%
LP080120-8L-26	AGG 3	333	142	0.304	0.009	0.043	0.001	0.400	23.381	0.306	0.051	0.001	-0.009	271	6	270	3	256	61	1.00	270	3	1%
LP080120-8s-36	AGG 3	1390	392	0.311	0.007	0.043	0.001	0.765	23.364	0.431	0.053	0.001	-0.207	275	6	270	5	324	40	0.98	270	5	2%
LP080120-8s-16	AGG 3	144.2	41.2	0.301	0.016	0.043	0.001	0.431	23.073	0.468	0.050	0.002	0.014	267	12	274	5	170	100	1.02	274	5	2%
LP080120-8s-31	AGG 3	329	149	0.320	0.008	0.043	0.001	0.712	23.010	0.482	0.054	0.001	0.171	282	6	274	6	360	48	0.97	274	6	2%
LP080120-8s-56	AGG 3	780	330.4	0.317	0.015	0.044	0.002	0.919	22.883	0.943	0.054	0.002	-0.580	279	12	276	11	367	80	0.99	276	11	4%
LP080120-8L-40	AGG 3	74.5	56.7	0.377	0.019	0.052	0.001	0.070	19.305	0.410	0.053	0.003	0.339	324	14	325	7	310	110	1.00	325	7	2%

LP080120-8L-15	AGG 3	467	279.7	0.406	0.010	0.054	0.001	0.226	18.413	0.210	0.054	0.001	0.192	346	8	341	4	363	44	0.99	341	4	1%
LP080120-8s-115	AGG 3	705	415	0.430	0.011	0.058	0.001	0.803	17.301	0.299	0.053	0.001	0.045	363	8	362	6	341	35	1.00	362	6	2%
LP080120-8s-79	AGG 3	786	782	0.431	0.007	0.059	0.001	0.662	17.085	0.196	0.054	0.001	0.183	364	5	367	4	362	29	1.01	367	4	1%
LP080120-8s-108	AGG 3	415	221.2	0.430	0.015	0.059	0.002	0.784	17.065	0.466	0.052	0.001	-0.132	363	11	367	10	297	50	1.01	367	10	3%
LP080120-8s-93	AGG 3	522	565	0.436	0.011	0.059	0.001	0.840	17.036	0.348	0.054	0.001	-0.111	367	8	368	7	371	31	1.00	368	7	2%
LP080120-8s-62	AGG 3	765	509	0.434	0.013	0.059	0.002	0.873	16.835	0.538	0.054	0.001	0.333	366	9	372	12	370	33	1.02	372	12	3%
LP080120-8s-10	AGG 3	336	226.1	0.433	0.013	0.060	0.001	0.426	16.667	0.200	0.052	0.001	-0.005	365	9	376	4	287	62	1.03	376	4	1%
LP080120-8s-111	AGG 3	323.7	220	0.447	0.014	0.060	0.001	0.691	16.611	0.331	0.053	0.001	0.093	375	10	377	7	334	50	1.00	377	7	2%
LP080120-8s-105	AGG 3	376	252	0.442	0.023	0.060	0.002	0.789	16.584	0.605	0.053	0.001	-0.121	371	16	377	13	329	58	1.02	377	13	3%
LP080120-8s-83	AGG 3	1986	384	0.480	0.011	0.064	0.001	0.971	15.625	0.342	0.055	0.000	-0.104	398	7	400	8	398	14	1.00	400	8	2%
LP080120-8s-14	AGG 3	2500	629	0.496	0.009	0.066	0.001	0.849	15.202	0.199	0.054	0.000	0.030	410	6	411	5	386	20	1.00	411	5	1%
LP080120-8s-26	AGG 3	1043	605	0.581	0.009	0.074	0.001	0.847	13.532	0.201	0.057	0.001	-0.151	465	6	460	7	476	25	0.99	460	7	1%
LP080120-8s-2	AGG 3	234.5	156.9	0.598	0.016	0.078	0.002	0.260	12.903	0.266	0.056	0.002	0.507	476	10	481	9	446	62	1.01	481	9	2%
LP080120-8s-148	AGG 3	468	125.9	0.676	0.018	0.084	0.002	0.825	11.933	0.242	0.058	0.001	-0.071	524	11	519	10	522	33	0.99	519	10	2%
LP080120-8s-113	AGG 3	203.2	191.3	0.658	0.024	0.084	0.002	0.704	11.905	0.283	0.056	0.001	-0.030	513	14	520	12	464	41	1.01	520	12	2%
LP080120-8s-75	AGG 3	710	412	0.670	0.016	0.085	0.002	0.825	11.820	0.224	0.058	0.001	-0.102	521	10	524	9	528	29	1.00	524	9	2%
LP080120-8L-42	AGG 3	673	185.1	0.683	0.012	0.085	0.001	0.702	11.723	0.151	0.057	0.001	0.161	528	7	528	6	505	25	1.00	528	6	1%
LP080120-8s-72	AGG 3	205.8	271.9	0.711	0.026	0.088	0.001	0.581	11.416	0.156	0.059	0.002	-0.137	545	15	541	7	567	64	0.99	541	7	1%
LP080120-8s-3	AGG 3	223.3	99.2	0.726	0.025	0.090	0.002	0.601	11.062	0.220	0.058	0.001	0.031	554	15	558	11	532	54	1.01	558	11	2%
LP080120-8s-45	AGG 3	172.7	110.2	0.761	0.018	0.094	0.001	0.498	10.695	0.160	0.060	0.001	0.177	574	10	576	8	582	44	1.00	576	8	1%
LP080120-8s-15	AGG 3	238.3	300.3	0.754	0.023	0.095	0.002	0.278	10.582	0.168	0.057	0.002	0.335	570	13	582	9	503	68	1.02	582	9	2%
LP080120-8L-29	AGG 3	431	80.1	0.776	0.013	0.096	0.001	0.708	10.460	0.153	0.059	0.001	0.144	583	7	589	8	552	27	1.01	589	8	1%
LP080120-8L-7	AGG 3	1785	345.7	0.784	0.009	0.096	0.001	0.893	10.447	0.091	0.059	0.000	0.013	588	5	589	5	563	17	1.00	589	5	1%
LP080120-8s-58	AGG 3	461	146	0.798	0.017	0.098	0.002	0.795	10.246	0.157	0.060	0.001	-0.174	595	10	600	9	588	28	1.01	600	9	1%
LP080120-8L-55	AGG 3	429	257.2	0.852	0.018	0.101	0.001	0.742	9.881	0.117	0.062	0.001	-0.243	628	11	621	7	667	30	0.99	621	7	1%
LP080120-8L-5	AGG 3	630	181	0.843	0.017	0.102	0.002	0.727	9.785	0.172	0.060	0.001	0.137	623	10	627	11	592	32	1.01	627	11	2%
LP080120-8s-94	AGG 3	300	54	0.877	0.031	0.104	0.004	0.922	9.634	0.353	0.060	0.001	0.121	638	17	636	22	607	29	1.00	636	22	3%
LP080120-8s-44	AGG 3	153.9	156.3	0.914	0.023	0.105	0.002	0.682	9.515	0.208	0.064	0.002	-0.077	659	12	644	13	730	48	0.98	644	13	2%
LP080120-8s-145	AGG 3	160.2	90.1	0.919	0.034	0.105	0.003	0.598	9.515	0.272	0.063	0.002	0.034	661	18	648	16	690	76	0.98	648	16	2%
LP080120-8s-143	AGG 3	305	29	1.050	0.200	0.113	0.016	0.994	8.850	1.253	0.064	0.003	-0.904	702	95	686	94	730	100	0.98	686	94	14%
LP080120-8s-119	AGG 3	254.5	139	1.010	0.033	0.116	0.003	0.791	8.613	0.193	0.063	0.001	-0.121	708	17	711	14	706	41	1.00	711	14	2%
LP080120-8s-46	AGG 3	393	164	1.117	0.029	0.124	0.003	0.853	8.091	0.177	0.066	0.001	-0.003	761	14	751	15	791	27	0.99	751	15	2%
LP080120-8s-66	AGG 3	1274	633	1.118	0.071	0.124	0.006	0.992	8.039	0.407	0.065	0.001	-0.850	759	34	755	36	785	29	0.99	755	36	5%
LP080120-8s-103	AGG 3	387	297	1.103	0.042	0.127	0.004	0.932	7.880	0.236	0.064	0.001	-0.148	758	19	770	22	725	27	1.02	770	22	3%
LP080120-8s-11	AGG 3	929	520	1.144	0.025	0.130	0.003	0.936	7.722	0.173	0.064	0.001	-0.013	774	12	785	16	735	19	1.01	785	16	2%
LP080120-8s-99	AGG 3	2083	1017	1.269	0.024	0.137	0.003	0.962	7.326	0.166	0.067	0.000	-0.078	832	11	824	17	849	13	0.99	824	17	2%
LP080120-8s-70	AGG 3	194.3	81.7	1.307	0.031	0.144	0.003	0.818	6.964	0.150	0.067	0.001	0.134	848	14	865	18	821	32	1.02	865	18	2%
LP080120-8s-90	AGG 3	405	206	1.412	0.037	0.147	0.004	0.926	6.821	0.191	0.070	0.001	0.227	893	15	882	23	932	24	0.99	882	23	3%
LP080120-8s-144	AGG 3	129	48.9	1.495	0.099	0.152	0.008	0.960	6.588	0.360	0.071	0.002	-0.563	924	41	910	47	940	50	0.98	910	47	5%
LP080120-8s-92	AGG 3	189.6	141.2	1.649	0.044	0.162	0.003	0.666	6.177	0.126	0.073	0.002	0.222	993	18	967	18	1033	40	0.97	967	18	2%
LP080120-8s-116	AGG 3	191	144.6	1.636	0.045	0.164	0.004	0.810	6.083	0.133	0.072	0.001	-0.003	983	17	981	20	986	34	1.00	981	20	2%
LP080120-8L-50	AGG 3	142.3	79.5	1.941	0.044	0.165	0.004	0.849	6.072	0.147	0.086	0.001	0.262	1095	15	983	22	1332	30	0.90	983	22	2%
LP080120-8s-97	AGG 3	110.9	39.6	1.613	0.045	0.165	0.004	0.654	6.068	0.129	0.071	0.001	0.103	974	17	983	20	960	41	1.01	983	20	2%
LP080120-8L-35	AGG 3	1884	1304	1.679	0.027	0.166	0.002	0.957	6.035	0.076	0.073	0.000	-0.317	1000	10	988	12	1013	11	0.99	988	12	1%
LP080120-8s-85	AGG 3	193	72	1.810	0.130	0.166	0.011	0.974	6.024	0.399	0.078	0.002	-0.381	1041	50	991	62	1150	43	0.95	991	62	6%
LP080120-8s-17	AGG 3	636	216	1.677	0.032	0.169	0.002	0.880	5.931	0.084	0.072	0.001	-0.056	999	12	1004	13	980	22	1.01	1004	13	1%
LP080120-8s-98	AGG 3	299	157.9	1.703	0.037	0.170	0.003	0.826	5.875	0.104	0.073	0.001	-0.102	1009	14	1013	17	1002	26	1.00	1013	17	2%
LP080120-8s-137	AGG 3	977	1072	1.767	0.028	0.171	0.003	0.912	5.855	0.086	0.075	0.000	-0.289	1033	10	1016	14	1055	12	0.98	1016	14	1%
LP080120-8s-124	AGG 3	591	345.7	1.807	0.037	0.174	0.003	0.908	5.737	0.109	0.075	0.001	-0.165	1047	14	1035	18	1062	17	0.99	1035	18	2%
LP080120-8L-21	AGG 3	863	359	2.291	0.070	0.175	0.004	0.972	5.714	0.124	0.096	0.001	-0.681	1208	22	1040	21	1542	18	0.86	1040	21	2%
LP080120-8s-133	AGG 3	86.8	135.1	1.936	0.035	0.175	0.004	0.765	5.714	0.124	0.080	0.001	0.335	1093	12	1046	24	1203	35	0.96	1046	24	2%
LP080120-8s-140	AGG 3	663	212	2.083	0.065	0.191	0.006	0.961	5.238	0.162	0.078	0.001	0.102	1142	22	1126	32	1152	14	0.99	1152	14	1%
LP080120-8L-49	AGG 3	62	25.3	2.237	0.079	0.199	0.006	0.822	5.018	0.151	0.081	0.002	0.025	1191	24	1171	32	1224	37	0.98	1224	37	3%
LP080120-8s-22	AGG 3	2114	76.6	2.860	0.057	0.209	0.004	0.988	4.792	0.092	0.099	0.000	-0.250	1371	15	1222	21	1600	4.4	0.76	1600	4	0%
LP080120-8L-34	AGG 3	166.4	81.6	2.718	0.048	0.231	0.004	0.723	4.329	0.075	0.085	0.001	0.311	1333	13	1339	21	1304	24	1.03	1304	24	2%
LP080120-8s-6	AGG 3	226.2	109.5	2.762	0.037	0.231	0.003	0.676	4.325	0.060	0.086	0.001	0.450	1345	10	1341	17	1345	21	1.00	1345	21	2%
LP080120-8L-24	AGG 3	1043	94.5	2.991	0.052	0.232	0.003	0.944	4.307	0.056	0.093	0.001	-0.454	1405	13	1346	16	1488	11	0.90	1488	11	1%
LP080120-8s-84	AGG 3	518	119	2.930	0.065	0.235	0.005	0.918	4.264	0.082	0.091	0.000	-0.062	1393	18	1358	23	1439	10	0.94	1439	10	1%
LP080120-8s-135	AGG 3	443	263	2.898	0.082	0.235	0.007	0.932	4.257	0.125	0.089	0.001	0.126	1391	25	1360	36	1407	20	0.97	1407	20	1%
LP080120-8s-8	AGG 3	228.8	285.9	2.808	0.061	0.235	0.004	0.869	4.255	0.076	0.087	0.001	0.027	1357	16	1360	22	1363	23	1.00	1363	23	2%
LP080120-8s-117	AGG 3	195	226	2.854	0.049	0.238	0.004	0.749	4.205	0.067	0.087	0.001	0.329	1369	13	1375	20	1354	21	1.02	1354	21	2%
LP080120-8s-142	AGG 3	195.5	143.2	2.973	0.065	0.242	0.005	0.891	4.136	0.092	0.089	0.001	0.096	1400	17	1396	28	1397	21	1.00	1397	21	2%
LP080120-8s-4	AGG 3	112	101	3.076	0.084	0.247	0.005	0.730	4.049	0.075	0.089	0.002	-0.167	1425	21	1423	24	1416	39	1.00	1416	39	3%
LP080120-8L-14	AGG 3	146.7	141.5	3.090	0.044	0.247	0.003	0.566	4.047	0.049	0.092	0.001	0.103	1430	11	1424	16	1469	25	0.97	1469	25	2%
LP080120-8s-60	AGG 3	120.3	73.5	3.060	0.081	0.250	0.006	0.929	4.005	0.096	0.089	0.001	-0.039	1422	20	1436	31	1412	19	1.02	1412	19	1%
LP080120-8s-27	AGG 3	547	346.5	3.056	0.073	0.250	0.005	0.951	3.994	0.086	0.088	0.001	0.029	1421	18	1440	28	1394	12	1.03	1394	12	1%
LP080120-8s-96	AGG 3	145.6	111.6	3.123	0.072	0.254	0.005	0.862	3.931	0.074	0.090	0.001	0.064	1437	18	1461	25	1423	24	1.03	1423	24	2%
LP080120-8L-53	AGG 3	960	325	3.535	0.072	0.262	0.005	0.960	3.814	0.070	0.098	0.001	-0.033	1534	16	1501	25	1582	9.8	0.95	1582	10	1%
LP080120-8s-74	AGG 3	342	148	3.838	0.076	0.283	0.006	0.940	3.537	0.078	0.099	0.001	0.545	1600	16	1605	31	1610	12	1.00	1610	12	1%
LP080120-8s-48	AGG 3	856	498	4.303	0.088	0.293	0.006	0.974	3.408	0.065	0.108	0.001	-0.132	1697	16	1658	28	1762	8.6	0.94	1762	9	0%
LP080120-8L-37	AGG 3	193.9	75.1	4.329	0.088	0.296	0.004	0.771	3.381	0.049	0.105	0.001	-0.155	1698	17	1670	21	1716	21	0.97	1716	21	1%
LP080120-8s-52	AGG 3	276	89.4	4.581	0.098	0.298	0.006	0.931	3.357	0.062	0.112	0.001	-0.112	1745	18	1680	27	1828	12	0.92	1828	12	1%
LP080120-8s-112	AGG 3	137.3	124	4.800	0.210	0.298	0.012	0.977	3.356	0.135	0.118	0.001	-0.480	1790	40	1682	61	1922	21	0.88	1922	21	1%
LP080120-8s-127	AGG 3	474.5	135.2	4.401	0.083	0.301	0.005	0.962	3.326	0.054	0.107	0.001	0.046	1716	17	1695	24	1746	13	0.97	1746	13	1%
LP080120-8s-106	AGG 3	1054	206	4.810	0.140	0.303	0.009	0.992	3.299	0.101	0.116	0.001	-0.253	1792	26	1706	46	1895	8.5	0.90	1895	9	0%
LP080120-8s-73	AGG 3	274.1	107.2	4.509	0.090	0.306	0.005	0.936	3.264	0.055	0.108	0.001	0.050	1732	16	1723	26	1760	15	0.98	1760	15	1%
LP080120-8s-29	AGG 3	361.2	325	4.653	0.087	0.307	0.006	0.940	3.253	0.062	0.109	0.001	0.147	1758	16	1727	29	1788	12	0.97	1788	12	1%
LP080120-8L-46	AGG 3	210.8	119.2	4.500	0.094	0.309	0.006	0.863	3.239	0.058	0.105	0.001	0.181	1730	17	1734	27	1707	18	1.02	1707	18	1%
LP080120-8s-37	AGG 3	49.9	45.9	4.950	0.210	0.314	0.012	0.886	3.185	0.122	0.115	0.002	0.092	1807	35	1760	58	1869	34	0.94	1869	34	2%
LP080120-8s-95	AGG 3	43.8	71.8	4.770	0.190	0.316	0.010	0.880	3.165	0.100	0.111	0.003	-0.110	1784	35	1769	50	1808	41	0.98	1808	41	2%
LP080120-8s-134	AGG 3	138.5	110.9	4.960	0.100	0.319	0.004	0.825	3.136	0.041	0.111	0.001	-0.039	1812	17	1784	20	1818	24	0.98	1818	24	1%
LP080120-8s-86	AGG 3	150.5	63.3	4.870	0.120	0.323	0.009	0.893	3.100	0.085	0.110	0.001	0.193	1796	21	1801	43	1803	19	1.00	1803	19	1%
LP080120-8s-19	AGG 3	204	211	4.950	0.110	0.323	0.006	0.889	3.094	0.059	0.109	0.001	-0.213	1810	18	1805	30	1786	19	1.01	1786	19	1%
LP080120-8s-141	AGG 3	234.7	127.6	5.002	0.099	0.325	0.006	0.926	3.082	0.057	0.111	0.001	0.157	1819	17	1811	29	1825	13	0.99	1825	13	1%
LP080120-8s-61	AGG 3	664	156.1	5.010	0.190	0.326	0.011	0.988	3.067	0.104	0.113	0.001	-0.627	1819	31	1818	51	1844	14	0.99	1844	14	1%
LP080120-8L-10	AGG 3	199.9	134.7	4.938	0.073	0.327	0.004	0.798	3.062	0.037	0.110	0.001	-0.131	1808	12	1822	19	1795	15	1.02	1795	15	1%
LP080120-8L-47	AGG 3	148.2	103.9	5.030	0.110	0.327	0.007	0.885	3.061	0.063	0.112	0.001	-0.013	1823	18	1822	33	1823	17	1.00	1823	17	1%
LP080120-8L-19	AGG 3	78	94.9	5.111	0.072	0.329	0.005	0.774	3.037	0.044	0.114	0.002	0.590	1838	12	1835	23	1858	24	0.99	1858	24	1%
LP080120-8s-118	AGG 3	295.3	479	5.004	0.096	0.329	0.007	0.978	3.036	0.060	0.110	0.001	0.331	1819	16	1835	32	1803	9.7	1.02	1803	10	1%
LP080120-8s-128	AGG 3	62.8	68.2	5.020	0.140	0.330	0.009	0.926	3.033	0.083	0.111	0.001	0.069	1821	24	1836	43	1817	17	1.01	1817	17	1%
LP080120-8s-25	AGG 3	33.4	63	5.420	0.380	0.331	0.019	0.766	3.021	0.173	0.118	0.004	0.011	1879	59	1839	91	1920	54	0.96	1920	54	3%
LP080120-8L-31	AGG 3	418.2	189.4	5.230	0.065	0.332	0.004	0.955	3.011	0.038	0.113	0.000	0.170	1857	11	1849	20	1855	7.5	1.00	1855	8	0%
LP080120-8L-2	AGG 3	466	28.4	5.181	0.089	0.336	0.005	0.927	2.976	0.040	0.112	0.001	-0.236	1849	15	1867	22	1827	13	1.02	1827	13	1%
LP080120-8s-122	AGG 3	169.5	132.4	5.370	0.130	0.339	0.007	0.915	2.949	0.064	0.115	0.001	0.227	1879	20	1882	36	1877	16	1.00	1877	16	1%
LP080120-8s-13	AGG 3	110.9	63.6	5.490	0.130	0.345	0.006	0.888	2.901	0.052	0.115	0.001	-0.057	1898	20	1909	30	1885	17	1.01	1885	17	1%
LP080120-8s-5	AGG 3	145.3	155.4	5.554	0.096	0.347	0.005	0.693	2.879	0.037	0.117	0.002	0.209	1912	16	1921	21	1903	23	1.01	1903	23	1%
LP080120-8L-1	AGG 3	152.7	102.1	5.571	0.097	0.348	0.006	0.854	2.873	0.048	0.115	0.001	0.120	1911	15	1925	28	1877	19	1.03	1877	19	1%
LP080120-8s-35	AGG 3	186	95	5.910	0.120	0.352	0.007	0.932	2.843	0.060	0.122	0.001	0.043	1962	18	1942	35	1984	16	0.98	1984	16	1%
LP080120-8s-9	AGG 3	170.1	66.1	5.990	0.096	0.357	0.005	0.731	2.803	0.039	0.122	0.001	0.294	1974	14	1967	24	1977	18	0.99	1977	18	1%
LP080120-8s-53	AGG 3	343	184.8	6.130	0.110	0.360	0.007	0.952	2.778	0.057	0.125	0.001	0.149	1994	16	1981	35	2036	8	0.97	2036	8	0%
LP080120-8L-30	AGG 3	100.1	107.6	6.290	0.180	0.364	0.007	0.824	2.750	0.056	0.125	0.002	-0.197	2016	25	1999	35	2030	35	0.98	2030	35	2%
LP080120-8L-48	AGG 3	502	53.2	6.683	0.074	0.372	0.004	0.895	2.686	0.027	0.130	0.001	0.150	2070	10	2040	18	2094	7.4	0.97	2094	7	0%
LP080120-8L-12	AGG 3	344	89.9	6.443	0.085	0.374	0.005	0.940	2.674	0.035	0.126	0.001	0.199	2038	12	2048	23	2037	7.5	1.01	2037	8	0%
LP080120-8L-27	AGG 3	79.3	63.7	6.760	0.190	0.376	0.010	0.842	2.660	0.071	0.129	0.003	0.068	2078	25	2057	47	2081	34	0.99	2081	34	2%
LP080120-8L-33	AGG 3	118.1	85.5	6.620	0.150	0.376	0.006	0.772	2.660	0.041	0.126	0.002	-0.045	2061	19	2057	27	2045	24	1.01	2045	24	1%
LP080120-8s-30	AGG 3	87.1	97.2	6.680	0.180	0.378	0.009	0.884	2.648	0.062	0.129	0.001	0.074	2068	24	2065	42	2086	19	0.99	2086	19	1%
LP080120-8L-17	AGG 3	204.5	212.4	6.694	0.096	0.379	0.006	0.900	2.636	0.039	0.129	0.001	0.432	2071	13	2073	26	2082	12	1.00	2082	12	1%
LP080120-8s-120	AGG 3	269.9	185.1	7.040	0.150	0.381	0.008	0.940	2.626	0.055	0.134	0.001	0.024	2116	19	2079	37	2156	11	0.96	2156	11	1%
LP080120-8s-12	AGG 3	146.3	174.4	8.320	0.170	0.422	0.007	0.919	2.372	0.040	0.142	0.001	-0.116	2265	19	2267	32	2252	17	1.01	2252	17	1%
LP080120-8L-16	AGG 3	619	330.8	8.740	0.160	0.426	0.008	0.957	2.349	0.042	0.149	0.001	0.088	2311	17	2286	34	2339	8.3	0.98	2339	8	0%
LP080120-8L-3	AGG 3	178	98.5	8.560	0.120	0.429	0.007	0.889	2.330	0.037	0.144	0.001	0.369	2292	13	2302	31	2277	11	1.01	2277	11	0%
LP080120-8s-51	AGG 3	970	55.5	9.620	0.270	0.437	0.013	0.980	2.288	0.068	0.160	0.001	-0.551	2397	27	2335	58	2452	10	0.95	2452	10	0%
LP080120-8s-150	AGG 3	73.9	50.9	11.410	0.370	0.483	0.014	0.934	2.070	0.060	0.170	0.002	-0.077	2555	30	2539	60	2564	19	0.99	2564	19	1%
LP080120-8s-121	AGG 3	103.8	61.4	12.150	0.170	0.496	0.010	0.923	2.018	0.040	0.178	0.002	0.753	2616	13	2594	43	2631	14	0.99	2631	14	1%
LP080120-8s-101	AGG 3	176.4	211.7	12.470	0.270	0.505	0.011	0.956	1.980	0.043	0.180	0.001	0.012	2640	20	2634	49	2656	12	0.99	2656	12	0%
LP080120-8s-131	AGG 3	162.5	150.6	12.980	0.230	0.509	0.008	0.968	1.965	0.031	0.184	0.001	-0.230	2677	17	2651	34	2690	6.6	0.99	2690	7	0%
LP080120-8s-123	AGG 3	121.5	96.5	13.080	0.310	0.511	0.011	0.962	1.957	0.042	0.186	0.001	-0.062	2689	21	2658	47	2706	11	0.98	2706	11	0%
LP080120-8s-28	AGG 3	175.8	198.6	13.400	0.270	0.515	0.010	0.960	1.941	0.037	0.187	0.001	0.189	2707	19	2677	41	2716	8.9	0.99	2716	9	0%
LP080120-8L-32	AGG 3	78.3	79.1	13.370	0.380	0.520	0.012	0.898	1.923	0.044	0.184	0.002	-0.085	2704	27	2697	51	2689	20	1.00	2689	20	1%
LP080120-8s-77	AGG 3	24.3	7	13.620	0.940	0.546	0.038	0.980	1.832	0.127	0.184	0.003	-0.248	2729	70	2800	160	2688	23	1.04	2688	23	1%
LP080120-8L-18	AGG 3	253.9	121.2	15.670	0.280	0.547	0.009	0.956	1.830	0.030	0.209	0.001	-0.020	2856	17	2810	37	2894	7.1	0.97	2894	7	0%
LP080120-8s-43	AGG 3	179.7	78.6	17.450	0.350	0.575	0.012	0.930	1.739	0.036	0.221	0.001	0.315	2959	19	2929	50	2988	8.7	0.98	2988	9	0%
LP080120-8L-45	AGG 3	124.8	58.4	18.410	0.240	0.592	0.008	0.894	1.689	0.024	0.226	0.001	0.394	3011	13	2997	34	3023	9.6	0.99	3023	10	0%
Rejected Grains																							
LP080120-8L-44	AGG 3	172.2	783.4	0.502	0.019	0.041	0.001	0.277	24.510	0.451	0.089	0.003	0.208	413	13	258	5	1386	72	0.62	258	5	2%
LP080120-8s-71	AGG 3	153.2	592	0.491	0.020	0.041	0.001	0.606	24.438	0.406	0.089	0.003	-0.195	405	14	259	4	1397	71	0.64	259	4	2%
LP080120-8L-54	AGG 3	159.6	851	0.524	0.018	0.043	0.001	0.188	23.524	0.448	0.090	0.004	0.281	427	12	268	5	1407	81	0.63	268	5	2%
LP080120-8L-36	AGG 3	88.5	321.1	0.760	0.036	0.043	0.001	0.663	23.148	0.589	0.128	0.005	-0.223	579	23	273	7	2074	73	0.47	273	7	3%
LP080120-8L-28	AGG 3	37.8	188.8	0.856	0.053	0.045	0.002	0.776	22.472	1.111	0.142	0.007	-0.145	625	29	283	14	2243	80	0.45	283	14	5%
LP080120-8s-139	AGG 3	248	136.3	3.020	0.160	0.215	0.010	0.979	4.651	0.216	0.101	0.001	-0.486	1407	43	1252	56	1633	22	0.77	1633	22	1%

LP080120-8s-1	AGG 3	926	204	3.590	0.230	0.238	0.012	0.994	4.202	0.212	0.110	0.002	-0.935	1551	49	1374	61	1792	30	0.77	1792	30	2%
LP080120-8L-52	AGG 3	160.7	633.7	3.607	0.082	0.240	0.005	0.876	4.168	0.080	0.110	0.002	0.136	1550	18	1386	24	1795	25	0.77	1795	25	1%

Sample LP080120-9

				Measured isotopic ratios										Isotopic ages and errors (Ma)									
Grain	Unit	U (ppm)	Th (ppm)	$^{207}Pb/^{235}U$	2σ	$^{206}Pb/^{238}U$	2σ	Error Correlation	$^{238}Pb/^{206}Pb$	2σ	$^{207}Pb/^{206}Pb$	2σ	Error Correlation	$^{207}Pb/^{235}U$	2σ	$^{206}Pb/^{238}U$	2σ	$^{207}Pb/^{206}Pb$	2σ	discordance	best age (Ma)	2σ	internal error
LP080120-9s-58	AGG 3	92.9	59.8	0.093	0.008	0.011	0.000	0.007	95.147	2.263	0.064	0.006	0.328	90	7	67	2	680	190	0.75	67	2	2%
LP080120-9s-119	AGG 3	1190	850	0.074	0.003	0.011	0.000	0.731	87.260	2.437	0.047	0.001	0.265	73	2	74	2	61	48	1.01	74	2	3%
LP080120-9s-137	AGG 3	215.8	190	0.089	0.007	0.012	0.000	0.458	80.645	2.666	0.052	0.004	-0.029	87	6	80	3	280	140	0.92	80	3	3%
LP080120-9s-166	AGG 3	416	285	0.098	0.006	0.013	0.000	0.718	78.064	2.072	0.055	0.002	-0.328	95	5	82	2	399	90	0.86	82	2	3%
LP080120-9s-77	AGG 3	714	365	0.087	0.003	0.013	0.000	0.628	77.459	2.040	0.049	0.001	0.294	85	3	83	2	146	54	0.98	83	2	3%
LP080120-9s-75	AGG 3	1007	631	0.105	0.004	0.013	0.000	0.771	74.906	2.076	0.057	0.001	0.075	101	3	86	2	489	42	0.85	86	2	3%
LP080120-9L-13	AGG 3	781	456.7	0.092	0.003	0.014	0.000	0.504	72.359	0.838	0.048	0.001	-0.052	90	2	89	1	116	51	0.99	89	1	1%
LP080120-9s-81	AGG 3	741	321	0.095	0.004	0.014	0.000	0.600	71.073	1.364	0.049	0.002	-0.142	92	4	90	2	153	70	0.98	90	2	2%
LP080120-9s-51	AGG 3	316	121.3	0.099	0.004	0.014	0.000	0.704	70.872	1.607	0.051	0.002	-0.201	95	4	90	2	215	65	0.95	90	2	2%
LP080120-9s-42	AGG 3	1986	1252	0.103	0.002	0.014	0.000	0.662	70.274	1.086	0.052	0.001	0.177	99	2	91	1	297	32	0.92	91	1	2%
LP080120-9s-59	AGG 3	420	255	0.096	0.004	0.014	0.000	0.314	70.126	1.574	0.049	0.002	0.290	93	4	91	2	135	80	0.98	91	2	2%
LP080120-9s-40	AGG 3	344.3	196	0.106	0.008	0.014	0.000	0.337	69.444	1.157	0.053	0.004	-0.083	102	7	92	2	310	140	0.91	92	2	2%
LP080120-9s-124	AGG 3	978	600	0.096	0.003	0.014	0.000	0.817	69.204	1.676	0.048	0.001	0.053	93	3	93	2	104	40	1.00	93	2	2%
LP080120-9s-3	AGG 3	587	231	0.097	0.003	0.015	0.000	0.340	68.306	0.980	0.048	0.001	0.167	94	3	94	1	107	54	1.00	94	1	1%
LP080120-9s-2	AGG 3	156	77	0.100	0.005	0.015	0.000	0.084	67.843	1.289	0.049	0.003	0.257	97	4	94	2	150	100	0.98	94	2	2%
LP080120-9s-29	AGG 3	359	70.8	0.101	0.005	0.015	0.000	0.313	67.568	1.278	0.050	0.002	0.136	98	5	95	2	168	98	0.97	95	2	2%
LP080120-9s-78	AGG 3	294.9	121.9	0.101	0.005	0.015	0.000	0.558	67.568	1.689	0.050	0.002	-0.015	98	4	95	2	170	81	0.97	95	2	3%
LP080120-9L-8	AGG 3	123.8	47.2	0.101	0.005	0.015	0.000	0.345	67.476	1.093	0.049	0.002	-0.014	97	5	95	2	160	100	0.98	95	2	2%
LP080120-9s-153	AGG 3	474	275	0.105	0.004	0.015	0.000	0.548	67.431	1.728	0.051	0.002	0.029	101	4	95	2	232	82	0.94	95	2	3%
LP080120-9s-19	AGG 3	327	87.3	0.104	0.005	0.015	0.000	0.504	67.069	1.619	0.051	0.002	0.094	100	4	95	2	219	78	0.95	95	2	2%
LP080120-9s-146	AGG 3	300.2	136	0.103	0.005	0.015	0.000	0.685	66.979	1.839	0.050	0.002	-0.144	100	5	96	3	189	77	0.96	96	3	3%
LP080120-9s-76	AGG 3	880	160	0.115	0.003	0.015	0.000	0.675	67.024	1.797	0.056	0.001	0.382	110	3	96	3	450	50	0.87	96	3	3%
LP080120-9s-74	AGG 3	371	118.5	0.102	0.005	0.015	0.000	0.347	66.845	1.340	0.050	0.002	0.192	98	4	96	2	164	94	0.97	96	2	2%
LP080120-9s-167	AGG 3	158.4	71.3	0.101	0.006	0.015	0.001	0.399	66.401	2.337	0.049	0.003	0.280	98	5	96	3	120	110	0.99	96	3	4%
LP080120-9s-122	AGG 3	342.8	108.8	0.102	0.003	0.015	0.000	0.263	66.138	1.443	0.049	0.002	0.382	98	3	97	2	143	73	0.98	97	2	2%
LP080120-9s-16	AGG 3	434	171.3	0.109	0.008	0.015	0.000	0.515	65.402	1.240	0.052	0.003	-0.231	105	7	98	2	240	130	0.93	98	2	2%
LP080120-9s-148	AGG 3	635	176	0.103	0.005	0.015	0.000	0.741	65.189	1.870	0.049	0.002	-0.242	99	5	98	3	120	71	0.99	98	3	3%
LP080120-9s-170	AGG 3	1239	340	0.103	0.003	0.015	0.000	0.812	65.104	1.907	0.048	0.001	0.295	100	3	98	3	116	37	0.99	98	3	3%
LP080120-9s-68	AGG 3	608	148	0.104	0.003	0.015	0.000	0.681	64.851	1.724	0.049	0.001	0.441	100	3	99	3	144	52	0.98	99	3	3%
LP080120-9s-96	AGG 3	504	95.7	0.105	0.004	0.015	0.000	0.817	64.851	1.893	0.049	0.001	-0.248	101	4	99	3	161	49	0.98	99	3	3%
LP080120-9s-69	AGG 3	319	69.6	0.106	0.005	0.016	0.000	0.497	64.062	1.354	0.049	0.002	0.019	102	4	100	2	157	80	0.98	100	2	2%
LP080120-9s-62	AGG 3	715	430	0.106	0.003	0.016	0.000	0.563	63.816	1.059	0.049	0.001	-0.031	102	3	100	2	143	57	0.98	100	2	2%
LP080120-9L-6	AGG 3	651	224.4	0.106	0.003	0.016	0.000	0.368	63.131	0.877	0.048	0.001	0.075	102	3	101	1	115	63	0.99	101	1	1%
LP080120-9s-38	AGG 3	136	14.2	0.112	0.008	0.016	0.001	0.607	61.576	3.033	0.050	0.003	0.014	107	7	104	5	190	110	0.97	104	5	5%
LP080120-9s-159	AGG 3	169	55	0.111	0.006	0.017	0.001	0.629	60.569	2.275	0.048	0.002	0.061	106	5	106	4	121	87	0.99	106	4	4%
LP080120-9s-94	AGG 3	54.5	29.5	0.124	0.012	0.017	0.001	0.536	57.637	2.658	0.052	0.004	-0.020	119	11	111	5	270	170	0.93	111	5	5%
LP080120-9s-115	AGG 3	325	139.7	0.117	0.005	0.018	0.001	0.701	56.085	1.636	0.048	0.002	-0.045	112	5	114	3	94	67	1.01	114	3	3%
LP080120-9s-163	AGG 3	193.5	130.8	0.133	0.009	0.020	0.001	0.835	49.826	2.185	0.048	0.002	-0.288	127	8	128	6	92	76	1.01	128	6	4%
LP080120-9s-102	AGG 3	218.9	102.3	0.159	0.009	0.021	0.001	0.357	47.778	1.370	0.055	0.003	0.116	149	8	134	4	390	130	0.89	134	4	3%
LP080120-9s-120	AGG 3	1295	308	0.143	0.004	0.021	0.001	0.838	47.103	1.176	0.049	0.001	0.202	135	3	135	3	142	31	1.00	135	3	2%
LP080120-9s-30	AGG 3	364.6	115.9	0.142	0.006	0.021	0.000	0.684	47.081	0.864	0.049	0.002	-0.339	135	5	136	2	128	73	1.00	136	2	2%
LP080120-9L-1	AGG 3	175.1	87.7	0.141	0.008	0.021	0.000	0.135	46.970	0.596	0.048	0.003	0.090	133	7	136	2	90	110	1.02	136	2	1%
LP080120-9s-156	AGG 3	311.1	195	0.151	0.006	0.022	0.001	0.590	45.434	1.672	0.050	0.002	0.315	142	6	140	5	173	87	0.99	140	5	4%
LP080120-9s-17	AGG 3	357	444	0.171	0.004	0.025	0.000	0.467	39.984	0.703	0.050	0.001	0.356	160	3	159	3	177	45	1.00	159	3	2%
LP080120-9s-47	AGG 3	581	601	0.185	0.009	0.025	0.001	0.603	39.401	0.792	0.053	0.002	-0.236	173	8	162	3	313	81	0.94	162	3	2%
LP080120-9s-107	AGG 3	304.8	326	0.175	0.005	0.026	0.001	0.542	38.715	0.854	0.049	0.001	0.344	163	4	164	4	154	52	1.01	164	4	2%
LP080120-9s-65	AGG 3	282	143.1	0.208	0.012	0.026	0.001	0.637	38.066	0.855	0.057	0.003	-0.390	192	11	167	4	480	110	0.87	167	4	2%
LP080120-9s-141	AGG 3	205.9	204	0.186	0.009	0.027	0.001	0.663	37.580	1.116	0.051	0.002	0.023	173	7	169	5	226	82	0.98	169	5	3%
LP080120-9s-144	AGG 3	649	29.7	0.208	0.010	0.027	0.001	0.911	37.175	1.382	0.056	0.001	-0.088	191	8	171	6	447	45	0.89	171	6	4%
LP080120-9s-116	AGG 3	188.7	166	0.201	0.009	0.029	0.001	0.696	35.063	1.094	0.051	0.002	0.076	186	7	181	6	247	66	0.98	181	6	3%
LP080120-9s-111	AGG 3	182.5	213	0.248	0.010	0.035	0.001	0.445	28.719	0.808	0.052	0.002	0.105	225	9	221	6	268	77	0.98	221	6	3%
LP080120-9s-14	AGG 3	80.5	111	0.244	0.016	0.037	0.001	0.599	27.367	0.622	0.048	0.003	-0.229	221	13	231	5	120	110	1.05	231	5	2%
LP080120-9s-37	AGG 3	369	161.8	0.286	0.010	0.040	0.001	0.695	24.876	0.507	0.052	0.001	-0.141	256	8	254	5	263	59	0.99	254	5	2%
LP080120-9s-39	AGG 3	265.6	133	0.312	0.016	0.042	0.001	0.554	23.906	0.337	0.054	0.002	-0.319	275	12	264	4	359	93	0.96	264	4	1%
LP080120-9s-64	AGG 3	425	22.6	0.481	0.010	0.063	0.001	0.825	15.974	0.357	0.056	0.001	0.369	399	7	392	8	445	28	0.98	392	8	2%
LP080120-9s-43	AGG 3	524	183.7	0.507	0.014	0.067	0.001	0.804	14.993	0.270	0.055	0.001	-0.257	417	9	417	7	414	35	1.00	417	7	2%
LP080120-9s-5	AGG 3	465	124	0.550	0.014	0.068	0.002	0.772	14.620	0.321	0.058	0.001	0.038	445	9	426	9	545	35	0.96	426	9	2%
LP080120-9L-5	AGG 3	219.8	136	0.560	0.008	0.072	0.001	0.498	13.906	0.164	0.056	0.001	0.319	451	5	448	5	467	30	0.99	448	5	1%
LP080120-9s-92	AGG 3	224.3	303	0.870	0.110	0.087	0.002	0.506	11.494	0.238	0.072	0.008	-0.361	625	50	538	11	920	170	0.86	538	11	2%
LP080120-9s-87	AGG 3	112.8	57	0.709	0.022	0.087	0.002	0.524	11.481	0.211	0.059	0.002	0.076	544	13	539	10	567	64	0.99	539	10	2%
LP080120-9s-57	AGG 3	134.3	97.6	0.785	0.018	0.089	0.002	0.715	11.287	0.204	0.064	0.001	0.139	588	10	547	10	751	37	0.93	547	10	2%
LP080120-9s-98	AGG 3	58	48	0.840	0.160	0.092	0.005	-0.309	10.870	0.603	0.067	0.016	0.554	609	74	567	30	720	320	0.93	567	30	5%
LP080120-9s-25	AGG 3	97.1	188.6	0.770	0.023	0.092	0.002	0.714	10.823	0.269	0.061	0.001	0.111	579	13	570	13	620	43	0.98	570	13	2%
LP080120-9s-70	AGG 3	136.4	120.7	0.805	0.017	0.096	0.002	0.598	10.438	0.218	0.061	0.001	0.449	599	10	590	12	641	38	0.98	590	12	2%
LP080120-9s-89	AGG 3	86.8	48.7	0.829	0.031	0.099	0.003	0.522	10.132	0.298	0.061	0.002	0.285	612	17	607	17	637	69	0.99	607	17	3%
LP080120-9s-95	AGG 3	554	9.2	0.870	0.019	0.100	0.003	0.278	10.040	0.282	0.064	0.002	0.760	635	10	612	16	727	50	0.96	612	16	3%
LP080120-9s-127	AGG 3	223.1	250	0.850	0.033	0.103	0.004	0.926	9.671	0.365	0.060	0.001	0.216	624	18	634	23	597	32	1.02	634	23	4%
LP080120-9s-12	AGG 3	49.2	40.9	0.929	0.038	0.107	0.002	0.242	9.320	0.165	0.063	0.003	0.202	666	20	657	11	693	84	0.99	657	11	2%
LP080120-9s-113	AGG 3	69	33.6	0.961	0.036	0.111	0.003	0.408	9.001	0.235	0.063	0.002	0.343	683	19	679	17	698	82	0.99	679	17	3%
LP080120-9s-133	AGG 3	150.8	60.3	1.090	0.043	0.122	0.004	0.871	8.177	0.247	0.065	0.001	-0.154	747	20	744	21	765	41	1.00	744	21	3%
LP080120-9s-117	AGG 3	404	290.2	1.629	0.048	0.153	0.004	0.949	6.523	0.170	0.077	0.001	0.002	980	19	919	22	1128	20	0.94	919	22	2%
LP080120-9s-150	AGG 3	155.5	89.1	1.517	0.043	0.156	0.004	0.846	6.414	0.148	0.071	0.001	0.024	936	17	934	20	942	31	1.00	934	20	2%
LP080120-9s-34	AGG 3	234.2	58.3	1.566	0.035	0.159	0.003	0.824	6.289	0.103	0.071	0.001	-0.151	956	14	951	15	968	25	0.99	951	15	2%
LP080120-9s-10	AGG 3	164	62.4	1.626	0.029	0.165	0.002	0.618	6.075	0.081	0.072	0.001	0.145	980	11	982	12	979	28	1.00	982	12	1%
LP080120-9s-67	AGG 3	212	109.7	1.741	0.040	0.169	0.003	0.834	5.935	0.099	0.075	0.001	-0.229	1023	15	1004	16	1069	26	0.94	1069	26	2%
LP080120-9L-7	AGG 3	432	155.5	1.727	0.024	0.170	0.002	0.791	5.875	0.079	0.074	0.001	0.250	1018	9	1013	13	1029	17	0.98	1029	17	2%
LP080120-9s-82	AGG 3	660	227	1.858	0.044	0.171	0.003	0.983	5.838	0.116	0.079	0.000	-0.504	1065	15	1019	19	1167	10	0.87	1167	10	1%
LP080120-9s-56	AGG 3	67.1	61.7	1.765	0.053	0.172	0.004	0.758	5.814	0.135	0.075	0.002	0.004	1031	20	1023	22	1051	42	0.97	1051	42	4%
LP080120-9s-1	AGG 3	58.6	35.2	1.730	0.044	0.173	0.004	0.911	5.767	0.120	0.072	0.001	-0.133	1019	16	1031	20	997	22	1.03	997	22	2%
LP080120-9s-151	AGG 3	146	53.1	1.795	0.054	0.176	0.005	0.946	5.672	0.161	0.074	0.001	-0.122	1042	20	1046	28	1034	18	1.01	1034	18	2%
LP080120-9s-79	AGG 3	274	127.4	1.889	0.041	0.179	0.004	0.809	5.590	0.116	0.077	0.001	0.144	1077	15	1061	20	1115	26	0.95	1115	26	2%
LP080120-9s-149	AGG 3	121.1	34.1	1.946	0.046	0.180	0.004	0.796	5.552	0.111	0.078	0.001	0.073	1096	16	1067	19	1155	27	0.92	1155	27	2%
LP080120-9s-26	AGG 3	110	103.5	1.847	0.039	0.180	0.003	0.718	5.546	0.077	0.074	0.001	-0.059	1062	14	1068	14	1051	28	1.02	1051	28	3%
LP080120-9s-45	AGG 3	204.2	45.3	1.916	0.032	0.183	0.002	0.775	5.464	0.072	0.076	0.001	-0.130	1086	11	1083	13	1092	22	0.99	1092	22	2%
LP080120-9s-162	AGG 3	178	229	1.985	0.064	0.185	0.006	0.929	5.397	0.169	0.077	0.001	0.018	1109	22	1096	31	1128	23	0.97	1128	23	2%
LP080120-9s-21	AGG 3	538	347	2.032	0.057	0.186	0.004	0.872	5.391	0.102	0.080	0.001	-0.322	1125	19	1097	19	1184	26	0.93	1184	26	2%
LP080120-9s-90	AGG 3	166	72	2.088	0.058	0.192	0.004	0.867	5.200	0.116	0.079	0.001	-0.161	1144	19	1133	23	1169	27	0.97	1169	27	2%
LP080120-9s-53	AGG 3	97.3	36.8	2.108	0.060	0.193	0.004	0.803	5.192	0.102	0.079	0.001	0.009	1150	19	1135	21	1181	31	0.96	1181	31	3%
LP080120-9s-83	AGG 3	462	177	2.126	0.042	0.194	0.004	0.933	5.157	0.106	0.080	0.001	0.261	1157	14	1142	22	1190	15	0.96	1190	15	1%
LP080120-9s-35	AGG 3	373.2	71.8	2.170	0.034	0.197	0.003	0.791	5.081	0.067	0.080	0.001	0.055	1171	11	1158	14	1196	19	0.97	1196	19	2%
LP080120-9s-123	AGG 3	178.9	63	2.199	0.067	0.204	0.006	0.949	4.904	0.144	0.079	0.001	0.100	1179	21	1196	32	1159	18	1.03	1159	18	2%
LP080120-9s-99	AGG 3	123.2	36.7	2.561	0.071	0.218	0.005	0.922	4.583	0.107	0.085	0.001	-0.164	1288	20	1272	27	1322	22	0.96	1322	22	2%
LP080120-9s-138	AGG 3	135	31	2.414	0.099	0.219	0.009	0.972	4.566	0.179	0.080	0.001	-0.076	1244	30	1275	46	1199	20	1.06	1199	20	2%
LP080120-9s-27	AGG 3	167.9	124.6	2.818	0.044	0.222	0.004	0.764	4.498	0.071	0.092	0.001	0.317	1360	12	1294	19	1468	19	0.88	1468	19	1%
LP080120-9s-140	AGG 3	314	151.6	2.767	0.048	0.230	0.004	0.914	4.350	0.076	0.087	0.001	0.081	1346	13	1334	21	1371	13	0.97	1371	13	1%
LP080120-9s-24	AGG 3	185.5	149	3.170	0.055	0.244	0.004	0.872	4.103	0.066	0.094	0.001	0.230	1449	14	1406	20	1517	13	0.93	1517	13	1%
LP080120-9s-4	AGG 3	253	99.9	3.212	0.062	0.247	0.003	0.821	4.050	0.056	0.095	0.001	-0.200	1459	15	1422	18	1518	24	0.94	1518	24	2%
LP080120-9s-31	AGG 3	51.4	35.1	3.036	0.084	0.250	0.005	0.818	4.006	0.087	0.088	0.001	-0.080	1415	21	1436	28	1386	31	1.04	1386	31	2%
LP080120-9s-63	AGG 3	131.5	49	3.210	0.078	0.250	0.005	0.893	3.994	0.080	0.093	0.001	-0.157	1459	19	1440	26	1490	20	0.97	1490	20	1%
LP080120-9s-129	AGG 3	92	84	3.124	0.099	0.251	0.008	0.878	3.979	0.124	0.091	0.001	0.235	1437	24	1444	40	1434	29	1.01	1434	29	2%
LP080120-9s-86	AGG 3	149.5	115.8	3.240	0.086	0.253	0.006	0.884	3.956	0.097	0.093	0.001	0.011	1466	20	1452	32	1492	25	0.97	1492	25	2%
LP080120-9L-12	AGG 3	165.8	101.9	3.266	0.033	0.257	0.003	0.659	3.893	0.038	0.092	0.001	0.294	1473	8	1474	13	1473	15	1.00	1473	15	1%
LP080120-9s-6	AGG 3	55.4	50.8	3.230	0.110	0.258	0.007	0.859	3.877	0.105	0.091	0.002	-0.082	1462	26	1478	35	1445	33	1.02	1445	33	2%
LP080120-9s-136	AGG 3	146.7	51.8	3.350	0.170	0.264	0.012	0.949	3.788	0.172	0.092	0.001	0.080	1489	37	1508	62	1475	26	1.02	1475	26	2%
LP080120-9s-147	AGG 3	263.5	98.8	3.450	0.110	0.265	0.008	0.953	3.779	0.114	0.095	0.001	-0.085	1514	26	1512	41	1520	17	0.99	1520	17	1%
LP080120-9s-152	AGG 3	131.6	57.5	3.520	0.100	0.271	0.008	0.916	3.686	0.111	0.094	0.001	0.169	1530	24	1547	42	1508	21	1.03	1508	21	1%
LP080120-9s-164	AGG 3	1123	271	4.100	0.150	0.272	0.009	0.898	3.682	0.123	0.109	0.002	0.175	1652	28	1548	46	1782	24	0.87	1782	24	1%
LP080120-9s-13	AGG 3	114.6	151	3.894	0.090	0.276	0.006	0.912	3.628	0.075	0.103	0.001	-0.022	1611	19	1569	29	1673	18	0.94	1673	18	1%
LP080120-9s-11	AGG 3	132.5	52.5	3.691	0.069	0.277	0.005	0.874	3.617	0.059	0.097	0.001	-0.039	1569	15	1573	23	1567	17	1.00	1567	17	1%
LP080120-9s-7	AGG 3	251.8	110	4.160	0.050	0.280	0.005	0.840	3.573	0.057	0.108	0.001	0.656	1666	10	1591	23	1766	14	0.90	1766	14	1%
LP080120-9s-131	AGG 3	325	120.5	4.040	0.100	0.288	0.006	0.942	3.472	0.076	0.102	0.001	-0.263	1641	21	1631	32	1661	13	0.98	1661	13	1%
LP080120-9s-130	AGG 3	261.1	105.6	4.036	0.057	0.288	0.005	0.846	3.470	0.055	0.102	0.001	0.449	1641	12	1632	23	1660	13	0.98	1660	13	1%
LP080120-9s-32	AGG 3	167	103.5	4.115	0.056	0.288	0.003	0.736	3.470	0.040	0.104	0.001	0.071	1657	11	1632	16	1690	18	0.97	1690	18	1%
LP080120-9s-33	AGG 3	81.8	66.6	4.082	0.068	0.291	0.005	0.635	3.442	0.053	0.102	0.002	0.412	1650	13	1644	22	1659	27	0.99	1659	27	2%
LP080120-9s-143	AGG 3	374.8	164	4.122	0.092	0.291	0.006	0.933	3.438	0.072	0.103	0.001	-0.045	1658	18	1646	31	1676	14	0.98	1676	14	1%
LP080120-9L-9	AGG 3	178.5	77.1	4.220	0.050	0.296	0.003	0.790	3.375	0.033	0.103	0.001	0.258	1678	10	1673	15	1684	14	0.99	1684	14	1%
LP080120-9L-10	AGG 3	93	50.1	4.291	0.072	0.297	0.004	0.676	3.365	0.050	0.105	0.001	0.173	1691	14	1677	22	1710	22	0.98	1710	22	1%
LP080120-9s-9	AGG 3	67.3	25.9	4.229	0.091	0.298	0.005	0.784	3.352	0.054	0.103	0.001	-0.057	1679	18	1682	24	1678	25	1.00	1678	25	1%
LP080120-9s-108	AGG 3	88.1	25.9	4.280	0.100	0.299	0.006	0.800	3.347	0.071	0.104	0.001	0.135	1689	19	1685	31	1700	23	0.99	1700	23	1%
LP080120-9s-100	AGG 3	156.6	84.6	4.292	0.082	0.299	0.005	0.864	3.346	0.056	0.104	0.001	-0.015	1691	16	1686	25	1703	17	0.99	1703	17	1%
LP080120-9s-73	AGG 3	144	76.5	4.390	0.110	0.299	0.007	0.942	3.341	0.078	0.107	0.001	0.090	1709	21	1687	35	1742	13	0.97	1742	13	1%
LP080120-9s-15	AGG 3	181.2	106	4.540	0.100	0.303	0.006	0.944	3.305	0.062	0.109	0.001	-0.329	1737	18	1704	28	1782	14	0.96	1782	14	1%
LP080120-9s-118	AGG 3	544	47.5	4.490	0.110	0.305	0.008	0.882	3.279	0.089	0.107	0.002	0.374	1727	22	1715	41	1751	24	0.98	1751	24	1%

LP080120-9s-106	AGG 3	163.7	95.3	4.360	0.110	0.306	0.007	0.949	3.270	0.071	0.104	0.001	-0.044	1703	20	1719	32	1688	15	1.02	1688	15	1%
LP080120-9s-48	AGG 3	570	233.9	4.720	0.110	0.306	0.007	0.897	3.268	0.079	0.112	0.001	0.110	1770	21	1720	37	1831	16	0.94	1831	16	1%
LP080120-9s-145	AGG 3	93.3	62.6	4.310	0.110	0.308	0.008	0.941	3.251	0.089	0.102	0.001	0.106	1694	22	1728	41	1657	19	1.04	1657	19	1%
LP080120-9s-160	AGG 3	183	165.6	4.830	0.310	0.311	0.010	0.722	3.218	0.099	0.112	0.005	-0.203	1782	50	1744	47	1819	75	0.96	1819	75	4%
LP080120-9s-121	AGG 3	632	131	5.850	0.290	0.333	0.014	0.990	3.003	0.126	0.128	0.001	-0.641	1949	44	1849	68	2068	19	0.89	2068	19	1%
LP080120-9s-168	AGG 3	129.1	121.2	5.550	0.170	0.344	0.010	0.965	2.907	0.085	0.116	0.001	0.071	1906	26	1905	49	1898	14	1.00	1898	14	1%
LP080120-9s-161	AGG 3	183	164	11.920	0.500	0.448	0.018	0.988	2.232	0.090	0.192	0.001	-0.139	2593	39	2384	78	2758	10	0.86	2758	10	0%
LP080120-9s-41	AGG 3	58.4	54.8	12.590	0.270	0.473	0.010	0.930	2.116	0.043	0.193	0.002	0.078	2648	20	2494	42	2769	14	0.90	2769	14	1%
LP080120-9s-22	AGG 3	157.9	109.8	12.650	0.240	0.493	0.005	0.761	2.028	0.022	0.186	0.002	-0.158	2653	17	2584	24	2708	17	0.95	2708	17	1%
LP080120-9s-23	AGG 3	281.4	381.1	12.720	0.210	0.499	0.008	0.827	2.006	0.033	0.185	0.002	0.430	2658	15	2607	35	2701	13	0.97	2701	13	0%
LP080120-9s-8	AGG 3	153.2	82.2	13.190	0.200	0.504	0.007	0.870	1.986	0.026	0.190	0.001	0.016	2692	14	2628	28	2745	9	0.96	2745	9	0%
LP080120-9s-103	AGG 3	150.2	73.6	13.760	0.280	0.517	0.010	0.938	1.935	0.036	0.194	0.001	-0.107	2732	19	2684	40	2773	10	0.97	2773	10	0%
LP080120-9s-104	AGG 3	107.8	27.5	15.130	0.370	0.551	0.013	0.967	1.815	0.043	0.200	0.001	-0.047	2822	23	2829	53	2823	9	1.00	2823	9	0%
LP080120-9s-158	AGG 3	125.8	57.6	16.220	0.600	0.560	0.019	0.961	1.786	0.061	0.209	0.002	-0.215	2886	35	2866	78	2898	14	0.99	2898	14	0%
Rejected Grains																							
LP080120-9s-66	AGG 3	222.8	118.8	0.014	0.002	0.002	0.000	-0.081	570.776	15.638	0.058	0.010	0.255	14	2	11	0	400	350	0.81	11	0	3%
LP080120-9L-14	AGG 3	138.3	68.6	0.014	0.003	0.002	0.000	0.160	539.957	16.619	0.055	0.013	-0.061	14	3	12	0	250	400	0.85	12	0	3%
LP080120-9L-4	AGG 3	160	200	0.020	0.004	0.002	0.000	0.154	403.714	12.387	0.060	0.011	-0.081	21	4	16	0	410	330	0.78	16	0	3%
LP080120-9s-28	AGG 3	89.9	49.8	0.019	0.004	0.003	0.000	0.046	381.971	12.985	0.052	0.010	0.147	19	4	17	1	210	350	0.90	17	1	3%
LP080120-9s-126	AGG 3	120.9	54.9	0.017	0.003	0.003	0.000	-0.061	378.931	13.067	0.048	0.008	0.300	17	3	17	1	40	310	0.99	17	1	3%
LP080120-9L-15	AGG 3	186.3	118.9	0.020	0.002	0.003	0.000	0.013	377.216	10.387	0.056	0.006	0.234	20	2	17	0	390	230	0.84	17	0	3%
LP080120-9s-125	AGG 3	487	630	0.017	0.001	0.003	0.000	0.036	373.972	12.307	0.046	0.004	0.366	17	1	17	1	10	150	1.02	17	1	3%
LP080120-9s-128	AGG 3	253.7	114	0.018	0.002	0.003	0.000	-0.011	372.440	13.039	0.048	0.005	0.353	18	2	17	1	100	190	0.98	17	1	4%
LP080120-9s-169	AGG 3	96.8	54.9	0.017	0.004	0.003	0.000	0.059	366.300	14.759	0.045	0.012	0.107	17	4	18	1	-70	400	1.02	18	1	4%
LP080120-9s-105	AGG 3	84	31.4	0.045	0.008	0.003	0.000	0.210	362.319	17.066	0.118	0.019	0.073	44	8	18	1	1710	350	0.40	18	1	5%
LP080120-9s-139	AGG 3	853	214	0.136	0.005	0.013	0.000	0.222	79.618	1.521	0.079	0.003	0.311	130	4	80	2	1160	70	0.62	80	2	2%
LP080120-9s-54	AGG 3	3920	1011	0.117	0.005	0.014	0.000	0.484	70.771	1.052	0.060	0.002	-0.158	112	4	91	1	591	68	0.81	91	1	1%
LP080120-9s-50	AGG 3	138.3	260	0.300	0.011	0.014	0.000	0.467	69.156	1.722	0.151	0.005	0.207	266	9	93	2	2346	58	0.35	93	2	2%
LP080120-9L-11	AGG 3	310	195.6	0.198	0.007	0.015	0.000	0.342	66.401	0.926	0.095	0.003	0.037	183	6	96	1	1526	60	0.53	96	1	1%
LP080120-9s-80	AGG 3	320.4	111	0.143	0.008	0.015	0.000	0.748	65.876	1.562	0.068	0.003	-0.349	136	7	97	2	865	92	0.72	97	2	2%
LP080120-9s-46	AGG 3	54.9	28.3	0.456	0.024	0.016	0.001	0.530	61.387	1.922	0.203	0.009	0.047	381	17	104	3	2839	71	0.27	104	3	3%
LP080120-9s-109	AGG 3	169.1	43.2	0.336	0.013	0.016	0.001	0.596	60.938	2.228	0.149	0.005	0.342	294	10	105	4	2329	57	0.36	105	4	4%
LP080120-9s-155	AGG 3	137.2	125.3	0.346	0.016	0.017	0.001	0.689	58.038	1.954	0.145	0.005	0.078	301	12	110	4	2284	57	0.37	110	4	3%
LP080120-9L-3	AGG 3	47.5	11.9	0.664	0.029	0.018	0.001	0.219	54.289	1.592	0.262	0.012	0.376	516	18	118	3	3246	70	0.23	118	3	3%
LP080120-9s-97	AGG 3	148.4	60.1	0.295	0.040	0.031	0.003	0.985	32.258	3.434	0.067	0.003	-0.838	259	32	197	21	830	100	0.76	197	21	11%
LP080120-9s-91	AGG 3	214	152.8	0.395	0.046	0.041	0.001	0.454	24.219	0.493	0.069	0.007	-0.257	335	30	261	5	850	160	0.78	261	5	2%
LP080120-9s-134	AGG 3	661	140.4	0.548	0.040	0.044	0.003	0.987	22.779	1.505	0.091	0.001	-0.587	442	27	277	18	1437	26	0.63	277	18	6%
LP080120-9s-132	AGG 3	604	138.9	0.544	0.027	0.052	0.002	0.978	19.194	0.884	0.076	0.001	-0.371	440	18	328	15	1091	25	0.75	328	15	5%
LP080120-9s-101	AGG 3	660	60.5	1.099	0.029	0.076	0.002	0.918	13.245	0.263	0.106	0.001	-0.411	752	14	469	9	1726	20	0.62	469	9	2%
LP080120-9s-110	AGG 3	240.3	70.6	0.816	0.024	0.078	0.002	0.700	12.788	0.294	0.076	0.002	0.180	605	13	485	11	1089	40	0.80	485	11	2%
LP080120-9s-114	AGG 3	299.6	94.2	0.975	0.046	0.092	0.002	0.890	10.893	0.261	0.077	0.002	-0.624	689	23	566	13	1117	50	0.82	566	13	2%
LP080120-9s-44	AGG 3	429	124.3	1.460	0.030	0.104	0.002	0.800	9.643	0.149	0.102	0.001	-0.204	914	12	636	9	1662	25	0.70	636	9	1%
LP080120-9s-165	AGG 3	359	44.9	2.350	0.130	0.155	0.009	0.990	6.443	0.365	0.109	0.001	0.304	1222	41	929	49	1785	14	0.76	929	49	5%
LP080120-9s-55	AGG 3	259	69.1	2.293	0.050	0.172	0.003	0.904	5.828	0.115	0.097	0.001	0.124	1210	15	1021	19	1566	17	0.65	1566	17	2%
LP080120-9s-36	AGG 3	439.5	64.7	2.543	0.061	0.179	0.003	0.833	5.593	0.106	0.103	0.001	0.031	1283	18	1060	18	1681	22	0.63	1681	22	2%
LP080120-9s-49	AGG 3	670	89.9	2.560	0.350	0.183	0.024	0.998	5.464	0.717	0.101	0.001	-0.339	1260	100	1070	130	1645	16	0.65	1645	16	12%
LP080120-9s-52	AGG 3	246.2	181.4	5.360	0.100	0.203	0.004	0.899	4.931	0.095	0.192	0.002	0.090	1877	17	1190	21	2756	18	0.43	2756	18	2%
LP080120-9s-84	AGG 3	228.2	407	3.500	0.110	0.206	0.004	0.585	4.866	0.097	0.124	0.003	0.025	1525	25	1205	22	2008	45	0.60	2008	45	2%
LP080120-9s-60	AGG 3	674	313	3.079	0.058	0.211	0.004	0.909	4.751	0.088	0.106	0.001	0.036	1427	14	1231	21	1736	12	0.71	1736	12	2%
LP080120-9s-18	AGG 3	195	87	2.881	0.061	0.221	0.008	0.791	4.523	0.153	0.095	0.002	0.829	1376	16	1287	40	1526	44	0.84	1526	44	3%
LP080120-9s-135	AGG 3	181.2	121.1	3.690	0.120	0.235	0.006	0.890	4.264	0.116	0.114	0.002	-0.172	1567	26	1357	33	1870	25	0.73	1870	25	2%
LP080120-9s-157	AGG 3	164	29	4.120	0.170	0.240	0.009	0.959	4.163	0.161	0.124	0.001	-0.189	1656	34	1387	48	2016	20	0.69	2016	20	3%
LP080120-9s-72	AGG 3	114.2	96.1	3.590	0.200	0.250	0.014	0.978	4.000	0.224	0.104	0.001	0.064	1542	46	1437	74	1704	19	0.84	1704	19	5%
LP080120-9s-88	AGG 3	200.9	98.3	8.920	0.220	0.365	0.009	0.967	2.737	0.065	0.178	0.001	-0.029	2328	23	2006	41	2630	8	0.76	2630	8	2%
LP080120-9s-71	AGG 3	50.7	17.5	10.770	0.780	0.417	0.026	0.991	2.398	0.150	0.187	0.003	-0.765	2489	70	2240	120	2715	28	0.83	2715	28	5%
LP080120-9s-154	AGG 3	40.2	24.2	6.900	3.500	0.321	0.036	0.922	3.115	0.349	0.141	0.046	-0.779	1920	290	1790	170	2020	390	0.89	2020	390	19%
Sample LP130120-1																							
				Measured isotopic ratios										Isotopic ages and errors (Ma)									
Grain	Unit	U (ppm)	Th (ppm)	$^{207}Pb/^{235}U$	2σ	$^{206}Pb/^{238}U$	2σ	Error Correlation	$^{238}Pb/^{206}Pb$	2σ	$^{207}Pb/^{206}Pb$	2σ	Error Correlation	$^{207}Pb/^{235}U$	2σ	$^{206}Pb/^{238}U$	2σ	$^{207}Pb/^{206}Pb$	2σ	discordance	best age (Ma)	2σ	internal error
LP130120-1-7	AGG 3	102.7	37.5	0.100	0.008	0.015	0.000	0.101	67.476	1.184	0.049	0.004	0.114	97	7	95	2	160	160	0.98	95	2	2%
LP130120-1-8	AGG 3	359	146	0.114	0.004	0.015	0.000	0.029	66.313	1.099	0.055	0.002	0.431	110	4	97	2	401	83	0.88	97	2	2%
LP130120-1-10	AGG 3	72.4	54.4	0.777	0.033	0.087	0.002	0.086	11.507	0.225	0.065	0.003	0.362	583	18	537	10	757	88	0.92	537	10	2%
LP130120-1-11	AGG 3	93.3	95.3	0.886	0.030	0.105	0.002	0.565	9.515	0.145	0.061	0.002	-0.121	644	16	644	9	636	58	1.00	644	9	1%
LP130120-1-6	AGG 3	416	27.5	1.666	0.025	0.165	0.003	0.770	6.079	0.092	0.073	0.001	0.374	995	10	982	14	1025	21	0.99	982	14	1%
LP130120-1-2	AGG 3	227.2	154.2	1.954	0.035	0.184	0.003	0.929	5.429	0.097	0.077	0.001	0.085	1099	12	1090	18	1120	13	0.97	1120	13	1%
LP130120-1-4	AGG 3	145	121	2.472	0.047	0.215	0.004	0.852	4.662	0.083	0.084	0.001	-0.095	1263	14	1253	20	1282	24	0.98	1282	24	2%
LP130120-1-5	AGG 3	110.8	57.7	3.003	0.057	0.244	0.003	0.807	4.103	0.056	0.089	0.001	-0.286	1408	15	1406	17	1411	24	1.00	1411	24	2%
LP130120-1-3	AGG 3	96.6	47.1	3.231	0.062	0.255	0.004	0.813	3.920	0.065	0.092	0.001	0.046	1464	15	1465	21	1464	20	1.00	1464	20	1%
LP130120-1-1	AGG 3	313.1	256	3.354	0.053	0.258	0.004	0.848	3.871	0.063	0.094	0.001	0.267	1493	12	1481	21	1513	14	0.98	1513	14	1%
Sample LP090120-2																							
				Measured isotopic ratios										Isotopic ages and errors (Ma)									
Grain	Unit	U (ppm)	Th (ppm)	$^{207}Pb/^{235}U$	2σ	$^{206}Pb/^{238}U$	2σ	Error Correlation	$^{238}Pb/^{206}Pb$	2σ	$^{207}Pb/^{206}Pb$	2σ	Error Correlation	$^{207}Pb/^{235}U$	2σ	$^{206}Pb/^{238}U$	2σ	$^{207}Pb/^{206}Pb$	2σ	discordance	best age (Ma)	2σ	internal error
LP090120-2s-43	AGG 4	283	107	0.100	0.005	0.014	0.000	0.444	69.541	1.934	0.051	0.002	0.101	97	5	92	3	215	97	0.95	92	3	3%
LP090120-2L-15	AGG 4	430	161.1	0.106	0.005	0.015	0.000	0.584	68.966	0.999	0.052	0.002	-0.351	102	5	93	1	284	92	0.91	93	1	1%
LP090120-2s-46	AGG 4	182.9	82.1	0.096	0.005	0.015	0.000	0.522	67.568	1.598	0.047	0.002	-0.001	93	4	95	2	58	87	1.02	95	2	2%
LP090120-2L-42	AGG 4	460	125.5	0.101	0.005	0.015	0.000	0.351	67.385	1.362	0.049	0.002	0.050	98	4	95	2	148	91	0.97	95	2	2%
LP090120-2s-18	AGG 4	199.6	90.6	0.103	0.005	0.015	0.000	0.394	67.159	1.308	0.050	0.002	0.027	99	4	95	2	189	93	0.96	95	2	2%
LP090120-2s-48	AGG 4	727	395	0.115	0.004	0.015	0.000	0.752	66.094	1.442	0.055	0.001	-0.123	110	3	97	2	417	47	0.88	97	2	2%
LP090120-2L-45	AGG 4	96.9	31.3	0.112	0.009	0.016	0.000	0.102	63.492	1.975	0.052	0.004	0.259	108	9	101	3	250	170	0.93	101	3	3%
LP090120-2L-78	AGG 4	442	188	0.142	0.005	0.021	0.000	0.589	48.239	0.931	0.050	0.002	-0.047	135	5	132	3	182	67	0.98	132	3	2%
LP090120-2L-63	AGG 4	167.3	90	0.145	0.006	0.021	0.000	0.643	47.619	0.839	0.050	0.002	-0.280	138	5	134	2	196	72	0.97	134	2	2%
LP090120-2L-7	AGG 4	217	130.9	0.147	0.006	0.021	0.000	0.291	47.551	0.746	0.050	0.002	0.102	139	5	134	2	189	82	0.96	134	2	2%
LP090120-2s-71	AGG 4	1128	753	0.273	0.006	0.039	0.001	0.796	25.720	0.549	0.051	0.001	0.258	245	5	246	5	241	31	1.00	246	5	2%
LP090120-2L-38	AGG 4	548.5	245	0.274	0.007	0.039	0.001	0.770	25.621	0.381	0.051	0.001	-0.245	246	5	247	4	218	37	1.01	247	4	1%
LP090120-2L-47	AGG 4	628	305	0.278	0.009	0.039	0.001	0.766	25.602	0.413	0.051	0.001	-0.379	249	7	247	4	252	54	0.99	247	4	2%
LP090120-2s-17	AGG 4	569	292	0.278	0.008	0.039	0.001	0.771	25.452	0.583	0.051	0.001	0.057	249	6	248	6	259	43	1.00	248	6	2%
LP090120-2L-35	AGG 4	526	303	0.277	0.008	0.039	0.001	0.718	25.400	0.626	0.051	0.001	0.232	248	6	249	6	225	45	1.00	249	6	2%
LP090120-2s-30	AGG 4	784	437	0.276	0.007	0.039	0.001	0.829	25.387	0.477	0.051	0.001	-0.201	247	6	249	5	234	38	1.01	249	5	2%
LP090120-2L-28	AGG 4	352	140	0.275	0.007	0.039	0.000	0.360	25.323	0.250	0.050	0.001	0.005	247	6	250	2	197	55	1.01	250	2	1%
LP090120-2L-22	AGG 4	386	237	0.285	0.007	0.040	0.001	0.419	25.291	0.377	0.052	0.001	0.236	254	6	250	4	267	53	0.98	250	4	1%
LP090120-2s-20	AGG 4	659	227	0.282	0.007	0.040	0.001	0.725	25.259	0.472	0.052	0.001	0.110	252	5	250	5	273	38	0.99	250	5	2%
LP090120-2s-37	AGG 4	67.9	49.5	0.266	0.014	0.040	0.001	0.236	25.195	0.438	0.049	0.003	0.056	239	12	251	4	140	110	1.05	251	4	2%
LP090120-2L-11	AGG 4	713	400	0.283	0.006	0.040	0.000	0.733	25.138	0.303	0.051	0.001	-0.210	253	5	252	3	231	35	0.99	252	3	1%
LP090120-2s-54	AGG 4	269.7	223.4	0.281	0.012	0.040	0.001	0.678	25.126	0.694	0.051	0.002	-0.012	251	9	252	7	246	73	1.00	252	7	3%
LP090120-2L-25	AGG 4	612	276.6	0.289	0.006	0.040	0.001	0.733	25.113	0.366	0.052	0.001	-0.052	257	5	252	4	285	34	0.98	252	4	1%
LP090120-2s-5	AGG 4	809	518	0.282	0.006	0.040	0.001	0.910	25.094	0.453	0.051	0.001	-0.361	252	5	252	4	257	26	1.00	252	4	2%
LP090120-2s-15	AGG 4	457	219	0.280	0.008	0.040	0.001	0.611	25.082	0.447	0.051	0.001	0.045	250	6	252	4	238	50	1.01	252	4	2%
LP090120-2L-44	AGG 4	347.7	167.7	0.283	0.007	0.040	0.001	0.396	25.063	0.314	0.051	0.001	0.091	253	6	252	3	251	55	1.00	252	3	1%
LP090120-2L-32	AGG 4	703	408.6	0.285	0.006	0.040	0.001	0.637	24.931	0.311	0.051	0.001	-0.110	255	5	254	3	246	39	1.00	254	3	1%
LP090120-2L-65	AGG 4	385	205	0.278	0.009	0.040	0.001	0.627	24.876	0.681	0.050	0.001	0.162	249	7	254	7	205	58	1.02	254	7	3%
LP090120-2L-59	AGG 4	102.1	91.2	0.289	0.013	0.040	0.001	0.645	24.876	0.619	0.052	0.002	-0.091	257	11	254	6	274	81	0.99	254	6	3%
LP090120-2s-40	AGG 4	85.4	68.8	0.288	0.012	0.040	0.001	0.192	24.845	0.451	0.052	0.002	0.241	257	10	254	5	278	97	0.99	254	5	2%
LP090120-2s-45	AGG 4	342	174	0.286	0.011	0.040	0.001	0.778	24.820	0.585	0.052	0.001	-0.255	255	8	255	6	257	57	1.00	255	6	2%
LP090120-2s-21	AGG 4	347.4	147.6	0.281	0.008	0.040	0.001	0.701	24.783	0.387	0.051	0.001	-0.200	252	6	255	4	224	51	1.01	255	4	2%
LP090120-2s-53	AGG 4	867	267	0.284	0.010	0.040	0.001	0.883	24.752	0.674	0.051	0.001	-0.180	254	8	256	7	242	37	1.01	256	7	3%
LP090120-2L-71	AGG 4	740	492	0.288	0.006	0.040	0.001	0.658	24.697	0.390	0.052	0.001	0.190	257	4	256	4	265	34	1.00	256	4	2%
LP090120-2s-66	AGG 4	215	70	0.282	0.010	0.041	0.001	0.793	24.631	0.789	0.050	0.001	0.139	252	8	256	8	211	50	1.02	256	8	3%
LP090120-2s-64	AGG 4	280	94.5	0.311	0.012	0.041	0.001	0.683	24.570	0.664	0.056	0.002	0.125	274	9	257	7	425	62	0.94	257	7	3%
LP090120-2s-12	AGG 4	574	144	0.305	0.007	0.041	0.001	0.770	24.546	0.446	0.054	0.001	0.238	270	5	257	5	385	36	0.95	257	5	2%
LP090120-2s-1	AGG 4	583	144	0.285	0.007	0.041	0.001	0.743	24.528	0.421	0.051	0.001	-0.092	255	6	258	4	228	39	1.01	258	4	2%
LP090120-2L-17	AGG 4	221	88.1	0.294	0.007	0.041	0.001	0.453	24.438	0.358	0.052	0.001	0.222	262	5	259	4	260	48	0.99	259	4	1%
LP090120-2s-50	AGG 4	674	465	0.291	0.008	0.041	0.001	0.879	24.390	0.595	0.052	0.001	0.087	259	6	259	6	267	29	1.00	259	6	2%
LP090120-2s-70	AGG 4	534	238	0.291	0.014	0.041	0.002	0.932	24.272	1.060	0.051	0.001	0.086	259	11	260	11	249	37	1.00	260	11	4%
LP090120-2L-46	AGG 4	318.1	167.3	0.289	0.007	0.041	0.001	0.649	24.219	0.428	0.051	0.001	0.180	258	6	261	5	217	48	1.01	261	5	2%
LP090120-2s-4	AGG 4	327.6	140	0.288	0.006	0.041	0.001	0.479	24.225	0.340	0.051	0.001	0.179	257	5	261	4	227	46	1.01	261	4	1%
LP090120-2s-55	AGG 4	509	235	0.295	0.008	0.041	0.001	0.830	24.201	0.492	0.052	0.001	-0.216	262	7	261	5	276	36	1.00	261	5	2%
LP090120-2s-41	AGG 4	805	250.5	0.294	0.007	0.041	0.001	0.796	24.102	0.430	0.051	0.001	-0.028	261	6	262	5	259	37	1.00	262	5	2%
LP090120-2L-77	AGG 4	217.9	86	0.297	0.010	0.042	0.001	0.477	23.838	0.369	0.051	0.001	-0.004	264	8	265	4	253	62	1.00	265	4	2%
LP090120-2s-32	AGG 4	497	181	0.295	0.010	0.042	0.001	0.894	23.838	0.546	0.051	0.001	-0.381	262	8	265	6	244	38	1.01	265	6	2%
LP090120-2s-58	AGG 4	278.9	77.2	0.297	0.012	0.042	0.001	0.793	23.697	0.562	0.051	0.001	-0.196	264	10	266	7	244	59	1.01	266	7	2%
LP090120-2s-63	AGG 4	347	167	0.306	0.010	0.043	0.001	0.860	23.474	0.606	0.052	0.001	-0.167	271	8	269	7	288	42	0.99	269	7	3%
LP090120-2s-56	AGG 4	333.6	131.7	0.304	0.010	0.043	0.001	0.876	23.419	0.603	0.052	0.001	-0.172	269	8	270	7	268	42	1.00	270	7	3%
LP090120-2L-19	AGG 4	246.7	123	0.313	0.007	0.043	0.001	0.418	23.047	0.308	0.052	0.001	0.203	277	5	274	4	271	46	0.99	274	4	1%
LP090120-2s-13	AGG 4	475	97.4	0.446	0.013	0.059	0.001	0.837	17.007	0.289	0.055	0.001	-0.342	374	9	368	6	417	36	0.98	368	6	2%

LP090120-2s-23	AGG 4	208.3	70.8	0.501	0.015	0.067	0.001	0.491	14.903	0.244	0.054	0.001	0.183	412	10	419	7	379	60	1.02	419	7	2%
LP090120-2L-70	AGG 4	219.8	37	0.597	0.015	0.077	0.001	0.682	13.072	0.188	0.057	0.001	-0.162	475	9	475	6	477	41	1.00	475	6	1%
LP090120-2s-51	AGG 4	187.6	111	0.707	0.023	0.086	0.002	0.604	11.682	0.205	0.060	0.001	0.026	543	13	530	9	599	49	0.98	530	9	2%
LP090120-2s-22	AGG 4	256.9	92.1	0.697	0.018	0.087	0.002	0.839	11.521	0.279	0.058	0.001	0.205	537	11	536	12	545	33	1.00	536	12	2%
LP090120-2s-61	AGG 4	45.6	10.5	0.692	0.035	0.087	0.003	0.579	11.494	0.383	0.058	0.002	0.138	533	20	538	17	510	87	1.01	538	17	3%
LP090120-2s-39	AGG 4	117.3	97	0.730	0.023	0.089	0.002	0.805	11.211	0.289	0.060	0.001	0.037	556	13	551	13	582	40	0.99	551	13	2%
LP090120-2L-30	AGG 4	76.3	30.9	0.735	0.027	0.089	0.002	0.496	11.186	0.263	0.059	0.002	0.163	559	16	552	12	565	72	0.99	552	12	2%
LP090120-2s-2	AGG 4	666	285	0.768	0.023	0.091	0.003	0.914	10.977	0.337	0.061	0.001	0.209	578	14	562	16	650	26	0.97	562	16	3%
LP090120-2s-35	AGG 4	172.7	60.8	0.741	0.023	0.091	0.002	0.752	10.941	0.239	0.059	0.001	-0.005	562	14	564	12	560	42	1.00	564	12	2%
LP090120-2L-14	AGG 4	72.9	118.5	0.769	0.026	0.094	0.002	0.273	10.672	0.205	0.059	0.002	0.344	579	15	577	11	550	77	1.00	577	11	2%
LP090120-2s-10	AGG 4	185	46.4	0.778	0.022	0.094	0.002	0.649	10.661	0.205	0.060	0.001	0.058	584	13	578	11	612	47	0.99	578	11	2%
LP090120-2L-18	AGG 4	289	505	0.803	0.016	0.095	0.001	0.605	10.482	0.143	0.060	0.001	0.097	598	9	588	8	611	35	0.98	588	8	1%
LP090120-2s-79	AGG 4	432	176.1	0.780	0.028	0.096	0.003	0.903	10.449	0.306	0.059	0.001	-0.227	585	16	589	16	568	36	1.01	589	16	3%
LP090120-2s-80	AGG 4	349	249	0.782	0.022	0.096	0.002	0.834	10.406	0.249	0.059	0.001	0.057	586	13	592	14	564	37	1.01	592	14	2%
LP090120-2L-52	AGG 4	1190	28.7	0.808	0.020	0.097	0.002	0.962	10.309	0.223	0.060	0.000	-0.200	601	11	597	12	611	15	0.99	597	12	2%
LP090120-2L-24	AGG 4	387	65.8	0.821	0.019	0.098	0.002	0.871	10.215	0.198	0.060	0.001	-0.072	608	11	602	11	609	24	0.99	602	11	2%
LP090120-2s-59	AGG 4	223.2	92.2	0.809	0.023	0.098	0.002	0.845	10.173	0.217	0.060	0.001	-0.098	601	13	604	12	592	33	1.00	604	12	2%
LP090120-2s-65	AGG 4	221	40	0.903	0.028	0.101	0.003	0.911	9.921	0.266	0.065	0.001	-0.090	653	15	619	16	774	27	0.95	619	16	3%
LP090120-2L-16	AGG 4	96.9	95.8	0.904	0.028	0.106	0.002	0.507	9.407	0.142	0.061	0.002	0.009	653	15	651	9	627	56	1.00	651	9	1%
LP090120-2L-58	AGG 4	191.4	185	1.050	0.029	0.120	0.002	0.803	8.361	0.147	0.064	0.001	-0.169	728	15	728	12	724	36	1.00	728	12	2%
LP090120-2L-64	AGG 4	68.9	23.1	1.134	0.034	0.124	0.003	0.532	8.084	0.163	0.067	0.002	0.124	769	16	752	14	817	55	0.98	752	14	2%
LP090120-2s-74	AGG 4	472	349.3	1.187	0.041	0.127	0.004	0.948	7.899	0.243	0.068	0.001	-0.161	793	19	768	22	867	24	0.97	768	22	3%
LP090120-2L-57	AGG 4	185	120.2	1.474	0.042	0.153	0.003	0.847	6.540	0.124	0.070	0.001	-0.312	919	17	917	16	920	32	1.00	917	16	2%
LP090120-2s-75	AGG 4	52.3	31.8	1.473	0.097	0.155	0.008	0.738	6.443	0.340	0.069	0.003	0.187	917	39	930	46	895	91	1.01	930	46	5%
LP090120-2s-6	AGG 4	161.7	42.6	1.570	0.037	0.158	0.003	0.867	6.337	0.116	0.072	0.001	-0.050	958	15	944	16	994	25	0.99	944	16	2%
LP090120-2L-4	AGG 4	143.3	111.3	1.581	0.040	0.160	0.002	0.694	6.258	0.094	0.071	0.001	-0.128	962	16	956	13	939	36	0.99	956	13	1%
LP090120-2L-3	AGG 4	65.8	88.9	1.731	0.088	0.165	0.003	0.526	6.072	0.107	0.075	0.003	-0.220	1017	31	982	16	1049	80	0.97	982	16	2%
LP090120-2s-7	AGG 4	57	17.2	1.639	0.060	0.166	0.004	0.908	6.039	0.153	0.072	0.001	-0.350	984	23	988	23	979	41	1.00	988	23	2%
LP090120-2s-29	AGG 4	332	45.6	1.770	0.028	0.171	0.003	0.756	5.838	0.092	0.075	0.001	0.320	1034	10	1019	15	1073	21	0.95	1073	21	2%
LP090120-2L-67	AGG 4	92.6	63.1	1.866	0.054	0.179	0.005	0.805	5.593	0.144	0.076	0.001	0.116	1068	19	1060	25	1086	32	0.98	1086	32	3%
LP090120-2s-68	AGG 4	360	216	1.883	0.089	0.182	0.008	0.976	5.507	0.243	0.075	0.001	-0.129	1072	31	1075	44	1074	22	1.00	1074	22	2%
LP090120-2L-39	AGG 4	215.5	63.5	1.910	0.035	0.183	0.002	0.771	5.479	0.072	0.075	0.001	-0.086	1084	12	1081	13	1080	25	1.00	1080	25	2%
LP090120-2s-73	AGG 4	98.5	31.2	2.135	0.064	0.199	0.005	0.960	5.015	0.118	0.078	0.001	-0.413	1159	20	1172	25	1138	19	1.03	1138	19	2%
LP090120-2s-34	AGG 4	102.8	62.2	2.194	0.046	0.200	0.003	0.771	5.008	0.085	0.080	0.001	0.114	1178	15	1174	18	1194	25	0.98	1194	25	2%
LP090120-2s-52	AGG 4	145.1	205.2	2.315	0.057	0.200	0.004	0.834	4.990	0.105	0.084	0.001	0.130	1216	17	1177	22	1290	24	0.91	1290	24	2%
LP090120-2L-10	AGG 4	142.2	153.1	2.340	0.052	0.204	0.003	0.812	4.907	0.079	0.082	0.001	-0.140	1224	16	1196	18	1243	25	0.96	1243	25	2%
LP090120-2L-27	AGG 4	197.6	69.1	2.343	0.028	0.206	0.002	0.598	4.866	0.054	0.082	0.001	0.363	1225	9	1205	12	1243	21	0.97	1243	21	2%
LP090120-2L-36	AGG 4	133.4	39.6	2.619	0.052	0.223	0.004	0.806	4.492	0.087	0.085	0.001	0.289	1305	15	1295	23	1311	23	0.99	1311	23	2%
LP090120-2s-25	AGG 4	87.6	35.7	2.834	0.050	0.226	0.003	0.816	4.431	0.065	0.091	0.001	0.011	1364	13	1312	17	1454	24	0.90	1454	24	2%
LP090120-2s-77	AGG 4	396	230	2.700	0.058	0.233	0.005	0.958	4.290	0.092	0.084	0.001	0.005	1328	16	1351	26	1294	13	1.04	1294	13	1%
LP090120-2L-9	AGG 4	111.7	44.3	3.044	0.093	0.234	0.004	0.863	4.281	0.068	0.093	0.002	-0.564	1417	23	1353	20	1484	35	0.91	1484	35	2%
LP090120-2L-69	AGG 4	197.9	130	2.983	0.051	0.240	0.004	0.819	4.175	0.063	0.090	0.001	0.062	1403	13	1384	19	1433	16	0.97	1433	16	1%
LP090120-2L-8	AGG 4	126.8	63.4	3.047	0.060	0.241	0.003	0.789	4.144	0.058	0.090	0.001	-0.138	1419	15	1393	18	1427	23	0.98	1427	23	2%
LP090120-2L-61	AGG 4	304.8	123.4	3.218	0.062	0.242	0.005	0.941	4.134	0.077	0.096	0.001	0.014	1461	15	1396	23	1556	13	0.90	1556	13	1%
LP090120-2L-31	AGG 4	377	91.8	3.370	0.065	0.253	0.005	0.929	3.957	0.070	0.096	0.001	0.083	1497	15	1452	23	1548	13	0.94	1548	13	1%
LP090120-2s-57	AGG 4	770	1478	3.558	0.075	0.257	0.005	0.981	3.888	0.077	0.100	0.001	-0.315	1539	17	1475	26	1633	10	0.90	1633	10	1%
LP090120-2L-13	AGG 4	159.8	85.7	3.717	0.055	0.272	0.003	0.755	3.681	0.037	0.098	0.001	-0.207	1575	12	1550	14	1583	20	0.98	1583	20	1%
LP090120-2s-42	AGG 4	269	86	4.260	0.100	0.275	0.006	0.917	3.638	0.078	0.113	0.001	-0.167	1684	20	1565	30	1842	20	0.85	1842	20	1%
LP090120-2s-28	AGG 4	275	229	3.930	0.110	0.280	0.008	0.965	3.577	0.100	0.102	0.001	0.162	1618	23	1589	39	1664	14	0.95	1664	14	1%
LP090120-2s-69	AGG 4	275	114.6	4.280	0.110	0.290	0.006	0.964	3.446	0.076	0.107	0.001	-0.279	1687	21	1642	32	1748	13	0.94	1748	13	1%
LP090120-2s-38	AGG 4	85.9	55.6	4.100	0.110	0.291	0.007	0.929	3.432	0.078	0.102	0.001	-0.031	1654	21	1648	33	1667	18	0.99	1667	18	1%
LP090120-2s-47	AGG 4	153.7	104.6	4.134	0.092	0.292	0.006	0.947	3.428	0.067	0.103	0.001	-0.210	1660	18	1650	28	1678	17	0.98	1678	17	1%
LP090120-2s-67	AGG 4	134.9	91	4.114	0.075	0.293	0.004	0.833	3.412	0.051	0.102	0.001	0.076	1656	15	1657	22	1660	20	1.00	1660	20	1%
LP090120-2s-11	AGG 4	185.6	101.5	4.290	0.150	0.296	0.009	0.983	3.378	0.104	0.105	0.001	-0.463	1689	30	1670	45	1721	14	0.97	1721	14	1%
LP090120-2L-5	AGG 4	97.3	48	4.398	0.086	0.299	0.005	0.854	3.348	0.058	0.105	0.001	0.028	1711	16	1685	26	1713	18	0.98	1713	18	1%
LP090120-2L-54	AGG 4	72.7	32.4	4.720	0.130	0.305	0.006	0.866	3.279	0.060	0.112	0.002	-0.318	1769	22	1715	28	1831	26	0.94	1831	26	1%
LP090120-2L-33	AGG 4	80.7	57.1	4.571	0.098	0.309	0.006	0.828	3.235	0.062	0.107	0.001	0.110	1743	18	1736	29	1740	24	1.00	1740	24	1%
LP090120-2L-1	AGG 4	131	143	5.017	0.082	0.321	0.005	0.876	3.115	0.045	0.111	0.001	0.061	1822	14	1794	22	1820	15	0.99	1820	15	1%
LP090120-2L-43	AGG 4	37.9	48.6	5.060	0.130	0.323	0.007	0.770	3.098	0.067	0.113	0.002	0.083	1828	22	1803	34	1853	30	0.97	1853	30	2%
LP090120-2L-29	AGG 4	58.2	44.3	4.980	0.140	0.324	0.008	0.842	3.085	0.079	0.111	0.002	0.064	1815	25	1809	40	1807	29	1.00	1807	29	2%
LP090120-2L-72	AGG 4	83	32.7	5.068	0.096	0.328	0.005	0.897	3.051	0.050	0.112	0.001	-0.131	1830	16	1827	26	1836	15	1.00	1836	15	1%
LP090120-2s-36	AGG 4	193	89.7	5.540	0.190	0.329	0.012	0.973	3.040	0.111	0.122	0.001	0.123	1904	30	1834	56	1989	14	0.92	1989	14	1%
LP090120-2s-60	AGG 4	62.8	16.9	5.110	0.180	0.330	0.010	0.913	3.032	0.091	0.113	0.002	-0.211	1834	30	1836	48	1838	26	1.00	1838	26	1%
LP090120-2L-26	AGG 4	120.5	73.8	5.412	0.098	0.333	0.005	0.941	3.006	0.046	0.117	0.001	-0.129	1886	15	1851	25	1909	12	0.97	1909	12	1%
LP090120-2s-72	AGG 4	120.3	102.3	5.210	0.150	0.334	0.009	0.934	2.991	0.081	0.113	0.001	-0.014	1852	25	1858	43	1849	18	1.00	1849	18	1%
LP090120-2s-9	AGG 4	47.2	59.3	5.530	0.210	0.337	0.013	0.956	2.967	0.114	0.119	0.001	0.276	1901	34	1868	65	1947	22	0.96	1947	22	1%
LP090120-2L-6	AGG 4	100	100.3	5.560	0.130	0.338	0.005	0.878	2.960	0.046	0.117	0.001	-0.399	1909	19	1876	25	1916	20	0.98	1916	20	1%
LP090120-2s-16	AGG 4	150.9	60	5.990	0.130	0.338	0.007	0.943	2.958	0.065	0.129	0.001	0.183	1973	19	1877	35	2082	14	0.90	2082	14	1%
LP090120-2s-78	AGG 4	61.8	74	5.360	0.150	0.345	0.009	0.768	2.901	0.075	0.113	0.002	0.232	1877	24	1908	43	1845	31	1.03	1845	31	2%
LP090120-2L-41	AGG 4	270.8	244.5	6.328	0.090	0.363	0.005	0.897	2.754	0.036	0.126	0.001	0.083	2022	13	1996	22	2041	10	0.98	2041	10	0%
LP090120-2s-14	AGG 4	133.2	57.6	6.460	0.120	0.366	0.006	0.919	2.736	0.047	0.129	0.001	-0.033	2040	17	2008	30	2080	15	0.97	2080	15	1%
LP090120-2L-73	AGG 4	203.9	59.1	6.480	0.120	0.369	0.007	0.955	2.710	0.048	0.128	0.001	0.121	2043	16	2024	31	2065	10	0.98	2065	10	0%
LP090120-2L-60	AGG 4	49	31.4	6.690	0.150	0.376	0.008	0.824	2.662	0.057	0.129	0.002	0.204	2071	20	2056	38	2086	24	0.99	2086	24	1%
LP090120-2L-2	AGG 4	98.5	67.3	6.770	0.140	0.377	0.008	0.922	2.653	0.054	0.128	0.001	0.162	2080	19	2062	36	2068	15	1.00	2068	15	1%
LP090120-2L-21	AGG 4	69.9	48.7	8.490	0.140	0.417	0.007	0.853	2.400	0.041	0.146	0.001	0.346	2284	15	2245	32	2302	16	0.98	2302	16	1%
LP090120-2L-53	AGG 4	51.4	24.1	8.320	0.290	0.419	0.011	0.912	2.387	0.063	0.144	0.002	-0.278	2263	32	2255	52	2270	25	0.99	2270	25	1%
LP090120-2s-24	AGG 4	131.6	32.4	10.760	0.180	0.468	0.008	0.948	2.136	0.034	0.167	0.001	-0.026	2502	15	2475	33	2530	11	0.98	2530	11	0%
LP090120-2L-76	AGG 4	68.8	72.3	11.440	0.250	0.473	0.009	0.930	2.116	0.038	0.176	0.002	-0.258	2558	21	2494	38	2614	14	0.95	2614	14	1%
LP090120-2L-48	AGG 4	252.8	83.7	11.240	0.200	0.476	0.007	0.943	2.101	0.033	0.171	0.001	-0.187	2543	17	2509	32	2565	10	0.98	2565	10	0%
LP090120-2s-26	AGG 4	67.6	71.3	11.520	0.270	0.481	0.010	0.928	2.078	0.043	0.174	0.002	-0.087	2565	22	2532	43	2597	15	0.97	2597	15	1%
LP090120-2L-74	AGG 4	134.9	54.5	12.280	0.260	0.482	0.009	0.941	2.074	0.040	0.185	0.001	-0.128	2625	20	2536	40	2698	13	0.94	2698	13	0%
LP090120-2L-23	AGG 4	580	380	13.240	0.260	0.498	0.009	0.983	2.007	0.038	0.191	0.001	-0.085	2696	19	2605	40	2749	8	0.95	2749	8	0%
LP090120-2s-33	AGG 4	163	71.3	12.520	0.300	0.504	0.012	0.976	1.984	0.047	0.181	0.001	0.086	2643	23	2631	52	2659	9	0.99	2659	9	0%
LP090120-2s-44	AGG 4	55.4	49.4	13.370	0.340	0.508	0.011	0.964	1.969	0.043	0.191	0.001	-0.305	2705	24	2648	47	2753	12	0.96	2753	12	0%
LP090120-2L-68	AGG 4	136.6	122.6	12.900	0.170	0.509	0.006	0.948	1.964	0.024	0.184	0.001	0.039	2672	13	2653	27	2688	7	0.99	2688	7	0%
LP090120-2L-49	AGG 4	86.7	49.9	13.310	0.240	0.511	0.009	0.910	1.956	0.034	0.188	0.002	0.189	2701	17	2661	38	2727	13	0.98	2727	13	0%
LP090120-2L-12	AGG 4	133.4	11.1	13.490	0.220	0.515	0.008	0.957	1.942	0.030	0.187	0.001	0.037	2714	15	2677	34	2719	8	0.98	2719	8	0%
LP090120-2L-55	AGG 4	76.6	67.6	13.520	0.280	0.521	0.010	0.950	1.919	0.037	0.188	0.001	0.012	2715	20	2701	44	2725	10	0.99	2725	10	0%
LP090120-2s-27	AGG 4	37.6	34.8	18.160	0.840	0.593	0.026	0.956	1.686	0.074	0.223	0.003	-0.036	2995	44	3000	110	3004	21	1.00	3004	21	1%
Rejected Grains																							
LP090120-2s-62	AGG 4	209.9	79.3	0.013	0.002	0.002	0.000	-0.041	605.694	18.343	0.058	0.009	0.332	13	2	11	0	400	290	0.03	11	0	73%
LP090120-2L-62	AGG 4	259.4	120.9	0.015	0.002	0.003	0.000	-0.064	393.546	12.235	0.042	0.005	0.291	15	2	16	1	-130	200	-0.13	16	1	-154%
LP090120-2s-49	AGG 4	952	928	0.017	0.001	0.003	0.000	0.317	374.252	7.563	0.046	0.003	0.011	17	1	17	0	0	120	0.00	17	NA	NA
LP090120-2s-19	AGG 4	521	41.3	0.132	0.009	0.015	0.000	0.511	66.138	1.312	0.064	0.004	-0.155	126	8	97	2	700	120	0.77	97	2	2%
LP090120-2L-20	AGG 4	50	48.8	0.605	0.030	0.019	0.000	0.511	53.333	1.280	0.231	0.010	-0.063	480	19	120	3	3051	68	0.25	120	3	2%
LP090120-2s-8	AGG 4	1181	431	0.680	0.150	0.055	0.002	0.856	18.083	0.654	0.086	0.016	-0.780	502	83	347	12	1120	320	0.69	347	12	3%
LP090120-2L-50	AGG 4	42.4	22	2.230	0.530	0.174	0.007	0.834	5.750	0.222	0.090	0.015	-0.662	1140	110	1033	36	1310	210	0.79	1310	210	16%
LP090120-2L-75	AGG 4	580	1015	2.520	0.120	0.194	0.008	0.955	5.144	0.201	0.094	0.001	-0.385	1275	33	1145	41	1507	26	0.76	1507	26	2%
LP090120-2s-31	AGG 4	500	233	2.500	0.110	0.199	0.007	0.978	5.030	0.185	0.091	0.001	-0.554	1268	31	1168	39	1451	22	0.80	1451	22	2%
LP090120-2L-56	AGG 4	198	83.2	8.820	0.500	0.346	0.018	0.995	2.890	0.150	0.184	0.001	-0.512	2311	55	1911	86	2692	12	0.71	2692	12	0%

Sample LP090120-3

				Measured isotopic ratios										Isotopic ages and errors (Ma)									
Grain	Unit	U (ppm)	Th (ppm)	$^{207}Pb/^{235}U$	2σ	$^{206}Pb/^{238}U$	2σ	Error Correlation	$^{238}Pb/^{206}Pb$	2σ	$^{207}Pb/^{206}Pb$	2σ	Error Correlation	$^{207}Pb/^{235}U$	2σ	$^{206}Pb/^{238}U$	2σ	$^{207}Pb/^{206}Pb$	2σ	discordance	best age (Ma)	2σ	internal error
LP090120-3s-111	AGG 4	462	178	0.092	0.004	0.014	0.000	0.679	72.464	1.365	0.048	0.002	-0.263	89	4	88	2	97	70	1.00	88	2	2%
LP090120-3s-3	AGG 4	256	138	0.106	0.004	0.014	0.000	0.104	69.156	1.196	0.053	0.002	0.329	102	4	93	2	327	95	0.90	93	2	2%
LP090120-3s-26	AGG 4	1594	428	0.105	0.006	0.015	0.000	0.676	68.213	1.256	0.052	0.002	-0.462	101	5	94	2	261	85	0.93	94	2	2%
LP090120-3s-79	AGG 4	393	79	0.103	0.005	0.015	0.000	0.513	67.935	1.431	0.050	0.002	-0.066	99	4	94	2	204	81	0.95	94	2	2%
LP090120-3L-65	AGG 4	185	54	0.101	0.008	0.015	0.000	0.458	67.476	1.457	0.050	0.003	-0.193	98	7	95	2	160	130	0.97	95	2	2%
LP090120-3L-36	AGG 4	109	58	0.100	0.008	0.015	0.000	0.212	67.431	1.591	0.049	0.004	0.061	97	7	95	2	150	150	0.98	95	2	2%
LP090120-3s-25	AGG 4	314	102	0.111	0.004	0.015	0.000	0.587	66.622	1.731	0.054	0.001	0.145	107	3	96	3	344	55	0.90	96	3	3%
LP090120-3L-50	AGG 4	383	85	0.100	0.003	0.015	0.000	0.016	66.445	1.015	0.048	0.001	0.444	97	3	96	1	110	64	1.00	96	1	1%
LP090120-3L-62	AGG 4	240	194	0.102	0.005	0.015	0.000	0.208	65.445	1.456	0.049	0.002	0.220	99	4	98	2	130	97	0.99	98	2	2%
LP090120-3s-103	AGG 4	1232	713	0.102	0.002	0.015	0.000	0.668	64.809	1.092	0.048	0.001	0.262	99	2	99	2	97	34	1.00	99	2	2%
LP090120-3s-84	AGG 4	432	218	0.111	0.009	0.015	0.000	0.066	64.683	1.046	0.052	0.004	0.095	107	8	99	2	240	150	0.93	99	2	2%
LP090120-3s-10	AGG 4	101	44	0.127	0.008	0.018	0.000	0.400	56.275	1.393	0.052	0.003	0.103	121	7	114	3	260	120	0.94	114	3	2%
LP090120-3s-15	AGG 4	371	253	0.139	0.003	0.021	0.000	0.040	48.008	0.807	0.048	0.001	0.534	132	3	133	2	116	64	1.01	133	2	2%
LP090120-3s-82	AGG 4	557	288	0.139	0.005	0.021	0.000	0.592	48.008	1.037	0.048	0.001	0.105	132	4	133	3	101	60	1.01	133	3	2%
LP090120-3L-49	AGG 4	545	197	0.142	0.003	0.021	0.000	0.711	47.281	0.894	0.049	0.001	0.241	135	3	135	3	131	40	1.00	135	3	2%
LP090120-3s-59	AGG 4	235	114	0.146	0.006	0.021	0.000	0.418	46.577	0.759	0.049	0.002	-0.048	139	5	137	2	150	76	0.99	137	2	2%
LP090120-3L-26	AGG 4	213	95	0.150	0.006	0.022	0.000	0.374	46.339	0.923	0.050	0.002	0.092	141	5	138	3	206	84	0.97	138	3	2%
LP090120-3L-16	AGG 4	305	35	0.181	0.008	0.026	0.001	0.802	38.580	1.161	0.051	0.001	-0.076	169	7	165	5	220	60	0.98	165	5	3%
LP090120-3L-48	AGG 4	504	421	0.177	0.007	0.026	0.001	0.830	38.551	1.189	0.050	0.001	-0.011	166	6	165	5	170	52	1.00	165	5	3%

LP090120-3L-41	AGG 4	225	75	0.210	0.009	0.028	0.001	0.585	35.638	0.953	0.054	0.002	0.078	193	7	178	5	375	77	0.92	178	5	3%
LP090120-3s-117	AGG 4	523	377	0.235	0.011	0.030	0.001	0.443	33.772	0.673	0.057	0.002	0.011	214	9	188	4	494	83	0.88	188	4	2%
LP090120-3s-118	AGG 4	290	283	0.313	0.012	0.039	0.002	0.877	25.445	1.360	0.058	0.002	0.764	276	9	248	13	525	61	0.90	248	13	5%
LP090120-3L-7	AGG 4	66	54	0.281	0.015	0.040	0.001	0.451	25.189	0.761	0.051	0.003	0.072	251	12	251	8	240	110	1.00	251	8	3%
LP090120-3L-13	AGG 4	482	190	0.282	0.008	0.040	0.001	0.699	25.126	0.511	0.051	0.001	0.080	253	6	252	5	258	42	1.00	252	5	2%
LP090120-3s-29	AGG 4	637	318	0.288	0.007	0.040	0.001	0.745	25.113	0.429	0.052	0.001	-0.134	257	5	252	4	301	35	0.98	252	4	2%
LP090120-3s-54	AGG 4	607	311	0.282	0.006	0.040	0.001	0.527	25.006	0.363	0.051	0.001	0.136	252	5	253	4	231	41	1.00	253	4	1%
LP090120-3s-115	AGG 4	650	343	0.285	0.011	0.040	0.001	0.856	24.876	0.681	0.051	0.001	-0.263	254	8	254	7	248	43	1.00	254	7	3%
LP090120-3s-52	AGG 4	708	378	0.286	0.007	0.040	0.001	0.726	24.697	0.488	0.051	0.001	0.083	256	6	256	5	238	41	1.00	256	5	2%
LP090120-3s-105	AGG 4	447	205	0.285	0.008	0.041	0.001	0.749	24.649	0.571	0.051	0.001	0.122	255	6	256	6	231	45	1.01	256	6	2%
LP090120-3L-45	AGG 4	1290	676	0.297	0.007	0.041	0.001	0.879	24.606	0.515	0.053	0.001	0.005	264	6	257	5	329	25	0.97	257	5	2%
LP090120-3s-65	AGG 4	935	102	0.294	0.005	0.041	0.001	0.729	24.606	0.484	0.052	0.001	0.398	262	4	257	5	294	29	0.98	257	5	2%
LP090120-3L-53	AGG 4	284	172	0.284	0.011	0.041	0.001	0.765	24.570	0.604	0.051	0.001	-0.097	253	9	257	7	222	58	1.01	257	7	3%
LP090120-3s-6	AGG 4	176	81	0.303	0.015	0.041	0.001	0.631	24.510	0.661	0.054	0.002	-0.194	269	12	258	7	355	81	0.96	258	7	3%
LP090120-3L-56	AGG 4	870	668	0.294	0.010	0.041	0.001	0.888	24.510	0.601	0.052	0.001	-0.241	261	8	258	7	295	34	0.99	258	7	3%
LP090120-3s-14	AGG 4	420	162	0.301	0.007	0.041	0.001	0.574	24.486	0.312	0.053	0.001	-0.037	267	5	258	3	341	45	0.97	258	3	1%
LP090120-3s-74	AGG 4	475	255	0.292	0.013	0.041	0.002	0.881	24.450	1.076	0.052	0.001	0.154	260	11	258	11	263	49	0.99	258	11	4%
LP090120-3L-35	AGG 4	139	84	0.297	0.013	0.041	0.001	0.707	24.408	0.590	0.053	0.002	-0.240	264	10	259	6	304	68	0.98	259	6	2%
LP090120-3L-80	AGG 4	192	139	0.295	0.011	0.041	0.001	0.680	24.390	0.714	0.052	0.002	0.203	262	9	259	7	289	65	0.99	259	7	3%
LP090120-3L-23	AGG 4	161	83	0.292	0.011	0.041	0.001	0.512	24.272	0.648	0.051	0.002	0.242	260	9	261	7	252	70	1.00	261	7	3%
LP090120-3L-25	AGG 4	621	340	0.303	0.008	0.041	0.001	0.707	24.231	0.429	0.053	0.001	-0.059	269	6	261	5	336	45	0.97	261	5	2%
LP090120-3s-63	AGG 4	517	294	0.302	0.015	0.042	0.002	0.945	23.923	0.973	0.052	0.001	-0.312	267	11	264	10	279	36	0.99	264	10	4%
LP090120-3s-95	AGG 4	660	272	0.296	0.007	0.042	0.001	0.711	23.590	0.534	0.050	0.001	0.317	263	6	268	6	215	39	1.02	268	6	2%
LP090120-3L-3	AGG 4	277	82	0.302	0.009	0.043	0.001	0.505	23.529	0.554	0.052	0.002	0.270	268	7	269	7	256	65	1.00	269	7	2%
LP090120-3s-56	AGG 4	195	107	0.306	0.013	0.043	0.001	0.475	23.397	0.542	0.052	0.002	0.119	271	10	270	6	260	84	1.00	270	6	2%
LP090120-3s-47	AGG 4	302	205	0.321	0.012	0.043	0.001	0.867	23.310	0.598	0.054	0.001	-0.250	282	9	271	7	365	40	0.96	271	7	3%
LP090120-3L-18	AGG 4	333	110	0.310	0.006	0.043	0.001	0.478	23.229	0.437	0.052	0.001	0.438	275	4	272	5	297	44	0.99	272	5	2%
LP090120-3L-15	AGG 4	205	117	0.308	0.011	0.043	0.001	0.635	23.095	0.533	0.052	0.001	0.020	272	8	273	6	257	63	1.00	273	6	2%
LP090120-3s-108	AGG 4	433	34	0.312	0.010	0.044	0.001	0.783	22.784	0.488	0.051	0.001	-0.169	275	8	277	6	251	48	1.01	277	6	2%
LP090120-3s-76	AGG 4	650	161	0.363	0.012	0.050	0.002	0.888	20.040	0.643	0.053	0.001	0.064	315	9	314	10	307	35	1.00	314	10	3%
LP090120-3s-17	AGG 4	275	235	0.390	0.016	0.050	0.001	0.391	19.881	0.474	0.056	0.002	0.405	334	12	317	8	451	78	0.95	317	8	2%
LP090120-3s-45	AGG 4	530	516	0.421	0.015	0.055	0.001	0.848	18.315	0.470	0.056	0.001	-0.016	356	10	343	9	436	40	0.96	343	9	3%
LP090120-3s-110	AGG 4	52	17	0.410	0.020	0.056	0.002	0.481	17.986	0.485	0.053	0.002	0.058	348	15	349	9	328	95	1.00	349	9	3%
LP090120-3L-29	AGG 4	266	239	0.436	0.013	0.058	0.002	0.776	17.361	0.452	0.055	0.001	0.093	367	9	361	9	405	44	0.98	361	9	3%
LP090120-3s-89	AGG 4	254	158	0.433	0.012	0.058	0.001	0.642	17.331	0.330	0.054	0.001	0.003	365	9	361	7	373	49	0.99	361	7	2%
LP090120-3s-80	AGG 4	287	170	0.434	0.007	0.059	0.001	0.518	17.094	0.292	0.053	0.001	0.467	366	5	366	6	347	35	1.00	366	6	2%
LP090120-3L-78	AGG 4	323	221	0.439	0.011	0.059	0.001	0.720	17.082	0.283	0.054	0.001	-0.010	369	8	367	6	388	41	0.99	367	6	2%
LP090120-3s-7	AGG 4	259	47	0.539	0.024	0.066	0.002	0.776	15.106	0.434	0.059	0.002	-0.165	437	15	413	12	560	58	0.95	413	12	3%
LP090120-3s-57	AGG 4	186	123	0.530	0.015	0.069	0.001	0.583	14.535	0.232	0.056	0.001	0.056	431	10	429	7	429	52	0.99	429	7	2%
LP090120-3s-92	AGG 4	83	50	0.585	0.021	0.076	0.002	0.401	13.106	0.326	0.056	0.002	0.301	467	13	474	11	422	76	1.01	474	11	2%
LP090120-3L-14	AGG 4	258	46	0.614	0.015	0.078	0.002	0.662	12.887	0.266	0.057	0.001	0.139	486	9	482	9	503	41	0.99	482	9	2%
LP090120-3L-24	AGG 4	120	65	0.733	0.062	0.078	0.002	0.459	12.821	0.329	0.068	0.005	-0.205	555	35	484	12	830	140	0.87	484	12	2%
LP090120-3s-112	AGG 4	185	94	0.641	0.017	0.079	0.003	0.877	12.642	0.432	0.059	0.001	0.580	503	10	491	16	555	40	0.98	491	16	3%
LP090120-3L-59	AGG 4	244	138	0.630	0.021	0.080	0.003	0.768	12.531	0.393	0.057	0.001	0.199	496	13	495	15	500	47	1.00	495	15	3%
LP090120-3s-119	AGG 4	1026	135	0.775	0.025	0.081	0.002	0.890	12.346	0.351	0.069	0.001	-0.069	582	14	502	13	904	25	0.86	502	13	3%
LP090120-3L-74	AGG 4	183	49	0.664	0.020	0.082	0.002	0.840	12.195	0.327	0.059	0.001	-0.030	517	12	508	13	559	38	0.98	508	13	3%
LP090120-3s-12	AGG 4	92	96	0.698	0.023	0.084	0.002	0.378	11.947	0.228	0.061	0.002	0.272	537	14	518	10	611	70	0.97	518	10	2%
LP090120-3s-28	AGG 4	189	86	0.750	0.028	0.084	0.002	0.607	11.905	0.340	0.065	0.002	0.117	567	17	520	14	756	60	0.92	520	14	3%
LP090120-3s-68	AGG 4	89	61	0.697	0.014	0.086	0.002	0.437	11.696	0.233	0.059	0.001	0.495	537	8	529	10	557	47	0.99	529	10	2%
LP090120-3s-8	AGG 4	136	35	0.812	0.050	0.090	0.004	0.907	11.161	0.473	0.065	0.002	-0.542	601	29	553	22	780	70	0.92	553	22	4%
LP090120-3s-13	AGG 4	212	91	0.759	0.014	0.091	0.002	0.547	11.038	0.207	0.061	0.001	0.423	573	8	559	10	629	38	0.97	559	10	2%
LP090120-3s-18	AGG 4	64	57	0.902	0.073	0.091	0.003	0.512	11.038	0.317	0.072	0.005	-0.170	649	37	559	16	950	130	0.86	559	16	3%
LP090120-3L-34	AGG 4	125	26	0.749	0.021	0.092	0.002	0.655	10.929	0.275	0.060	0.002	0.185	567	12	564	13	581	53	0.99	564	13	2%
LP090120-3s-73	AGG 4	252	64	0.746	0.025	0.092	0.003	0.925	10.834	0.376	0.058	0.001	0.230	565	14	569	19	540	31	1.01	569	19	3%
LP090120-3s-39	AGG 4	329	108	0.752	0.017	0.093	0.002	0.765	10.787	0.209	0.059	0.001	0.118	569	10	572	11	552	34	1.01	572	11	2%
LP090120-3s-114	AGG 4	238	147	0.754	0.025	0.094	0.003	0.778	10.695	0.309	0.058	0.001	0.085	570	14	576	16	540	45	1.01	576	16	3%
LP090120-3L-2	AGG 4	132	57	0.764	0.029	0.094	0.002	0.806	10.661	0.227	0.059	0.002	-0.408	575	17	578	12	557	56	1.01	578	12	2%
LP090120-3s-44	AGG 4	203	24	0.801	0.020	0.095	0.002	0.725	10.560	0.212	0.061	0.001	0.141	597	11	583	11	641	37	0.98	583	11	2%
LP090120-3L-12	AGG 4	305	179	0.806	0.021	0.096	0.002	0.855	10.395	0.216	0.061	0.001	-0.153	600	12	592	12	627	28	0.99	592	12	2%
LP090120-3s-85	AGG 4	715	41	0.938	0.076	0.098	0.002	0.453	10.204	0.198	0.069	0.005	-0.252	668	36	602	11	870	120	0.90	602	11	2%
LP090120-3s-37	AGG 4	224	189	0.837	0.018	0.099	0.001	0.765	10.132	0.144	0.061	0.001	-0.255	617	10	607	8	649	29	0.98	607	8	1%
LP090120-3L-51	AGG 4	116	58	0.824	0.030	0.099	0.003	0.771	10.081	0.285	0.060	0.001	0.024	609	17	610	16	609	50	1.00	610	16	3%
LP090120-3s-90	AGG 4	901	69	0.841	0.019	0.100	0.002	0.912	9.990	0.230	0.061	0.000	0.256	619	10	615	13	625	16	0.99	615	13	2%
LP090120-3s-9	AGG 4	215	122	0.911	0.041	0.101	0.003	0.673	9.950	0.248	0.066	0.002	-0.254	657	21	617	15	788	59	0.94	617	15	2%
LP090120-3L-43	AGG 4	206	61	0.845	0.026	0.101	0.002	0.908	9.881	0.225	0.061	0.001	-0.381	621	14	621	13	623	30	1.00	621	13	2%
LP090120-3s-116	AGG 4	159	130	0.848	0.022	0.104	0.002	0.672	9.662	0.215	0.059	0.001	0.266	623	12	635	14	576	43	1.02	635	14	2%
LP090120-3s-94	AGG 4	897	170	0.988	0.023	0.111	0.002	0.881	9.009	0.179	0.064	0.001	-0.086	698	12	678	13	751	25	0.97	678	13	2%
LP090120-3L-64	AGG 4	196	50	1.002	0.035	0.112	0.003	0.881	8.961	0.273	0.065	0.001	-0.110	704	18	682	20	779	38	0.97	682	20	3%
LP090120-3s-5	AGG 4	284	104	1.068	0.038	0.114	0.004	0.953	8.741	0.290	0.068	0.001	-0.279	737	19	698	22	855	27	0.95	698	22	3%
LP090120-3L-31	AGG 4	68	61	1.559	0.045	0.156	0.004	0.655	6.398	0.143	0.072	0.002	0.104	953	18	936	19	994	49	0.98	936	19	2%
LP090120-3s-77	AGG 4	39	22	1.665	0.062	0.161	0.006	0.802	6.203	0.212	0.074	0.002	0.163	994	24	963	31	1048	42	0.97	963	31	3%
LP090120-3s-70	AGG 4	203	38	1.665	0.038	0.167	0.004	0.867	5.999	0.140	0.072	0.001	0.297	995	14	994	22	985	23	1.00	994	22	2%
LP090120-3s-55	AGG 4	33	24	1.700	0.120	0.168	0.004	-0.230	5.949	0.131	0.073	0.006	0.503	1006	44	1002	20	1000	160	1.00	1002	20	2%
LP090120-3s-43	AGG 4	82	35	2.093	0.090	0.170	0.004	0.751	5.896	0.139	0.089	0.003	-0.290	1144	30	1010	22	1398	66	0.88	1010	22	2%
LP090120-3s-106	AGG 4	104	36	1.697	0.066	0.172	0.005	0.856	5.831	0.177	0.072	0.001	-0.143	1006	25	1020	29	969	39	1.01	1020	29	3%
LP090120-3L-17	AGG 4	93	95	1.757	0.045	0.173	0.004	0.737	5.777	0.137	0.074	0.001	0.242	1029	16	1029	23	1028	37	1.00	1029	23	2%
LP090120-3s-48	AGG 4	60	21	1.758	0.063	0.175	0.005	0.873	5.727	0.154	0.073	0.001	-0.223	1029	23	1037	26	1002	36	1.01	1037	26	3%
LP090120-3s-42	AGG 4	247	177	1.820	0.043	0.175	0.003	0.951	5.701	0.111	0.075	0.001	-0.443	1052	15	1042	18	1065	18	0.99	1042	18	2%
LP090120-3s-4	AGG 4	321	99	2.490	0.240	0.180	0.015	0.996	5.556	0.463	0.100	0.002	-0.887	1256	72	1062	82	1622	35	0.85	1062	82	8%
LP090120-3s-16	AGG 4	233	66	2.010	0.170	0.180	0.011	0.943	5.556	0.340	0.080	0.003	-0.489	1111	56	1068	57	1197	66	0.96	1068	57	5%
LP090120-3s-97	AGG 4	291	157	1.885	0.049	0.180	0.005	0.925	5.543	0.138	0.075	0.001	-0.042	1075	17	1069	25	1080	18	0.99	1069	25	2%
LP090120-3s-120	AGG 4	397	77	1.924	0.037	0.183	0.003	0.914	5.467	0.102	0.076	0.001	0.049	1089	13	1083	18	1098	15	0.99	1083	18	2%
LP090120-3s-91	AGG 4	116	81	1.950	0.055	0.183	0.004	0.855	5.456	0.104	0.077	0.001	-0.331	1097	19	1085	19	1113	30	0.99	1085	19	2%
LP090120-3s-2	AGG 4	120	63	1.990	0.100	0.185	0.009	0.954	5.417	0.276	0.078	0.001	0.007	1107	39	1091	52	1147	33	0.99	1091	52	5%
LP090120-3s-69	AGG 4	177	54	2.610	0.170	0.187	0.012	0.982	5.348	0.343	0.100	0.001	-0.171	1296	48	1105	66	1628	22	0.85	1105	66	6%
LP090120-3L-46	AGG 4	197	104	2.068	0.041	0.193	0.004	0.908	5.184	0.099	0.078	0.001	0.082	1138	14	1137	20	1143	16	1.00	1137	20	2%
LP090120-3s-41	AGG 4	45	12	2.189	0.081	0.196	0.007	0.830	5.099	0.172	0.081	0.002	0.098	1176	26	1154	36	1211	42	0.98	1154	36	3%
LP090120-3L-71	AGG 4	112	38	2.172	0.051	0.199	0.004	0.728	5.030	0.099	0.079	0.001	0.060	1171	16	1168	21	1180	33	0.99	1180	33	3%
LP090120-3s-51	AGG 4	156	118	2.757	0.066	0.230	0.006	0.934	4.342	0.109	0.086	0.001	0.176	1343	18	1336	30	1346	18	0.99	1346	18	1%
LP090120-3s-1	AGG 4	167	230	2.945	0.050	0.237	0.003	0.808	4.218	0.059	0.090	0.001	0.034	1393	13	1371	17	1425	18	0.96	1425	18	1%
LP090120-3s-58	AGG 4	87	33	2.995	0.080	0.240	0.005	0.787	4.163	0.081	0.090	0.002	-0.128	1405	20	1388	24	1421	32	0.98	1421	32	2%
LP090120-3s-60	AGG 4	65	41	3.151	0.075	0.242	0.007	0.898	4.127	0.116	0.094	0.002	0.192	1444	18	1398	35	1503	34	0.93	1503	34	2%
LP090120-3s-19	AGG 4	85	56	3.143	0.082	0.244	0.006	0.852	4.103	0.098	0.093	0.001	0.026	1442	20	1406	30	1495	28	0.94	1495	28	2%
LP090120-3s-102	AGG 4	113	60	3.044	0.078	0.244	0.006	0.907	4.093	0.097	0.090	0.001	0.023	1418	20	1409	30	1425	17	0.99	1425	17	1%
LP090120-3s-109	AGG 4	145	88	3.095	0.063	0.249	0.004	0.825	4.016	0.066	0.090	0.001	-0.031	1431	16	1433	21	1421	21	1.01	1421	21	1%
LP090120-3s-72	AGG 4	87	47	3.147	0.075	0.250	0.004	0.846	4.000	0.067	0.091	0.001	-0.260	1443	18	1438	22	1439	23	1.00	1439	23	2%
LP090120-3L-68	AGG 4	111	71	3.183	0.089	0.251	0.007	0.916	3.986	0.106	0.092	0.001	0.099	1452	21	1443	35	1470	19	0.98	1470	19	1%
LP090120-3s-99	AGG 4	103	45	3.226	0.077	0.252	0.005	0.797	3.967	0.077	0.093	0.001	-0.084	1463	19	1449	25	1475	27	0.98	1475	27	2%
LP090120-3L-58	AGG 4	151	68	3.308	0.079	0.253	0.006	0.897	3.959	0.089	0.095	0.001	0.191	1482	19	1451	30	1530	17	0.95	1530	17	1%
LP090120-3s-86	AGG 4	235	116	3.313	0.061	0.257	0.005	0.887	3.888	0.070	0.093	0.001	0.115	1484	14	1475	23	1486	14	0.99	1486	14	1%
LP090120-3s-40	AGG 4	344	123	3.512	0.065	0.260	0.005	0.935	3.849	0.067	0.098	0.001	-0.121	1529	15	1489	23	1580	12	0.94	1580	12	1%
LP090120-3L-66	AGG 4	209	73	3.940	0.170	0.273	0.011	0.979	3.663	0.148	0.105	0.001	0.168	1620	34	1554	56	1713	16	0.91	1713	16	1%
LP090120-3s-36	AGG 4	158	211	3.940	0.130	0.279	0.007	0.953	3.589	0.089	0.102	0.001	-0.328	1620	26	1584	35	1663	20	0.95	1663	20	1%
LP090120-3s-62	AGG 4	200	54	3.921	0.096	0.282	0.006	0.944	3.552	0.080	0.100	0.001	-0.308	1617	20	1599	32	1630	19	0.98	1630	19	1%
LP090120-3s-101	AGG 4	49	55	3.860	0.120	0.282	0.007	0.903	3.544	0.085	0.099	0.001	-0.316	1603	25	1602	34	1598	27	1.00	1598	27	2%
LP090120-3s-78	AGG 4	187	107	4.025	0.055	0.286	0.004	0.777	3.492	0.045	0.101	0.001	0.120	1639	11	1623	19	1648	15	0.98	1648	15	1%
LP090120-3s-88	AGG 4	223	35	4.122	0.088	0.286	0.006	0.913	3.492	0.068	0.104	0.001	-0.017	1658	18	1623	28	1693	15	0.96	1693	15	1%
LP090120-3s-71	AGG 4	135	129	4.140	0.130	0.290	0.009	0.964	3.445	0.107	0.103	0.001	0.064	1659	26	1642	46	1673	17	0.98	1673	17	1%
LP090120-3s-64	AGG 4	293	102	4.400	0.140	0.294	0.006	0.871	3.405	0.073	0.108	0.002	-0.419	1711	27	1660	31	1764	34	0.94	1764	34	2%
LP090120-3L-61	AGG 4	98	39	4.412	0.095	0.300	0.007	0.878	3.332	0.073	0.107	0.001	0.306	1714	18	1691	33	1745	20	0.97	1745	20	1%
LP090120-3L-75	AGG 4	65	34	4.361	0.089	0.301	0.006	0.799	3.328	0.071	0.106	0.001	0.277	1704	17	1693	32	1721	23	0.98	1721	23	1%
LP090120-3s-21	AGG 4	128	76	4.410	0.120	0.302	0.007	0.905	3.316	0.079	0.106	0.001	0.016	1713	22	1699	36	1728	20	0.98	1728	20	1%
LP090120-3L-69	AGG 4	341	106	4.541	0.085	0.304	0.006	0.916	3.287	0.064	0.108	0.001	0.321	1738	16	1712	29	1773	13	0.97	1773	13	1%
LP090120-3s-98	AGG 4	240	133	4.653	0.099	0.308	0.008	0.932	3.243	0.080	0.109	0.001	0.400	1758	18	1732	38	1783	14	0.97	1783	14	1%
LP090120-3L-55	AGG 4	69	59	4.700	0.110	0.312	0.006	0.808	3.203	0.064	0.109	0.002	-0.056	1766	20	1751	31	1787	26	0.98	1787	26	1%
LP090120-3L-1	AGG 4	141	53	4.720	0.120	0.316	0.007	0.967	3.162	0.070	0.108	0.001	-0.286	1770	21	1771	34	1766	13	1.00	1766	13	1%
LP090120-3s-23	AGG 4	57	61	4.960	0.180	0.321	0.010	0.875	3.115	0.096	0.112	0.002	-0.103	1811	30	1794	48	1830	31	0.98	1830	31	2%
LP090120-3L-72	AGG 4	90	47	5.067	0.091	0.323	0.005	0.827	3.099	0.045	0.114	0.001	0.069	1830	15	1803	23	1865	15	0.97	1865	15	1%
LP090120-3L-10	AGG 4	194	79	4.710	0.140	0.323	0.010	0.945	3.093	0.093	0.106	0.001	0.226	1768	24	1805	47	1724	14	1.05	1724	14	1%
LP090120-3L-21	AGG 4	65	133	4.990	0.100	0.324	0.006	0.893	3.091	0.055	0.112	0.001	0.199	1817	17	1807	28	1829	19	0.99	1829	19	1%
LP090120-3s-81	AGG 4	123	82	4.933	0.099	0.324	0.007	0.853	3.088	0.067	0.110	0.001	0.404	1807	17	1808	34	1798	18	1.01	1798	18	1%
LP090120-3L-32	AGG 4	197	155	5.030	0.120	0.325	0.008	0.955	3.076	0.072	0.112	0.001	-0.069	1824	21	1814	37	1837	13	0.99	1837	13	1%
LP090120-3L-67	AGG 4	171	89	5.054	0.091	0.326	0.005	0.876	3.067	0.051	0.113	0.001	-0.015	1828	15	1819	26	1841	14	0.99	1841	14	1%
LP090120-3s-93	AGG 4	68	74	5.010	0.091	0.326	0.006	0.807	3.067	0.057	0.111	0.001	0.359	1820	16	1819	30	1815	20	1.00	1815	20	1%
LP090120-3L-30	AGG 4	124	66	5.070	0.140	0.327	0.008	0.952	3.059	0.075	0.112	0.001	-0.295	1829	23	1823	39	1839	14	0.99	1839	14	1%
LP090120-3L-39	AGG 4	269	142	5.120	0.090	0.328	0.006	0.927	3.053	0.057	0.113	0.001	0.231	1839	15	1827	29	1855	9	0.98	1855	9	0%
LP090120-3s-87	AGG 4	54	105	5.060	0.160	0.330	0.009	0.903	3.035	0.082	0.111	0.001	-0.089	1828	26	1835	43	1813	23	1.01	1813	23	1%
LP090120-3L-27	AGG 4	54	57	5.140	0.140	0.330	0.009	0.878	3.033	0.086	0.113	0.002	0.301	1840	24	1836	45	1848	25	0.99	1848	25	1%
LP090120-3L-54	AGG 4	34	15	5.150	0.160	0.332	0.010	0.908	3.012	0.091	0.113	0.002	0.188	1844	26	1846	49	1839	27	1.00	1839	27	1%
LP090120-3L-20	AGG 4	56	27	5.150	0.130	0.332	0.008	0.897	3.010	0.073	0.113	0.001	0.127	1844	22	1848	39	1839	21	1.00	1839	21	1%

LP090120-3L-44	AGG 4	268	89	5.360	0.130	0.335	0.007	0.948	2.985	0.066	0.116	0.001	-0.214	1878	20	1862	36	1899	10	0.98	1899	10	1%
LP090120-3L-9	AGG 4	35	46	5.670	0.160	0.336	0.010	0.666	2.979	0.085	0.122	0.003	0.437	1926	25	1865	46	1981	44	0.94	1981	44	2%
LP090120-3L-33	AGG 4	48	3	5.330	0.130	0.338	0.007	0.808	2.963	0.063	0.115	0.001	0.097	1872	21	1874	35	1872	22	1.00	1872	22	1%
LP090120-3s-104	AGG 4	60	34	5.430	0.140	0.340	0.009	0.905	2.946	0.076	0.116	0.002	0.221	1889	22	1883	43	1891	24	1.00	1891	24	1%
LP090120-3L-52	AGG 4	117	61	5.586	0.095	0.346	0.006	0.931	2.894	0.048	0.117	0.001	-0.001	1913	15	1913	27	1917	14	1.00	1917	14	1%
LP090120-3L-63	AGG 4	51	78	5.700	0.190	0.347	0.011	0.937	2.882	0.091	0.119	0.001	-0.051	1929	29	1921	52	1942	20	0.99	1942	20	1%
LP090120-3L-70	AGG 4	51	75	5.730	0.150	0.348	0.009	0.880	2.875	0.073	0.120	0.001	0.193	1934	22	1923	42	1951	20	0.99	1951	20	1%
LP090120-3L-6	AGG 4	50	80	5.810	0.160	0.352	0.010	0.950	2.841	0.081	0.120	0.001	0.419	1946	24	1941	50	1951	15	0.99	1951	15	1%
LP090120-3L-8	AGG 4	75	49	5.930	0.170	0.358	0.010	0.867	2.793	0.078	0.120	0.002	0.252	1964	25	1972	48	1956	24	1.01	1956	24	1%
LP090120-3s-107	AGG 4	71	47	5.940	0.180	0.363	0.011	0.948	2.755	0.083	0.118	0.001	0.047	1965	26	1995	51	1931	19	1.03	1931	19	1%
LP090120-3L-47	AGG 4	245	137	6.710	0.150	0.375	0.008	0.963	2.665	0.057	0.130	0.001	-0.256	2072	21	2053	38	2095	11	0.98	2095	11	1%
LP090120-3L-19	AGG 4	148	76	6.690	0.110	0.377	0.006	0.889	2.653	0.041	0.129	0.001	0.017	2071	15	2061	27	2081	12	0.99	2081	12	1%
LP090120-3s-27	AGG 4	550	76	9.170	0.710	0.403	0.019	0.991	2.481	0.117	0.163	0.006	-0.949	2341	72	2180	85	2484	62	0.88	2484	62	2%
LP090120-3L-79	AGG 4	54	49	8.640	0.220	0.422	0.010	0.902	2.371	0.055	0.149	0.002	-0.136	2299	23	2268	44	2331	18	0.97	2331	18	1%
LP090120-3L-73	AGG 4	82	34	10.530	0.280	0.467	0.012	0.922	2.141	0.055	0.164	0.002	0.080	2480	24	2470	53	2494	16	0.99	2494	16	1%
LP090120-3s-32	AGG 4	64	50	11.990	0.330	0.476	0.011	0.965	2.101	0.049	0.182	0.002	-0.442	2602	26	2510	50	2672	14	0.94	2672	14	1%
LP090120-3L-11	AGG 4	34	28	13.400	1.500	0.493	0.038	0.998	2.028	0.156	0.198	0.007	-0.975	2710	100	2580	160	2809	58	0.92	2809	58	2%
LP090120-3L-5	AGG 4	33	21	13.110	0.970	0.495	0.026	0.918	2.020	0.106	0.190	0.007	-0.447	2684	72	2590	110	2743	56	0.94	2743	56	2%
LP090120-3s-33	AGG 4	67	49	12.500	0.180	0.496	0.007	0.850	2.015	0.030	0.182	0.001	0.301	2642	13	2597	32	2673	13	0.97	2673	13	0%
LP090120-3s-35	AGG 4	64	56	12.520	0.330	0.499	0.013	0.925	2.004	0.052	0.181	0.002	0.170	2642	25	2609	57	2665	16	0.98	2665	16	1%
LP090120-3L-22	AGG 4	66	85	13.090	0.330	0.513	0.012	0.898	1.949	0.046	0.185	0.002	0.103	2685	24	2667	52	2699	15	0.99	2699	15	1%
LP090120-3L-38	AGG 4	56	76	13.080	0.300	0.515	0.010	0.954	1.942	0.038	0.184	0.001	-0.264	2684	22	2676	45	2693	13	0.99	2693	13	0%
LP090120-3L-60	AGG 4	32	17	13.560	0.420	0.517	0.018	0.942	1.934	0.067	0.190	0.002	0.504	2719	29	2686	77	2745	19	0.98	2745	19	1%
LP090120-3s-50	AGG 4	73	102	13.360	0.220	0.519	0.009	0.894	1.927	0.033	0.186	0.001	0.186	2705	16	2694	38	2705	12	1.00	2705	12	0%
LP090120-3L-28	AGG 4	60	71	13.690	0.350	0.525	0.012	0.948	1.905	0.044	0.189	0.002	-0.203	2727	24	2719	51	2735	14	0.99	2735	14	1%
LP090120-3s-61	AGG 4	40	28	14.350	0.390	0.529	0.012	0.928	1.890	0.043	0.195	0.002	-0.060	2771	26	2737	52	2788	17	0.98	2788	17	1%
LP090120-3L-4	AGG 4	42	34	14.870	0.470	0.539	0.015	0.957	1.855	0.052	0.200	0.002	-0.336	2804	30	2780	62	2822	14	0.99	2822	14	0%
LP090120-3s-30	AGG 4	100	69	16.970	0.330	0.566	0.010	0.923	1.766	0.031	0.217	0.001	-0.220	2932	19	2892	41	2956	10	0.98	2956	10	0%
Rejected Grains																							
LP090120-3s-100	AGG 4	126.6	83.2	0.020	0.003	0.003	0.000	0.088	394.633	12.459	0.056	0.009	0.146	20	3	16	1	340	320	0.83	16	1	3%
LP090120-3L-37	AGG 4	127.7	54.7	0.014	0.004	0.003	0.000	0.079	386.100	14.907	0.040	0.010	0.001	14	4	17	1	-240	350	1.16	17	1	4%
LP090120-3s-53	AGG 4	48.4	73.9	0.022	0.009	0.003	0.000	0.393	340.136	17.354	0.053	0.020	-0.259	22	8	19	1	30	600	0.86	19	1	5%
LP090120-3s-83	AGG 4	670	141.4	0.129	0.005	0.015	0.000	0.526	68.353	1.495	0.064	0.002	0.050	123	5	94	2	720	69	0.76	94	2	2%
LP090120-3s-113	AGG 4	528	254	0.264	0.009	0.016	0.000	0.587	61.087	1.008	0.117	0.003	-0.023	238	7	105	2	1900	53	0.44	105	2	2%
LP090120-3L-57	AGG 4	41.5	24	0.129	0.014	0.020	0.001	0.300	48.924	1.843	0.046	0.005	0.108	123	13	130	5	30	190	1.06	130	5	4%
LP090120-3s-96	AGG 4	206	94	0.172	0.020	0.021	0.000	0.621	46.926	0.947	0.058	0.006	-0.503	161	17	136	3	460	220	0.84	136	3	2%
LP090120-3s-31	AGG 4	45.1	35.4	0.181	0.017	0.028	0.001	0.320	35.537	1.162	0.046	0.004	0.033	168	15	179	6	40	170	1.06	179	6	3%
LP090120-3s-46	AGG 4	47.4	21.1	2.990	0.120	0.225	0.010	0.775	4.444	0.198	0.096	0.003	0.645	1403	31	1305	54	1548	47	0.84	1548	47	4%
LP090120-3s-34	AGG 4	305	62.9	3.340	0.310	0.237	0.020	0.996	4.219	0.356	0.102	0.002	-0.863	1476	75	1370	100	1650	29	0.83	1650	29	7%
LP090120-3s-24	AGG 4	172	76	3.840	0.480	0.246	0.029	0.997	4.065	0.479	0.112	0.002	-0.751	1560	120	1410	160	1835	30	0.77	1835	30	11%
LP090120-3s-75	AGG 4	403	158	9.800	1.800	0.348	0.053	1.000	2.874	0.438	0.195	0.011	-0.996	2310	210	1900	260	2760	110	0.69	2760	110	14%
LP090120-3L-77	AGG 4	263.4	372	8.200	0.240	0.376	0.011	0.982	2.660	0.078	0.158	0.001	-0.276	2251	26	2057	50	2437	7	0.84	2437	7	2%
LP090120-3s-67	AGG 4	261	85.3	9.580	0.780	0.382	0.028	0.998	2.618	0.192	0.180	0.002	-0.897	2379	77	2080	130	2652	20	0.78	2652	20	6%
LP090120-3s-20	AGG 4	705	60	17.100	1.300	0.458	0.024	0.967	2.183	0.114	0.269	0.008	-0.736	2926	69	2420	100	3295	50	0.73	3295	50	4%
LP090120-3s-11	AGG 4	244	38.5	2.010	0.240	0.173	0.020	0.996	5.780	0.668	0.084	0.001	-0.724	1099	88	1020	110	1284	29	0.93	1020	110	11%

APPENDIX Ib: Uranium, lead, and thorium isotope data for samples collected from the Sierra Las Pintas Group. Best age: $^{207}Pb/^{206}Pb$ ages used for grains older than 1.0 Ga and $^{206}Pb/^{238}U$ ages for grains younger than 1.0 Ga with 2 sigma uncertainty.

Sample LP100120-1

				Measured isotopic ratios										Isotopic ages and errors (Ma)									
Grain	Unit	U (ppm)	Th (ppm)	$^{207}Pb/^{235}U$	2σ	$^{206}Pb/^{238}U$	2σ	Error Correlation	$^{238}Pb/^{206}Pb$	2σ	$^{207}Pb/^{206}Pb$	2σ	Error Correlation	$^{207}Pb/^{235}U$	2σ	$^{206}Pb/^{238}U$	2σ	$^{207}Pb/^{206}Pb$	2σ	discordance	best age (Ma)	2σ	internal error
LP100120-1L-40	SP1	227	216.4	0.075	0.004	0.011	0.000	0.628	88.574	2.903	0.047	0.002	0.039	73	4	72	2	53	80	0.99	72	2	3%
LP100120-1s-44	SP1	101.1	64.6	0.092	0.007	0.012	0.000	0.199	85.324	2.694	0.058	0.004	0.196	89	6	75	2	490	160	0.84	75	2	3%
LP100120-1L-10	SP1	246	552	0.081	0.006	0.012	0.000	0.223	81.900	2.616	0.049	0.004	0.116	79	5	78	3	140	150	0.99	78	3	3%
LP100120-1s-40	SP1	630	362	0.087	0.003	0.013	0.000	0.462	76.336	2.506	0.048	0.002	0.389	85	3	84	3	93	68	0.99	84	3	3%
LP100120-1s-91	SP1	3032	3640	0.102	0.003	0.014	0.000	0.588	70.126	1.377	0.051	0.001	-0.128	98	3	91	2	252	61	0.93	91	2	2%
LP100120-1L-54	SP1	753	298	0.100	0.003	0.015	0.000	0.754	68.966	1.427	0.049	0.001	0.114	97	3	93	2	166	36	0.96	93	2	2%
LP100120-1s-56	SP1	250	94.2	0.099	0.007	0.015	0.001	0.535	67.843	2.762	0.050	0.003	0.122	97	7	94	4	190	120	0.97	94	4	4%
LP100120-1s-70	SP1	361	126	0.104	0.009	0.015	0.001	0.810	67.797	3.172	0.052	0.003	-0.395	101	8	94	4	280	130	0.94	94	4	5%
LP100120-1L-32	SP1	746	126	0.097	0.004	0.015	0.000	0.750	67.705	2.200	0.048	0.002	-0.056	94	4	95	3	105	69	1.00	95	3	3%
LP100120-1s-49	SP1	456	98.4	0.098	0.004	0.015	0.000	0.540	67.613	1.646	0.048	0.001	0.165	95	3	95	2	116	68	1.00	95	2	2%
LP100120-1s-12	SP1	163.5	64.9	0.100	0.007	0.015	0.000	0.174	67.069	1.889	0.048	0.003	0.267	97	6	95	3	110	120	0.99	95	3	3%
LP100120-1s-59	SP1	907	503.5	0.100	0.004	0.015	0.001	0.887	67.114	2.658	0.049	0.001	0.220	96	4	95	4	123	51	0.99	95	4	4%
LP100120-1L-79	SP1	375	86.5	0.096	0.004	0.015	0.001	0.656	66.934	2.554	0.047	0.001	0.314	93	4	96	4	57	63	1.03	96	4	4%
LP100120-1L-83	SP1	132	19.6	0.101	0.007	0.015	0.000	0.687	66.225	1.623	0.048	0.002	-0.343	97	6	97	2	103	97	0.99	97	2	2%
LP100120-1s-37	SP1	326	82.3	0.101	0.004	0.015	0.000	0.683	66.225	2.061	0.049	0.002	0.155	97	4	97	3	125	76	0.99	97	3	3%
LP100120-1s-66	SP1	520	86	0.098	0.004	0.015	0.000	0.660	66.138	2.056	0.047	0.001	0.118	95	4	97	3	54	63	1.02	97	3	3%
LP100120-1s-74	SP1	279	98	0.099	0.006	0.015	0.000	0.544	65.963	1.566	0.048	0.002	-0.135	96	6	97	2	90	100	1.01	97	2	2%
LP100120-1s-46	SP1	296.2	141	0.113	0.005	0.015	0.001	0.608	65.660	2.630	0.053	0.002	0.295	108	5	97	4	327	75	0.90	97	4	4%
LP100120-1s-77	SP1	1107	316	0.101	0.003	0.015	0.000	0.818	65.488	1.758	0.048	0.001	-0.080	98	3	98	3	101	46	1.00	98	3	3%
LP100120-1L-73	SP1	118.4	42.3	0.110	0.006	0.015	0.001	0.486	65.147	2.292	0.051	0.002	0.209	106	6	98	3	233	95	0.93	98	3	3%
LP100120-1L-13	SP1	116	38	0.098	0.007	0.015	0.000	0.459	64.725	1.969	0.045	0.003	0.114	95	7	99	3	-40	120	1.04	99	3	3%
LP100120-1L-69	SP1	383	88.1	0.106	0.004	0.016	0.001	0.544	64.516	2.081	0.050	0.002	0.246	103	3	99	3	184	73	0.97	99	3	3%
LP100120-1s-13	SP1	893	254	0.104	0.005	0.016	0.001	0.907	64.226	2.351	0.048	0.001	-0.310	100	5	100	4	127	56	0.99	100	4	4%
LP100120-1L-45	SP1	524	305	0.103	0.004	0.016	0.000	0.618	63.573	1.415	0.047	0.002	0.172	99	4	101	2	75	73	1.01	101	2	2%
LP100120-1s-5	SP1	1999	2450	0.103	0.004	0.016	0.001	0.855	63.573	2.102	0.048	0.001	-0.031	99	4	101	3	119	50	1.01	101	3	3%
LP100120-1L-3	SP1	292.2	100	0.108	0.004	0.016	0.000	0.329	62.735	1.850	0.050	0.002	0.382	104	3	102	3	179	95	0.98	102	3	3%
LP100120-1L-56	SP1	45.7	18.5	0.109	0.013	0.016	0.001	0.025	61.881	2.719	0.050	0.006	0.302	105	12	103	5	160	240	0.98	103	5	4%
LP100120-1L-66	SP1	285.3	74	0.123	0.006	0.016	0.001	0.695	60.976	2.119	0.054	0.002	-0.144	118	5	105	4	356	85	0.89	105	4	3%
LP100120-1L-21	SP1	239.9	88.4	0.139	0.005	0.021	0.001	0.658	47.529	1.242	0.048	0.001	-0.206	132	5	134	4	100	64	1.02	134	4	3%
LP100120-1L-38	SP1	295	174	0.139	0.005	0.021	0.001	0.741	47.281	2.101	0.048	0.001	0.326	132	5	135	6	102	60	1.03	135	6	4%
LP100120-1s-14	SP1	170.7	78.3	0.150	0.011	0.021	0.001	0.618	46.773	1.641	0.052	0.003	-0.117	142	10	136	5	250	140	0.96	136	5	3%
LP100120-1L-64	SP1	148.1	71.2	0.149	0.009	0.022	0.001	0.537	46.425	1.078	0.050	0.003	-0.146	141	8	137	3	180	110	0.98	137	3	2%
LP100120-1L-34	SP1	152.9	84.2	0.141	0.006	0.022	0.001	0.199	46.296	1.115	0.048	0.002	0.227	134	5	138	3	92	88	1.03	138	3	2%
LP100120-1s-28	SP1	380	214	0.146	0.005	0.022	0.001	0.782	46.275	1.456	0.050	0.001	0.302	138	5	138	4	203	54	1.00	138	4	3%
LP100120-1L-89	SP1	245	160	0.152	0.006	0.022	0.001	0.710	46.019	1.652	0.051	0.002	0.071	144	5	139	5	215	78	0.96	139	5	4%
LP100120-1s-23	SP1	234.6	127.4	0.150	0.007	0.022	0.001	0.550	45.413	1.444	0.050	0.002	0.039	142	7	140	4	199	96	0.99	140	4	3%
LP100120-1L-59	SP1	232.5	103.3	0.156	0.006	0.023	0.001	0.491	42.699	1.057	0.049	0.002	0.299	147	5	149	4	123	75	1.01	149	4	2%
LP100120-1s-54	SP1	275.4	142.8	0.157	0.006	0.024	0.001	0.639	40.967	1.074	0.047	0.002	0.001	148	6	155	4	73	69	1.05	155	4	3%
LP100120-1L-18	SP1	497	427.6	0.174	0.004	0.025	0.001	0.746	39.463	1.043	0.049	0.001	0.327	163	4	161	4	152	43	0.99	161	4	3%
LP100120-1s-27	SP1	566	590	0.179	0.008	0.026	0.001	0.787	39.216	1.692	0.050	0.001	0.382	167	7	162	7	237	60	0.97	162	7	4%
LP100120-1s-106	SP1	614	680	0.190	0.007	0.027	0.001	0.793	37.722	1.067	0.051	0.001	-0.043	176	6	169	5	237	53	0.96	169	5	3%
LP100120-1L-29	SP1	78	71.6	0.226	0.015	0.034	0.001	0.623	29.257	0.710	0.049	0.003	-0.213	207	12	217	5	130	110	1.05	217	5	2%
LP100120-1s-55	SP1	234	60.7	0.294	0.010	0.041	0.001	0.745	24.331	0.710	0.051	0.001	0.228	261	8	260	7	253	64	0.99	260	7	3%
LP100120-1s-45	SP1	658	341.9	0.298	0.009	0.041	0.002	0.944	24.331	0.947	0.053	0.001	0.157	265	7	260	10	314	30	0.98	260	10	4%
LP100120-1s-51	SP1	216.7	95	0.299	0.013	0.042	0.001	0.639	24.096	0.697	0.052	0.002	0.366	265	10	262	7	288	79	0.99	262	7	3%
LP100120-1s-15	SP1	1060	442	0.307	0.011	0.041	0.001	0.947	24.155	0.817	0.053	0.001	-0.111	272	9	263	8	347	28	0.97	263	8	3%
LP100120-1s-33	SP1	311	169.9	0.305	0.011	0.042	0.001	0.808	23.923	0.630	0.053	0.001	0.106	270	9	264	7	329	53	0.98	264	7	3%
LP100120-1s-58	SP1	243	105.1	0.305	0.011	0.042	0.001	0.684	23.866	0.627	0.053	0.001	0.121	270	8	265	7	302	56	0.98	265	7	3%
LP100120-1s-67	SP1	292	117	0.298	0.013	0.042	0.002	0.810	23.810	0.850	0.052	0.001	0.036	265	10	265	9	270	61	1.00	265	9	3%
LP100120-1L-77	SP1	439	356	0.301	0.012	0.042	0.002	0.927	23.697	0.842	0.051	0.001	0.118	267	9	266	9	256	41	1.00	266	9	3%
LP100120-1L-84	SP1	519	281.7	0.297	0.012	0.042	0.001	0.892	23.641	0.727	0.051	0.001	-0.120	264	9	267	8	264	41	1.01	267	8	3%
LP100120-1s-92	SP1	242.1	277	0.315	0.013	0.043	0.001	0.733	23.529	0.609	0.052	0.002	0.005	278	10	268	7	273	69	0.96	268	7	3%
LP100120-1s-21	SP1	1024	700.7	0.302	0.010	0.043	0.001	0.943	23.529	0.775	0.052	0.001	0.113	268	7	268	9	274	28	1.00	268	9	3%
LP100120-1s-90	SP1	458	415.3	0.306	0.012	0.043	0.001	0.866	23.529	0.664	0.052	0.001	-0.145	271	10	268	7	297	41	0.99	268	7	3%
LP100120-1s-75	SP1	740	489	0.300	0.008	0.043	0.001	0.871	23.474	0.661	0.052	0.001	0.108	266	7	269	7	267	35	1.01	269	7	3%
LP100120-1s-69	SP1	455	108.4	0.300	0.012	0.043	0.002	0.970	23.474	0.937	0.052	0.001	-0.337	266	10	269	11	299	38	1.01	269	11	4%
LP100120-1L-19	SP1	658	182	0.304	0.005	0.043	0.001	0.804	23.452	0.528	0.051	0.001	0.492	270	4	269	6	264	37	1.00	269	6	2%
LP100120-1s-24	SP1	220.8	79.6	0.317	0.012	0.043	0.001	0.872	23.419	0.713	0.054	0.001	-0.307	279	9	269	8	358	57	0.96	269	8	3%
LP100120-1s-104	SP1	242	185	0.307	0.018	0.043	0.002	0.826	23.310	1.195	0.051	0.002	-0.059	271	14	270	13	217	75	1.00	270	13	5%
LP100120-1s-108	SP1	904	516	0.308	0.016	0.043	0.002	0.959	23.419	1.097	0.052	0.001	-0.261	272	12	270	12	291	30	0.99	270	12	4%
LP100120-1L-63	SP1	314	235	0.306	0.011	0.043	0.002	0.804	23.310	0.815	0.051	0.001	0.167	271	9	271	9	260	49	1.00	271	9	3%
LP100120-1L-5	SP1	687	175.1	0.310	0.007	0.043	0.001	0.690	23.250	0.524	0.052	0.001	0.298	274	6	271	6	269	41	0.99	271	6	2%
LP100120-1L-71	SP1	423.8	264.1	0.302	0.011	0.043	0.001	0.872	23.256	0.595	0.051	0.001	-0.224	268	9	271	7	256	35	1.01	271	7	3%
LP100120-1L-36	SP1	378	195.1	0.319	0.010	0.043	0.001	0.789	23.202	0.700	0.054	0.001	0.289	281	8	272	8	356	48	0.97	272	8	3%
LP100120-1s-84	SP1	407	212	0.301	0.014	0.043	0.002	0.913	23.202	1.023	0.050	0.001	0.255	267	11	272	12	212	41	1.02	272	12	4%
LP100120-1L-12	SP1	100.9	76.3	0.295	0.016	0.043	0.001	0.683	23.202	0.754	0.050	0.002	-0.099	262	13	272	9	190	100	1.04	272	9	3%
LP100120-1s-22	SP1	446	153.9	0.311	0.010	0.043	0.001	0.871	23.148	0.643	0.052	0.001	-0.270	275	8	272	7	295	37	0.99	272	7	3%
LP100120-1s-32	SP1	884	487.7	0.311	0.006	0.043	0.001	0.742	23.175	0.494	0.053	0.001	0.372	275	5	272	6	318	33	0.99	272	6	2%
LP100120-1s-34	SP1	267.4	127	0.306	0.013	0.043	0.002	0.788	23.148	0.804	0.052	0.001	0.020	271	10	273	9	288	51	1.01	273	9	3%
LP100120-1L-42	SP1	451	173.1	0.302	0.009	0.043	0.001	0.901	23.148	0.589	0.051	0.001	-0.088	268	7	273	7	233	40	1.02	273	7	3%
LP100120-1s-41	SP1	390	216	0.305	0.012	0.043	0.002	0.930	23.095	0.960	0.052	0.001	-0.042	270	9	273	11	287	49	1.01	273	11	4%
LP100120-1s-7	SP1	918	529	0.310	0.008	0.043	0.001	0.889	23.095	0.496	0.053	0.001	-0.040	274	6	273	6	323	29	1.00	273	6	2%
LP100120-1s-30	SP1	643	280.7	0.317	0.009	0.043	0.001	0.656	23.095	0.587	0.053	0.001	0.113	280	7	273	7	334	47	0.98	273	7	2%
LP100120-1s-20	SP1	493	329	0.308	0.008	0.043	0.001	0.724	23.041	0.531	0.052	0.001	0.163	273	6	274	6	274	41	1.00	274	6	2%
LP100120-1s-86	SP1	2998	5920	0.313	0.009	0.043	0.001	0.966	23.041	0.584	0.052	0.000	-0.237	276	7	274	7	306	20	0.99	274	7	3%
LP100120-1L-15	SP1	548	152.5	0.312	0.008	0.043	0.001	0.869	23.041	0.584	0.052	0.001	0.265	275	7	274	7	285	33	1.00	274	7	2%
LP100120-1s-1	SP1	897	861	0.307	0.010	0.043	0.001	0.867	23.026	0.488	0.052	0.001	0.150	272	8	274	6	286	41	1.01	274	6	2%
LP100120-1L-51	SP1	647	322.7	0.310	0.008	0.043	0.001	0.796	22.994	0.375	0.051	0.001	-0.106	274	6	274	4	263	37	1.00	274	4	2%
LP100120-1L-43	SP1	545	209.3	0.313	0.009	0.044	0.001	0.935	22.989	0.581	0.052	0.001	-0.094	276	7	275	7	294	30	0.99	275	7	2%
LP100120-1L-23	SP1	324.3	91.8	0.304	0.012	0.044	0.001	0.827	22.936	0.684	0.051	0.001	-0.074	269	9	275	8	222	50	1.02	275	8	3%
LP100120-1L-74	SP1	287.5	133.7	0.310	0.015	0.044	0.002	0.926	22.936	0.999	0.052	0.001	-0.280	273	12	275	11	280	35	1.01	275	11	4%
LP100120-1L-85	SP1	406.2	257.1	0.303	0.010	0.043	0.001	0.814	23.057	0.526	0.051	0.001	-0.007	268	8	275	7	243	43	1.02	275	7	2%
LP100120-1L-1	SP1	321.3	248.1	0.309	0.012	0.044	0.001	0.851	22.883	0.681	0.051	0.001	-0.108	273	10	276	8	247	42	1.01	276	8	3%
LP100120-1s-61	SP1	433	186	0.314	0.018	0.044	0.002	0.908	22.831	1.199	0.052	0.001	-0.070	276	14	276	14	284	49	1.00	276	14	5%
LP100120-1L-76	SP1	995	669	0.311	0.010	0.044	0.001	0.894	22.831	0.573	0.052	0.001	-0.134	275	8	277	7	282	32	1.01	277	7	3%
LP100120-1L-35	SP1	445.3	164.9	0.309	0.011	0.044	0.001	0.849	22.769	0.508	0.052	0.001	-0.227	273	9	277	6	260	52	1.01	277	6	2%
LP100120-1s-31	SP1	169.6	122.2	0.320	0.014	0.044	0.001	0.707	22.727	0.517	0.053	0.002	-0.058	282	11	278	6	329	63	0.98	278	6	2%
LP100120-1L-31	SP1	275	200	0.307	0.014	0.044	0.002	0.912	22.676	1.028	0.051	0.001	-0.031	272	11	278	12	237	60	1.02	278	12	4%
LP100120-1s-87	SP1	579	300	0.310	0.010	0.044	0.001	0.814	22.691	0.499	0.052	0.001	0.137	274	8	278	6	286	50	1.01	278	6	2%
LP100120-1L-20	SP1	315.8	154	0.303	0.010	0.044	0.001	0.746	22.681	0.499	0.050	0.001	-0.025	268	7	278	6	202	45	1.04	278	6	2%
LP100120-1s-83	SP1	1380	1180	0.315	0.015	0.044	0.002	0.955	22.573	0.917	0.052	0.001	-0.129	277	11	279	11	288	30	1.01	279	11	4%
LP100120-1L-48	SP1	387.3	155.1	0.323	0.008	0.044	0.001	0.832	22.523	0.558	0.053	0.001	-0.029	284	6	280	7	345	38	0.99	280	7	3%
LP100120-1s-42	SP1	251	96	0.329	0.019	0.045	0.002	0.870	22.026	0.873	0.053	0.001	0.065	289	14	286	11	313	63	0.99	286	11	4%
LP100120-1s-57	SP1	289	110	0.317	0.019	0.046	0.003	0.925	21.978	1.256	0.053	0.001	0.078	279	15	287	16	317	50	1.03	287	16	6%
LP100120-1s-85	SP1	464	153	0.315	0.015	0.046	0.002	0.873	21.882	0.718	0.052	0.001	0.026	278	11	288	9	275	48	1.04	288	9	3%
LP100120-1s-105	SP1	440	432	0.326	0.014	0.046	0.002	0.955	21.834	0.906	0.051	0.001	0.461	286	10	289	11	254	35	1.01	289	11	4%
LP100120-1s-102	SP1	820	640	0.353	0.032	0.047	0.004	0.976	21.231	1.893	0.054	0.001	-0.020	305	24	296	26	371	36	0.97	296	26	9%
LP100120-1s-9	SP1	257.9	205	0.451	0.017	0.060	0.001	0.663	16.750	0.393	0.055	0.002	-0.135	377	12	374	9	419	66	0.99	374	9	2%
LP100120-1L-87	SP1	413	634	0.480	0.015	0.065	0.002	0.890	15.432	0.429	0.054	0.001	-0.071	398	10	405	11	386	36	1.02	405	11	3%
LP100120-1s-11	SP1	380.5	263.1	0.559	0.017	0.066	0.002	0.875	15.129	0.435	0.062	0.001	0.111	450	11	413	11	678	33	0.92	413	11	3%
LP100120-1L-60	SP1	159.2	64.9	0.512	0.017	0.067	0.002	0.878	14.837	0.462	0.056	0.001	0.295	419	12	421	12	448	35	1.00	421	12	3%
LP100120-1s-95	SP1	623	257	0.534	0.020	0.068	0.002	0.881	14.815	0.527	0.057	0.001	0.184	434	13	424	13	496	40	0.98	424	13	3%
LP100120-1s-29	SP1	104.5	52.7	0.652	0.036	0.078	0.003	0.835	12.821	0.493	0.060	0.002	-0.149	508	22	484	18	594	68	0.95	484	18	4%
LP100120-1s-35	SP1	102.7	68.6	0.702	0.021	0.087	0.002	0.548	11.507	0.225	0.059	0.001	0.069	540	13	537	10	572	50	0.99	537	10	2%
LP100120-1L-28	SP1	143.1	28.6	0.752	0.022	0.092	0.003	0.862	10.846	0.306	0.059	0.001	0.063	569	13	568	15	563	37	1.00	568	15	3%
LP100120-1L-88	SP1	188.8	267.1	0.957	0.024	0.112	0.002	0.913	8.945	0.184	0.063	0.001	-0.071	681	13	683	13	696	25	1.00	683	13	2%
LP100120-1s-52	SP1	210	29.5	1.378	0.076	0.142	0.006	0.974	7.037	0.307	0.071	0.001	-0.597	876	32	856	35	953	35	0.98	856	35	4%
LP100120-1L-82	SP1	132	25.2	1.522	0.051	0.155	0.005	0.899	6.468	0.201	0.073	0.001	-0.234	938	21	926	27	1007	36	0.99	926	27	3%
LP100120-1L-53	SP1	152.2	74.5	1.567	0.051	0.158	0.005	0.906	6.321	0.192	0.072	0.001	0.049	956	20	946	27	976	31	0.99	946	27	3%
LP100120-1L-4	SP1	79.5	22.7	1.824	0.056	0.167	0.006	0.755	5.984	0.197	0.079	0.002	0.313	1053	20	1002	29	1166	40	0.86	1166	40	3%
LP100120-1s-89	SP1	129.5	122.4	1.877	0.078	0.182	0.008	0.934	5.507	0.255	0.076	0.001	0.315	1071	28	1075	46	1091	33	0.99	1091	33	3%
LP100120-1s-73	SP1	68.4	51.7	1.989	0.071	0.184	0.005	0.771	5.435	0.139	0.078	0.002	0.054	1116	21	1088	26	1146	47	0.95	1146	47	4%
LP100120-1L-80	SP1	280.1	99.5	1.959	0.038	0.186	0.004	0.931	5.365	0.115	0.077	0.001	0.277	1101	13	1102	22	1112	17	0.99	1112	17	2%
LP100120-1L-24	SP1	93.7	43.9	2.033	0.071	0.189	0.006	0.943	5.297	0.171	0.078	0.001	0.069	1125	24	1114	33	1149	23	0.97	1149	23	2%
LP100120-1s-101	SP1	507	108	2.137	0.070	0.191	0.006	0.951	5.244	0.162	0.081	0.001	-0.256	1159	23	1125	32	1211	21	0.93	1211	21	2%
LP100120-1s-99	SP1	364	254	2.260	0.130	0.192	0.010	0.970	5.211	0.269	0.085	0.001	-0.362	1203	39	1130	54	1321	22	0.86	1321	22	2%
LP100120-1L-30	SP1	39.07	19.3	2.057	0.082	0.195	0.005	0.811	5.128	0.121	0.077	0.002	-0.194	1133	27	1148	25	1125	55	1.02	1125	55	5%
LP100120-1s-110	SP1	98.8	56	2.124	0.099	0.196	0.006	0.894	5.102	0.151	0.078	0.002	-0.382	1154	32	1153	31	1150	46	1.00	1150	46	4%
LP100120-1s-16	SP1	126.6	36.9	2.176	0.051	0.198	0.002	0.537	5.048	0.056	0.081	0.002	0.086	1173	16	1165	12	1213	38	0.96	1213	38	3%
LP100120-1s-2	SP1	173	155.8	2.106	0.078	0.198	0.007	0.952	5.043	0.186	0.079	0.001	-0.044	1149	25	1165	39	1166	24	1.00	1166	24	2%
LP100120-1L-25	SP1	128.5	68.6	2.164	0.047	0.198	0.005	0.875	5.043	0.120	0.080	0.001	0.290	1169	15	1166	25	1191	22	0.98	1191	22	2%
LP100120-1L-55	SP1	66.4	26.1	2.168	0.078	0.200	0.007	0.913	5.005	0.178	0.079	0.001	0.209	1169	25	1174	38	1166	31	1.01	1166	31	3%
LP100120-1L-86	SP1	131.9	66	2.171	0.070	0.201	0.006	0.911	4.983	0.139	0.080	0.001	-0.102	1170	23	1178	30	1184	25	0.99	1184	25	2%
LP100120-1L-70	SP1	284.2	193.7	2.227	0.059	0.201	0.005	0.959	4.965	0.113	0.080	0.001	-0.281	1189	19	1182	25	1204	17	0.98	1204	17	1%

LP100120-1s-6	SP1	216.1	171.4	2.205	0.062	0.203	0.006	0.905	4.931	0.141	0.080	0.001	0.167	1181	19	1190	31	1199	26	0.99	1199	26	2%
LP100120-1L-26	SP1	94.9	37.8	2.296	0.076	0.207	0.006	0.921	4.843	0.145	0.081	0.001	0.082	1209	23	1209	33	1222	26	0.99	1222	26	2%
LP100120-1L-16	SP1	96.4	85.5	2.356	0.086	0.213	0.006	0.910	4.706	0.140	0.081	0.001	-0.049	1227	26	1242	33	1225	29	1.01	1225	29	2%
LP100120-1s-64	SP1	325	94.7	2.630	0.140	0.221	0.011	0.984	4.525	0.225	0.087	0.001	-0.502	1304	41	1288	58	1359	23	0.95	1359	23	2%
LP100120-1s-98	SP1	86.1	75.4	2.550	0.100	0.222	0.008	0.870	4.496	0.160	0.083	0.002	0.097	1298	22	1294	42	1262	35	1.03	1262	35	3%
LP100120-1s-25	SP1	146.5	69.4	2.656	0.087	0.224	0.007	0.977	4.462	0.141	0.086	0.001	-0.047	1315	24	1303	38	1336	18	0.98	1336	18	1%
LP100120-1s-63	SP1	85	43	2.730	0.110	0.233	0.008	0.922	4.301	0.142	0.085	0.001	-0.373	1342	27	1347	40	1321	30	1.02	1321	30	2%
LP100120-1s-88	SP1	100.1	58	2.829	0.067	0.233	0.005	0.782	4.297	0.100	0.088	0.002	0.374	1366	17	1348	28	1392	38	0.97	1392	38	3%
LP100120-1s-94	SP1	255.5	180.9	2.817	0.071	0.232	0.006	0.945	4.305	0.111	0.088	0.001	0.136	1359	19	1355	28	1381	21	0.98	1381	21	2%
LP100120-1s-18	SP1	63.7	49.5	2.828	0.089	0.235	0.008	0.865	4.264	0.144	0.090	0.002	0.021	1361	23	1357	41	1415	37	0.96	1415	37	3%
LP100120-1L-8	SP1	125.8	29.6	2.745	0.080	0.236	0.009	0.919	4.241	0.167	0.086	0.001	0.366	1346	25	1364	49	1326	24	1.03	1326	24	2%
LP100120-1L-9	SP1	67	50.3	2.839	0.084	0.236	0.006	0.939	4.239	0.104	0.087	0.001	0.066	1364	22	1365	30	1367	24	1.00	1367	24	2%
LP100120-1L-68	SP1	74.8	46.7	2.860	0.110	0.239	0.008	0.939	4.191	0.142	0.088	0.001	-0.126	1371	28	1378	42	1384	31	1.00	1384	31	2%
LP100120-1s-38	SP1	147.2	38.6	2.873	0.094	0.239	0.008	0.967	4.186	0.138	0.087	0.001	0.102	1373	25	1380	41	1370	17	1.01	1370	17	1%
LP100120-1L-67	SP1	251.4	117.2	2.976	0.071	0.241	0.005	0.965	4.143	0.093	0.089	0.001	-0.006	1401	18	1394	28	1413	12	0.99	1413	12	1%
LP100120-1s-53	SP1	133.9	118.1	2.914	0.080	0.242	0.006	0.906	4.136	0.094	0.088	0.001	0.163	1389	19	1395	28	1394	23	1.00	1394	23	2%
LP100120-1s-68	SP1	123.7	39.5	3.037	0.096	0.248	0.008	0.930	4.040	0.124	0.090	0.001	-0.154	1415	24	1425	39	1413	23	1.01	1413	23	2%
LP100120-1s-71	SP1	84.1	66.4	3.190	0.110	0.248	0.009	0.908	4.031	0.140	0.093	0.001	0.065	1452	28	1428	45	1483	28	0.96	1483	28	2%
LP100120-1s-109	SP1	962	137.6	3.280	0.100	0.250	0.008	0.976	4.008	0.124	0.095	0.001	-0.032	1475	24	1435	40	1529	10	0.94	1529	10	1%
LP100120-1L-61	SP1	102.3	38.1	3.160	0.130	0.256	0.010	0.958	3.902	0.148	0.091	0.001	0.146	1445	31	1470	50	1440	19	1.02	1440	19	1%
LP100120-1s-107	SP1	295	171	3.310	0.210	0.260	0.016	0.995	3.846	0.237	0.092	0.001	-0.392	1475	48	1488	79	1468	14	1.01	1468	14	1%
LP100120-1L-78	SP1	113.7	38.6	3.368	0.081	0.266	0.007	0.917	3.758	0.092	0.093	0.001	-0.108	1496	19	1520	33	1480	22	1.03	1480	22	1%
LP100120-1s-96	SP1	306.9	500	3.820	0.220	0.267	0.014	0.995	3.745	0.196	0.103	0.001	-0.706	1589	47	1526	70	1678	18	0.91	1678	18	1%
LP100120-1L-37	SP1	67.9	56.2	3.817	0.094	0.273	0.005	0.920	3.666	0.070	0.102	0.001	-0.381	1595	20	1555	26	1656	21	0.94	1656	21	1%
LP100120-1L-7	SP1	472	123.9	3.860	0.110	0.277	0.007	0.776	3.615	0.088	0.099	0.001	0.141	1604	24	1574	34	1610	22	0.98	1610	22	1%
LP100120-1s-60	SP1	95.2	63.5	3.900	0.150	0.278	0.008	0.934	3.598	0.106	0.105	0.001	0.012	1610	32	1580	42	1710	24	0.92	1710	24	1%
LP100120-1s-82	SP1	219.3	313	3.956	0.090	0.284	0.006	0.947	3.524	0.078	0.101	0.001	-0.147	1624	18	1610	32	1650	16	0.98	1650	16	1%
LP100120-1s-50	SP1	229	99.5	4.170	0.170	0.284	0.012	0.980	3.521	0.149	0.108	0.001	-0.224	1680	34	1611	59	1764	15	0.91	1764	15	1%
LP100120-1s-8	SP1	243.7	139.2	4.150	0.140	0.290	0.009	0.929	3.444	0.107	0.105	0.001	-0.174	1661	27	1643	45	1706	18	0.96	1706	18	1%
LP100120-1s-17	SP1	312.3	203.2	4.150	0.110	0.289	0.007	0.975	3.460	0.085	0.103	0.001	-0.413	1663	22	1652	30	1689	12	0.98	1689	12	1%
LP100120-1s-39	SP1	193	13.3	4.690	0.150	0.299	0.009	0.974	3.344	0.097	0.113	0.001	0.013	1764	26	1685	43	1854	14	0.91	1854	14	1%
LP100120-1L-65	SP1	245	40.9	4.300	0.170	0.301	0.011	0.976	3.322	0.121	0.104	0.001	-0.284	1690	32	1694	53	1689	12	1.00	1689	12	1%
LP100120-1L-14	SP1	137	46.4	4.570	0.170	0.308	0.012	0.984	3.247	0.126	0.107	0.001	0.048	1741	30	1727	58	1757	12	0.98	1757	12	1%
LP100120-1L-41	SP1	77.4	63.6	4.380	0.120	0.310	0.008	0.943	3.230	0.081	0.102	0.001	-0.094	1707	23	1738	39	1671	19	1.04	1671	19	1%
LP100120-1s-100	SP1	80.8	60.3	4.540	0.160	0.311	0.010	0.935	3.220	0.100	0.106	0.002	-0.136	1736	29	1743	48	1721	29	1.01	1721	29	2%
LP100120-1s-43	SP1	226.1	98.5	4.710	0.130	0.311	0.009	0.962	3.220	0.095	0.110	0.001	0.406	1772	25	1743	45	1797	15	0.97	1797	15	1%
LP100120-1L-75	SP1	146.1	146.8	4.700	0.130	0.317	0.008	0.952	3.152	0.080	0.108	0.001	-0.159	1766	24	1776	40	1761	17	1.01	1761	17	1%
LP100120-1s-3	SP1	137.6	99.9	4.760	0.160	0.317	0.009	0.936	3.152	0.093	0.111	0.001	-0.079	1776	29	1776	46	1806	19	0.98	1806	19	1%
LP100120-1L-81	SP1	230.9	91.1	5.010	0.120	0.324	0.007	0.937	3.087	0.062	0.113	0.001	-0.388	1820	20	1808	32	1850	13	0.98	1850	13	1%
LP100120-1s-65	SP1	268.4	75.6	5.050	0.150	0.326	0.009	0.984	3.069	0.084	0.113	0.001	-0.244	1832	27	1817	43	1856	12	0.98	1856	12	1%
LP100120-1s-4	SP1	182.2	164.2	5.260	0.150	0.335	0.009	0.966	2.986	0.082	0.115	0.001	-0.248	1860	24	1861	45	1881	17	0.99	1881	17	1%
LP100120-1s-78	SP1	200	113	8.300	0.210	0.410	0.010	0.942	2.439	0.059	0.147	0.001	0.161	2268	21	2215	47	2311	14	0.96	2311	14	1%
LP100120-1s-48	SP1	287	324	10.570	0.300	0.441	0.013	0.979	2.268	0.067	0.175	0.001	0.090	2484	26	2353	59	2606	7	0.90	2606	7	0%
LP100120-1L-72	SP1	121.1	96	12.820	0.390	0.506	0.013	0.977	1.976	0.051	0.184	0.001	-0.162	2664	28	2638	57	2685	11	0.98	2685	11	0%
LP100120-1s-79	SP1	130.3	128.7	13.000	0.410	0.511	0.016	0.987	1.957	0.061	0.185	0.001	-0.234	2677	30	2661	69	2697	11	0.99	2697	11	0%
LP100120-1L-17	SP1	229	104.5	12.800	0.290	0.512	0.013	0.953	1.953	0.050	0.180	0.001	0.178	2664	21	2666	55	2652	10	1.01	2652	10	0%
LP100120-1s-72	SP1	86.4	50.3	12.980	0.440	0.514	0.017	0.963	1.946	0.064	0.185	0.002	0.001	2675	32	2671	72	2698	14	0.99	2698	14	1%
LP100120-1s-93	SP1	197	258	13.490	0.310	0.514	0.012	0.976	1.946	0.045	0.190	0.001	0.311	2713	21	2674	53	2737	9	0.98	2737	9	0%
LP100120-1L-27	SP1	106.2	132.8	13.260	0.440	0.520	0.018	0.991	1.923	0.067	0.185	0.001	0.169	2695	32	2695	76	2699	8	1.00	2699	8	0%
LP100120-1s-103	SP1	117.2	91.9	15.710	0.410	0.553	0.014	0.970	1.808	0.046	0.205	0.001	0.021	2857	25	2838	57	2865	9	0.99	2865	9	0%
Rejected Grains																							
LP100120-1L-11	SP1	470	191.4	0.012	0.002	0.002	0.000	0.014	573.724	15.141	0.050	0.008	0.158	12	2	11	0	150	290	0.07	11	0	3%
LP100120-1s-47	SP1	184.6	89.7	0.018	0.004	0.003	0.000	0.085	393.701	21.700	0.051	0.011	0.039	18	4	16	1	230	380	0.07	16	1	5%
LP100120-1s-62	SP1	149.5	47.3	0.017	0.004	0.003	0.000	0.036	389.105	19.682	0.047	0.011	0.233	17	4	17	1	90	430	0.18	17	1	5%
LP100120-1L-58	SP1	169.2	64.4	0.015	0.002	0.003	0.000	0.311	387.597	15.023	0.042	0.005	0.016	15	2	17	1	-90	180	-0.18	17	1	4%
LP100120-1s-97	SP1	247.6	150.5	0.018	0.003	0.003	0.000	0.355	387.447	13.961	0.051	0.007	-0.094	18	3	17	1	310	260	0.05	17	1	4%
LP100120-1s-80	SP1	117.4	74.9	0.015	0.005	0.003	0.000	0.333	387.597	16.525	0.041	0.012	-0.216	15	5	17	1	-120	470	-0.14	17	1	4%
LP100120-1L-52	SP1	185.7	66.8	0.017	0.002	0.003	0.000	-0.061	380.952	14.222	0.049	0.008	0.289	17	2	17	1	90	270	0.19	17	1	4%
LP100120-1L-50	SP1	418	295	0.033	0.002	0.005	0.000	0.380	210.971	7.121	0.049	0.002	0.266	33	2	31	1	150	100	0.20	31	1	4%
LP100120-1s-36	SP1	372	91.6	0.116	0.010	0.014	0.000	0.675	69.348	2.068	0.056	0.004	-0.385	111	9	92	3	450	140	0.83	92	3	3%
LP100120-1L-46	SP1	227.9	115.4	0.129	0.007	0.015	0.000	0.733	66.007	1.743	0.063	0.003	-0.051	123	6	97	3	674	96	0.79	97	3	3%
LP100120-1s-76	SP1	114.4	33.5	0.101	0.008	0.016	0.001	0.293	60.827	1.850	0.045	0.003	0.119	98	7	105	3	10	140	1.08	105	3	3%
LP100120-1L-22	SP1	130.3	43.7	0.301	0.012	0.017	0.000	0.704	59.666	1.104	0.129	0.005	-0.216	267	10	107	2	2106	72	0.40	107	2	2%
LP100120-1L-62	SP1	68.7	40.8	0.460	0.022	0.018	0.001	0.581	56.338	2.254	0.190	0.009	0.200	384	15	113	5	2746	77	0.30	113	5	4%
LP100120-1L-44	SP1	25.5	27.9	0.630	0.044	0.018	0.002	0.041	55.249	7.021	0.254	0.035	0.834	496	27	116	14	3200	210	0.23	116	14	12%
LP100120-1L-39	SP1	48.1	90.3	0.686	0.047	0.020	0.001	0.554	50.150	1.660	0.246	0.013	-0.142	528	29	127	4	3164	93	0.24	127	4	3%
LP100120-1L-47	SP1	34.4	47.6	0.472	0.097	0.021	0.002	0.955	48.544	5.184	0.164	0.017	-0.751	390	65	131	14	2490	170	0.34	131	14	11%
LP100120-1L-2	SP1	414	124.3	0.453	0.023	0.046	0.001	0.599	21.645	0.562	0.070	0.002	-0.144	379	16	291	7	945	63	0.77	291	7	2%
LP100120-1L-6	SP1	278	119.6	1.602	0.072	0.114	0.005	0.971	8.780	0.401	0.102	0.001	0.090	968	28	695	30	1655	19	0.72	695	30	4%
LP100120-1L-49	SP1	56.7	23	1.758	0.077	0.174	0.005	0.811	5.747	0.159	0.072	0.002	-0.160	1028	28	1034	27	977	49	1.06	977	49	3%
LP100120-1s-81	SP1	281	174.1	2.480	0.430	0.173	0.031	0.999	5.780	1.036	0.097	0.004	-0.932	1290	140	1090	160	1548	99	0.70	1548	99	15%
LP100120-1s-26	SP1	468	219	3.460	0.140	0.222	0.008	0.984	4.507	0.171	0.113	0.001	-0.200	1515	32	1291	44	1851	15	0.70	1851	15	3%
LP100120-1s-19	SP1	70.9	52.4	11.460	0.540	0.431	0.020	0.989	2.320	0.108	0.193	0.002	-0.072	2565	47	2305	90	2771	13	0.83	2771	13	4%
Sample LP110120-1																							
				Measured isotopic ratios										Isotopic ages and errors (Ma)									
Grain	Unit	U (ppm)	Th (ppm)	$^{207}Pb/^{235}U$	2σ	$^{206}Pb/^{238}U$	2σ	Error Correlation	$^{238}Pb/^{206}Pb$	2σ	$^{207}Pb/^{206}Pb$	2σ	Error Correlation	$^{207}Pb/^{235}U$	2σ	$^{206}Pb/^{238}U$	2σ	$^{207}Pb/^{206}Pb$	2σ	discordance	best age (Ma)	2σ	internal error
LP110120-1L-4	SP2	181.9	104.1	0.087	0.005	0.013	0.000	0.098	78.247	1.286	0.048	0.002	0.254	85	4	82	1	130	110	0.97	82	1	2%
LP110120-1L-11	SP2	1081	404.8	0.098	0.002	0.015	0.000	0.613	68.166	0.836	0.048	0.001	-0.067	95	2	94	1	98	41	0.99	94	1	1%
LP110120-1L-55	SP2	354.6	49.4	0.096	0.003	0.015	0.000	0.419	68.074	0.973	0.048	0.001	0.021	94	3	94	1	82	46	1.01	94	1	1%
LP110120-1s-10	SP2	234.8	82	0.099	0.007	0.015	0.000	0.548	66.934	1.837	0.048	0.003	-0.087	95	6	96	3	80	120	1.00	96	3	3%
LP110120-1L-122	SP2	52.91	12.3	0.117	0.016	0.015	0.001	-0.075	65.920	2.216	0.056	0.008	0.260	112	14	97	3	360	280	0.87	97	3	3%
LP110120-1L-100	SP2	77	25.2	0.105	0.009	0.015	0.000	0.004	65.920	1.695	0.049	0.004	0.361	101	8	97	3	140	170	0.96	97	3	3%
LP110120-1s-46	SP2	1350	471	0.101	0.004	0.015	0.001	0.920	64.851	2.271	0.049	0.001	-0.176	98	4	99	3	112	46	1.01	99	3	3%
LP110120-1L-73	SP2	375	142.1	0.101	0.004	0.016	0.000	0.270	64.392	1.368	0.048	0.002	0.250	98	4	99	2	85	82	1.01	99	2	2%
LP110120-1L-36	SP2	124	59.3	0.112	0.007	0.016	0.000	0.367	64.226	1.279	0.051	0.003	0.064	107	6	100	2	270	130	0.93	100	2	2%
LP110120-1L-21	SP2	276	118	0.112	0.004	0.016	0.000	0.272	61.200	0.936	0.050	0.002	0.090	108	4	105	2	204	95	0.97	105	2	2%
LP110120-1s-27	SP2	1104	581	0.146	0.004	0.021	0.001	0.790	47.237	1.116	0.050	0.001	0.044	139	3	135	3	182	35	0.97	135	3	2%
LP110120-1L-64	SP2	440	97.3	0.147	0.005	0.021	0.000	0.627	47.059	0.864	0.051	0.002	-0.142	139	5	136	3	206	68	0.97	136	3	2%
LP110120-1s-13	SP2	518	278.7	0.154	0.004	0.021	0.000	0.725	47.059	0.709	0.051	0.001	-0.029	145	3	136	2	264	46	0.93	136	2	1%
LP110120-1L-44	SP2	339.1	203.2	0.145	0.006	0.021	0.000	0.632	46.577	0.694	0.049	0.002	-0.221	138	5	137	2	158	73	0.99	137	2	1%
LP110120-1s-57	SP2	819	258.7	0.162	0.010	0.022	0.001	0.402	46.253	1.198	0.054	0.004	0.078	152	9	138	4	340	130	0.91	138	4	3%
LP110120-1L-61	SP2	297	60.3	0.145	0.004	0.022	0.000	0.217	45.914	0.759	0.049	0.002	0.249	137	4	139	2	132	68	1.01	139	2	2%
LP110120-1s-18	SP2	235.3	116.6	0.173	0.009	0.027	0.001	0.401	37.481	0.843	0.048	0.002	0.016	162	8	170	4	140	100	1.05	170	4	2%
LP110120-1s-40	SP2	1847	1444	0.280	0.007	0.038	0.001	0.915	26.233	0.557	0.053	0.001	-0.034	250	5	241	5	343	23	0.96	241	5	2%
LP110120-1L-93	SP2	279	313	0.288	0.025	0.038	0.003	0.901	26.178	1.919	0.056	0.002	-0.090	256	20	242	18	430	84	0.95	242	18	7%
LP110120-1L-98	SP2	682	341.8	0.286	0.006	0.040	0.001	0.758	25.195	0.419	0.053	0.001	0.148	255	4	251	4	307	36	0.98	251	4	2%
LP110120-1s-54	SP2	258	170.9	0.303	0.012	0.041	0.001	0.459	24.504	0.438	0.055	0.002	-0.097	269	9	258	5	385	84	0.96	258	5	2%
LP110120-1s-66	SP2	1700	940	0.297	0.011	0.041	0.001	0.935	24.390	0.833	0.052	0.001	0.075	264	9	259	9	298	28	0.98	259	9	3%
LP110120-1L-15	SP2	248	159	0.296	0.008	0.041	0.001	0.446	24.378	0.321	0.052	0.001	0.068	263	6	259	3	269	53	0.98	259	3	1%
LP110120-1L-77	SP2	819	427	0.310	0.009	0.041	0.001	0.593	24.149	0.484	0.055	0.001	0.045	274	7	262	5	416	52	0.95	262	5	2%
LP110120-1L-43	SP2	278	196.8	0.298	0.010	0.041	0.001	0.386	24.125	0.361	0.052	0.002	0.057	265	8	262	4	280	73	0.99	262	4	1%
LP110120-1L-17	SP2	809	786	0.305	0.004	0.042	0.000	0.505	24.050	0.237	0.053	0.001	0.278	270	3	263	3	308	23	0.97	263	3	1%
LP110120-1L-34	SP2	556	426.3	0.297	0.006	0.042	0.001	0.649	24.038	0.370	0.052	0.001	0.354	264	5	263	4	287	44	1.00	263	4	1%
LP110120-1L-40	SP2	738	361.9	0.298	0.006	0.042	0.001	0.737	23.992	0.368	0.052	0.001	0.113	266	5	263	4	269	33	0.99	263	4	1%
LP110120-1L-85	SP2	255.9	181	0.315	0.009	0.042	0.001	0.512	23.861	0.438	0.055	0.001	0.076	278	7	265	5	392	57	0.95	265	5	2%
LP110120-1L-3	SP2	237.4	130.7	0.296	0.009	0.042	0.000	0.417	23.838	0.244	0.051	0.002	-0.126	263	7	265	3	231	67	1.01	265	3	1%
LP110120-1L-28	SP2	399	178.2	0.308	0.006	0.042	0.000	0.585	23.810	0.227	0.053	0.001	-0.007	272	5	265	3	330	36	0.97	265	3	1%
LP110120-1L-82	SP2	543	459	0.299	0.005	0.042	0.001	0.630	23.798	0.328	0.052	0.001	0.198	265	4	265	4	297	41	1.00	265	4	1%
LP110120-1L-27	SP2	514	345.8	0.298	0.007	0.042	0.001	0.732	23.776	0.305	0.051	0.001	-0.220	265	6	266	3	244	40	1.00	266	3	1%
LP110120-1L-86	SP2	327	256.7	0.293	0.007	0.042	0.001	0.558	23.764	0.367	0.051	0.001	0.161	261	6	266	4	223	38	1.02	266	4	2%
LP110120-1L-95	SP2	1216	762	0.309	0.005	0.042	0.001	0.852	23.674	0.454	0.053	0.000	0.325	274	4	267	5	337	19	0.97	267	5	2%
LP110120-1s-17	SP2	304	202.2	0.298	0.010	0.042	0.001	0.644	23.641	0.559	0.051	0.001	0.159	265	8	267	6	248	62	1.01	267	6	2%
LP110120-1s-35	SP2	489	295	0.305	0.007	0.042	0.001	0.735	23.646	0.358	0.052	0.001	-0.125	271	6	267	4	312	35	0.99	267	4	1%
LP110120-1L-32	SP2	640	333.1	0.302	0.006	0.042	0.001	0.635	23.629	0.346	0.052	0.001	0.006	268	5	267	4	270	37	1.00	267	4	1%
LP110120-1L-76	SP2	1786	1236	0.302	0.004	0.042	0.001	0.830	23.618	0.368	0.053	0.001	0.551	268	3	267	4	314	22	1.00	267	4	2%
LP110120-1L-16	SP2	539	263	0.310	0.004	0.042	0.001	0.293	23.585	0.317	0.052	0.001	0.526	275	3	268	4	293	36	0.97	268	4	1%
LP110120-1L-128	SP2	907	792	0.310	0.005	0.043	0.001	0.655	23.529	0.338	0.053	0.001	0.339	274	4	268	4	315	28	0.98	268	4	1%
LP110120-1s-69	SP2	148	76	0.295	0.016	0.043	0.001	0.606	23.529	0.609	0.052	0.002	-0.053	262	13	269	7	261	96	1.03	269	7	3%
LP110120-1L-90	SP2	162	114.7	0.307	0.013	0.043	0.001	0.422	23.496	0.409	0.052	0.002	-0.001	271	10	269	5	287	93	0.99	269	5	2%
LP110120-1L-102	SP2	463.5	249.2	0.319	0.014	0.043	0.001	0.413	23.419	0.346	0.054	0.002	-0.118	280	10	270	4	341	67	0.96	270	4	1%
LP110120-1s-14	SP2	202.6	151.9	0.309	0.014	0.043	0.001	0.586	23.364	0.546	0.053	0.002	-0.064	273	11	270	6	300	85	0.99	270	6	2%
LP110120-1s-59	SP2	865	390	0.302	0.006	0.043	0.001	0.749	23.343	0.485	0.051	0.001	0.411	268	4	270	6	262	37	1.01	270	6	2%
LP110120-1L-10	SP2	394.7	173.9	0.308	0.007	0.043	0.001	0.455	23.332	0.332	0.052	0.001	0.145	273	6	271	4	294	48	0.99	271	4	1%
LP110120-1L-130	SP2	155.5	94.8	0.303	0.010	0.043	0.001	0.002	23.337	0.321	0.051	0.002	0.362	270	8	271	4	230	75	1.00	271	4	1%
LP110120-1L-23	SP2	671	450	0.309	0.006	0.043	0.000	0.462	23.337	0.240	0.052	0.001	0.107	273	5	271	3	268	33	0.99	271	3	1%
LP110120-1L-6	SP2	399.5	185.3	0.303	0.007	0.043	0.000	0.628	23.326	0.234	0.051	0.001	-0.181	268	5	271	3	233	40	1.01	271	3	1%
LP110120-1L-56	SP2	605	343	0.308	0.008	0.043	0.001	0.694	23.310	0.321	0.052	0.001	-0.086	272	6	271	4	285	44	0.99	271	4	1%
LP110120-1L-101	SP2	588	317.9	0.312	0.006	0.043	0.001	0.691	23.267	0.314	0.052	0.001	0.257	276	4	271	4	307	34	0.98	271	4	1%

LP110120-1s-67	SP2	162.4	83.1	0.321	0.014	0.043	0.001	0.763	23.261	0.492	0.054	0.002	-0.106	283	10	271	6	373	67	0.96	271	6	2%
LP110120-1s-42	SP2	408	245	0.305	0.009	0.043	0.001	0.727	23.250	0.476	0.052	0.001	-0.138	270	7	272	5	261	49	1.01	272	5	2%
LP110120-1s-32	SP2	154.1	104.2	0.308	0.014	0.043	0.001	0.536	23.256	0.541	0.053	0.002	0.042	273	10	272	6	336	78	1.00	272	6	2%
LP110120-1L-12	SP2	639	228.9	0.320	0.008	0.043	0.001	0.740	23.116	0.299	0.053	0.001	-0.138	282	6	273	4	336	36	0.97	273	4	1%
LP110120-1L-115	SP2	311.3	122.8	0.311	0.008	0.043	0.001	0.655	23.100	0.411	0.052	0.001	-0.004	276	5	273	5	276	47	0.99	273	5	2%
LP110120-1L-74	SP2	378.5	146.2	0.304	0.010	0.043	0.001	0.720	23.057	0.404	0.052	0.001	-0.069	269	7	274	5	277	54	1.02	274	5	2%
LP110120-1L-72	SP2	151.7	88.2	0.306	0.013	0.043	0.001	0.698	23.041	0.637	0.052	0.002	-0.019	273	9	274	8	294	77	1.00	274	8	3%
LP110120-1s-30	SP2	971	576	0.313	0.007	0.043	0.001	0.815	23.041	0.483	0.052	0.001	0.241	276	5	274	6	289	30	0.99	274	6	2%
LP110120-1s-24	SP2	1216	873	0.313	0.011	0.043	0.001	0.880	23.041	0.584	0.052	0.001	-0.079	276	8	274	7	300	38	0.99	274	7	2%
LP110120-1s-43	SP2	1188	860	0.312	0.008	0.044	0.001	0.894	22.978	0.496	0.052	0.001	-0.205	275	6	275	6	304	34	1.00	275	6	2%
LP110120-1L-69	SP2	350.8	138.8	0.310	0.007	0.044	0.001	0.519	22.936	0.431	0.052	0.001	0.393	274	6	275	5	284	42	1.00	275	5	2%
LP110120-1L-89	SP2	580	295	0.309	0.009	0.044	0.001	0.833	22.910	0.394	0.051	0.001	-0.389	273	7	275	5	244	41	1.01	275	5	2%
LP110120-1s-58	SP2	635	304	0.308	0.011	0.044	0.001	0.836	22.883	0.628	0.052	0.001	-0.235	272	9	276	7	287	45	1.01	276	7	3%
LP110120-1L-88	SP2	408	216	0.309	0.007	0.044	0.001	0.746	22.862	0.376	0.051	0.001	0.049	273	6	276	5	263	36	1.01	276	5	2%
LP110120-1L-1	SP2	511	245.7	0.317	0.007	0.044	0.001	0.581	22.821	0.271	0.052	0.001	-0.117	280	6	277	3	289	41	0.99	277	3	1%
LP110120-1s-11	SP2	189.1	94.2	0.313	0.011	0.044	0.001	0.412	22.779	0.519	0.052	0.002	0.327	276	8	277	6	258	70	1.00	277	6	2%
LP110120-1s-16	SP2	154.2	84.6	0.318	0.010	0.044	0.001	0.267	22.722	0.372	0.053	0.002	0.222	280	8	278	4	301	67	0.99	278	4	2%
LP110120-1s-55	SP2	745	268.8	0.317	0.007	0.044	0.001	0.647	22.722	0.490	0.052	0.001	0.433	280	6	278	6	290	37	0.99	278	6	2%
LP110120-1L-121	SP2	642	438	0.322	0.007	0.044	0.001	0.713	22.691	0.299	0.053	0.001	-0.069	283	6	278	4	322	41	0.98	278	4	1%
LP110120-1s-29	SP2	1401	870	0.345	0.013	0.044	0.001	0.785	22.624	0.563	0.057	0.001	-0.223	301	10	279	7	474	47	0.93	279	7	2%
LP110120-1L-68	SP2	470.2	220.1	0.307	0.007	0.044	0.001	0.401	22.492	0.344	0.051	0.001	0.277	272	5	280	4	238	50	1.03	280	4	1%
LP110120-1s-68	SP2	427	139.2	0.319	0.012	0.045	0.001	0.736	22.406	0.442	0.052	0.002	-0.176	281	9	282	5	292	66	1.00	282	5	2%
LP110120-1L-70	SP2	400	176.9	0.325	0.008	0.045	0.001	0.593	22.222	0.464	0.054	0.001	0.280	286	6	284	6	383	42	0.99	284	6	2%
LP110120-1s-65	SP2	342.2	594	0.462	0.071	0.051	0.001	0.880	19.455	0.375	0.065	0.009	-0.809	380	43	323	6	680	200	0.85	323	6	2%
LP110120-1s-22	SP2	478	158.2	0.481	0.011	0.058	0.003	0.424	17.391	0.998	0.062	0.003	0.896	399	8	360	20	660	110	0.90	360	20	6%
LP110120-1L-127	SP2	332	179	0.476	0.012	0.063	0.001	0.609	15.939	0.241	0.055	0.001	0.104	395	8	392	6	406	42	0.99	392	6	1%
LP110120-1L-33	SP2	102	50.7	0.541	0.023	0.064	0.002	0.854	15.528	0.458	0.061	0.003	0.612	439	15	402	11	643	83	0.92	402	11	3%
LP110120-1s-39	SP2	874	451	0.511	0.012	0.067	0.001	0.878	14.837	0.264	0.055	0.001	-0.251	419	8	421	8	410	25	1.00	421	8	2%
LP110120-1L-83	SP2	125	112.6	0.552	0.018	0.069	0.002	0.360	14.472	0.377	0.058	0.002	0.284	446	12	431	11	532	53	0.97	431	11	3%
LP110120-1s-63	SP2	139	54.9	0.550	0.018	0.073	0.002	0.510	13.755	0.284	0.055	0.002	0.070	445	12	452	9	444	54	1.02	452	9	2%
LP110120-1L-109	SP2	148.2	192.1	0.712	0.020	0.088	0.001	0.632	11.416	0.182	0.059	0.001	-0.002	545	12	541	8	570	44	0.99	541	8	2%
LP110120-1L-30	SP2	145	53.9	0.748	0.022	0.091	0.002	0.641	11.001	0.206	0.059	0.001	-0.061	566	13	561	10	559	47	0.99	561	10	2%
LP110120-1s-31	SP2	532	201.3	0.791	0.028	0.095	0.004	0.951	10.549	0.389	0.061	0.001	0.102	591	16	584	21	625	27	0.99	584	21	4%
LP110120-1L-49	SP2	79.7	63.4	0.819	0.022	0.095	0.002	0.452	10.493	0.176	0.063	0.002	0.355	607	12	587	10	690	54	0.97	587	10	2%
LP110120-1L-67	SP2	52.6	18.8	0.804	0.028	0.098	0.002	0.435	10.246	0.252	0.060	0.002	0.200	603	14	600	14	618	83	1.00	600	14	2%
LP110120-1L-19	SP2	74.5	31.5	0.838	0.030	0.098	0.002	0.578	10.246	0.168	0.062	0.002	-0.106	621	16	600	10	677	54	0.97	600	10	2%
LP110120-1s-44	SP2	177.8	335	0.851	0.021	0.101	0.002	0.772	9.930	0.207	0.061	0.001	0.082	625	11	618	12	617	39	0.99	618	12	2%
LP110120-1s-50	SP2	540	306	1.143	0.027	0.109	0.004	0.671	9.183	0.337	0.078	0.002	0.773	774	13	666	23	1133	44	0.86	666	23	3%
LP110120-1s-56	SP2	226.9	102	1.694	0.037	0.162	0.003	0.774	6.192	0.096	0.076	0.001	0.107	1006	14	965	14	1093	29	0.96	965	14	1%
LP110120-1L-48	SP2	49.5	34	1.698	0.088	0.167	0.004	0.760	5.977	0.136	0.072	0.002	-0.359	1005	33	997	21	987	64	0.99	997	21	2%
LP110120-1L-60	SP2	47.1	19.9	1.662	0.042	0.169	0.004	0.574	5.914	0.133	0.071	0.002	0.243	993	16	1007	21	963	53	1.05	963	53	6%
LP110120-1s-9	SP2	116.2	54	1.723	0.054	0.170	0.004	0.856	5.889	0.125	0.073	0.001	-0.270	1016	20	1011	20	1024	33	0.99	1024	33	3%
LP110120-1s-19	SP2	327.5	123	1.788	0.047	0.170	0.004	0.946	5.875	0.138	0.076	0.001	-0.263	1040	17	1013	22	1096	22	0.92	1096	22	2%
LP110120-1L-114	SP2	119.3	42.2	1.765	0.050	0.172	0.005	0.794	5.811	0.176	0.074	0.001	0.448	1032	18	1023	28	1029	37	0.99	1029	37	4%
LP110120-1L-18	SP2	56.1	39.7	1.788	0.053	0.172	0.004	0.622	5.811	0.125	0.074	0.002	0.141	1044	18	1028	19	1060	43	0.97	1060	43	4%
LP110120-1L-47	SP2	359	45.8	1.840	0.100	0.174	0.008	0.986	5.734	0.270	0.077	0.001	-0.325	1062	35	1035	45	1120	19	0.92	1120	19	2%
LP110120-1L-65	SP2	120.2	55.9	1.777	0.033	0.175	0.002	0.740	5.731	0.069	0.075	0.001	-0.126	1037	12	1037	12	1068	29	0.97	1068	29	3%
LP110120-1s-36	SP2	104.5	100	1.812	0.045	0.176	0.004	0.881	5.675	0.132	0.074	0.001	0.093	1049	16	1046	22	1046	30	1.00	1046	30	3%
LP110120-1L-59	SP2	239.6	166	1.851	0.032	0.179	0.003	0.825	5.593	0.088	0.076	0.001	0.089	1063	11	1060	15	1097	20	0.97	1097	20	2%
LP110120-1L-54	SP2	156	42.8	1.860	0.032	0.179	0.003	0.734	5.587	0.087	0.076	0.001	0.307	1067	11	1062	15	1104	24	0.96	1104	24	2%
LP110120-1L-126	SP2	235	24.6	1.885	0.038	0.183	0.003	0.903	5.476	0.102	0.075	0.001	0.137	1075	14	1081	19	1067	20	1.01	1067	20	2%
LP110120-1L-45	SP2	369.8	109.9	1.939	0.028	0.183	0.003	0.835	5.473	0.081	0.077	0.001	0.013	1095	10	1081	15	1108	22	0.98	1108	22	2%
LP110120-1L-46	SP2	118.4	64.8	1.970	0.030	0.183	0.002	0.589	5.456	0.068	0.078	0.001	0.212	1105	10	1085	13	1136	32	0.96	1136	32	3%
LP110120-1L-107	SP2	90	38.4	2.019	0.059	0.186	0.003	0.564	5.379	0.087	0.079	0.002	-0.036	1121	20	1099	16	1172	55	0.94	1172	55	5%
LP110120-1L-51	SP2	102	22.3	2.023	0.040	0.188	0.003	0.733	5.322	0.091	0.079	0.001	0.182	1123	13	1110	18	1163	27	0.95	1163	27	2%
LP110120-1L-108	SP2	99.3	93	2.039	0.046	0.189	0.003	0.739	5.299	0.093	0.078	0.001	-0.134	1128	15	1114	18	1153	30	0.97	1153	30	3%
LP110120-1L-5	SP2	213.1	58.2	2.081	0.029	0.191	0.002	0.779	5.247	0.061	0.078	0.001	0.120	1142	10	1124	12	1158	18	0.97	1158	18	2%
LP110120-1L-104	SP2	89.3	69.2	2.085	0.057	0.191	0.004	0.788	5.230	0.104	0.079	0.001	-0.193	1143	19	1128	20	1165	33	0.97	1165	33	3%
LP110120-1L-25	SP2	279.8	124.4	2.117	0.042	0.192	0.003	0.819	5.206	0.079	0.079	0.001	-0.074	1154	14	1132	16	1177	22	0.96	1177	22	2%
LP110120-1s-47	SP2	176.2	51.4	2.052	0.059	0.194	0.006	0.895	5.157	0.152	0.077	0.001	0.220	1132	20	1142	31	1114	25	1.03	1114	25	2%
LP110120-1L-7	SP2	212.6	90.5	2.114	0.026	0.194	0.002	0.743	5.147	0.056	0.078	0.001	0.182	1153	9	1144	11	1147	17	1.00	1147	17	1%
LP110120-1s-62	SP2	945	52.5	2.119	0.048	0.195	0.004	0.967	5.139	0.114	0.079	0.001	-0.170	1154	16	1146	23	1165	13	0.98	1165	13	1%
LP110120-1L-66	SP2	95.9	61.5	2.109	0.060	0.194	0.005	0.881	5.160	0.128	0.079	0.001	-0.218	1151	20	1152	26	1177	34	0.98	1177	34	3%
LP110120-1L-99	SP2	258.3	75.2	2.167	0.037	0.198	0.003	0.845	5.061	0.082	0.080	0.001	0.143	1173	12	1162	17	1197	17	0.97	1197	17	1%
LP110120-1L-110	SP2	204.3	109.4	2.142	0.042	0.198	0.004	0.826	5.056	0.092	0.079	0.001	0.151	1162	14	1163	19	1165	25	1.00	1165	25	2%
LP110120-1L-117	SP2	208.6	6.6	2.199	0.036	0.198	0.003	0.796	5.056	0.072	0.081	0.001	0.238	1180	11	1163	15	1210	20	0.96	1210	20	2%
LP110120-1L-62	SP2	71.9	25	2.104	0.065	0.199	0.004	0.873	5.038	0.091	0.079	0.001	-0.296	1153	20	1167	19	1174	30	0.99	1174	30	3%
LP110120-1L-94	SP2	61.1	28	2.219	0.077	0.202	0.005	0.837	4.948	0.127	0.080	0.001	-0.122	1185	25	1186	28	1196	35	0.99	1196	35	2%
LP110120-1L-92	SP2	194.7	53.2	2.283	0.053	0.204	0.004	0.911	4.907	0.104	0.081	0.001	-0.058	1206	16	1195	23	1232	17	0.97	1232	17	2%
LP110120-1L-81	SP2	62.3	30.7	2.405	0.051	0.217	0.005	0.746	4.600	0.097	0.081	0.001	0.023	1243	15	1268	24	1237	35	1.03	1237	35	2%
LP110120-1L-41	SP2	105.5	45.3	2.649	0.055	0.222	0.004	0.592	4.515	0.084	0.086	0.002	0.354	1314	15	1290	21	1340	33	0.96	1340	33	2%
LP110120-1s-70	SP2	223.9	91.1	2.700	0.078	0.225	0.006	0.967	4.454	0.117	0.087	0.001	0.047	1332	20	1305	31	1352	15	0.97	1352	15	2%
LP110120-1s-7	SP2	173.1	70.8	2.643	0.057	0.226	0.005	0.904	4.419	0.098	0.084	0.001	0.246	1312	16	1315	26	1303	19	1.01	1303	19	2%
LP110120-1s-61	SP2	206	197.7	2.658	0.061	0.228	0.006	0.902	4.394	0.106	0.084	0.001	0.473	1316	17	1321	29	1303	22	1.01	1303	22	2%
LP110120-1L-111	SP2	168.7	61.7	2.780	0.050	0.228	0.003	0.838	4.378	0.054	0.088	0.001	0.035	1350	14	1326	15	1377	17	0.96	1377	17	1%
LP110120-1L-71	SP2	186.8	139.8	2.830	0.043	0.229	0.003	0.920	4.367	0.063	0.092	0.001	-0.320	1363	11	1329	17	1462	14	0.91	1462	14	1%
LP110120-1L-29	SP2	218.3	73.5	2.851	0.038	0.229	0.002	0.725	4.359	0.042	0.089	0.001	0.159	1369	10	1331	12	1407	19	0.95	1407	19	1%
LP110120-1s-49	SP2	520	148.9	2.825	0.099	0.230	0.008	0.990	4.355	0.142	0.089	0.000	-0.427	1360	26	1332	39	1413	10	0.94	1413	10	3%
LP110120-1s-5	SP2	130.7	43	2.713	0.056	0.232	0.005	0.818	4.320	0.088	0.086	0.001	0.167	1335	17	1342	25	1333	21	1.01	1333	21	2%
LP110120-1L-58	SP2	59.1	73.3	2.835	0.065	0.241	0.005	0.797	4.156	0.085	0.087	0.001	0.055	1369	19	1389	25	1368	29	1.02	1368	29	2%
LP110120-1s-2	SP2	142.6	48.5	2.980	0.120	0.241	0.004	0.543	4.151	0.071	0.090	0.003	-0.322	1401	29	1391	21	1422	50	0.98	1422	50	2%
LP110120-1s-15	SP2	185.2	73	2.961	0.049	0.242	0.004	0.670	4.131	0.068	0.088	0.001	0.375	1397	13	1398	21	1387	23	1.01	1387	23	2%
LP110120-1L-113	SP2	88.7	35.3	3.041	0.062	0.246	0.004	0.797	4.065	0.069	0.090	0.001	0.009	1417	16	1418	22	1422	24	1.00	1422	24	2%
LP110120-1L-129	SP2	219.3	88.1	3.116	0.066	0.249	0.005	0.911	4.013	0.079	0.091	0.001	0.041	1436	16	1434	25	1442	14	0.99	1442	14	2%
LP110120-1L-84	SP2	279.9	358	3.095	0.042	0.250	0.003	0.813	4.000	0.051	0.092	0.001	0.162	1431	10	1438	16	1458	15	0.99	1458	15	1%
LP110120-1L-22	SP2	48.4	20.2	3.207	0.067	0.250	0.005	0.450	3.998	0.072	0.092	0.002	0.281	1462	14	1439	23	1470	44	0.98	1470	44	2%
LP110120-1L-26	SP2	586.9	349.2	3.315	0.033	0.251	0.003	0.898	3.981	0.041	0.095	0.000	0.234	1484	8	1444	13	1532	8	0.94	1532	8	1%
LP110120-1L-97	SP2	87.4	41.3	3.187	0.069	0.254	0.005	0.894	3.943	0.078	0.091	0.001	-0.031	1453	17	1457	26	1453	21	1.00	1453	21	2%
LP110120-1s-6	SP2	307.5	101.3	3.244	0.073	0.257	0.006	0.955	3.890	0.097	0.091	0.001	-0.189	1467	17	1474	33	1444	17	1.02	1444	17	2%
LP110120-1s-37	SP2	497	160.5	3.319	0.088	0.259	0.006	0.964	3.861	0.083	0.093	0.001	-0.298	1489	19	1485	29	1497	14	0.99	1497	14	2%
LP110120-1s-4	SP2	95.2	62.1	3.350	0.100	0.263	0.007	0.871	3.799	0.104	0.093	0.001	0.330	1492	24	1506	37	1494	29	1.01	1494	29	2%
LP110120-1s-33	SP2	183.5	67.3	3.391	0.092	0.264	0.007	0.919	3.791	0.102	0.094	0.001	0.067	1501	21	1508	36	1503	22	1.00	1503	22	2%
LP110120-1L-2	SP2	58.2	17.1	3.726	0.072	0.266	0.004	0.831	3.766	0.054	0.100	0.001	-0.157	1576	15	1518	20	1631	16	0.93	1631	16	1%
LP110120-1L-106	SP2	95.7	87.6	3.929	0.051	0.271	0.003	0.765	3.691	0.041	0.105	0.001	-0.080	1619	10	1545	15	1712	19	0.90	1712	19	1%
LP110120-1s-26	SP2	232.5	110.8	3.681	0.097	0.271	0.007	0.957	3.691	0.097	0.098	0.001	0.085	1566	21	1545	36	1594	15	0.97	1594	15	2%
LP110120-1L-125	SP2	147.9	177	3.840	0.100	0.278	0.006	0.921	3.602	0.073	0.100	0.001	-0.209	1599	22	1579	28	1629	20	0.97	1629	20	2%
LP110120-1L-87	SP2	655	601	4.249	0.081	0.290	0.005	0.935	3.449	0.057	0.107	0.001	-0.199	1683	16	1641	24	1752	12	0.94	1752	12	1%
LP110120-1s-38	SP2	199.1	160	4.310	0.150	0.290	0.009	0.962	3.447	0.106	0.107	0.001	-0.198	1693	29	1641	44	1752	17	0.94	1752	17	3%
LP110120-1L-119	SP2	111.6	194.9	4.076	0.066	0.291	0.005	0.887	3.433	0.055	0.101	0.001	0.140	1649	13	1648	24	1640	14	1.00	1640	14	1%
LP110120-1s-34	SP2	294	56.9	4.190	0.140	0.295	0.010	0.978	3.389	0.111	0.103	0.001	0.006	1676	26	1666	49	1682	13	0.99	1682	13	3%
LP110120-1L-112	SP2	82.5	43.9	4.453	0.089	0.302	0.005	0.891	3.317	0.054	0.107	0.001	-0.183	1721	16	1698	24	1747	18	0.97	1747	18	1%
LP110120-1L-124	SP2	202.6	115.2	4.631	0.095	0.304	0.006	0.929	3.289	0.065	0.111	0.001	0.030	1754	17	1711	30	1812	12	0.94	1812	12	2%
LP110120-1s-64	SP2	241	160.2	4.337	0.093	0.303	0.005	0.949	3.301	0.053	0.105	0.001	-0.437	1700	18	1711	26	1705	14	1.00	1705	14	2%
LP110120-1L-50	SP2	390	138.9	4.584	0.079	0.307	0.005	0.952	3.255	0.056	0.108	0.001	0.074	1746	14	1727	26	1759	11	0.98	1759	11	2%
LP110120-1L-63	SP2	205.2	39.1	4.658	0.061	0.314	0.004	0.820	3.186	0.036	0.109	0.001	0.196	1759	11	1760	17	1789	13	0.98	1789	13	1%
LP110120-1L-53	SP2	167.9	109.8	5.028	0.097	0.325	0.006	0.879	3.075	0.061	0.114	0.001	0.133	1823	16	1815	31	1856	17	0.98	1856	17	2%
LP110120-1L-9	SP2	116.3	35.5	5.860	0.120	0.348	0.006	0.962	2.871	0.051	0.121	0.001	-0.367	1954	18	1926	30	1970	11	0.98	1970	11	2%
LP110120-1s-45	SP2	289.7	155.3	6.530	0.150	0.374	0.009	0.964	2.675	0.062	0.127	0.001	0.122	2052	21	2047	40	2054	10	1.00	2054	10	2%
LP110120-1s-48	SP2	118	88.3	11.600	0.350	0.476	0.013	0.956	2.101	0.057	0.177	0.001	-0.237	2570	29	2510	57	2624	12	0.96	2624	12	2%
LP110120-1L-120	SP2	203.6	84.3	12.850	0.280	0.499	0.010	0.969	2.004	0.040	0.187	0.001	0.095	2667	21	2609	43	2716	9	0.96	2716	9	2%
LP110120-1s-53	SP2	231	200	12.590	0.280	0.504	0.010	0.968	1.984	0.039	0.182	0.001	0.097	2648	21	2631	43	2674	9	0.98	2674	9	2%
LP110120-1s-60	SP2	148.7	49.8	14.780	0.280	0.549	0.011	0.970	1.821	0.036	0.195	0.001	-0.043	2800	18	2820	45	2783	8	1.01	2783	8	2%
LP110120-1L-78	SP2	63.7	137.1	14.950	0.270	0.549	0.008	0.861	1.820	0.028	0.201	0.001	-0.043	2811	17	2822	35	2830	11	1.00	2830	11	1%
LP110120-1L-8	SP2	52	27.6	17.330	0.390	0.570	0.014	0.960	1.754	0.043	0.220	0.001	0.167	2957	20	2906	57	2979	11	0.98	2979	11	2%
LP110120-1s-8	SP2	188.5	165.1	18.160	0.490	0.579	0.016	0.991	1.727	0.048	0.226	0.001	-0.255	2996	26	2944	66	3026	5	0.97	3026	5	2%
Rejected Grains																							
LP110120-1L-39	SP2	382.2	228.6	0.015	0.002	0.002	0.000	-0.022	577.701	18.689	0.059	0.006	0.402	15	2	11	0	640	220	0.02	11	0	3%
LP110120-1L-57	SP2	345.7	212.5	0.015	0.002	0.003	0.000	0.197	392.465	9.858	0.044	0.005	-0.010	15	2	16	0	-70	200	-0.23	16	0	3%
LP110120-1s-21	SP2	265	145.1	0.026	0.003	0.003	0.000	0.149	372.301	10.673	0.070	0.008	0.141	26	3	17	1	880	270	0.02	17	1	3%
LP110120-1L-105	SP2	61.8	82.8	0.019	0.007	0.004	0.000	0.321	261.780	9.594	0.038	0.013	-0.217	19	7	25	1	-330	500	-0.07	25	1	4%
LP110120-1L-118	SP2	55.8	454.1	0.518	0.020	0.013	0.000	0.503	77.640	2.170	0.289	0.007	0.404	423	13	83	2	3406	39	0.20	83	2	3%
LP110120-1s-52	SP2	144	92	0.192	0.036	0.013	0.001	0.801	77.101	4.102	0.105	0.016	-0.644	175	30	83	4	1560	270	0.47	83	4	5%
LP110120-1s-12	SP2	402	132.6	0.124	0.007	0.015	0.000	0.305	65.445	1.413	0.058	0.003	0.113	118.8	6.1	98	2	580	110	0.82	98	2	2%
LP110120-1L-13	SP2	72	22	0.186	0.024	0.016	0.001	0.541	61.767	2.022	0.083	0.010	-0.377	172	20	104	3	1210	210	0.60	104	3	3%
LP110120-1L-91	SP2	42.8	80.9	0.743	0.069	0.019	0.001	0.158	52.493	1.488	0.284	0.026	0.133	564	40	122	3	3380	140	0.22	122	3	3%
LP110120-1L-42	SP2	979	97.2	0.417	0.008	0.036	0.001	0.586	27.988	0.454	0.084	0.001	0.434	353.8	5.9	226	4	1293	32	0.64	226	4	2%
LP110120-1s-20	SP2	199.4	119.7	0.428	0.037	0.045	0.001	0.309	22.173	0.492	0.069	0.006	-0.114	360	25	285	6	860	150	0.79	285	6	2%
LP110120-1L-123	SP2	821	515	0.749	0.027	0.047	0.001	-0.174	21.277	0.403	0.116	0.005	0.506	567	16	296	6	1876	80	0.52	296	6	2%
LP110120-1s-1	SP2	143	62	2.400	0.260	0.140	0.014	0.990	7.143	0.714	0.125	0.002	-0.513	1227	74	840	77	2023	31	0.68	840	77	9%
LP110120-1L-75	SP2	182	107.4	2.608	0.084	0.208	0.007	0.966	4.819	0.151	0.093	0.001	-0.070	1301	24	1215	35	1484	17	0.82	1484	17	3%

LP110120-1L-14	SP2	607	263	3.709	0.067	0.220	0.005	0.944	4.552	0.097	0.122	0.001	0.571	1573	15	1280	25	1978	14	0.65	1978	14	2%
LP110120-1s-25	SP2	303.9	225.9	6.860	0.240	0.327	0.010	0.982	3.063	0.092	0.154	0.001	-0.295	2091	31	1821	47	2385	12	0.76	2385	12	3%
LP110120-1L-116	SP2	41	28.3	1.497	0.092	0.156	0.017	0.798	6.410	0.699	0.070	0.005	0.837	929	38	932	95	920	140	1.00	932	95	10%
Sample 18-LP-10																							
				Measured isotopic ratios										Isotopic ages and errors (Ma)									
Grain	Unit	U (ppm)	Th (ppm)	$^{207}Pb/^{235}U$	2σ	$^{206}Pb/^{238}U$	2σ	Error Correlation	$^{238}Pb/^{206}Pb$	2σ	$^{207}Pb/^{206}Pb$	2σ	Error Correlation	$^{207}Pb/^{235}U$	2σ	$^{206}Pb/^{238}U$	2σ	$^{207}Pb/^{206}Pb$	2σ	discordance	best age (Ma)	2σ	internal error
lava antes lg-30	SP2	304.2	236.1	0.289	0.005	0.040	0.000	0.603	24.845	0.185	0.052	0.001	-0.199	258	4	254	2	287	28	0.99	254	2	1%
lava antes lg-2	SP2	472.6	204	0.302	0.003	0.042	0.000	0.370	23.776	0.096	0.052	0.000	0.040	268	2	266	1	276	22	0.99	266	1	0%
lava antes lg-31	SP2	858	653.9	0.300	0.004	0.042	0.000	0.637	23.776	0.130	0.052	0.000	-0.165	266	3	266	1	272	21	1.00	266	1	1%
lava antes lg-11	SP2	567	239.8	0.299	0.004	0.042	0.000	0.644	23.674	0.179	0.051	0.000	-0.027	266	3	267	2	258	22	1.00	267	2	1%
lava antes lg-108	SP2	932	759	0.305	0.003	0.042	0.000	0.827	23.602	0.206	0.052	0.000	-0.032	270	3	268	2	298	14	0.99	268	2	1%
lava antes lg-147	SP2	182.7	102.07	0.306	0.007	0.042	0.000	0.425	23.540	0.194	0.052	0.001	0.028	271	5	268	2	302	37	0.99	268	2	1%
lava antes lg-121	SP2	162.3	88.62	0.308	0.006	0.043	0.000	0.618	23.452	0.193	0.053	0.001	-0.323	273	5	269	2	328	40	0.99	269	2	1%
lava antes lg-113	SP2	374.2	197.7	0.303	0.004	0.043	0.000	0.609	23.436	0.231	0.052	0.001	0.247	269	3	269	3	269	22	1.00	269	3	1%
lava antes lg-63	SP2	380.8	231.2	0.301	0.004	0.043	0.000	0.478	23.425	0.154	0.051	0.001	0.066	267	3	270	2	244	24	1.01	270	2	1%
lava antes lg-70	SP2	166.3	104.1	0.304	0.007	0.043	0.000	-0.091	23.408	0.247	0.052	0.001	0.505	269	5	270	3	268	58	1.00	270	3	1%
lava antes lg-24	SP2	1158	1211	0.303	0.003	0.043	0.000	0.779	23.408	0.148	0.051	0.000	-0.142	269	2	270	2	263	14	1.00	270	2	1%
lava antes lg-153	SP2	167.2	123	0.310	0.011	0.043	0.000	0.543	23.397	0.257	0.053	0.002	-0.196	274	8	270	3	305	67	0.98	270	3	1%
lava antes lg-162	SP2	98.1	55.92	0.297	0.009	0.043	0.001	0.346	23.375	0.279	0.051	0.002	0.057	264	7	270	3	240	72	1.02	270	3	1%
lava antes lg-149	SP2	100.1	80.18	0.308	0.006	0.043	0.000	0.292	23.370	0.235	0.052	0.001	0.146	273	5	270	3	287	43	0.99	270	3	1%
lava antes lg-1	SP2	514.5	253.7	0.305	0.003	0.043	0.000	0.308	23.354	0.147	0.052	0.001	0.337	270	2	270	2	269	23	1.00	270	2	1%
lava antes lg-34	SP2	873	318.2	0.303	0.002	0.043	0.000	0.674	23.343	0.114	0.051	0.000	-0.168	269	2	270	1	260	16	1.01	270	1	0%
lava antes lg-141	SP2	147	121.5	0.315	0.007	0.043	0.001	0.430	23.337	0.278	0.054	0.001	0.027	278	6	271	3	369	46	0.97	271	3	1%
lava antes lg-9	SP2	180.8	80.4	0.313	0.006	0.043	0.000	0.481	23.310	0.120	0.053	0.001	-0.196	277	4	271	1	308	37	0.98	271	1	1%
lava antes lg-20	SP2	230.7	84.2	0.304	0.005	0.043	0.000	0.445	23.305	0.114	0.051	0.001	-0.078	270	4	271	1	260	37	1.00	271	1	0%
lava antes lg-157	SP2	750	479	0.306	0.003	0.043	0.000	0.843	23.299	0.223	0.052	0.000	0.164	271	3	271	3	280	15	1.00	271	3	1%
lava antes lg-74	SP2	452.9	160.9	0.305	0.004	0.043	0.000	0.593	23.288	0.179	0.052	0.000	0.038	270	3	271	2	269	21	1.00	271	2	1%
lava antes lg-19	SP2	436.4	266.7	0.313	0.004	0.043	0.000	0.618	23.272	0.184	0.053	0.001	0.027	276	3	271	2	317	23	0.98	271	2	1%
lava antes lg-110	SP2	689	340	0.305	0.002	0.043	0.000	0.553	23.207	0.156	0.052	0.000	0.300	270	2	272	2	266	16	1.01	272	2	1%
lava antes lg-75	SP2	636.6	436	0.307	0.005	0.043	0.000	0.758	23.175	0.183	0.052	0.000	-0.318	272	4	272	2	275	22	1.00	272	2	1%
lava antes lg-142	SP2	423.4	177.4	0.308	0.005	0.043	0.001	0.770	23.148	0.273	0.052	0.001	0.044	273	4	273	3	283	25	1.00	273	3	1%
lava antes lg-88	SP2	418.4	172.9	0.307	0.003	0.043	0.000	0.433	23.137	0.112	0.051	0.000	0.059	272	2	273	1	261	20	1.00	273	1	0%
lava antes lg-64	SP2	295.4	127.8	0.310	0.005	0.043	0.000	0.570	23.132	0.161	0.052	0.001	-0.118	274	4	273	2	306	32	1.00	273	2	1%
lava antes lg-156	SP2	416.4	154	0.308	0.005	0.043	0.000	0.798	23.132	0.246	0.052	0.001	-0.250	272	4	273	3	268	23	1.00	273	3	1%
lava antes lg-51	SP2	318.4	176.8	0.304	0.004	0.043	0.000	0.559	23.127	0.134	0.051	0.001	-0.204	269	3	273	2	255	30	1.01	273	2	1%
lava antes lg-155	SP2	380.4	216.3	0.311	0.005	0.043	0.000	0.615	23.127	0.241	0.052	0.001	0.048	275	4	273	3	298	27	0.99	273	3	1%
lava antes lg-32	SP2	494.5	217.2	0.306	0.003	0.043	0.000	0.325	23.095	0.128	0.052	0.000	0.369	271	2	273	2	269	19	1.01	273	2	1%
lava antes lg-170	SP2	76.74	42.28	0.315	0.010	0.043	0.000	0.208	23.036	0.223	0.052	0.002	0.109	278	8	274	3	320	74	0.99	274	3	1%
lava antes lg-39	SP2	265.6	107.5	0.315	0.005	0.043	0.000	0.144	23.020	0.164	0.053	0.001	0.272	278	4	274	2	311	36	0.98	274	2	1%
lava antes lg-119	SP2	363	175.7	0.309	0.005	0.043	0.001	0.729	23.020	0.286	0.052	0.001	0.132	274	4	274	3	270	25	1.00	274	3	1%
lava antes lg-126	SP2	330.2	177.2	0.310	0.005	0.043	0.000	0.526	23.026	0.217	0.052	0.001	0.189	274	4	274	3	289	31	1.00	274	3	1%
lava antes lg-137	SP2	169.4	113.9	0.311	0.007	0.043	0.000	0.628	23.015	0.222	0.052	0.001	-0.259	275	6	274	3	295	38	1.00	274	3	1%
lava antes lg-80	SP2	217.4	79.54	0.309	0.006	0.044	0.000	0.298	22.983	0.143	0.051	0.001	0.132	273	4	275	2	264	40	1.01	275	2	1%
lava antes lg-114	SP2	178.6	85.9	0.330	0.009	0.044	0.000	0.270	22.973	0.222	0.055	0.002	0.120	290	7	275	3	418	59	0.95	275	3	1%
lava antes lg-158	SP2	287.9	101.5	0.308	0.005	0.044	0.001	0.673	22.973	0.306	0.051	0.001	-0.019	273	4	275	4	248	34	1.01	275	4	1%
lava antes lg-100	SP2	374.8	149	0.314	0.005	0.044	0.000	0.449	22.967	0.185	0.052	0.001	0.180	277	4	275	2	293	32	0.99	275	2	1%
lava antes lg-58	SP2	183	152.4	0.313	0.005	0.044	0.000	0.256	22.894	0.173	0.052	0.001	0.141	277	4	276	2	286	35	1.00	276	2	1%
lava antes lg-171	SP2	230.5	90.4	0.310	0.006	0.044	0.000	0.807	22.878	0.230	0.051	0.001	-0.381	274	5	276	3	252	32	1.01	276	3	1%
lava antes lg-56	SP2	244.3	87	0.315	0.004	0.044	0.000	0.204	22.862	0.183	0.052	0.001	0.367	278	3	276	2	298	30	0.99	276	2	1%
lava antes lg-150	SP2	508.8	252	0.309	0.006	0.044	0.000	0.907	22.831	0.214	0.051	0.001	-0.630	273	5	276	3	264	27	1.01	276	3	1%
lava antes lg-152	SP2	329	166	0.309	0.006	0.044	0.000	0.740	22.831	0.177	0.051	0.001	-0.420	273	5	276	2	244	33	1.01	276	2	1%
lava antes lg-29	SP2	128.8	79.66	0.317	0.008	0.044	0.000	0.300	22.774	0.166	0.053	0.001	0.020	281	7	277	2	329	55	0.99	277	2	1%
lava antes lg-41	SP2	305.4	153.6	0.315	0.004	0.044	0.000	0.605	22.696	0.201	0.052	0.001	0.139	278	3	278	2	278	24	1.00	278	2	1%
lava antes lg-159	SP2	328.8	123.7	0.317	0.006	0.044	0.000	0.743	22.686	0.216	0.052	0.001	-0.122	280	5	278	3	298	29	0.99	278	3	1%
lava antes lg-104	SP2	195.2	79.4	0.324	0.006	0.044	0.000	0.317	22.563	0.229	0.053	0.001	0.240	285	5	280	3	336	49	0.98	280	3	1%
lava antes lg-8	SP2	88.8	43.45	1.494	0.015	0.147	0.002	0.743	6.793	0.074	0.074	0.001	0.081	928	6	885	9	1040	20	0.95	885	9	1%
lava antes lg-163	SP2	75	43.3	1.645	0.027	0.166	0.003	0.779	6.013	0.090	0.071	0.001	0.051	990	11	992	14	972	24	1.00	992	14	1%
lava antes lg-164	SP2	53.6	40.06	1.638	0.035	0.167	0.002	0.752	5.977	0.082	0.072	0.001	-0.340	984	13	997	13	985	37	1.01	997	13	1%
lava antes lg-69	SP2	60.64	19.24	1.686	0.032	0.169	0.001	0.664	5.921	0.046	0.072	0.001	-0.312	1003	12	1006	7	993	33	1.01	993	33	3%
lava antes lg-160	SP2	79.9	31.03	1.722	0.022	0.170	0.001	0.715	5.872	0.048	0.073	0.001	-0.110	1017	8	1014	8	1026	20	0.99	1026	20	2%
lava antes lg-13	SP2	37.31	18.54	1.734	0.038	0.172	0.002	0.532	5.831	0.054	0.073	0.001	-0.035	1021	14	1020	9	1020	37	1.00	1020	37	4%
lava antes lg-94	SP2	205	123.4	1.737	0.018	0.172	0.001	0.769	5.821	0.041	0.073	0.000	-0.116	1022	7	1022	7	1020	12	1.00	1020	12	1%
lava antes lg-16	SP2	89.8	52.4	1.728	0.018	0.172	0.001	0.534	5.820	0.033	0.073	0.001	-0.012	1019	7	1022	5	1014	16	1.01	1014	16	2%
lava antes lg-148	SP2	334.3	105.6	1.755	0.018	0.173	0.002	0.886	5.770	0.067	0.074	0.000	0.130	1029	7	1030	11	1029	10	1.00	1029	10	1%
lava antes lg-132	SP2	177.3	105.7	1.779	0.020	0.174	0.002	0.932	5.760	0.070	0.075	0.000	0.093	1038	7	1032	11	1059	8	0.97	1059	8	1%
lava antes lg-105	SP2	172.3	57.59	1.772	0.022	0.175	0.002	0.742	5.708	0.055	0.074	0.001	0.059	1035	8	1041	10	1029	19	1.01	1029	19	2%
lava antes lg-151	SP2	58.79	40.63	1.855	0.034	0.175	0.002	0.567	5.705	0.072	0.076	0.001	0.147	1065	12	1041	12	1109	31	0.94	1109	31	3%
lava antes lg-71	SP2	85.2	48.58	1.858	0.022	0.176	0.002	0.759	5.682	0.052	0.077	0.001	-0.312	1066	8	1045	9	1112	17	0.94	1112	17	2%
lava antes lg-35	SP2	74.3	96.9	1.788	0.021	0.177	0.002	0.646	5.653	0.054	0.073	0.001	0.136	1041	8	1050	9	1022	17	1.03	1022	17	2%
lava antes lg-136	SP2	93.7	31.96	1.808	0.024	0.177	0.002	0.893	5.640	0.051	0.074	0.001	-0.400	1048	9	1052	9	1050	16	1.00	1050	16	2%
lava antes lg-145	SP2	91.51	24.93	1.916	0.024	0.178	0.002	0.756	5.627	0.063	0.079	0.001	-0.064	1086	9	1054	11	1167	17	0.90	1167	17	1%
lava antes lg-125	SP2	139.7	65.9	1.829	0.014	0.178	0.002	0.832	5.627	0.051	0.075	0.000	0.418	1056	5	1054	9	1062	10	0.99	1062	10	1%
lava antes lg-130	SP2	151.4	178.9	1.848	0.022	0.179	0.002	0.838	5.593	0.053	0.075	0.000	-0.156	1063	8	1060	9	1074	13	0.99	1074	13	1%
lava antes lg-52	SP2	339.8	156.8	1.860	0.010	0.181	0.001	0.844	5.516	0.024	0.074	0.000	-0.133	1067	4	1074	4	1053	8	1.02	1053	8	1%
lava antes lg-127	SP2	30.98	13.39	1.890	0.046	0.181	0.002	0.567	5.516	0.052	0.076	0.002	-0.169	1077	16	1076	9	1093	41	0.98	1093	41	4%
lava antes lg-134	SP2	174.8	90.61	1.896	0.022	0.182	0.002	0.906	5.501	0.054	0.076	0.000	-0.403	1079	8	1077	10	1093	12	0.99	1093	12	1%
lava antes lg-161	SP2	25.26	9.78	1.890	0.059	0.182	0.002	0.369	5.510	0.058	0.076	0.002	0.004	1076	20	1078	9	1085	56	0.99	1085	56	5%
lava antes lg-109	SP2	135.2	79.98	1.891	0.023	0.183	0.002	0.711	5.464	0.054	0.075	0.001	0.104	1078	8	1083	10	1068	20	1.01	1068	20	2%
lava antes lg-38	SP2	18.46	12.41	1.913	0.050	0.183	0.003	0.267	5.476	0.090	0.076	0.002	0.346	1085	18	1084	15	1097	56	0.99	1097	56	5%
lava antes lg-57	SP2	72.9	33.3	1.920	0.031	0.183	0.002	0.884	5.459	0.054	0.076	0.001	-0.455	1088	11	1085	10	1104	19	0.98	1104	19	2%
lava antes lg-133	SP2	63.39	40.71	1.906	0.025	0.185	0.001	0.635	5.414	0.038	0.075	0.001	0.054	1083	9	1093	7	1070	19	1.02	1070	19	2%
lava antes lg-76	SP2	80	87.1	1.943	0.024	0.186	0.001	0.757	5.385	0.041	0.076	0.001	-0.254	1096	8	1098	8	1101	18	1.00	1101	18	2%
lava antes lg-45	SP2	18.63	10.81	2.062	0.050	0.191	0.003	0.396	5.233	0.077	0.078	0.001	0.247	1139	16	1127	15	1156	37	0.97	1156	37	3%
lava antes lg-98	SP2	122.5	20.53	2.037	0.024	0.191	0.001	0.858	5.230	0.033	0.078	0.001	-0.340	1130	8	1128	7	1142	13	0.99	1142	13	1%
lava antes lg-28	SP2	24.2	19.85	2.121	0.037	0.193	0.001	0.408	5.181	0.035	0.080	0.001	0.093	1155	12	1138	7	1185	33	0.96	1185	33	3%
lava antes lg-107	SP2	613.2	136	2.089	0.016	0.193	0.001	0.937	5.179	0.038	0.078	0.000	-0.059	1145	5	1138	8	1157	6	0.98	1157	6	1%
lava antes lg-79	SP2	32.41	26.41	2.069	0.042	0.193	0.001	0.714	5.176	0.038	0.078	0.001	-0.470	1138	14	1139	8	1140	36	1.00	1140	36	3%
lava antes lg-10	SP2	111.5	29.24	2.078	0.020	0.194	0.001	0.674	5.160	0.032	0.077	0.001	-0.055	1141	7	1142	7	1126	13	1.01	1126	13	1%
lava antes lg-22	SP2	11.45	6.53	2.088	0.061	0.194	0.003	0.578	5.157	0.090	0.079	0.002	-0.108	1144	20	1142	18	1155	61	0.99	1155	61	5%
lava antes lg-48	SP2	37.7	16	2.121	0.031	0.194	0.002	0.198	5.155	0.048	0.079	0.001	0.527	1156	10	1143	10	1181	31	0.97	1181	31	3%
lava antes lg-73	SP2	68.2	19.29	2.085	0.029	0.194	0.001	0.528	5.147	0.037	0.077	0.001	0.094	1144	10	1145	8	1131	21	1.01	1131	21	2%
lava antes lg-61	SP2	76.11	29.83	2.120	0.024	0.194	0.002	0.397	5.147	0.042	0.079	0.001	0.231	1155	8	1145	9	1178	24	0.97	1178	24	2%
lava antes lg-165	SP2	26.69	21.5	2.080	0.055	0.195	0.003	0.726	5.139	0.079	0.078	0.001	-0.163	1145	19	1146	16	1145	34	1.00	1145	34	3%
lava antes lg-43	SP2	79.7	30.25	2.103	0.027	0.195	0.002	0.619	5.118	0.042	0.079	0.001	0.119	1150	9	1151	9	1162	18	0.99	1162	18	2%
lava antes lg-82	SP2	62.6	46.6	2.127	0.032	0.195	0.002	0.809	5.118	0.055	0.079	0.001	-0.080	1157	10	1151	11	1167	21	0.99	1167	21	2%
lava antes lg-138	SP2	235.8	52.57	2.108	0.024	0.196	0.002	0.917	5.105	0.052	0.078	0.000	-0.142	1151	8	1153	11	1147	10	1.01	1147	10	1%
lava antes lg-66	SP2	29.4	12.92	2.146	0.040	0.196	0.002	0.110	5.097	0.042	0.080	0.002	0.330	1163	13	1155	9	1185	38	0.97	1185	38	3%
lava antes lg-99	SP2	45.76	20.98	2.145	0.044	0.198	0.002	0.633	5.061	0.061	0.079	0.001	-0.060	1163	14	1162	13	1163	31	1.00	1163	31	3%
lava antes lg-25	SP2	57	20.88	2.167	0.026	0.199	0.001	0.565	5.035	0.035	0.079	0.001	-0.152	1170	8	1168	8	1169	20	1.00	1169	20	2%
lava antes lg-112	SP2	110.65	36.39	2.172	0.027	0.199	0.002	0.775	5.015	0.045	0.079	0.001	-0.014	1172	9	1172	10	1175	16	1.00	1175	16	1%
lava antes lg-84	SP2	266.1	74.81	2.185	0.026	0.200	0.002	0.927	5.008	0.040	0.079	0.000	-0.384	1176	8	1174	8	1176	8	1.00	1176	8	1%
lava antes lg-50	SP2	103.2	59.64	2.193	0.026	0.201	0.001	0.700	4.985	0.035	0.079	0.001	0.166	1179	8	1179	8	1183	13	1.00	1183	13	1%
lava antes lg-26	SP2	71.44	39.58	2.210	0.026	0.204	0.002	0.728	4.900	0.038	0.079	0.001	-0.045	1184	8	1198	9	1169	18	1.02	1169	18	2%
lava antes lg-78	SP2	58.5	24.4	2.261	0.050	0.205	0.002	0.883	4.869	0.057	0.080	0.001	-0.608	1200	16	1204	13	1188	27	1.01	1188	27	2%
lava antes lg-49	SP2	42.04	27.13	2.334	0.029	0.206	0.001	0.348	4.857	0.031	0.082	0.001	0.166	1222	9	1207	7	1243	27	0.97	1243	27	2%
lava antes lg-92	SP2	247.6	83.2	2.370	0.025	0.211	0.002	0.909	4.748	0.045	0.082	0.000	-0.085	1234	8	1232	11	1238	9	0.99	1238	9	1%
lava antes lg-77	SP2	175	3.64	2.804	0.033	0.232	0.002	0.809	4.320	0.032	0.088	0.001	-0.227	1358	8	1342	9	1373	12	0.98	1373	12	1%
lava antes lg-122	SP2	111.3	28.53	2.724	0.045	0.232	0.003	0.846	4.316	0.054	0.086	0.001	-0.136	1337	13	1343	15	1339	16	1.00	1339	16	1%
lava antes lg-67	SP2	57.18	39.76	2.796	0.031	0.234	0.002	0.620	4.274	0.037	0.087	0.001	0.143	1354	8	1355	11	1366	16	0.99	1366	16	1%
lava antes lg-3	SP2	95.4	46.1	2.810	0.035	0.235	0.002	0.822	4.255	0.029	0.087	0.001	-0.422	1358	9	1361	9	1350	16	1.01	1350	16	1%
lava antes lg-123	SP2	87.9	38.63	2.941	0.042	0.239	0.002	0.826	4.181	0.042	0.089	0.001	-0.104	1392	11	1382	12	1401	12	0.99	1401	12	1%
lava antes lg-47	SP2	108.1	53.1	2.965	0.029	0.242	0.002	0.870	4.134	0.031	0.089	0.000	-0.057	1399	7	1397	10	1404	9	0.99	1404	9	1%
lava antes lg-128	SP2	129.2	75	3.013	0.039	0.243	0.003	0.868	4.122	0.049	0.091	0.001	0.173	1411	10	1400	15	1436	13	0.97	1436	13	1%
lava antes lg-139	SP2	376	164.4	3.035	0.041	0.243	0.003	0.974	4.119	0.058	0.091	0.000	0.168	1416	10	1401	18	1447	6	0.97	1447	6	0%
lava antes lg-144	SP2	83.7	27.47	2.970	0.041	0.244	0.003	0.844	4.100	0.044	0.089	0.001	-0.102	1400	11	1407	14	1395	14	1.01	1395	14	1%
lava antes lg-33	SP2	70.4	32.4	3.021	0.024	0.245	0.002	0.415	4.083	0.027	0.090	0.001	0.385	1413	6	1412	8	1416	15	1.00	1416	15	1%
lava antes lg-59	SP2	172	45.48	3.050	0.024	0.248	0.002	0.795	4.039	0.033	0.090	0.000	0.377	1420	6	1426	10	1416	10	1.01	1416	10	1%
lava antes lg-116	SP2	78.7	65.67	3.106	0.047	0.249	0.002	0.812	4.019	0.032	0.091	0.001	-0.223	1434	12	1432	10	1442	15	0.99	1442	15	1%
lava antes lg-72	SP2	79.6	22.95	3.101	0.031	0.249	0.002	0.825	4.014	0.034	0.091	0.001	-0.037	1433	8	1434	11	1441	13	1.00	1441	13	1%
lava antes lg-21	SP2	153	38.96	3.096	0.024	0.250	0.002	0.834	4.003	0.030	0.090	0.000	-0.071	1432	6	1437	10	1423	9	1.01	1423	9	1%
lava antes lg-166	SP2	152.2	64.9	3.117	0.028	0.250	0.002	0.840	4.002	0.034	0.091	0.000	0.194	1437	7	1438	11	1446	10	0.99	1446	10	1%
lava antes lg-87	SP2	80.9	42.7	3.130	0.040	0.251	0.002	0.830	3.982	0.033	0.090	0.001	-0.220	1440	10	1444	11	1433	13	1.01	1433	13	1%
lava antes lg-135	SP2	248.2	195.4	3.169	0.039	0.252	0.002	0.879	3.975	0.036	0.092	0.001	-0.053	1450	10	1447	12	1460	11	0.99	1460	11	1%
lava antes lg-167	SP2	75.12	88.62	3.149	0.040	0.252	0.003	0.829	3.971	0.043	0.091	0.001	-0.043	1449	10	1448	14	1447	15	1.00	1447	15	1%
lava antes lg-124	SP2	75.3	81.4	3.250	0.037	0.255	0.002	0.865	3.917	0.034	0.092	0.001	-0.032	1471	9	1466	11	1479	12	0.99	1479	12	1%
lava antes lg-154	SP2	100.13	46.19	3.236	0.033	0.256	0.003	0.880	3.914	0.041	0.091	0.001	0.061	1466	8	1467	14	1456	12	1.01	1456	12	1%
lava antes lg-17	SP2	53.18	48.05	3.288	0.038	0.258	0.002	0.562	3.874	0.027	0.092	0.001	0.206	1478	9	1480	9	1477	17	1.00	1477	17	1%
lava antes lg-115	SP2	108.9	56.7	3.300	0.033	0.260	0.002	0.822	3.852	0.034	0.092	0.000	-0.008	1481	8	1488	12	1467	9	1.01	1467	9	1%

lava antes lg-6	SP2	105	49.96	3.365	0.027	0.262	0.002	0.521	3.815	0.025	0.093	0.001	0.258	1496	6	1501	9	1482	13	1.01	1482	13	1%
lava antes lg-68	SP2	82.33	81.2	3.683	0.029	0.271	0.002	0.777	3.685	0.023	0.099	0.001	-0.129	1568	6	1548	8	1596	11	0.97	1596	11	1%
lava antes lg-97	SP2	212.6	66.8	3.977	0.042	0.274	0.003	0.939	3.650	0.039	0.106	0.000	-0.092	1629	9	1561	15	1724	7	0.91	1724	7	0%
lava antes lg-118	SP2	382.1	175	3.942	0.046	0.276	0.003	0.963	3.630	0.041	0.104	0.000	-0.254	1622	10	1568	15	1703	7	0.92	1703	7	0%
lava antes lg-96	SP2	119.2	82.7	3.761	0.037	0.276	0.002	0.816	3.618	0.027	0.099	0.001	-0.011	1584	8	1573	10	1602	10	0.98	1602	10	1%
lava antes lg-46	SP2	340.2	217.3	4.061	0.030	0.288	0.002	0.953	3.467	0.026	0.102	0.000	0.254	1647	6	1634	11	1669	5	0.98	1669	5	0%
lava antes lg-62	SP2	95.1	77.4	4.570	0.240	0.297	0.014	0.998	3.367	0.159	0.112	0.001	-0.799	1739	41	1674	71	1831	9	0.91	1831	9	0%
lava antes lg-86	SP2	416.7	82.1	4.451	0.031	0.300	0.002	0.918	3.334	0.021	0.108	0.000	-0.115	1722	6	1691	9	1765	5	0.96	1765	5	0%
lava antes lg-53	SP2	242	116	4.500	0.120	0.304	0.009	0.991	3.295	0.092	0.108	0.000	0.388	1729	23	1708	42	1766	5	0.97	1766	5	0%
lava antes lg-93	SP2	75.8	54.6	4.408	0.057	0.308	0.004	0.848	3.251	0.039	0.104	0.001	0.123	1714	11	1729	18	1695	13	1.02	1695	13	1%
lava antes lg-168	SP2	324.3	155.8	4.630	0.057	0.310	0.004	0.983	3.224	0.046	0.109	0.000	0.289	1754	10	1742	22	1777	4	0.98	1777	4	0%
lava antes lg-4	SP2	91.9	67.74	4.621	0.037	0.312	0.002	0.752	3.207	0.021	0.107	0.001	-0.001	1753	7	1750	10	1747	10	1.00	1747	10	1%
lava antes lg-91	SP2	99.1	135.8	4.708	0.054	0.313	0.004	0.980	3.196	0.039	0.109	0.000	0.294	1768	10	1755	19	1787	7	0.98	1787	7	0%
lava antes lg-83	SP2	261.9	98.1	4.696	0.033	0.314	0.002	0.923	3.188	0.023	0.109	0.000	-0.086	1767	6	1759	11	1776	6	0.99	1776	6	0%
lava antes lg-85	SP2	81.4	52.19	4.717	0.052	0.315	0.003	0.845	3.173	0.026	0.108	0.001	-0.010	1770	9	1766	13	1772	10	1.00	1772	10	1%
lava antes lg-129	SP2	206.9	153.3	4.710	0.060	0.316	0.004	0.947	3.167	0.036	0.109	0.000	-0.130	1769	11	1769	18	1775	7	1.00	1775	7	0%
lava antes lg-15	SP2	66.5	59.56	4.720	0.034	0.316	0.002	0.743	3.162	0.022	0.108	0.001	0.311	1771	6	1772	11	1769	9	1.00	1769	9	1%
lava antes lg-143	SP2	227.1	68.18	4.768	0.050	0.316	0.003	0.960	3.161	0.033	0.109	0.000	-0.260	1779	9	1772	16	1790	5	0.99	1790	5	0%
lava antes lg-140	SP2	202.3	98	4.779	0.030	0.318	0.002	0.904	3.150	0.022	0.110	0.000	0.389	1781	5	1778	11	1794	5	0.99	1794	5	0%
lava antes lg-131	SP2	204.7	68.9	4.748	0.043	0.318	0.002	0.910	3.145	0.024	0.109	0.000	-0.099	1776	8	1780	12	1785	7	1.00	1785	7	0%
lava antes lg-90	SP2	275.9	55.02	4.757	0.039	0.318	0.002	0.938	3.142	0.023	0.108	0.000	-0.231	1777	7	1781	11	1773	5	1.00	1773	5	0%
lava antes lg-102	SP2	74.1	57.2	4.762	0.040	0.319	0.003	0.712	3.139	0.029	0.108	0.001	0.517	1778	7	1783	14	1766	13	1.01	1766	13	1%
lava antes lg-60	SP2	324.6	105.1	4.753	0.040	0.319	0.002	0.855	3.137	0.023	0.109	0.000	-0.034	1777	7	1784	11	1775	7	1.01	1775	7	0%
lava antes lg-40	SP2	28.14	19.02	4.853	0.048	0.324	0.004	0.681	3.090	0.037	0.109	0.001	0.470	1794	8	1807	19	1775	16	1.02	1775	16	1%
lava antes lg-120	SP2	250.4	62.6	5.019	0.050	0.326	0.003	0.936	3.072	0.028	0.112	0.000	0.020	1822	8	1816	15	1836	5	0.99	1836	5	0%
lava antes lg-18	SP2	112	15.76	5.077	0.037	0.329	0.002	0.609	3.036	0.017	0.112	0.001	0.169	1834	6	1836	9	1830	11	1.00	1830	11	1%
lava antes lg-89	SP2	57.7	48.2	6.697	0.051	0.377	0.003	0.767	2.656	0.023	0.128	0.001	0.291	2072	7	2060	15	2077	10	0.99	2077	10	0%
lava antes lg-14	SP2	39.12	15.16	13.274	0.089	0.524	0.003	0.903	1.910	0.011	0.184	0.001	0.445	2701	6	2714	12	2690	6	1.01	2690	6	0%
lava antes lg-95	SP2	18.51	6.02	14.690	0.200	0.525	0.006	0.807	1.905	0.022	0.203	0.002	0.053	2795	13	2720	25	2848	15	0.96	2848	15	1%
lava antes lg-101	SP2	121.6	56.84	13.470	0.140	0.525	0.005	0.940	1.905	0.019	0.186	0.001	-0.079	2713	10	2720	21	2707	5	1.00	2707	5	0%
lava antes lg-111	SP2	33.92	26.43	13.840	0.100	0.533	0.005	0.699	1.877	0.017	0.189	0.001	0.378	2739	7	2753	20	2735	9	1.01	2735	9	0%
lava antes lg-23	SP2	85.3	45.2	17.480	0.130	0.584	0.004	0.917	1.711	0.010	0.217	0.000	-0.120	2961	7	2966	14	2958	4	1.00	2958	4	0%
lava antes lg-103	SP2	69	79	30.500	0.260	0.708	0.005	0.942	1.412	0.011	0.312	0.001	-0.140	3503	8	3451	20	3533	5	0.98	3533	5	0%
Rejected Grains																							
lava antes lg-106	SP2	1170	8.5	3.470	0.021	0.248	0.002	0.966	4.027	0.026	0.101	0.000	0.177	1522	6	1430	8	1648	4	0.87	1648	8	1%
lava antes lg-81	SP2	960	665	2.120	0.220	0.141	0.015	0.977	7.092	0.754	0.110	0.002	-0.078	1155	78	849	83	1797	34	0.74	849	83	10%
lava antes lg-7	SP2	201.3	79.4	0.019	0.004	0.003	0.000	0.261	383.142	4.404	0.053	0.011	-0.210	19	4	17	0	280	400	0.88	17	0	1%
lava antes lg-146	SP2	861	647.8	0.049	0.001	0.007	0.000	0.479	136.351	1.543	0.048	0.001	-0.098	48	1	47	1	93	46	0.97	47	1	1%
lava antes lg-169	SP2	233.5	124.8	0.050	0.002	0.007	0.000	0.114	136.333	1.375	0.049	0.002	0.100	49	2	47	0	145	94	0.96	47	0	1%
lava antes lg-117	SP2	289.5	62.4	0.067	0.003	0.010	0.000	0.409	102.354	1.467	0.050	0.002	-0.049	66	3	63	1	190	81	0.95	63	1	1%
lava antes lg-42	SP2	344.8	162.9	0.091	0.002	0.014	0.000	-0.078	71.454	0.465	0.047	0.001	0.285	88	2	90	1	72	57	1.02	90	1	1%
lava antes lg-44	SP2	290.2	196	2.104	0.024	0.175	0.002	0.945	5.731	0.056	0.088	0.000	-0.009	1150	8	1037	9	1375	7	0.75	1375	7	1%
lava antes lg-27	SP2	210.9	147	2.206	0.019	0.187	0.002	0.849	5.336	0.048	0.086	0.000	0.470	1183	6	1107	9	1335	11	0.83	1335	11	1%
lava antes lg-5	SP2	7.68	3.16	1.870	0.110	0.180	0.004	0.272	5.568	0.136	0.076	0.004	0.152	1073	41	1064	24	1090	110	0.98	1090	110	10%

Sample X181218

				Measured isotopic ratios										Isotopic ages and errors (Ma)									
Grain	Unit	U (ppm)	Th (ppm)	$^{207}Pb/^{235}U$	2σ	$^{206}Pb/^{238}U$	2σ	Error Correlation	$^{238}Pb/^{206}Pb$	2σ	$^{207}Pb/^{206}Pb$	2σ	Error Correlation	$^{207}Pb/^{235}U$	2σ	$^{206}Pb/^{238}U$	2σ	$^{207}Pb/^{206}Pb$	2σ	discordance	best age (Ma)	2σ	internal error
X181218_1b_8	SP4	661.1	198.5	0.094	0.003	0.014	0.000	0.776	70.671	1.099	0.047	0.001	-0.240	91	2	91	1	73	37	1.00	91	1	2%
X181218_1b_13	SP4	384.1	198.7	0.104	0.003	0.015	0.000	0.551	66.934	1.165	0.051	0.001	-0.066	101	3	96	2	234	61	0.95	96	2	2%
X181218_1b_7	SP4	773	236.9	0.109	0.005	0.015	0.000	0.459	65.617	1.206	0.051	0.002	-0.022	105	4	98	2	244	71	0.93	98	2	2%
X181218_1b_5	SP4	4654	2418	0.103	0.001	0.015	0.000	0.944	65.104	0.805	0.048	0.000	0.183	99	1	98	1	109	12	0.99	98	1	1%
X181218_1b_20	SP4	328.8	99.6	0.117	0.003	0.016	0.000	0.740	63.331	1.043	0.054	0.001	-0.243	112	2	101	2	362	49	0.90	101	2	2%
X181218_1b_9	SP4	133.7	64.98	0.113	0.006	0.016	0.000	0.388	62.972	1.348	0.051	0.003	0.013	109	6	102	2	230	110	0.93	102	2	2%
X181218_1b_15	SP4	374.8	75.7	0.125	0.005	0.016	0.000	0.569	62.422	1.247	0.056	0.002	-0.101	119	5	102	2	447	69	0.86	102	2	2%
X181218_1b_11	SP4	402.5	179.2	0.145	0.003	0.021	0.000	0.676	46.598	0.803	0.049	0.001	0.293	137	2	137	2	151	32	1.00	137	2	2%
X181218_1b_12	SP4	513	274.2	0.150	0.005	0.022	0.001	0.902	45.662	1.334	0.049	0.001	-0.048	141	4	140	4	163	29	0.99	140	4	3%
X181218_1b_17	SP4	651.3	202.2	0.180	0.003	0.026	0.000	0.717	37.750	0.470	0.050	0.001	0.173	168	3	169	2	178	27	1.00	169	2	1%
X181218_1b_2	SP4	367.2	162.7	0.215	0.005	0.029	0.000	0.192	34.364	0.425	0.053	0.001	0.259	198	4	185	2	325	54	0.94	185	2	1%
X181218_1b_22	SP4	64.9	36.29	1.472	0.031	0.144	0.003	0.755	6.925	0.134	0.074	0.001	0.137	922	13	869	16	1039	25	0.94	869	16	2%
X181218_1b_21	SP4	132.8	65.7	1.753	0.046	0.170	0.005	0.971	5.896	0.163	0.075	0.001	0.368	1028	17	1010	26	1081	14	0.98	1010	26	3%
X181218_1b_1	SP4	111.8	54.95	1.898	0.038	0.182	0.003	0.909	5.488	0.093	0.075	0.001	0.145	1083	12	1079	17	1060	18	1.00	1079	17	2%
X181218_1b_16	SP4	768.8	81.9	3.642	0.055	0.269	0.004	0.982	3.715	0.051	0.098	0.000	-0.215	1558	12	1536	19	1593	5	0.96	1593	5	0%
X181218_1b_19	SP4	113.8	141.2	4.072	0.064	0.290	0.004	0.951	3.453	0.050	0.102	0.001	-0.087	1648	13	1639	21	1669	9	0.98	1669	9	1%
X181218_1b_6	SP4	91.7	41.89	4.266	0.069	0.300	0.005	0.938	3.337	0.056	0.103	0.001	0.242	1686	13	1690	25	1677	11	1.01	1677	11	1%
X181218_1b_18	SP4	192	168	4.120	0.081	0.287	0.006	0.984	3.481	0.070	0.104	0.000	0.253	1658	16	1628	29	1700	7	0.96	1700	7	0%
X181218_1b_10	SP4	27.51	37.71	12.820	0.250	0.515	0.010	0.974	1.942	0.038	0.180	0.001	0.250	2665	18	2679	44	2654	8	1.01	2654	8	0%
Rejected Grains																							
X181218_1b_4	SP4	107.2	30.6	0.174	0.025	0.012	0.000	0.757	81.967	2.150	0.106	0.015	-0.661	161	22	78	2	1720	260	0.49	78	2	3%
X181218_1b_3	SP4	445	116.5	0.122	0.004	0.015	0.000	0.360	67.659	1.328	0.060	0.002	0.275	117	4	95	2	579	74	0.81	95	2	2%
X181218_1b_14	SP4	576	225.6	3.852	0.095	0.253	0.007	0.991	3.948	0.106	0.110	0.000	0.071	1603	20	1463	33	1793	6	0.82	1793	6	0%

APPENDIX Ic: Uranium, lead, and thorium isotope data for samples collected from the Minas de Barita Area. Best age: $^{207}Pb/^{206}Pb$ ages used for grains older than 1.0 Ga and $^{206}Pb/^{238}U$ ages for grains younger than 1.0 Ga with 2 sigma uncertainty. RN: Rancho Nuevo Formation, MM: Mina México Formation.

Sample 13-11-SR2																				
				Measured isotopic ratios						Isotopic ages and errors (Ma)										
Grain	Unit	U (ppm)	Th (ppm)	$^{207}Pb/^{235}U$	2σ	$^{206}Pb/^{238}U$	2σ	$^{207}Pb/^{206}Pb$	2σ	$^{207}Pb/^{235}U$	2σ	$^{206}Pb/^{238}U$	2σ	$^{207}Pb/^{206}Pb$	2σ	discordance	best age (Ma)	2σ	internal error
1311-SR2_Zrn-24	RN	631.4	298.9	0.366	0.021	0.049	0.001	0.054	0.004	316	15	310	6	360	150	0.98	310	6	2%
1311-SR2_Zrn-09	RN	302.2	327.7	0.381	0.023	0.050	0.001	0.055	0.004	327	17	314	7	400	160	0.96	314	7	2%
1311-SR2_Zrn-89	RN	480	34.7	0.489	0.027	0.057	0.002	0.061	0.004	404	18	359	9	620	150	0.89	359	9	2%
1311-SR2_Zrn-64	RN	316	134.8	0.457	0.026	0.058	0.001	0.058	0.004	385	18	365	8	540	150	0.95	365	8	2%
1311-SR2_Zrn-03	RN	251	55.8	0.462	0.026	0.060	0.001	0.056	0.004	384	18	376	8	423	160	0.98	376	8	2%
1311-SR2_Zrn-81	RN	724	449	0.453	0.022	0.061	0.001	0.053	0.003	381	15	380	8	336	140	1.00	380	8	2%
1311-SR2_Zrn-45	RN	387.5	119.3	0.477	0.025	0.061	0.001	0.058	0.004	395	17	381	8	557	130	0.97	381	8	2%
1311-SR2_Zrn-17	RN	618	446	0.501	0.024	0.065	0.001	0.055	0.003	414	16	408	8	413	140	0.99	408	8	2%
1311-SR2_Zrn-50	RN	644	148.2	0.517	0.027	0.067	0.001	0.057	0.004	423	18	419	9	477	140	0.99	419	9	2%
1311-SR2_Zrn-83	RN	402	133	0.520	0.024	0.067	0.001	0.055	0.004	425	16	419	8	418	130	0.99	419	8	2%
1311-SR2_Zrn-22	RN	218	192.9	0.532	0.035	0.068	0.002	0.055	0.004	436	23	421	10	440	170	0.97	421	10	2%
1311-SR2_Zrn-26	RN	150.5	81.9	0.548	0.038	0.069	0.002	0.059	0.005	445	24	431	10	500	180	0.97	431	10	2%
1311-SR2_Zrn-59	RN	265	320	0.571	0.038	0.073	0.002	0.057	0.004	456	24	453	10	430	170	0.99	453	10	2%
1311-SR2_Zrn-58	RN	312	198	0.642	0.038	0.073	0.002	0.064	0.004	502	23	453	13	700	140	0.90	453	13	3%
1311-SR2_Zrn-76	RN	398.2	23.92	0.603	0.028	0.073	0.002	0.060	0.004	479	18	454	9	660	130	0.95	454	9	2%
1311-SR2_Zrn-90	RN	493	273.8	0.601	0.030	0.075	0.002	0.059	0.004	477	18	465	10	550	130	0.97	465	10	2%
1311-SR2_Zrn-04	RN	185	82.5	0.660	0.038	0.076	0.002	0.063	0.005	518	22	469	12	710	150	0.91	469	12	3%
1311-SR2_Zrn-10	RN	256	150	0.672	0.053	0.080	0.002	0.060	0.005	519	30	497	13	610	170	0.96	497	13	3%
1311-SR2_Zrn-61	RN	81.1	37	0.670	0.061	0.080	0.002	0.061	0.006	514	37	497	13	530	200	0.97	497	13	3%
1311-SR2_Zrn-48	RN	1290	174	0.716	0.031	0.082	0.003	0.066	0.004	548	21	506	19	788	120	0.92	506	19	4%
1311-SR2_Zrn-49	RN	162.8	47.4	0.809	0.054	0.091	0.002	0.066	0.005	601	29	562	12	790	140	0.94	562	12	2%
1311-SR2_Zrn-12	RN	142.7	98.3	0.764	0.048	0.095	0.002	0.059	0.005	577	28	583	13	540	170	1.01	583	13	2%
1311-SR2_Zrn-54	RN	64.4	46.39	0.878	0.073	0.095	0.003	0.068	0.007	645	41	587	15	850	200	0.91	587	15	3%
1311-SR2_Zrn-05	RN	299	484	0.819	0.041	0.097	0.002	0.061	0.004	609	24	595	12	614	140	0.98	595	12	2%
1311-SR2_Zrn-32	RN	246.8	288	0.828	0.041	0.098	0.002	0.063	0.004	611	23	603	12	677	140	0.99	603	12	2%
1311-SR2_Zrn-06	RN	252	157	0.819	0.039	0.099	0.002	0.060	0.004	609	21	611	12	602	140	1.00	611	12	2%
1311-SR2_Zrn-62	RN	395	320	0.846	0.039	0.102	0.002	0.060	0.004	621	21	627	12	612	130	1.01	627	12	2%
1311-SR2_Zrn-25	RN	124.8	112.1	0.869	0.052	0.104	0.003	0.061	0.004	634	27	635	15	670	150	1.00	635	15	2%
1311-SR2_Zrn-11	RN	319	177.7	0.869	0.044	0.105	0.002	0.059	0.004	636	23	646	12	592	150	1.02	646	12	2%
1311-SR2_Zrn-30	RN	312	162.1	0.880	0.042	0.106	0.002	0.061	0.004	642	23	647	13	612	140	1.01	647	13	2%
1311-SR2_Zrn-23	RN	115.1	45.5	0.995	0.066	0.106	0.003	0.068	0.006	698	31	648	14	820	160	0.93	648	14	2%
1311-SR2_Zrn-77	RN	407	183	0.966	0.051	0.112	0.004	0.063	0.004	686	27	681	23	725	130	0.99	681	23	3%
1311-SR2_Zrn-13	RN	121.4	108.6	1.095	0.098	0.117	0.003	0.067	0.007	748	42	714	16	800	180	0.95	714	16	2%
1311-SR2_Zrn-55	RN	424	201	1.311	0.053	0.128	0.003	0.074	0.004	850	24	776	15	1046	120	0.91	776	15	2%
1311-SR2_Zrn-71	RN	212.8	105.4	1.554	0.064	0.144	0.003	0.079	0.005	951	25	869	17	1165	120	0.91	869	17	2%
1311-SR2_Zrn-53	RN	84.5	75	1.590	0.110	0.149	0.007	0.078	0.006	960	43	892	42	1160	140	0.93	892	42	5%
1311-SR2_Zrn-65	RN	832	53	1.676	0.100	0.150	0.007	0.081	0.005	997	37	899	41	1210	120	0.90	899	41	5%
1311-SR2_Zrn-18	RN	204.3	113.2	1.537	0.072	0.151	0.003	0.073	0.005	944	30	905	18	1015	120	0.96	905	18	2%
1311-SR2_Zrn-33	RN	141.6	62.9	1.609	0.070	0.152	0.004	0.078	0.005	973	27	910	20	1154	130	0.94	910	20	2%
1311-SR2_Zrn-87	RN	89.51	56.01	1.550	0.170	0.152	0.005	0.072	0.007	948	56	914	25	1010	160	0.96	914	25	3%
1311-SR2_Zrn-78	RN	267.3	123.2	1.722	0.074	0.159	0.005	0.080	0.005	1015	31	949	27	1174	130	0.93	949	27	3%
1311-SR2_Zrn-57	RN	188	4.79	1.726	0.110	0.162	0.004	0.077	0.006	1017	37	966	20	1130	140	0.95	966	20	2%
1311-SR2_Zrn-02	RN	50.4	31.6	1.750	0.120	0.170	0.004	0.075	0.006	1019	45	1010	22	1000	180	0.99	1010	22	2%
1311-SR2_Zrn-43	RN	34.8	24.69	1.740	0.420	0.170	0.008	0.077	0.016	1048	97	1013	41	1060	270	0.97	1013	41	4%
1311-SR2_Zrn-01	RN	48.1	59.3	1.780	0.120	0.171	0.004	0.076	0.006	1047	41	1016	24	1100	160	0.97	1016	24	2%
1311-SR2_Zrn-34	RN	129	67.1	1.860	0.093	0.175	0.004	0.078	0.005	1065	32	1039	21	1142	120	0.98	1039	21	2%
1311-SR2_Zrn-08	RN	113.4	45.4	1.821	0.096	0.175	0.004	0.075	0.005	1050	35	1040	24	1074	140	0.99	1040	24	2%
1311-SR2_Zrn-69	RN	97	63.3	1.908	0.094	0.182	0.004	0.078	0.005	1081	33	1077	23	1128	140	1.00	1077	23	2%
1311-SR2_Zrn-72	RN	346.6	87.3	1.924	0.120	0.184	0.006	0.077	0.005	1089	41	1087	34	1127	120	1.00	1087	34	3%
1311-SR2_Zrn-42	RN	85.3	52.2	2.082	0.120	0.189	0.004	0.084	0.006	1153	40	1117	24	1281	150	0.97	1117	24	2%
1311-SR2_Zrn-14	RN	285	112.6	2.044	0.086	0.190	0.004	0.078	0.005	1129	29	1122	21	1126	120	0.99	1122	21	2%
1311-SR2_Zrn-31	RN	205.8	34.7	2.763	0.120	0.222	0.005	0.091	0.006	1345	32	1290	25	1449	110	0.89	1290	25	8%
1311-SR2_Zrn-38	RN	275.6	111.3	2.913	0.140	0.236	0.008	0.093	0.005	1393	39	1368	40	1489	110	0.92	1368	40	7%
1311-SR2_Zrn-75	RN	50.6	18.58	2.990	0.160	0.239	0.005	0.091	0.006	1400	40	1380	28	1433	130	0.96	1380	28	9%
1311-SR2_Zrn-67	RN	534	188.8	3.677	0.140	0.276	0.005	0.097	0.006	1566	32	1569	27	1561	110	1.01	1561	110	7%
1311-SR2_Zrn-47	RN	112.8	35.1	3.370	0.150	0.254	0.005	0.100	0.006	1496	35	1456	28	1608	120	0.91	1608	120	7%
1311-SR2_Zrn-82	RN	445	88.1	3.699	0.150	0.262	0.005	0.100	0.006	1570	33	1502	26	1619	110	0.93	1619	110	7%
1311-SR2_Zrn-27	RN	147	132	4.082	0.170	0.291	0.006	0.103	0.006	1652	34	1646	30	1663	110	0.99	1663	110	7%
1311-SR2_Zrn-56	RN	100.8	47.5	4.260	0.190	0.298	0.007	0.103	0.006	1687	36	1679	34	1680	110	1.00	1680	110	7%
1311-SR2_Zrn-37	RN	238	177	3.882	0.150	0.271	0.005	0.107	0.006	1610	32	1547	27	1748	110	0.89	1748	110	6%
1311-SR2_Zrn-29	RN	187.2	117.9	4.630	0.180	0.309	0.006	0.109	0.006	1753	33	1737	29	1775	110	0.98	1775	110	6%
1311-SR2_Zrn-39	RN	263.5	83.2	4.238	0.160	0.288	0.006	0.110	0.006	1681	33	1632	31	1794	100	0.91	1794	100	6%
1311-SR2_Zrn-20	RN	70	83.3	4.960	0.270	0.323	0.009	0.112	0.007	1810	49	1805	44	1821	130	0.99	1821	130	7%
1311-SR2_Zrn-63	RN	438	68.8	5.080	0.230	0.328	0.009	0.112	0.007	1832	38	1827	44	1831	110	1.00	1831	110	6%
1311-SR2_Zrn-35	RN	75.8	63.4	4.930	0.210	0.321	0.007	0.115	0.007	1806	36	1792	34	1867	110	0.96	1867	110	6%
1311-SR2_Zrn-60	RN	339	135	6.059	0.230	0.360	0.007	0.122	0.007	1984	35	1980	33	1982	100	1.00	1982	100	5%
1311-SR2_Zrn-74	RN	420	43.13	5.577	0.360	0.344	0.012	0.122	0.008	1912	46	1906	54	1986	99	0.96	1986	99	5%
1311-SR2_Zrn-15	RN	42.4	27.56	6.600	0.320	0.365	0.009	0.130	0.009	2056	43	2005	41	2090	110	0.96	2090	110	5%
1311-SR2_Zrn-21	RN	185.7	82.5	6.649	0.260	0.357	0.008	0.135	0.008	2065	37	1970	37	2156	100	0.91	2156	100	5%
1311-SR2_Zrn-28	RN	147	110	7.630	0.360	0.404	0.013	0.136	0.008	2186	45	2187	57	2174	99	1.01	2174	99	5%
1311-SR2_Zrn-40	RN	14.64	23.21	10.640	0.660	0.463	0.012	0.172	0.013	2477	57	2450	51	2540	130	0.96	2540	130	5%
1311-SR2_Zrn-73	RN	65.8	37	11.350	1.100	0.469	0.025	0.179	0.014	2535	120	2476	110	2626	160	0.94	2626	160	6%
1311-SR2_Zrn-88	RN	137.2	69.9	1.562	0.092	0.134	0.003	0.085	0.006	954	33	813	17	1300	120	0.85	813	17	2%
1311-SR2_Zrn-36	RN	339	150.7	2.976	0.120	0.232	0.005	0.095	0.006	1401	31	1342	26	1532	110	0.88	1342	26	7%
1311-SR2_Zrn-80	RN	464	147.2	1.764	0.075	0.152	0.004	0.083	0.005	1032	30	911	23	1269	120	0.88	911	23	3%
Rejected Grains																			
1311-SR2_Zrn-16	RN	1143	244	0.468	0.040	0.045	0.003	0.074	0.005	389	25	281	19	1047	120	0.72	281	19	7%
1311-SR2_Zrn-68	RN	58.9	23.77	4.160	0.260	0.249	0.008	0.123	0.010	1657	52	1435	44	1950	130	0.74	1950	130	3%
1311-SR2_Zrn-52	RN	514	79.1	2.177	0.087	0.146	0.003	0.109	0.006	1177	29	878	18	1772	110	0.75	878	18	2%
1311-SR2_Zrn-44	RN	1050	95	0.232	0.014	0.025	0.001	0.069	0.004	212	11	159	7	900	140	0.75	159	7	5%
1311-SR2_Zrn-46	RN	211.9	67	0.626	0.042	0.062	0.003	0.076	0.005	493	25	386	15	1104	130	0.78	386	15	4%
1311-SR2_Zrn-66	RN	156.8	63.4	0.512	0.290	0.053	0.008	0.072	0.020	417	110	332	45	1070	330	0.80	332	45	14%
1311-SR2_Zrn-19	RN	434.6	78.6	2.671	0.110	0.205	0.004	0.093	0.005	1319	30	1203	24	1496	110	0.80	1203	24	2%
1311-SR2_Zrn-70	RN	261.9	111.7	3.720	0.160	0.252	0.006	0.108	0.006	1573	36	1449	33	1776	100	0.82	1776	100	2%
1311-SR2_Zrn-85	RN	200.2	30.3	0.547	0.033	0.057	0.002	0.068	0.006	441	22	360	10	840	160	0.82	360	10	3%
1311-SR2_Zrn-51	RN	218	104.7	3.120	0.140	0.231	0.006	0.101	0.006	1434	34	1337	30	1634	110	0.82	1337	30	2%
1311-SR2_Zrn-84	RN	119.7	63.8	0.880	0.077	0.085	0.002	0.075	0.007	634	38	528	14	1000	160	0.83	528	14	3%
1311-SR2_Zrn-41	RN	244	10.2	0.720	0.250	0.084	0.013	0.065	0.007	549	90	519	73	720	150	0.95	519	73	14%
1311-SR2_Zrn-07	RN	58	31.7	2.280	0.130	0.199	0.005	0.089	0.008	1198	40	1170	27	1320	140	0.89	1170	27	11%
Sample 12-11-SR2																			
				Measured isotopic ratios						Isotopic ages and errors (Ma)										
Grain	Unit	U (ppm)	Th (ppm)	$^{207}Pb/^{235}U$	2σ	$^{206}Pb/^{238}U$	2σ	$^{207}Pb/^{206}Pb$	2σ	$^{207}Pb/^{235}U$	2σ	$^{206}Pb/^{238}U$	2σ	$^{207}Pb/^{206}Pb$	2σ	discordance	best age (Ma)	2σ	internal error
1211-SR2a_Zrn-93	MM	208.8	169	0.329	0.036	0.046	0.002	0.052	0.006	292	25	289	11	290	210	0.99	289	11	0.04
1211-SR2a_Zrn-79	MM	438	266	0.389	0.046	0.047	0.002	0.060	0.007	333	34	296	11	550	260	0.89	295.9	11	0.04
1211-SR2a_Zrn-87	MM	155	80.7	0.367	0.041	0.047	0.002	0.057	0.006	315	30	297	12	420	230	0.94	297.4	12	0.04
1211-SR2a_Zrn-22	MM	876	260	0.428	0.022	0.052	0.002	0.059	0.003	362	15	329	13	558	100	0.91	329.3	13	0.04
1211-SR2a_Zrn-78	MM	118.6	64.3	0.419	0.029	0.055	0.002	0.055	0.004	354	21	345	14	370	160	0.98	345.2	14	0.04
1211-SR2a_Zrn-41	MM	195.3	61.3	0.487	0.029	0.057	0.003	0.061	0.004	402	20	358	15	630	120	0.89	358.1	15	0.04
1211-SR2a_Zrn-72	MM	482.8	7.59	0.438	0.020	0.058	0.002	0.056	0.002	368	14	365	13	444	93	0.99	364.6	13	0.04
1211-SR2a_Zrn-20	MM	275.1	352	0.439	0.025	0.059	0.002	0.054	0.004	369	18	367	14	340	140	1.00	367.4	14	0.04
1211-SR2a_Zrn-39	MM	1074	312.3	0.464	0.023	0.060	0.003	0.055	0.003	387	16	377	16	420	120	0.97	376.6	16	0.04

1211-SR2a_Zrn-96	MM	130	54.7	0.469	0.042	0.061	0.003	0.057	0.005	402	28	384	17	420	190	0.96	384	17	0.04
1211-SR2a_Zrn-83	MM	643	658	0.464	0.036	0.061	0.003	0.055	0.004	386	25	384	15	410	180	0.99	384	15	0.04
1211-SR2a_Zrn-57	MM	695	433	0.489	0.031	0.062	0.003	0.058	0.003	404	21	386	17	520	120	0.96	386	17	0.04
1211-SR2a_Zrn-89	MM	139.1	44.48	0.495	0.045	0.062	0.003	0.059	0.006	407	30	387	16	500	220	0.95	386.8	16	0.04
1211-SR2a_Zrn-26	MM	210	114.9	0.500	0.046	0.062	0.003	0.057	0.005	410	31	390	17	530	220	0.95	390	17	0.04
1211-SR2a_Zrn-51	MM	380	40.5	0.489	0.019	0.063	0.003	0.056	0.002	404	13	395	16	445	74	0.98	394.6	16	0.04
1211-SR2a_Zrn-12	MM	708	509	0.488	0.020	0.064	0.002	0.055	0.002	403	13	400	14	432	88	0.99	399.6	14	0.04
1211-SR2a_Zrn-64	MM	507	282	0.492	0.019	0.064	0.002	0.055	0.002	407	12	400	14	405	81	0.98	399.7	14	0.04
1211-SR2a_Zrn-02	MM	723	72.4	0.491	0.022	0.064	0.003	0.055	0.002	405	15	402	16	424	64	0.99	401.8	16	0.04
1211-SR2a_Zrn-65	MM	347.7	260.7	0.483	0.023	0.065	0.003	0.055	0.002	399	16	405	15	385	98	1.01	404.9	15	0.04
1211-SR2a_Zrn-67	MM	429	389	0.508	0.026	0.066	0.002	0.057	0.003	416	18	414	14	450	120	0.99	413.7	14	0.03
1211-SR2a_Zrn-38	MM	196.9	104.9	0.570	0.033	0.069	0.003	0.059	0.003	462	19	427	16	610	120	0.93	427.4	16	0.04
1211-SR2a_Zrn-56	MM	367	147.5	0.639	0.022	0.080	0.003	0.058	0.002	503	14	499	17	524	80	0.99	498.9	17	0.03
1211-SR2a_Zrn-75	MM	471	244	0.662	0.027	0.082	0.003	0.059	0.003	517	17	510	19	558	90	0.99	510.1	19	0.04
1211-SR2a_Zrn-71	MM	339	52.2	0.677	0.034	0.084	0.003	0.059	0.003	524	21	520	19	560	130	0.99	519.7	19	0.04
1211-SR2a_Zrn-58	MM	759	1091	0.675	0.026	0.085	0.003	0.058	0.002	523	15	524	19	525	72	1.00	524.3	19	0.04
1211-SR2a_Zrn-27	MM	194	90	0.707	0.037	0.086	0.003	0.060	0.003	551	22	533	20	600	130	0.97	533.2	20	0.04
1211-SR2a_Zrn-17	MM	245	126.1	0.735	0.036	0.089	0.003	0.060	0.003	558	21	549	19	580	100	0.98	548.5	19	0.03
1211-SR2a_Zrn-33	MM	324	17.1	0.747	0.033	0.091	0.003	0.059	0.003	565	19	560	19	594	95	0.99	559.5	19	0.03
1211-SR2a_Zrn-61	MM	183.3	22	0.798	0.053	0.092	0.004	0.063	0.004	599	29	569	21	670	140	0.95	568.6	21	0.04
1211-SR2a_Zrn-15	MM	49.8	44.3	0.819	0.088	0.093	0.004	0.065	0.007	600	50	573	23	730	230	0.96	573	23	0.04
1211-SR2a_Zrn-99	MM	515	333.2	0.799	0.024	0.096	0.004	0.061	0.002	596	13	591	21	627	65	0.99	591.4	21	0.04
1211-SR2a_Zrn-86	MM	420	364	0.817	0.033	0.100	0.004	0.061	0.002	608	19	611	22	630	79	1.01	611.2	22	0.04
1211-SR2a_Zrn-09	MM	277.2	408	0.921	0.029	0.100	0.004	0.066	0.002	662	15	612	22	801	65	0.92	611.8	22	0.04
1211-SR2a_Zrn-29	MM	224.8	115	0.841	0.036	0.101	0.004	0.061	0.003	622	19	619	23	632	88	1.00	619.2	23	0.04
1211-SR2a_Zrn-36	MM	46.9	52.3	0.924	0.081	0.104	0.005	0.065	0.006	668	46	635	30	810	190	0.95	635	30	0.05
1211-SR2a_Zrn-88	MM	81.3	63.6	0.865	0.065	0.104	0.004	0.061	0.005	629	36	636	25	680	170	1.01	636	25	0.04
1211-SR2a_Zrn-21	MM	1055	663	0.917	0.025	0.104	0.004	0.061	0.002	660	13	636	21	648	54	0.96	636.1	21	0.03
1211-SR2a_Zrn-74	MM	86.3	72	0.921	0.080	0.105	0.005	0.062	0.004	658	41	641	27	690	150	0.97	641	27	0.04
1211-SR2a_Zrn-42	MM	375	358.5	0.892	0.042	0.105	0.004	0.063	0.003	653	25	643	23	678	97	0.99	643.3	23	0.04
1211-SR2a_Zrn-18	MM	1060	64	0.975	0.034	0.106	0.004	0.068	0.003	691	17	649	23	875	86	0.94	648.9	23	0.04
1211-SR2a_Zrn-68	MM	298	135.6	0.903	0.032	0.107	0.004	0.061	0.002	652	17	658	22	641	78	1.01	658.1	22	0.03
1211-SR2a_Zrn-47	MM	119.3	68.3	1.042	0.067	0.116	0.005	0.065	0.004	721	33	707	27	770	130	0.98	707	27	0.04
1211-SR2a_Zrn-24	MM	249	348	1.121	0.076	0.118	0.005	0.067	0.005	761	36	720	30	860	150	0.95	720	30	0.04
1211-SR2a_Zrn-43	MM	241.4	29.7	1.600	0.062	0.139	0.005	0.083	0.003	969	24	841	29	1264	77	0.87	841	29	0.03
1211-SR2a_Zrn-35	MM	428	755	1.515	0.059	0.146	0.006	0.075	0.003	936	23	880	31	1049	74	0.94	880	31	0.04
1211-SR2a_Zrn-06	MM	260.8	346	1.405	0.046	0.148	0.005	0.069	0.002	892	19	890	30	895	67	1.00	889.9	30	0.03
1211-SR2a_Zrn-05	MM	162.5	117.1	1.510	0.100	0.152	0.006	0.073	0.005	946	47	910	33	1040	150	0.96	910	33	0.04
1211-SR2a_Zrn-63	MM	331	493.1	1.603	0.068	0.152	0.006	0.072	0.003	970	27	912	33	983	84	0.94	912	33	0.04
1211-SR2a_Zrn-81	MM	214	65.9	1.758	0.078	0.163	0.006	0.074	0.003	1028	28	972	33	1054	92	0.95	972	33	0.03
1211-SR2a_Zrn-46	MM	160.8	47.4	1.619	0.066	0.164	0.006	0.073	0.003	976	25	979	34	1028	78	1.00	979	34	0.03
1211-SR2a_Zrn-11	MM	66.5	56.4	1.659	0.088	0.164	0.006	0.074	0.004	998	34	981	35	990	120	0.98	981	35	0.04
1211-SR2a_Zrn-70	MM	167.5	129.1	1.815	0.073	0.168	0.006	0.075	0.003	1052	26	998	34	1051	74	0.95	998	34	0.03
1211-SR2a_Zrn-50	MM	33.3	39.58	1.700	0.160	0.168	0.008	0.073	0.008	997	62	999	44	970	220	1.00	999	44	0.04
1211-SR2a_Zrn-10	MM	134.3	101.2	1.657	0.089	0.168	0.006	0.073	0.003	989	34	999	36	1011	100	1.01	999	36	0.04
1211-SR2a_Zrn-66	MM	177.8	160	1.872	0.087	0.174	0.007	0.079	0.005	1083	40	1037	36	1160	110	0.96	1037	36	0.03
1211-SR2a_Zrn-37	MM	140.9	41.6	1.824	0.079	0.176	0.007	0.076	0.003	1051	29	1046	35	1097	75	1.00	1046	35	0.03
1211-SR2a_Zrn-62	MM	132.3	69.3	2.340	0.110	0.175	0.008	0.097	0.004	1222	35	1047	46	1563	81	0.86	1047	46	0.05
1211-SR2a_Zrn-25	MM	241.4	97.4	1.827	0.061	0.179	0.007	0.076	0.003	1054	22	1062	36	1072	72	1.01	1062	36	0.03
1211-SR2a_Zrn-82	MM	299	99.9	1.857	0.059	0.181	0.007	0.075	0.002	1064	21	1070	39	1052	69	1.01	1070	39	0.04
1211-SR2a_Zrn-04	MM	107.6	73	1.984	0.089	0.185	0.007	0.077	0.003	1111	32	1092	37	1119	93	0.98	1092	37	0.03
1211-SR2a_Zrn-19	MM	135.2	72.4	2.204	0.093	0.199	0.008	0.080	0.003	1185	32	1169	40	1197	88	0.99	1169	40	0.03
1211-SR2a_Zrn-48	MM	404	325	2.323	0.073	0.199	0.008	0.084	0.003	1219	22	1170	40	1298	57	0.96	1170	40	0.03
1211-SR2a_Zrn-23	MM	101.4	73.5	2.190	0.110	0.201	0.008	0.080	0.004	1177	35	1181	42	1193	100	1.00	1181	42	0.04
1211-SR2a_Zrn-90	MM	312	287.2	2.380	0.120	0.203	0.008	0.083	0.003	1232	35	1190	42	1290	76	0.97	1190	42	0.04
1211-SR2a_Zrn-76	MM	194.7	524	2.255	0.089	0.206	0.007	0.081	0.003	1201	27	1205	39	1219	62	1.00	1205.2	39	0.03
1211-SR2a_Zrn-85	MM	353	238.2	2.538	0.095	0.206	0.008	0.084	0.003	1282	27	1208	40	1297	67	0.94	1208	40	0.03
1211-SR2a_Zrn-16	MM	199.8	204	2.294	0.073	0.207	0.008	0.080	0.002	1209	23	1212	42	1190	59	1.00	1212	42	0.03
1211-SR2a_Zrn-53	MM	440	68.5	2.640	0.078	0.226	0.009	0.084	0.003	1313	23	1313	45	1285	65	1.02	1313	45	0.05
1211-SR2a_Zrn-80	MM	168	146	2.799	0.099	0.230	0.008	0.087	0.003	1356	26	1335	44	1382	70	0.97	1335	44	0.05
1211-SR2a_Zrn-95	MM	278	99	2.959	0.110	0.240	0.009	0.090	0.003	1396	27	1385	45	1427	65	0.97	1385	45	0.05
1211-SR2a_Zrn-59	MM	90.5	52.5	3.010	0.140	0.241	0.010	0.092	0.004	1409	34	1393	49	1481	79	0.94	1393	49	0.05
1211-SR2a_Zrn-13	MM	228	79.4	3.340	0.110	0.263	0.010	0.091	0.003	1493	28	1505	50	1445	68	1.04	1445	68	0.05
1211-SR2a_Zrn-98	MM	118.3	106.8	3.251	0.110	0.255	0.009	0.092	0.003	1468	25	1461	48	1470	52	0.99	1470	52	0.04
1211-SR2a_Zrn-49	MM	142.9	82.5	3.280	0.120	0.262	0.010	0.093	0.003	1475	28	1497	49	1490	60	1.00	1490	60	0.04
1211-SR2a_Zrn-91	MM	139.5	74.6	3.270	0.097	0.256	0.009	0.094	0.003	1473	23	1470	48	1494	51	0.98	1494	51	0.03
1211-SR2a_Zrn-40	MM	722	24.1	3.494	0.088	0.257	0.009	0.095	0.002	1525	20	1474	48	1520	42	0.97	1520	42	0.03
1211-SR2a_Zrn-32	MM	116	56.4	3.550	0.150	0.272	0.010	0.097	0.004	1540	33	1550	51	1562	70	0.99	1562	70	0.04
1211-SR2a_Zrn-34	MM	149.1	168	3.690	0.170	0.274	0.011	0.097	0.005	1567	36	1563	53	1562	91	1.00	1562	91	0.06
1211-SR2a_Zrn-08	MM	49.8	48.35	3.840	0.190	0.282	0.011	0.099	0.005	1593	40	1601	54	1579	94	1.01	1579	94	0.06
1211-SR2a_Zrn-92	MM	104.5	69.7	3.770	0.150	0.285	0.010	0.097	0.004	1589	34	1617	52	1579	81	1.02	1579	81	0.05
1211-SR2a_Zrn-60	MM	219.7	204.8	3.456	0.110	0.252	0.009	0.098	0.003	1521	27	1449	47	1581	53	0.92	1581	53	0.03
1211-SR2a_Zrn-55	MM	467	304	3.742	0.110	0.280	0.010	0.099	0.002	1583	24	1590	51	1595	44	1.00	1595	44	0.03
1211-SR2a_Zrn-14	MM	511	102.2	3.720	0.110	0.266	0.010	0.101	0.003	1575	24	1522	48	1640	53	0.93	1640	53	0.03
1211-SR2a_Zrn-44	MM	477	434	3.986	0.100	0.285	0.010	0.101	0.002	1631	21	1616	51	1640	44	0.99	1640	44	0.03
1211-SR2a_Zrn-07	MM	167.3	44.4	4.230	0.120	0.300	0.012	0.103	0.003	1679	23	1689	59	1684	47	1.00	1684	47	0.03
1211-SR2a_Zrn-77	MM	647	516	3.660	0.150	0.255	0.010	0.104	0.003	1561	33	1463	49	1711	50	0.86	1711	50	0.03
1211-SR2a_Zrn-100	MM	918	341	3.722	0.100	0.259	0.010	0.105	0.003	1576	22	1483	50	1712	47	0.87	1712	47	0.03
1211-SR2a_Zrn-73	MM	395	139.6	4.440	0.100	0.304	0.011	0.106	0.002	1720	19	1713	54	1724	38	0.99	1724	38	0.02
1211-SR2a_Zrn-69	MM	156.5	124.5	4.230	0.140	0.284	0.011	0.110	0.003	1678	26	1611	53	1788	50	0.90	1788	50	0.03
1211-SR2a_Zrn-03	MM	140.6	105.7	4.870	0.160	0.316	0.012	0.111	0.003	1795	28	1772	58	1813	50	0.98	1813	50	0.03
1211-SR2a_Zrn-01	MM	83.6	10.8	5.080	0.150	0.324	0.013	0.113	0.004	1832	25	1808	61	1846	62	0.98	1846	62	0.03
1211-SR2a_Zrn-30	MM	177.9	115.8	5.756	0.140	0.335	0.012	0.125	0.003	1939	22	1862	58	2022	43	0.92	2022	43	0.02
1211-SR2a_Zrn-97	MM	161	224	6.770	0.180	0.387	0.015	0.128	0.003	2080	23	2110	68	2063	38	1.02	2063	38	0.02
1211-SR2a_Zrn-84	MM	318.3	152.4	6.060	0.200	0.330	0.012	0.133	0.004	1984	29	1838	57	2145	43	0.86	2145	43	0.02
1211-SR2a_Zrn-45	MM	101.1	49.7	14.320	0.440	0.547	0.021	0.195	0.005	2770	29	2812	87	2785	43	1.01	2785	43	0.02
Rejected Grains																			
1211-SR2a_Zrn-54	MM	103.7	72.5	0.830	0.072	0.077	0.004	0.080	0.007	617	41	476	21	1170	160	0.77	476	21	0.04
1211-SR2a_Zrn-28	MM	61.9	23.6	3.200	0.210	0.225	0.010	0.102	0.007	1450	52	1307	54	1630	130	0.80	1307	54	0.08
1211-SR2a_Zrn-52	MM	459	44.7	4.800	0.150	0.282	0.011	0.121	0.004	1791	30	1599	53	1975	53	0.81	1975	53	0.03
1211-SR2a_Zrn-94	MM	865.6	93.9	9.990	0.240	0.408	0.015	0.178	0.004	2433	22	2204	67	2633	34	0.84	2633	34	0.01
1211-SR2a_Zrn-31	MM	323	55.1	3.658	0.092	0.251	0.009	0.106	0.002	1562	20	1444	47	1724	39	0.84	1724	39	0.02

Sample 13-11-SR3

				Measured isotopic ratios						Isotopic ages and errors (Ma)									
Grain	Unit	U (ppm)	Th (ppm)	$^{207}Pb/^{235}U$	2σ	$^{206}Pb/^{238}U$	2σ	$^{207}Pb/^{206}Pb$	2σ	$^{207}Pb/^{235}U$	2σ	$^{206}Pb/^{238}U$	2σ	$^{207}Pb/^{206}Pb$	2σ	discordance	best age (Ma)	2σ	internal error
1311-SR3a_b_Zrn-62	MM	183	161.3	0.319	0.035	0.043	0.002	0.056	0.005	285	24	272	14	430	190	0.95	272	14	5%
1311-SR3a_b_Zrn-71	MM	1512	43.9	0.356	0.030	0.048	0.002	0.055	0.004	309	21	300	13	391	140	0.97	300	13	4%
1311-SR3a_b_Zrn-89	MM	370	119.6	0.360	0.022	0.049	0.002	0.054	0.004	317	17	308	13	330	140	0.97	308	13	4%
1311-SR3a_b_Zrn-96	MM	831	652.4	0.373	0.021	0.050	0.002	0.052	0.003	322	15	317	13	285	120	0.99	317	13	4%
1311-SR3a_b_Zrn-31	MM	300	93	0.397	0.096	0.054	0.004	0.058	0.012	338	59	339	27	500	320	1.00	339	27	8%
1311-SR3a_b_Zrn-64	MM	473.8	85	0.428	0.023	0.054	0.002	0.058	0.003	361	17	340	14	520	130	0.94	340	14	4%
1311-SR3a_b_Zrn-98	MM	591.9	211.4	0.433	0.023	0.055	0.002	0.056	0.003	365	16	344	14	430	130	0.94	344	14	4%
1311-SR3a_b_Zrn-39	MM	295	157	0.431	0.027	0.056	0.002	0.054	0.004	363	19	353	15	350	150	0.97	353	15	4%
1311-SR3a_b_Zrn-42	MM	434	126	0.469	0.073	0.056	0.003	0.059	0.008	389	47	353	18	530	230	0.91	353	18	5%
1311-SR3a_b_Zrn-78	MM	282	105.6	0.438	0.034	0.057	0.003	0.059	0.004	368	22	354	20	570	150	0.96	354	20	6%

1311-SR3a_b_Zrn-18	MM	633.8	227.6	0.421	0.032	0.057	0.004	0.055	0.003	356	22	355	22	410	120	1.00	355	22	6%
1311-SR3a_b_Zrn-86	MM	155	171	0.553	0.054	0.062	0.004	0.063	0.005	443	33	387	23	710	140	0.87	387	23	6%
1311-SR3a_b_Zrn-48	MM	387	79.3	0.477	0.031	0.062	0.003	0.055	0.004	395	21	388	16	400	140	0.98	388	16	4%
1311-SR3a_b_Zrn-33	MM	1420	1014	0.480	0.024	0.062	0.003	0.055	0.003	398	17	388	16	414	120	0.98	388	16	4%
1311-SR3a_b_Zrn-68	MM	224	54.1	0.472	0.030	0.062	0.003	0.056	0.004	392	21	389	16	420	150	0.99	389	16	4%
1311-SR3a_b_Zrn-47	MM	96.7	116.9	0.514	0.041	0.063	0.003	0.060	0.005	418	27	393	17	590	160	0.94	393	17	4%
1311-SR3a_b_Zrn-38	MM	517	281	0.518	0.027	0.063	0.003	0.059	0.003	423	19	396	16	563	130	0.94	396	16	4%
1311-SR3a_b_Zrn-81	MM	620	459	0.486	0.029	0.064	0.003	0.055	0.004	401	20	398	16	388	140	0.99	398	16	4%
1311-SR3a_b_Zrn-22	MM	307	48.2	0.516	0.027	0.064	0.003	0.059	0.004	422	18	402	17	555	120	0.95	402	17	4%
1311-SR3a_b_Zrn-56	MM	464	143.8	0.504	0.029	0.065	0.003	0.057	0.004	414	20	405	16	491	130	0.98	405	16	4%
1311-SR3a_b_Zrn-49	MM	378	48.5	0.567	0.046	0.066	0.003	0.062	0.005	455	35	409	20	680	130	0.90	409	20	5%
1311-SR3a_b_Zrn-10	MM	480	9.6	0.532	0.046	0.067	0.004	0.058	0.004	437	28	417	24	490	140	0.95	417	24	6%
1311-SR3a_b_Zrn-21	MM	223.1	61.6	0.522	0.032	0.067	0.003	0.057	0.004	425	21	421	17	477	140	0.99	421	17	4%
1311-SR3a_b_Zrn-02	MM	928	476	0.601	0.043	0.075	0.004	0.057	0.004	478	26	468	21	479	130	0.98	468	21	4%
1311-SR3a_b_Zrn-40	MM	958	799	0.639	0.031	0.077	0.003	0.060	0.003	506	19	477	18	591	120	0.94	477	18	4%
1311-SR3a_b_Zrn-85	MM	102.8	53.5	0.640	0.063	0.077	0.005	0.060	0.006	498	40	479	29	510	220	0.96	479	29	6%
1311-SR3a_b_Zrn-43	MM	465.5	669	0.655	0.039	0.080	0.003	0.058	0.004	517	23	493	20	550	120	0.95	493	20	4%
1311-SR3a_b_Zrn-50	MM	490	80.7	0.638	0.034	0.080	0.003	0.057	0.003	503	21	498	20	483	130	0.99	498	20	4%
1311-SR3a_b_Zrn-19	MM	147.2	62.1	0.667	0.047	0.083	0.004	0.060	0.004	522	29	512	22	620	150	0.98	512	22	4%
1311-SR3a_b_Zrn-72	MM	142	54.8	0.688	0.047	0.086	0.004	0.059	0.004	533	27	530	22	560	160	0.99	530	22	4%
1311-SR3a_b_Zrn-63	MM	889	1260	0.723	0.035	0.090	0.004	0.060	0.003	553	21	553	22	588	120	1.00	553	22	4%
1311-SR3a_b_Zrn-23	MM	301	163	0.745	0.044	0.090	0.004	0.062	0.004	564	26	554	22	640	130	0.98	554	22	4%
1311-SR3a_b_Zrn-51	MM	910	33.4	0.734	0.036	0.090	0.004	0.061	0.003	559	21	554	22	630	110	0.99	554	22	4%
1311-SR3a_b_Zrn-29	MM	306	6.69	0.739	0.045	0.091	0.004	0.061	0.004	563	27	559	22	635	130	0.99	559	22	4%
1311-SR3a_b_Zrn-06	MM	804	188	0.764	0.040	0.091	0.004	0.060	0.004	576	23	563	23	607	110	0.98	563	23	4%
1311-SR3a_b_Zrn-20	MM	235	157	0.781	0.052	0.093	0.004	0.062	0.004	583	31	572	24	670	150	0.98	572	24	4%
1311-SR3a_b_Zrn-79	MM	505	373	0.766	0.039	0.093	0.004	0.060	0.003	577	22	573	22	588	110	0.99	573	22	4%
1311-SR3a_b_Zrn-99	MM	135	193	0.855	0.059	0.095	0.004	0.065	0.005	624	32	582	24	710	160	0.93	582	24	4%
1311-SR3a_b_Zrn-67	MM	154.3	34.5	0.814	0.064	0.095	0.004	0.063	0.005	604	33	587	26	770	130	0.97	587	26	4%
1311-SR3a_b_Zrn-08	MM	195	89	0.835	0.056	0.097	0.005	0.062	0.004	614	30	594	27	660	130	0.97	594	27	5%
1311-SR3a_b_Zrn-77	MM	642	14	0.794	0.062	0.097	0.005	0.060	0.004	593	32	594	31	619	110	1.00	594	31	5%
1311-SR3a_b_Zrn-35	MM	475	673	0.885	0.049	0.097	0.004	0.065	0.004	643	26	598	25	781	110	0.93	598	25	4%
1311-SR3a_b_Zrn-44	MM	420	242.8	0.831	0.045	0.097	0.004	0.061	0.004	613	25	598	23	650	130	0.98	598	23	4%
1311-SR3a_b_Zrn-76	MM	133.9	143	0.830	0.047	0.098	0.004	0.062	0.004	620	27	604	24	720	130	0.97	604	24	4%
1311-SR3a_b_Zrn-01	MM	502	852	0.824	0.055	0.098	0.004	0.060	0.004	609	32	604	25	602	140	0.99	604	25	4%
1311-SR3a_b_Zrn-91	MM	736	73.2	0.829	0.040	0.099	0.004	0.059	0.003	613	22	611	24	575	120	1.00	611	24	4%
1311-SR3a_b_Zrn-61	MM	97.4	80.6	0.980	0.110	0.100	0.008	0.081	0.007	692	52	612	48	1170	160	0.88	612	48	8%
1311-SR3a_b_Zrn-16	MM	528	34.9	0.848	0.056	0.100	0.004	0.063	0.004	623	29	614	26	697	120	0.99	614	26	4%
1311-SR3a_b_Zrn-12	MM	237	71.2	0.836	0.047	0.100	0.004	0.061	0.004	625	25	615	25	630	120	0.98	615	25	4%
1311-SR3a_b_Zrn-74	MM	376	311	0.842	0.044	0.100	0.004	0.061	0.004	620	24	616	24	625	120	0.99	616	24	4%
1311-SR3a_b_Zrn-11	MM	214	358	0.856	0.049	0.101	0.004	0.061	0.004	626	27	622	25	645	130	0.99	622	25	4%
1311-SR3a_b_Zrn-97	MM	58.3	73.5	0.904	0.072	0.104	0.005	0.062	0.006	648	39	636	26	630	180	0.98	636	26	4%
1311-SR3a_b_Zrn-94	MM	361	107	0.907	0.051	0.105	0.005	0.062	0.004	654	27	642	27	652	130	0.98	642	27	4%
1311-SR3a_b_Zrn-25	MM	537	228	0.908	0.047	0.106	0.004	0.064	0.004	655	25	648	25	736	110	0.99	648	25	4%
1311-SR3a_b_Zrn-87	MM	65.2	3.89	1.010	0.120	0.107	0.008	0.068	0.006	701	56	653	48	800	160	0.93	653	48	7%
1311-SR3a_b_Zrn-93	MM	146.9	103.8	0.930	0.056	0.107	0.005	0.062	0.004	666	29	657	27	639	130	0.99	657	27	4%
1311-SR3a_b_Zrn-26	MM	594	345	0.938	0.052	0.109	0.005	0.065	0.003	671	26	667	31	763	110	0.99	667	31	5%
1311-SR3a_b_Zrn-59	MM	337	229	0.950	0.049	0.109	0.005	0.066	0.004	678	26	667	26	778	120	0.98	667	26	4%
1311-SR3a_b_Zrn-92	MM	470	404	1.180	0.069	0.109	0.006	0.076	0.004	791	30	669	34	1100	120	0.85	669	34	5%
1311-SR3a_b_Zrn-66	MM	851	368	1.007	0.048	0.117	0.005	0.063	0.003	707	24	715	28	705	110	1.01	715	28	4%
1311-SR3a_b_Zrn-41	MM	568	116.7	1.070	0.054	0.119	0.005	0.064	0.004	738	27	722	29	721	120	0.98	722	29	4%
1311-SR3a_b_Zrn-13	MM	157	205	1.075	0.086	0.119	0.006	0.064	0.006	735	43	727	33	720	150	0.99	727	33	5%
1311-SR3a_b_Zrn-95	MM	63	8.88	1.680	0.130	0.147	0.007	0.084	0.007	995	48	883	40	1240	150	0.89	883	40	5%
1311-SR3a_b_Zrn-27	MM	267.6	105.8	1.457	0.076	0.152	0.006	0.072	0.004	914	33	909	35	985	120	0.99	909	35	4%
1311-SR3a_b_Zrn-34	MM	1656	669	1.835	0.100	0.152	0.008	0.087	0.005	1058	41	912	46	1352	100	0.86	912	46	5%
1311-SR3a_b_Zrn-53	MM	408	168	1.522	0.080	0.157	0.007	0.070	0.004	937	32	941	38	925	110	1.00	941	38	4%
1311-SR3a_b_Zrn-65	MM	208	116.6	1.677	0.110	0.160	0.008	0.080	0.005	1012	39	956	42	1198	120	0.94	956	42	4%
1311-SR3a_b_Zrn-57	MM	63.8	26.4	1.700	0.120	0.166	0.007	0.077	0.006	1017	43	990	40	1110	130	0.97	990	40	4%
1311-SR3a_b_Zrn-82	MM	343	181	1.661	0.088	0.166	0.007	0.073	0.004	992	34	991	38	1010	100	1.00	991	38	4%
1311-SR3a_b_Zrn-37	MM	367	42	2.259	0.110	0.200	0.008	0.081	0.004	1198	33	1173	44	1201	110	0.98	1173	44	4%
1311-SR3a_b_Zrn-69	MM	65.4	33.5	2.630	0.200	0.200	0.011	0.097	0.007	1301	52	1175	61	1530	130	0.90	1175	61	5%
1311-SR3a_b_Zrn-03	MM	268.9	83.3	2.291	0.120	0.205	0.008	0.079	0.004	1208	34	1200	45	1180	110	1.02	1200	45	4%
1311-SR3a_b_Zrn-07	MM	544	53.5	2.441	0.120	0.214	0.009	0.080	0.004	1256	32	1251	47	1208	110	1.04	1251	47	4%
1311-SR3a_b_Zrn-04	MM	229.1	128.7	2.550	0.130	0.216	0.009	0.084	0.005	1289	39	1261	50	1302	100	0.97	1261	50	4%
1311-SR3a_b_Zrn-30	MM	89	42.2	2.620	0.190	0.226	0.016	0.086	0.005	1300	64	1311	88	1347	110	0.97	1311	88	7%
1311-SR3a_b_Zrn-24	MM	171	180	3.055	0.180	0.248	0.011	0.091	0.005	1420	42	1428	58	1446	110	0.99	1446	110	8%
1311-SR3a_b_Zrn-14	MM	83	30.5	3.405	0.170	0.262	0.011	0.095	0.005	1504	40	1500	56	1527	110	0.98	1527	110	7%
1311-SR3a_b_Zrn-09	MM	289.1	158.6	3.942	0.190	0.284	0.012	0.100	0.005	1621	39	1610	59	1612	94	1.00	1612	94	6%
1311-SR3a_b_Zrn-52	MM	631	864	3.987	0.190	0.289	0.013	0.102	0.005	1631	38	1634	62	1659	92	0.98	1659	92	6%
1311-SR3a_b_Zrn-88	MM	222.6	176.7	4.184	0.200	0.289	0.012	0.103	0.006	1670	42	1636	61	1675	100	0.98	1675	100	6%
1311-SR3a_b_Zrn-100	MM	443	98.2	4.440	0.210	0.306	0.012	0.103	0.005	1719	38	1723	62	1683	95	1.02	1683	95	6%
1311-SR3a_b_Zrn-75	MM	123	83.1	4.460	0.230	0.307	0.013	0.106	0.006	1722	43	1725	62	1714	100	1.01	1714	100	6%
1311-SR3a_b_Zrn-73	MM	136.8	70.4	4.472	0.220	0.309	0.013	0.105	0.006	1724	41	1734	63	1731	100	1.00	1731	100	6%
1311-SR3a_b_Zrn-83	MM	264	141.6	4.330	0.230	0.280	0.014	0.113	0.006	1705	49	1591	71	1843	92	0.86	1843	92	5%
1311-SR3a_b_Zrn-70	MM	506	84.7	4.810	0.300	0.300	0.017	0.119	0.006	1786	42	1691	77	1941	92	0.87	1941	92	5%
1311-SR3a_b_Zrn-28	MM	192	75.1	5.900	0.360	0.359	0.020	0.122	0.006	1961	63	1979	99	1978	93	1.00	1978	93	5%
1311-SR3a_b_Zrn-17	MM	272	83.7	5.770	0.500	0.346	0.025	0.122	0.007	1940	110	1917	130	1980	140	0.97	1980	140	7%
1311-SR3a_b_Zrn-55	MM	250.3	107.8	6.030	0.310	0.353	0.015	0.123	0.007	1978	41	1948	70	2002	88	0.97	2002	88	4%
1311-SR3a_b_Zrn-05	MM	187.6	205.7	6.530	0.350	0.364	0.015	0.128	0.007	2049	45	1999	72	2072	94	0.96	2072	94	5%
1311-SR3a_b_Zrn-84	MM	129.7	23.7	6.680	0.370	0.365	0.019	0.130	0.007	2065	55	2004	92	2092	95	0.96	2092	95	5%
1311-SR3a_b_Zrn-36	MM	924	97.9	9.474	0.440	0.422	0.018	0.161	0.008	2385	45	2270	81	2467	86	0.92	2467	86	3%
1311-SR3a_b_Zrn-32	MM	100.8	77.9	10.700	0.520	0.425	0.018	0.185	0.010	2496	43	2282	84	2692	86	0.85	2692	86	3%
Rejected Grains																			
1311-SR3a_b_Zrn-15	MM	187.2	159.4	2.928	0.360	0.211	0.012	0.100	0.013	1397	70	1232	65	1637	160	0.75	1232	65	5%
1311-SR3a_b_Zrn-90	MM	197.7	42.7	1.084	0.150	0.091	0.010	0.085	0.005	744	66	560	58	1340	110	0.75	560	58	10%
1311-SR3a_b_Zrn-46	MM	348	163.7	4.344	0.200	0.260	0.011	0.120	0.006	1701	39	1487	55	1950	91	0.76	1950	91	5%
1311-SR3a_b_Zrn-54	MM	789	70.9	2.866	0.180	0.214	0.012	0.101	0.005	1372	58	1248	65	1636	100	0.76	1248	65	5%
1311-SR3a_b_Zrn-45	MM	647	185.8	4.419	0.240	0.265	0.012	0.120	0.006	1716	51	1513	62	1955	94	0.77	1955	94	5%
1311-SR3a_b_Zrn-58	MM	685	306.4	1.141	0.074	0.100	0.004	0.085	0.005	770	34	617	26	1290	110	0.80	617	26	4%
1311-SR3a_b_Zrn-80	MM	457.4	63.2	2.637	0.140	0.186	0.008	0.103	0.006	1311	40	1099	45	1675	100	0.84	1099	45	4%

APPENDIX IIa: Detrital zircon trace element data for samples of the Arroyo Grande Group. Trace elements: Si, P, Ti, Y, Zr, Nb, La, Ce, Pr, Nd, Sm.

Sample 070120-1

Grain	Unit	Si (ppm)	error	P (ppm)	error	Ti (ppm)	error	Y (ppm)	error	Zr (ppm)	error	Nb (ppm)	error	La (ppm)	error	Ce (ppm)	error	Pr (ppm)	error	Nd (ppm)	error	Sm (ppm)	error
LP070120-1s-70	AGG 1	12070000	340000	191	31	7.5	1.1	458	18	438000	18000	1.61	0.29	1.83	0.59	24.5	1.4	0.59	0.15	4.22	0.97	3.43	0.5
LP070120-1s-91	AGG 1	11780000	410000	74.8	6.3	4.8	1.1	990	100	447000	25000	4.01	0.79	0.101	0.048	46.8	7.7	0.292	0.066	5.31	0.99	8.1	1.6
LP070120-1s-61	AGG 1	12390000	450000	379	15	18.2	1.9	2130	110	410000	18000	6.92	0.59	0.005	0.0099	50	3	0.151	0.049	3.43	0.72	8.29	0.91
LP070120-1L-50	AGG 1	11610000	320000	77.9	7.2	5.1	1.1	410	16	456000	23000	1.97	0.22	0	1	16.3	1.1	0.051	0.026	0.89	0.27	1.87	0.48
LP070120-1s-23	AGG 1	11570000	420000	93.3	5.8	3.8	1	611	23	424000	22000	4.26	0.5	0	1	19.1	1.2	0.022	0.015	0.69	0.2	2.42	0.49
LP070120-1s-66	AGG 1	12140000	360000	55.5	4.6	2.48	0.91	486	25	426000	16000	1.87	0.23	0.043	0.03	20.8	1.2	0.066	0.027	0.95	0.27	1.72	0.41
LP070120-1s-75	AGG 1	12040000	320000	89.6	6.6	3.15	0.84	715	29	448000	19000	2.66	0.23	0.005	0.01	14.1	0.51	0.118	0.041	1.78	0.47	3.03	0.55
LP070120-1s-68	AGG 1	12080000	470000	145	9.6	13	1.5	1076	80	430000	24000	2.58	0.29	0.014	0.016	14.8	1.3	0.19	0.063	3.11	0.61	6.51	0.88
LP070120-1s-80	AGG 1	13140000	420000	233	37	1770	640	901	42	402000	19000	4.99	0.81	1.38	0.4	8.32	0.91	0.56	0.16	4.4	1	4.26	0.75
LP070120-1s-96	AGG 1	12080000	360000	104	6.9	4.54	0.79	691	42	444000	20000	1.58	0.27	0.024	0.02	5.12	0.45	0.068	0.027	1.92	0.42	3.26	0.6
LP070120-1L-35	AGG 1	11740000	350000	62.1	4.8	3.3	1.1	394	30	441000	13000	1.7	0.22	0	1	8.88	0.62	0.03	0.019	0.9	0.29	1.82	0.37
LP070120-1s-63	AGG 1	11930000	360000	740	200	8.9	1.6	1850	100	404000	21000	3.43	0.42	7.2	1.4	34.6	2.5	2.28	0.32	12.2	1.6	14.2	1.2
LP070120-1s-90	AGG 1	11600000	430000	134	10	7.4	1.2	752	47	427000	23000	1.57	0.18	0	1	7.88	0.52	0.088	0.051	1.42	0.38	3.65	0.6
LP070120-1L-59	AGG 1	11900000	470000	129	10	3.1	1.1	897	47	446000	23000	2.65	0.31	0.056	0.035	3.35	0.22	0.066	0.028	0.76	0.31	2.47	0.58
LP070120-1s-129	AGG 1	11680000	470000	77.2	6.2	3.62	0.82	492	25	449000	20000	1.34	0.19	0.54	0.16	5.87	0.5	0.148	0.051	1.62	0.42	2.25	0.45
LP070120-1s-22	AGG 1	11490000	280000	89.1	8.7	1.94	0.89	428	18	454000	19000	1.61	0.19	0.152	0.054	1.77	0.17	0.05	0.028	0.21	0.11	0.77	0.25
LP070120-1L-29	AGG 1	11600000	300000	56.8	5.7	7.7	1.4	442	28	452000	14000	1.79	0.25	0	1	2.74	0.26	0.069	0.03	1.38	0.4	3.53	0.53
LP070120-1s-104	AGG 1	11750000	370000	107.8	9.2	9.4	1.8	939	38	445000	21000	2.94	0.38	0.022	0.02	11.77	0.55	0.253	0.066	4.45	0.45	7.63	0.97
LP070120-1s-10	AGG 1	11420000	360000	134.8	8.2	16.5	2	544	19	452000	20000	1.64	0.18	0	1	1.78	0.14	0.017	0.017	0.99	0.3	2.71	0.41
LP070120-1L-52	AGG 1	11470000	380000	97.1	6.1	3.4	1.1	695	67	467000	21000	1.21	0.18	0.031	0.027	4.53	0.4	0.12	0.054	1.87	0.46	3.88	0.76
LP070120-1s-108	AGG 1	11510000	400000	2020	170	4.78	0.91	481	21	426000	21000	1.35	0.18	9.1	1.4	23.5	1.8	2.37	0.27	13.4	1.3	5	0.44
LP070120-1L-41	AGG 1	11330000	350000	106.4	7.3	8.3	1.5	1099	67	464000	22000	1.47	0.21	0	1	6.91	0.44	0.081	0.029	1.79	0.39	5.97	0.98
LP070120-1s-122	AGG 1	11870000	370000	109.7	8.8	9.2	1.3	1750	92	419000	17000	1.85	0.26	0.011	0.015	2.61	0.26	0.327	0.056	5.12	0.74	11.1	1.4
LP070120-1s-78	AGG 1	12060000	330000	153.4	9	5.3	1.1	973	28	444000	20000	2.3	0.18	0	1	13.09	0.82	0.057	0.025	0.86	0.24	3.48	0.58
LP070120-1s-97	AGG 1	11670000	410000	106.6	6.9	3.06	0.98	1100	77	443000	22000	2.52	0.29	0.014	0.016	15	1.1	0.252	0.064	4.5	0.66	7	1.1
LP070120-1s-2	AGG 1	11380000	430000	142.4	8.9	10.7	1.4	580	31	445000	26000	1.44	0.25	0.56	0.14	15.2	1.1	0.25	0.068	1.95	0.52	2.5	0.54
LP070120-1L-56	AGG 1	11220000	310000	116.4	8.2	9.7	1.6	524	16	463000	17000	1.53	0.22	0.128	0.076	2.24	0.23	0.077	0.038	1.18	0.32	2.25	0.41
LP070120-1s-40	AGG 1	13190000	520000	205	16	5	1	1248	58	397000	21000	4.92	0.48	0	1	5.66	0.43	0.069	0.03	0.9	0.29	2.72	0.41
LP070120-1L-43	AGG 1	11830000	440000	110.2	7.4	4.02	0.87	732	70	429000	19000	1.25	0.19	0.026	0.021	2.81	0.29	0.068	0.032	1.89	0.41	3.06	0.53
LP070120-1L-31	AGG 1	11620000	300000	87.7	7.2	7.4	2.3	624	16	457000	19000	1.98	0.25	0.051	0.025	4.85	0.3	0.048	0.025	0.52	0.22	2.21	0.46
LP070120-1s-33	AGG 1	11810000	340000	116.6	6.9	10.7	1.4	564	31	446000	17000	2.17	0.24	0.011	0.015	3.21	0.3	0.025	0.016	0.83	0.3	2.37	0.48
LP070120-1L-17	AGG 1	11750000	370000	93.3	6.2	11.2	1.8	537	29	461000	16000	1.27	0.25	0	1	2.95	0.24	0.022	0.015	1.36	0.34	2.54	0.34
LP070120-1s-118	AGG 1	11800000	330000	186	13	10.7	1.3	1150	43	450000	20000	2.79	0.21	0	1	2.21	0.27	0.113	0.044	2.28	0.63	5.1	0.74
LP070120-1s-93	AGG 1	11710000	380000	100.2	7	8	1.2	745	53	450000	17000	1.44	0.26	0	1	4.41	0.46	0.083	0.024	2.08	0.48	4.54	0.97
LP070120-1L-55	AGG 1	11910000	410000	103	7.3	4.06	0.87	947	52	434000	23000	8.71	0.54	0.029	0.026	16.16	0.86	0.079	0.032	1.69	0.45	4.08	0.63
LP070120-1s-79	AGG 1	12240000	490000	130	17	5.78	0.97	1260	140	434000	21000	3.82	0.39	0.4	0.46	12.3	2.2	0.46	0.18	7.1	1.4	14.2	2.2
LP070120-1s-74	AGG 1	11630000	460000	97.5	7.5	4.67	0.91	625	24	460000	22000	1.86	0.26	0	1	2.79	0.21	0.046	0.024	0.81	0.3	2.73	0.51
LP070120-1s-5	AGG 1	11660000	390000	87.9	7.5	8.1	1.3	714	30	456000	18000	0.96	0.2	0.025	0.021	2.02	0.25	0.091	0.041	2.13	0.39	4.46	0.89
LP070120-1s-110	AGG 1	12920000	550000	314	17	5.8	0.92	1648	79	422000	20000	3.59	0.43	0.38	0.12	14.87	0.92	0.39	0.13	3.9	1	5.89	0.86
LP070120-1L-9	AGG 1	12390000	370000	56.8	5.5	4.25	0.88	298	35	436000	19000	1.15	0.13	0	1	2.99	0.37	0.02	0.013	0.37	0.13	1.02	0.38
LP070120-1L-1	AGG 1	12070000	340000	570	100	3.9	1.2	236	11	453000	16000	0.74	0.15	2.95	0.7	10.1	1.5	1.23	0.26	7.7	1.7	1.56	0.3
LP070120-1L-45	AGG 1	11800000	430000	115	10	9.8	1.5	845	62	453000	16000	1.14	0.18	0	1	8.4	0.7	0.028	0.022	0.54	0.17	2.14	0.5
LP070120-1s-85	AGG 1	11440000	390000	80	6	2.47	0.79	238	11	458000	22000	1.08	0.16	0	1	3.69	0.32	0	1	0.043	0.06	0.2	0.13
LP070120-1s-71	AGG 1	12250000	450000	230	15	9.8	1.5	3060	180	437000	24000	2.44	0.35	0.024	0.019	18.5	1	0.4	0.075	5.79	0.77	11.6	1.5
LP070120-1s-41	AGG 1	11940000	550000	2230	770	4.4	1.1	1477	71	430000	23000	1.37	0.18	18.2	6.9	59	17	7.3	2.6	43	15	16.5	4.1
LP070120-1s-120	AGG 1	11460000	340000	246	16	11.4	1.3	1290	41	456000	20000	1.95	0.26	0.16	0.1	11.8	0.77	0.184	0.066	2.49	0.59	4.99	0.76
LP070120-1L-28	AGG 1	11180000	290000	124.2	7.2	7.2	1.3	1564	57	461000	17000	1.19	0.2	0	1	8.95	0.59	0.125	0.046	2.77	0.62	7.12	0.75
LP070120-1L-16	AGG 1	11880000	300000	107	6.7	7.1	1	660	31	432000	18000	1.34	0.15	0	1	8.44	0.39	0	1	0.47	0.18	1.3	0.26
LP070120-1L-40	AGG 1	11620000	310000	465	64	5.1	1	813	28	458000	19000	2.02	0.23	5.5	1.3	22.2	3.2	1.75	0.43	7.7	1.4	3.34	0.74
LP070120-1s-42	AGG 1	12060000	400000	129	7.8	12.5	2	648	24	420000	15000	1.19	0.25	0.019	0.018	8.25	0.46	0.035	0.021	0.61	0.24	2.15	0.51
LP070120-1L-34	AGG 1	11340000	320000	202	10	15.7	1.2	1155	41	471000	14000	1.54	0.18	0	1	12.29	0.65	0.047	0.025	1.53	0.42	4.84	0.61
LP070120-1L-14	AGG 1	11890000	440000	83.8	5.2	7.4	1.2	590	50	454000	20000	1.06	0.14	0	1	6.68	0.41	0.0061	0.0084	0.33	0.18	0.96	0.28
LP070120-1L-39	AGG 1	11770000	260000	124	11	7.4	1.3	1263	69	441000	16000	1.21	0.25	0	1	12.14	0.71	0.032	0.023	1.2	0.33	3.81	0.72
LP070120-1L-47	AGG 1	11910000	370000	143	10	14.4	1.8	1710	110	442000	13000	1.12	0.14	0.014	0.016	11.79	0.68	0.226	0.068	4.55	0.82	10	1.3
LP070120-1L-21	AGG 1	11930000	420000	141.6	9.3	7.43	0.91	1047	63	451000	20000	1.87	0.3	0	1	15.03	0.83	0.049	0.028	0.78	0.25	2.91	0.32
LP070120-1s-29	AGG 1	11580000	370000	210	14	12.8	1.9	1090	64	456000	20000	7.59	0.64	0.026	0.021	46.4	1.8	0.085	0.037	2.18	0.45	4.43	0.7
LP070120-1L-15	AGG 1	11990000	400000	156	8.5	8.8	1.4	1672	88	455000	16000	7.91	0.57	0	1	59.7	2.9	0.141	0.05	2.32	0.45	5.4	1
LP070120-1s-31	AGG 1	11190000	380000	2030	490	12.6	1.5	783	36	454000	31000	2.78	0.32	35.8	9.1	92	18	8.1	2.1	33.7	8.4	8.5	1.5
LP070120-1s-7	AGG 1	11900000	490000	162	9.6	7.9	1.1	1265	96	454000	26000	3.5	0.43	0	1	32.5	1.9	0.066	0.036	2.21	0.48	4.79	0.86
LP070120-1s-28	AGG 1	11830000	530000	141	12	13.4	1.9	841	45	422000	22000	3.17	0.34	0.051	0.036	23.1	1.2	0.074	0.041	1.93	0.44	3.75	0.65
LP070120-1L-25	AGG 1	11540000	360000	84.8	6.2	14.2	1.5	396	15	461000	17000	2.79	0.27	0	1	19.23	0.9	0.044	0.027	0.62	0.17	1.58	0.39
LP070120-1s-81	AGG 1	11510000	520000	198	39	12.2	1.8	672	28	431000	22000	2.25	0.23	1.66	0.86	15.6	1.3	0.4	0.19	3.3	1.1	3.48	0.78
LP070120-1s-52	AGG 1	11640000	520000	479	29	5.9	1.2	2160	150	422000	24000	7.01	0.61	0.089	0.06	6.27	0.85	0.289	0.094	4.15	0.76	10.6	1.9
LP070120-1L-38	AGG 1	11600000	350000	78.3	4.4	11.1	1.3	769	35	462000	19000	0.55	0.12	0.015	0.016	0.91	0.11	0.052	0.026	1.54	0.34	4.07	0.73
LP070120-1s-57	AGG 1	12100000	380000	217.4	8.8	10.2	1.4	1601	74	440000	17000	3.01	0.34	0	1	9.01	0.66	0.064	0.026	2.13	0.46	4.72	0.65
LP070120-1s-13	AGG 1	12110000	400000	83.7	8.3	19.2	1.8	505	26	445000	22000	0.66	0.14	0.023	0.019	1.18	0.12	0.109	0.043	1.86	0.5	3.6	0.54
LP070120-1s-25	AGG 1	11770000	440000	137.8	9.8	11.9	1.1	616	38	457000	19000	2.3	0.23	0	1	13.91	0.63	0.065	0.035	1.03	0.26	3.25	0.46
LP070120-1s-87	AGG 1	12490000	480000	255	16	25	11	1062	42	418000	18000	1.5	0.17	0.23	0.18	5.1	1.1	0.083	0.047	1.16	0.34	3.24	0.46
LP070120-1s-37	AGG 1	11500000	380000	125.3	9.1	6.3	1.2	311	17	453000	17000	1.43	0.2	0	1	1.21	0.17	0.01	0.012	0.33	0.16	1.29	0.37
LP070120-1s-124	AGG 1	12020000	430000	179	14	6.54	0.84	2045	91	456000	23000	22.1	1.3	0.005	0.01	34.3	1.5	0.297	0.072	3.97	0.61	8.9	1
LP070120-1s-20	AGG 1	11630000	520000	137	11	18.9	2	906	46	473000	23000	1.13	0.19	0.024	0.02	7.5	0.63	0.296	0.052	5.14	0.92	8.6	1.3
LP070120-1L-4	AGG 1	12510000	400000	140.6	8.4	13.1	1.4	1093	45	458000	23000	3.21	0.42	0	1	19.05	0.89	0.133	0.044	2.45	0.44	5.6	0.7
LP070120-1L-10	AGG 1	12250000	420000	364	12	5.74	0.77	2400	110	452000	21000	2.69	0.28	0.042	0.029	5.29	0.32	0.387	0.072	6.2	1	13	1.1
LP070120-1s-127	AGG 1	11490000	370000	123.9	9.4	12.6	1.6	970	53	451000	20000	1.25	0.19	0.011	0.015	16.8	1.1	0.63	0.11	11	1.5	12.4	1.4
LP070120-1s-32	AGG 1	12120000	500000	115.5	7.9	16.4	4.5	528	30	416000	17000	2.22	0.26	0.051	0.036	21.7	1.2	0.127	0.046	0.99	0.26	2.98	0.53
LP070120-1s-11	AGG 1	11630000	390000	305	20	4.9	1.3	1167	67	439000	25000	2.99	0.4	0.014	0.016	19.34	0.88	0.104	0.041	2.51	0.57	5.52	0.95
LP070120-1L-33	AGG 1	11730000	460000	102.6	6.8	10.5	1.3	758	64	461000	21000	2.1	0.35	0.015	0.016	19.2	1.3	0.221	0.063	3.4	0.72	7	1
LP070120-1L-11	AGG 1	11660000	330000	141	13	5.7	1.3	1550	210	455000	21000	2.62	0.34	0	1	21.6	1.8	0.109	0.037	3.01	0.7	7.6	1.4
LP070120-1L-24	AGG 1	11680000	330000	53.2	5.1	6	1.1	344	29	455000	16000	0.81	0.18	0	1	5.26	0.42	0.042	0.023	0.88	0.31	2.05	0.57
LP070120-1s-69	AGG 1	13040000	300000	221	17	20.4	5	1164	56	430000	14000	5.55	0.43	0.035	0.021	35.4	2.2	0.158	0.042	2.26	0.45	5.31	0.69
LP070120-1s-51	AGG 1	12370000	520000	492	36	8.6	1	2440	140	427000	21000	5.64	0.51	0	1	35.7	2.4	0.227	0.07	5.09	0.8	11.5	1.2
LP070120-1L-36	AGG 1	11870000	270000	63.4	4.6	7.3	1	647	33	451000	16000	1.87	0.28	0.18	0.15	37.2	1.8	0.4	0.095	5.91	0.64	9.04	0.86
LP070120-1L-22	AGG 1	11770000	430000	126.3	7.2	19	1.9	641	29	448000	18000	1.72	0.24	0	1	8.6	0.54	0.052	0.023	1.27	0.23	3.49	0.65
LP070120-1s-121	AGG 1	12520000	550000	89.6	7	8.8	1.1	463	23	407000	22000	6.09	0.63	0.072	0.043	12.6	0.92	0.08	0.046	0.6	0.18	1.47	0.44
LP070120-1s-113	AGG 1	12220000	410000	850	76	15	1.5	3010	180	427000	23000	1.78	0.17	0.078	0.041	1.96	0.21	0.204	0.056	3.06	0.51	6.49	0.77
LP070120-1s-59	AGG 1	12890000	460000	226	18	19.6	1.7	826	60	445000	24000	1.33	0.21	2.8	0.3	20.6	2.2	2.71	0.21	19.4	1.1	17.5	1.7
LP070120-1s-109	AGG 1	12500000	530000	96.3	5.9	11.2	1.5	439	26	402000	17000	4.57	0.39	0	1	9.71	0.62	0.081	0.03	1.65	0.4	3.24	0.52
LP070120-1s-117	AGG 1	12740000	420000	92.9	6.1	18.5	1.5	383	17	431000	25000	2.34	0.32	0.013	0.014	12.14	0.71	0.066	0.035	1.1	0.32	2.67	0.59
LP070120-1s-44	AGG 1	12310000	370000	211	17	72	30	635	36	436000	25000	2.61	0.25	0.014	0.016	21.2	1	0.144	0.061	1.82	0.48	3.14	0.84
LP070120-1s-9	AGG 1	11610000	450000	179.5	6.4	24.5	2.1	926	87	465000	19000	3.14	0.37	0	1	3	0.25	0.08	0.032	0.96	0.3	3.21	0.74
LP070120-1s-27	AGG 1	11560000	390000	124.4	8.8	16.8	1.8	753	38	463000	23000	2.36	0.3	0	1	11.71	0.69	0.155	0.051	2.05	0.46	5.23	0.77
LP070120-1s-39	AGG 1	11920000	450000	100.3	7.3	4	1.2	374	16	433000	17000	4.73	0.44	0.023	0.019	33.9	2.1	0.1	0.04	1.33	0.36	2.8	0.48
LP070120-1s-94	AGG 1	11730000	360000	80.5	5.1	16.4	1.3	346	17	462000	25000	2.37	0.33	0	1	6.44	0.49	0.053	0.029	0.68	0.23	1.71	0.41
LP070120-1s-56	AGG 1	12510000	310000	201.4	9.8	17.3	2	633	23	437000	19000	2.23	0.24	1.06	0.18	58	2.6	0.79	0.12	6.58	0.85	7.35	0.9
LP070120-1L-12	AGG 1	12300000	470000	128	12	17.6	2.1	697	64	430000	19000	3.43	0.42	0.123	0.045	4.32	0.39	0.11	0.032	1.62	0.46	2.01	0.44
LP070120-1L-20	AGG 1	12190000	430000	146.9	9.2	21.1	1.8	976	79	430000	20000	3.13	0.42	0.018	0.017	27.9	1.5	0.17	0.051	3.26	0.6	7.1	1.1
LP070120-1s-48	AGG 1	12390000	300000	229	19	6.2	1.4	1070	100	437000	14000	6.32	0.53	0	1	18.32	0.73	0.033	0.021	0.89	0.29	2.66	0.6
LP070120-1s-17	AGG 1	11510000	420000	150	11	11	1.5	948	48	459000	23000	1.61	0.25	0	1	9	0.56	0.044	0.024	1.31	0.31	3.6	0.45
LP070120-1s-98	AGG 1	12230000	340000	109.2	9	6.3	1.1	667	42	428000	22000	1.84	0.21	0.039	0.039	25.8	3.9	0.038	0.025	1.12	0.36	2.13	0.51
LP070120-1s-38	AGG 1	12480000	360000	131.3	8.1	32	2.9	1045	52	437000	17000	37.9	1.8	0.77	0.14	15.85	0.95	1.33	0.17	8.5	1.2	6.78	0.8
LP070120-1s-3	AGG 1	11560000	310000	185	12	6.7	1.2	1546	62	455000	22000	1.54	0.29	0.043	0.024	2.78	0.22	0.392	0.075	6.68	0.83	12.6	1.2
LP070120-1s-50	AGG 1	13010000	380000	240	13	13.2	2.2	2240	120	418000	17000	10.26	0.81	0.3	0.18	11.83	0.83	0.59	0.13	7.84	0.68	15.3	1.7
LP070120-1s-55	AGG 1	13510000	410000	120	11	142	75	348	17	435000	17000	3.81	0.44	0.186	0.061	2.62	0.29	0.087	0.038	0.79	0.25	2.81	0.53
LP070120-1s-92	AGG 1	11310000	380000	85.4	4.4	6.5	1.4	429	24	455000	22000	3.18	0.26	0.0047	0.0094	33.7	1.5	0.064	0.028	0.82	0.25	1.42	0.35
LP070120-1L-32	AGG 1	12070000	380000	84.2	6.6	11.9	1.4	440	21	451000	19000	0.89	0.17	0	1	5.17	0.45	0.043	0.022	1.07	0.3	1.74	0.42
LP070120-1s-82	AGG 1	12140000	380000	90.6	5	10	1.2	361	16	431000	20000	3.58	0.29	0	1	12.73	0.97	0.031	0.024	0.47	0.19	1.61	0.42
LP070120-1s-111	AGG 1	11930000	430000	192	17	7.61	0.97	980	110	457000	20000	6.39	0.58	6.04	0.8	26.1	2.2	1.17	0.19	4.56	0.43	4.05	0.99
LP070120-1s-86	AGG 1	12420000	610000	150	12	6.6	1.4	741	41	424000	19000	2.53	0.23	0.019	0.018	10.95	0.98	0.115	0.036	1.88	0.41	3.41	0.64
LP070120-1s-119	AGG 1	12160000	480000	181.7	7.5	26.2	1.9	667	31	443000	27000	3.99	0.3	0.006	0.011	27.3	1.3	0.084	0.026	2.57	0.46	5.39	0.87
LP070120-1L-51	AGG 1	11310000	360000	336	19	24.3	1.9	1602	99	477000	21000	2.62	0.4	0.005	0.011	12.62	0.7	0.364	0.075	7.3	0.96	12.6	1.4
LP070120-1s-62	AGG 1	12000000	350000	143.8	8.6	30	2.3	566	29	448000	21000	3.65	0.42	0	1	20.2	1.2	0.037	0.025	1.3	0.39	2.06	0.41
LP070120-1s-128	AGG 1	11810000	440000	135.3	7.7	11.2	3.2	1242	61	449000	23000	5.56	0.37	0	1	11.6	0.92	0.073	0.034	2.86	0.64	5.43	0.85
LP070120-1s-49	AGG 1	12760000	430000	132	11	6.9	1.4	1326	64	442000	20000	2.99	0.33	0.013	0.015	6.09	0.54	0.118	0.044	3.05	0.51	6.2	0.81
LP070120-1L-8	AGG 1	12770000	450000	283	15	13.5	1.4	1026	42	427000	17000	2.79	0.26	0.7	0.16	21.3	1.3	0.366	0.097	2.4	0.41	4.43	0.72
LP070120-1s-102	AGG 1	12040000	440000	226	16	9.1	1.5	661	43	446000	22000	3.77	0.32	0	1	13.94	0.74	0.015	0.016	0.28	0.15	1.16	0.29

LP070120-1s-24	AGG 1	11320000	360000	3440	560	29.4	2.6	1580	100	468000	24000	9.62	0.71	68	14	186	31	21.6	3.8	94	16	23.5	2.6
LP070120-1s-73	AGG 1	12370000	250000	131.8	7.7	6.9	1	954	60	434000	12000	3.21	0.31	0	1	5.49	0.57	0.096	0.046	1.84	0.45	4.48	0.87
LP070120-1s-58	AGG 1	12720000	420000	916	54	8.6	1.3	2550	130	440000	18000	4.9	0.37	0	1	4.37	0.4	0.012	0.012	0.47	0.14	2.9	0.63
LP070120-1s-72	AGG 1	12420000	420000	141.5	8.6	12.1	1.3	703	37	446000	18000	5.31	0.42	0	1	20.8	1.3	0.05	0.027	0.71	0.19	2.64	0.6
LP070120-1s-88	AGG 1	12020000	370000	134.7	7.7	6.93	0.7	1310	65	445000	21000	2.92	0.32	0.27	0.12	31.7	2.2	0.52	0.12	6.78	0.93	9.2	1.1
LP070120-1s-1	AGG 1	11650000	360000	57.7	5.5	4.52	0.72	323	12	461000	20000	2.96	0.27	0.006	0.011	32.8	1.7	0.04	0.02	0.58	0.23	1	0.34
LP070120-1s-8	AGG 1	12480000	490000	56.3	5.8	3.19	0.86	161.2	7.5	445000	20000	1.97	0.22	0	1	10.85	0.65	0	1	0.074	0.069	0.25	0.14
LP070120-1s-125	AGG 1	12500000	440000	258	17	6.2	1.2	1099	53	438000	17000	4.05	0.42	0.051	0.033	6.87	0.44	0.096	0.047	1.89	0.36	4.43	0.54
LP070120-1s-34	AGG 1	13050000	490000	116.4	8.4	10	1.2	751	50	446000	17000	2.34	0.25	0.013	0.014	19.72	0.81	0.11	0.041	2.19	0.38	4.46	0.58
LP070120-1s-101	AGG 1	12100000	540000	199	13	15.3	1.5	794	51	422000	25000	1.77	0.27	0.01	0.015	11.61	0.55	0.188	0.052	2.26	0.42	4.7	1
LP070120-1s-43	AGG 1	12360000	330000	159	14	14.3	1.6	986	40	443000	22000	3.25	0.27	0.021	0.017	56.5	2.7	0.345	0.08	6.34	0.85	10.34	0.79
LP070120-1s-21	AGG 1	11100000	400000	99	9	9.8	1	108.2	5.8	465000	20000	0.97	0.12	0	1	2.74	0.29	0.197	0.056	3.19	0.49	7.97	0.99
LP070120-1L-7	AGG 1	12510000	500000	166.2	9.6	8.01	0.69	715	30	440000	21000	2.67	0.24	0.038	0.03	48.6	5	0.111	0.04	1.38	0.43	2.25	0.43
LP070120-1s-114	AGG 1	11960000	320000	77.5	5.9	18.1	1.7	117.7	4.7	442000	19000	1.12	0.17	0	1	7.98	0.5	0.122	0.039	2.22	0.69	3.06	0.53
LP070120-1s-6	AGG 1	12380000	450000	138	11	9.9	1.2	1344	96	428000	26000	1.82	0.25	0.111	0.049	8.91	0.86	0.369	0.087	6.38	0.92	9.8	1
LP070120-1s-16	AGG 1	11810000	270000	816	41	48.3	4.7	5530	360	453000	20000	7.66	0.51	3.17	0.58	38.8	4.5	4.67	0.72	38.9	5.1	48.6	4.8
LP070120-1s-83	AGG 1	12320000	470000	179	15	10.6	1.1	896	32	438000	26000	3.26	0.29	0.0046	0.0092	44.3	2.1	0.11	0.034	2.46	0.43	6.04	0.64
LP070120-1s-4	AGG 1	12190000	410000	59.3	6	6.7	1.4	144.1	6.8	448000	19000	0.88	0.14	0	1	11.07	0.72	0.016	0.013	0.51	0.26	0.83	0.34
LP070120-1s-95	AGG 1	11720000	460000	102.1	7.3	4.99	0.96	501	26	462000	21000	0.91	0.18	0.024	0.02	13.25	0.78	0.15	0.052	2.03	0.34	4.39	0.84
LP070120-1s-60	AGG 1	11820000	480000	165	14	7.4	1.3	635	36	444000	26000	3.43	0.48	0	1	25.3	1.6	0.035	0.025	0.88	0.26	2.04	0.47
										Rejected Grains													
LP070120-1s-105	AGG 1	11670000	380000	940	120	11.4	1.5	3650	510	438000	18000	26.8	2.8	10.2	1.7	110	13	2.88	0.44	20.9	3.2	17.6	2.3
LP070120-1s-116	AGG 1	11620000	460000	185	16	3.24	0.99	955	40	439000	21000	3.8	0.38	0.19	0.17	10.61	0.64	0.124	0.076	1.57	0.38	5.12	0.87
LP070120-1s-54	AGG 1	11950000	510000	760	180	5.36	0.95	2610	180	430000	18000	4.21	0.46	7.2	2.2	51.7	8.5	3.35	0.96	24.6	5.7	26.9	4.1
LP070120-1L-62	AGG 1	11650000	320000	145	16	4.3	1.1	1921	96	448000	13000	4.23	0.47	0	1	6.05	0.31	0.115	0.035	3.04	0.44	8.2	1
LP070120-1s-106	AGG 1	11910000	300000	262	17	8.1	1.3	5640	190	432000	21000	18.3	1.4	0.03	0.022	26.2	1.5	0.602	0.09	13.3	1.3	32.4	2.4
LP070120-1L-6	AGG 1	12000000	380000	193	15	4.7	1.2	4990	220	441000	20000	52	3.3	0.011	0.015	31.9	1.7	0.111	0.041	3.31	0.52	15.6	1.3
LP070120-1L-23	AGG 1	11420000	370000	81.2	8.5	4.03	0.99	473	27	455000	16000	1.71	0.22	0	1	10.53	0.52	0.019	0.017	0.5	0.16	1.59	0.24
LP070120-1L-2	AGG 1	12140000	340000	77.3	5.8	3.46	0.83	700	30	450000	15000	3.13	0.27	0	1	21.5	1.5	0.016	0.013	0.86	0.26	2.12	0.36
LP070120-1s-26	AGG 1	11850000	390000	141	11	7.09	0.58	893	44	427000	20000	3.4	0.32	0	1	22.2	1.1	0.108	0.033	2.07	0.42	3.25	0.45
LP070120-1L-13	AGG 1	11740000	380000	313	43	4.8	1.2	438	35	450000	23000	1.23	0.22	2.24	0.77	12.6	1.6	0.52	0.18	2.51	0.64	1.63	0.46
LP070120-1L-61	AGG 1	11660000	420000	122.5	7.3	14.8	1.6	1477	67	453000	25000	1.47	0.23	0.033	0.028	14.5	0.86	0.308	0.063	5.87	0.85	8.04	0.74
LP070120-1L-53	AGG 1	11440000	450000	3850	210	15.1	1.7	18350	770	444000	16000	84.3	4.4	404	78	730	130	88	16	420	72	122.1	9.7
LP070120-1L-26	AGG 1	11440000	310000	97.9	5.6	4.45	0.88	664	26	452000	15000	2.2	0.32	0	1	8.26	0.56	0.019	0.014	1.11	0.35	1.83	0.48
LP070120-1L-49	AGG 1	11510000	370000	111.5	7.1	5.6	1.1	800	31	467000	20000	5.66	0.4	0	1	25.7	1.4	0.058	0.025	1.31	0.27	3.44	0.49
LP070120-1s-12	AGG 1	11620000	320000	129	14	7.7	1.1	368	19	452000	18000	1.29	0.17	0	1	7.94	0.72	0.024	0.018	0.74	0.26	1.63	0.35
LP070120-1L-48	AGG 1	11390000	350000	132	10	8.6	1.2	530	27	464000	15000	1.26	0.23	0	1	6.31	0.36	0.034	0.021	1.03	0.33	2.61	0.48
LP070120-1L-19	AGG 1	11480000	340000	110.4	7.3	6.48	0.89	861	38	464000	23000	2.9	0.31	0	1	15.67	0.86	0.084	0.036	0.89	0.21	2.4	0.37
LP070120-1s-46	AGG 1	11660000	370000	134.1	8.8	6.5	1.4	608	25	457000	19000	2.73	0.33	0.016	0.018	12.73	0.84	0.043	0.019	1.16	0.3	3.05	0.56
LP070120-1L-42	AGG 1	11890000	480000	82.2	5.9	7.1	1.1	575	29	438000	24000	1.85	0.23	0.0046	0.0093	12.14	0.89	0.05	0.025	1.08	0.25	1.96	0.47
LP070120-1L-46	AGG 1	11180000	340000	124.2	7.5	6.08	0.93	847	44	462000	20000	2.74	0.32	0	1	12.5	0.76	0.029	0.02	1.23	0.32	2.93	0.77
LP070120-1L-60	AGG 1	12020000	250000	137.5	7.8	7.5	1	607	22	440000	14000	1.68	0.22	0.01	0.013	10.05	0.68	0.108	0.044	1.69	0.27	2.8	0.56
LP070120-1s-107	AGG 1	11930000	480000	116.2	8.9	8.6	1	581	39	427000	21000	2.02	0.26	0.005	0.011	9.83	0.56	0.076	0.033	1.71	0.44	3.13	0.69
LP070120-1s-18	AGG 1	12340000	470000	278	41	19.4	3.7	706	37	431000	20000	2.13	0.3	1.44	0.49	12.73	0.98	0.45	0.14	3.52	0.97	3.36	0.68
LP070120-1s-126	AGG 1	11100000	390000	158	11	9.2	1.1	1063	69	459000	18000	1.53	0.22	0	1	14.9	1	0.189	0.056	3.77	0.51	8.4	1.1
LP070120-1L-27	AGG 1	11470000	430000	83.3	7.4	3.16	0.96	526	26	442000	22000	2.67	0.25	0	1	20	1.3	0.044	0.024	0.92	0.24	2.49	0.52
LP070120-1s-115	AGG 1	12100000	340000	247	39	8.1	1.5	449	25	430000	18000	2.56	0.35	4.3	1.3	27	2.6	0.9	0.28	3.86	0.91	2.53	0.42
LP070120-1s-103	AGG 1	11330000	370000	105.8	8.9	4.8	1.2	980	61	459000	20000	3.01	0.39	0.31	0.1	14.16	0.89	0.352	0.068	4.34	0.76	3.73	0.66
LP070120-1L-37	AGG 1	9900000	380000	154.2	9.8	226400	8500	1949	95	409	21	1806	76	1665	96	6050	330	757	43	2760	120	454	24
LP070120-1s-67	AGG 1	10050000	360000	424	30	215500	8300	268	25	159	12	1016	61	44.9	3.3	238	21	44.1	3.8	213	20	62	5.7
LP070120-1s-89	AGG 1	12020000	440000	120.4	9.8	6.8	1.3	765	32	433900	9900	1.91	0.2	0.73	0.13	14.66	0.97	0.589	0.076	5.53	0.75	4.97	0.77
LP070120-1s-112	AGG 1	11730000	420000	136	43	6.4	2.6	348	28	433000	20000	1.29	0.24	0.35	0.26	5.46	0.94	0.087	0.071	0.72	0.28	1.14	0.35
LP070120-1s-30	AGG 1	12180000	400000	550	170	102	20	1231	57	428000	20000	2.03	0.25	7.8	2.5	25.5	5.8	2.38	0.73	12.9	3.3	9.3	1.3
LP070120-1s-77	AGG 1	11760000	400000	525	85	38.3	7	1450	190	453000	28000	4.36	0.61	350	260	120	100	51	37	210	160	42	25
LP070120-1s-36	AGG 1	12510000	470000	131	11	8.7	1.8	717	41	411000	23000	1.85	0.24	0.6	0.16	20.5	4.5	0.65	0.21	4.7	1.3	4.29	0.91
LP070120-1s-45	AGG 1	10580000	310000	9800	760	10.9	1.3	1257	66	449000	17000	1.65	0.24	68	4.2	204	15	29	1.7	159.1	9.1	47.5	3.7
LP070120-1s-99	AGG 1	9870000	390000	108.9	7.6	223000	10000	658	36	164	11	407	22	114.8	5	595	26	128.2	7	615	27	173.5	8.1
LP070120-1L-57	AGG 1	9780000	410000	41.1	5.3	223700	8900	67.5	3.1	47	3.4	461	23	91.8	4.4	308	13	38.7	2	151.8	8.4	24.4	2.3
LP070120-1L-18	AGG 1	12090000	440000	94.4	8.3	3.84	0.88	796	44	432000	23000	4.83	0.41	0.108	0.043	13.98	0.82	0.054	0.026	0.46	0.21	1.59	0.42
LP070120-1s-53	AGG 1	12720000	490000	282	11	4.62	0.84	998	59	409000	16000	3.41	0.23	0.033	0.024	2.79	0.3	0.075	0.027	1.14	0.26	2.83	0.46
LP070120-1s-14	AGG 1	12170000	470000	160	12	1120	100	586	32	389000	18000	9	1.4	6.5	1.7	31.9	3.9	2.22	0.53	9.9	2	4.04	0.78
LP070120-1L-30	AGG 1	12330000	380000	432	27	57.7	5.4	3270	330	436000	17000	4.7	0.54	3.96	0.33	142	6.9	10.43	0.81	99	6.9	126	11
LP070120-1s-19	AGG 1	12200000	510000	166.8	9.9	67.5	9.2	644	51	424000	22000	5.28	0.39	0.34	0.12	49	2.9	0.216	0.062	2.56	0.5	3.6	0.55
LP070120-1s-100	AGG 1	11990000	560000	216	19	13.3	1.9	1128	63	430000	20000	2.45	0.29	1.7	0.51	27	1.8	1.55	0.32	14	2.9	14.9	1.6
LP070120-1s-84	AGG 1	11410000	380000	431	23	12.5	3.4	1288	83	456000	28000	3.14	0.52	0.051	0.039	9.11	0.72	0.16	0.055	2.69	0.58	4.04	0.8
LP070120-1s-76	AGG 1	12020000	310000	364	27	15.8	1.5	1238	98	443000	18000	2.37	0.28	0.95	0.33	24.7	1.5	1.17	0.21	7.4	1.3	7.6	1.1
LP070120-1L-58	AGG 1	12530000	410000	262	11	53.2	8.4	1520	140	444000	13000	6.56	0.86	11.2	1.5	49.7	6.2	7.1	1.1	41.9	6.3	22.7	3.9
LP070120-1s-15	AGG 1	12410000	350000	383	33	94	12	2330	180	456000	20000	8.87	0.67	11.6	1.2	168	12	14.5	1.6	100	9.8	65.6	7
LP070120-1L-44	AGG 1	12300000	390000	542	81	157	27	4940	860	446000	19000	8.68	0.98	8	1.1	112	18	17.3	3.1	131	24	104	20
LP070120-1s-47	AGG 1	12920000	370000	159.9	9.7	47.4	4.2	601	32	412000	14000	2.5	0.24	0.48	0.24	10.6	0.86	0.16	0.072	1.4	0.46	2.06	0.54
LP070120-1s-123	AGG 1	12210000	400000	669	36	7.9	1.4	2260	110	431000	20000	12.41	0.95	1.23	0.25	28.6	1.7	1.19	0.27	7.2	1.5	7.8	1.5
LP070120-1s-35	AGG 1	12060000	320000	360	91	42.7	9.8	2750	630	446000	14000	5.2	1.2	7.4	1.6	80	17	10.4	2	75	15	59	12
										Sample 070120-2													
Grain	Unit	Si (ppm)	error	P (ppm)	error	Ti (ppm)	error	Y (ppm)	error	Zr (ppm)	error	Nb (ppm)	error	La (ppm)	error	Ce (ppm)	error	Pr (ppm)	error	Nd (ppm)	error	Sm (ppm)	error
LP070120-2L-20	AGG 2	235000	13000	110	13	4.3	2.7	1419	94	661000	35000	3.47	0.5	0.053	0.053	8.34	0.71	0.289	0.075	4.03	0.85	9.3	1.6
LP070120-2s-42	AGG 2	237000	7500	266	20	12.3	2.5	1654	70	721000	18000	6.63	0.81	0.47	0.3	16.15	0.8	0.33	0.12	3.15	0.66	7.4	1.1
LP070120-2L-10	AGG 2	230000	17000	264	28	3.8	2.7	1049	57	668000	33000	5.79	0.75	0.01	0.021	1.5	0.33	0.014	0.028	0.43	0.3	2.61	0.76
LP070120-2s-16	AGG 2	238000	9200	108	12	27	24	2720	130	715000	22000	8.5	1.1	0.085	0.06	53.2	2.8	0.4	0.14	7.4	1.5	10.5	2.2
LP070120-2s-6	AGG 2	246000	9400	101	11	8.4	2.2	1534	73	739000	25000	11.4	1.1	0.032	0.047	63.9	6.8	0.152	0.076	3.15	0.74	6.3	1.3
LP070120-2s-5	AGG 2	238200	7100	810	390	21	3.3	1913	62	717000	23000	11.3	1.3	4.3	2.4	47.5	3.2	1.54	0.83	10.2	4.2	7.7	1.6
LP070120-2L-23	AGG 2	230000	12000	94	14	7.1	3.1	1307	76	665000	29000	8.54	0.94	0.46	0.35	35.8	2.3	0.2	0.12	2.45	0.95	2.21	0.88
LP070120-2L-15	AGG 2	234000	11000	59.9	8.9	4.2	2	1112	81	690000	30000	5.72	0.66	0.02	0.028	31.7	3.7	0.16	0.1	1.89	0.71	3.6	1.1
LP070120-2L-5	AGG 2	230000	11000	224	65	23	25	1470	140	695000	30000	11.1	2	1.3	1.1	56	8.2	0.52	0.64	2.9	1.1	4.2	1.4
LP070120-2L-17	AGG 2	228100	9800	87	12	5.3	2.4	613	17	677000	31000	6.17	0.7	0.011	0.021	26.2	1.9	0.034	0.035	0.86	0.4	1.61	0.62
LP070120-2L-2	AGG 2	240000	13000	1230	730	13.7	3.5	2530	360	695000	36000	6	1	3.7	1.8	41.8	8.7	2.2	1	17.3	5.7	16.4	3.4
LP070120-2s-9	AGG 2	246700	8000	82	11	2.4	1.5	870	35	783000	26000	6.08	0.5	0.064	0.064	2.76	0.37	0.055	0.043	1.6	0.81	5.25	0.97
LP070120-2s-13	AGG 2	246500	6900	190	16	17.7	2.6	1729	51	752000	19000	5.2	0.63	0.164	0.085	57.5	2.3	1.14	0.21	17.6	2.5	22.5	1.6
LP070120-2s-19	AGG 2	257700	8900	386	77	5.5	2.6	1372	54	771000	28000	4.78	0.6	3.8	3.3	22.6	5.4	1.19	0.64	6.3	2.3	4.3	1
LP070120-2s-33	AGG 2	257400	9800	84	11	7.2	2.2	1370	170	773000	30000	5.2	0.88	0	1	28.1	2.5	0.118	0.072	0.99	0.46	2.27	0.92
LP070120-2s-18	AGG 2	254000	7700	416	32	5.5	2.5	2890	120	754000	19000	9.36	0.98	0.01	0.021	15.6	1.9	0.053	0.032	2	0.75	5.8	1.2
LP070120-2s-26	AGG 2	262000	7200	429	27	17.4	4.3	2840	200	805000	26000	8.74	0.86	0.21	0.12	8.82	0.96	0.59	0.15	5.7	1.1	11	1.5
LP070120-2s-3	AGG 2	242900	6200	150	14	9.4	2.1	898	70	745000	28000	5.8	0.68	0.021	0.043	27.1	1.8	0.158	0.067	1.94	0.58	3.84	0.97
LP070120-2L-12	AGG 2	224000	10000	94	12	16.6	3.4	316	14	654000	32000	2.78	0.39	0	1	16	1.4	0.069	0.049	0.64	0.46	1.7	0.52
LP070120-2s-41	AGG 2	239000	10000	180	15	31.7	4.7	2590	130	711000	33000	7.41	0.73	0.86	0.28	96.6	7	1.24	0.22	13.7	1.9	17.5	2.5
LP070120-2s-24	AGG 2	264800	9400	696	84	16	2.9	3680	310	783000	29000	20.6	1.7	0.133	0.08	35.1	2.3	0.233	0.097	2.75	0.93	7.3	1.9
LP070120-2s-2	AGG 2	249000	12000	323	17	19.4	3.4	3700	250	776000	30000	7.16	0.71	2.02	0.73	26	3.8	1.51	0.55	8.7	2.7	12.6	2.6
LP070120-2s-40	AGG 2	266000	11000	117	11	24.3	8.3	287	12	796000	22000	2.47	0.31	0.083	0.072	3.65	0.38	0.035	0.028	0.39	0.37	0.47	0.51
LP070120-2s-8	AGG 2	255800	6700	141	12	13.3	3.1	2600	120	794000	20000	4.98	0.66	0.18	0.1	18.7	1.3	0.78	0.18	9.5	1.7	15.7	2
LP070120-2s-20	AGG 2	266000	10000	339	21	28.1	4.4	4010	120	770000	29000	13.7	1.2	0.35	0.16	45.1	1.9	0.9	0.18	16.7	2.1	27.6	2.8
LP070120-2s-1	AGG 2	240200	7200	215	15	5.3	1.9	1522	55	757000	29000	7.84	0.8	0.19	0.22	27.6	1.4	0.103	0.072	1.2	0.53	4.6	1.1
LP070120-2s-12	AGG 2	241500	8200	266	16	7.9	2.8	1294	44	759000	30000	6.7	0.66	0.011	0.021	4.72	0.51	0.048	0.042	1.08	0.51	3.31	0.95
LP070120-2L-14	AGG 2	235000	11000	288	47	7.3	2.1	1688	81	685000	19000	7.3	1	0.032	0.046	11.3	3.5	0.117	0.063	1.8	1.2	4.2	1.7
LP070120-2s-36	AGG 2	266000	10000	235	16	12.5	3	1794	59	777000	28000	6.93	0.88	0.073	0.071	9.51	0.76	0.152	0.071	2.07	0.55	5.8	1.2
LP070120-2s-21	AGG 2	271900	9800	590	240	11.3	2.6	1300	47	750000	23000	6.31	0.79	4.7	3	59.4	9.1	1.37	0.79	8.4	3.3	6.3	1.4
LP070120-2L-16	AGG 2	219000	11000	155	15	12.5	3.2	893	43	678000	26000	7.67	0.86	0	1	30.2	2.5	0.021	0.03	0.94	0.52	2.07	0.83
LP070120-2L-4	AGG 2	238000	15000	248	18	17.6	4	1710	120	687000	24000	12.1	1.8	0.49	0.21	39.1	6.3	0.77	0.29	8.6	1.7	8	1.1
LP070120-2L-19	AGG 2	230000	13000	157	17	4.6	3.1	721	32	669000	35000	6.72	0.86	0.042	0.05	17.8	1.6	0.028	0.033	0.99	0.56	2.21	0.8
LP070120-2s-22	AGG 2	262000	10000	104	15	11.6	3.9	325	17	795000	35000	3.01	0.48	0.064	0.093	5.74	0.55	0.028	0.033	0.61	0.36	1.36	0.6
LP070120-2s-27	AGG 2	265000	11000	267	18	15.3	2.8	3490	140	764000	27000	6.86	0.67	0.116	0.069	75.3	3.9	1.31	0.24	18	2.3	24	3.3
LP070120-2s-7	AGG 2	235700	5900	214	17	31.1	3.9	1130	37	730000	22000	5.26	0.46	0.064	0.056	75.7	3.9	0.41	0.13	9.8	1.6	10.1	1.7
LP070120-2s-29	AGG 2	257000	7000	457	28	28.7	4.4	2150	110	766000	25000	4.19	0.7	0.158	0.082	6.7	1.2	0.46	0.19	6	1.1	11	1.7
LP070120-2L-6	AGG 2	229000	12000	340	120	25	11	2070	830	674000	23000	7.7	1.8	0.26	0.17	47.7	7.8	0.28	0.19	6.6	3.9	24	12
LP070120-2s-38	AGG 2	237900	6400	213	15	11.8	2.8	1620	160	748000	23000	11.5	1.1	0.084	0.072	122.6	8.6	0.73	0.19	12.8	2.7	18.9	3.8
LP070120-2s-23	AGG 2	257700	9400	103	13	11	3.6	284	17	771000	26000	2.69	0.47	0.053	0.053	2.34	0.35	0.028	0.033	0.52	0.34	2.16	0.87
LP070120-2L-24	AGG 2	217000	12000	123	15	8.3	2.4	727	34	657000	25000	2.52	0.46	0.011	0.021	13.6	1.1	0.172	0.073	3.48	0.67	3.9	1
LP070120-2L-22	AGG 2	224000	12000	130	14	23.4	4.3	678	28	661000	27000	7.96	0.88	0.053	0.068	14.3	1.1	0.11	0.06	2.1	0.97	3.96	0.93
LP070120-2s-11	AGG 2	242600	8000	215	16	31.7	4	1895	68	754000	25000	4.72	0.62	0.053	0.062	10.14	0.87	1.06	0.17	16	2.1	23.2	2.3

LP070120-2s-35	AGG 2	244000	6400	277	19	22.7	4	4120	300	761000	22000	8.8	1.1	0.131	0.089	19.2	1.4	1.31	0.28	21.4	2.9	34	3.9
LP070120-2s-39	AGG 2	241100	7700	353	94	22.9	3.3	2730	110	712000	26000	5.58	0.58	0.51	0.29	13.6	1.6	0.93	0.37	11.2	3.2	16.2	2
LP070120-2L-9	AGG 2	237000	16000	186	12	145	66	1556	57	670000	38000	4.23	0.61	0.031	0.035	5.71	0.59	0.241	0.093	3.66	0.97	7.6	1.7
LP070120-2L-1	AGG 2	238000	15000	232	15	11.8	3.1	2614	87	678000	30000	7.23	0.96	0.031	0.046	15.5	1.1	0.45	0.14	10.4	1.9	17.9	1.8
LP070120-2s-28	AGG 2	255400	7700	294	19	7.9	2.5	2221	75	773000	22000	10.2	0.87	0.021	0.042	130.3	5.7	0.35	0.14	6.7	1.3	11.4	2.1
LP070120-2s-31	AGG 2	255300	7500	164	12	74.1	4.8	718	18	765000	28000	3.54	0.56	0	1	27.4	1.3	0.29	0.1	5.7	1.2	7.5	1.4
LP070120-2s-4	AGG 2	235500	5800	142	10	4.8	2.2	864	46	744000	25000	11.8	1.3	0	1	11.81	0.93	0.034	0.035	0.73	0.54	1.94	0.76
LP070120-2s-15	AGG 2	256000	8100	377	23	23.5	3.4	1711	92	737000	18000	23.2	3.5	0.16	0.11	4.05	0.53	0.09	0.057	2.21	0.71	4.7	1.3
LP070120-2L-21	AGG 2	235000	13000	222	20	9.2	3.3	1030	56	692000	29000	9.75	0.87	0.021	0.029	21.8	1.8	0.021	0.041	0.73	0.33	1.89	0.82
LP070120-2s-34	AGG 2	249700	7900	175	15	23.8	2.9	1378	58	751000	22000	6.09	0.74	0.042	0.05	15.5	1.1	0.118	0.087	1.77	0.74	4.5	1.3
LP070120-2s-37	AGG 2	250100	7600	727	32	18.4	2.9	2638	94	770000	31000	6.19	0.64	0.031	0.046	20.8	1	0.228	0.068	3.41	0.81	6.4	1.2
LP070120-2L-13	AGG 2	240000	13000	196	15	11	2.6	1833	69	660000	33000	5.06	0.71	0.011	0.021	36.8	2.8	0.51	0.19	8.7	1.6	14.9	2
LP070120-2L-7	AGG 2	241000	12000	284	25	37.7	4.6	1417	66	682000	34000	5.66	0.66	0	1	42.8	2.7	0.179	0.079	3.62	0.95	7.1	1.2
LP070120-2L-8	AGG 2	233000	16000	196	18	37.2	3.9	1032	55	680000	32000	7.56	0.91	0	1	33.1	2.1	0.11	0.066	3.28	0.87	5.2	1.2
LP070120-2L-18	AGG 2	230000	10000	185	13	9.8	2.5	1336	44	666000	28000	12.4	1	0	1	30.3	1.9	0.11	0.066	2.36	0.82	6.3	1.3
LP070120-2s-14	AGG 2	245200	6700	99	11	12	3	249	10	749000	24000	2.37	0.33	0.043	0.05	2.66	0.35	0.007	0.014	0.043	0.086	0.56	0.36
LP070120-2s-32	AGG 2	251700	8500	226	15	15.2	3.8	2493	71	783000	25000	6.98	0.91	0.18	0.12	23.7	2.1	0.51	0.16	5.1	1.5	13.3	2.4
LP070120-2s-30	AGG 2	248500	8200	96	6.9	90	12	276	14	761000	31000	1.97	0.29	0.032	0.046	2.48	0.38	0	1	0.26	0.23	0.57	0.31
Rejected Grains																							
LP070120-2L-3	AGG 2	190000	10000	206	21	276700	5600	583	23	423	25	367	24	106.3	7.2	595	41	107.1	5.4	595	26	173	8.5
LP070120-2L-11	AGG 2	194000	14000	140	18	274100	5700	235	40	204	40	243	13	25	12	138	71	26	13	140	74	36	17
LP070120-2s-10	AGG 2	231100	8500	133	13	9.9	3	1177	38	701000	21000	8.71	0.73	0.043	0.05	64	2.2	0.131	0.061	1.51	0.53	4.4	1.1
LP070120-2s-17	AGG 2	256600	8500	415	60	33.6	4	2380	200	771000	27000	19.3	2.2	85	48	210	94	26	15	131	68	35	12
LP070120-2s-25	AGG 2	268100	7100	184	15	12.7	2.9	1861	74	792000	24000	6	1.1	0.25	0.12	17.8	1.2	0.75	0.17	9.5	1.3	15.7	2.1
Sample 080120-1																							
Grain	Unit	Si (ppm)	error	P (ppm)	error	Ti (ppm)	error	Y (ppm)	error	Zr (ppm)	error	Nb (ppm)	error	La (ppm)	error	Ce (ppm)	error	Pr (ppm)	error	Nd (ppm)	error	Sm (ppm)	error
LP080120-1s-12	AGG 3	13210000	400000	32400	1100	98	16	1132000	23000	88800000	2900000	1670	150	25	14	5140	230	45	24	115	26	415	61
LP080120-1L-13	AGG 3	12640000	450000	7890	310	263	22	283500	8400	82700000	2600000	867	83	148	49	7950	410	72	26	219	57	452	71
LP080120-1L-4	AGG 3	12690000	320000	15000	2100	215	24	878000	74000	83600000	2900000	2880	190	720	410	36200	3200	680	140	1580	230	2170	160
LP080120-1s-10	AGG 3	13340000	360000	9970	600	201	19	554000	23000	86400000	2400000	726	61	20	16	6480	700	287	61	559	98	1190	110
LP080120-1L-10	AGG 3	12260000	410000	8270	420	143	16	540000	26000	82900000	1700000	902	91	0	1	2330	200	204	58	598	78	1000	100
LP080120-1s-17	AGG 3	12810000	370000	9840	450	312	22	317000	12000	86400000	2800000	578	86	0	1	4830	390	40	17	113	25	202	50
LP080120-1s-18	AGG 3	13880000	330000	12390	960	225	26	605000	27000	90000000	2600000	765	74	122	79	6150	490	205	73	464	97	866	86
LP080120-1s-5	AGG 3	12650000	310000	8960	420	209	19	579000	14000	85100000	2800000	498	50	0	1	6770	310	78	27	217	47	502	71
LP080120-1L-3	AGG 3	11780000	360000	8980	420	281	24	295000	13000	84000000	2200000	472	67	0	1	3500	210	30	21	122	35	315	52
LP080120-1s-9	AGG 3	12890000	280000	8970	340	173	18	464000	18000	87300000	2800000	470	68	0	1	6570	530	59	26	124	47	491	82
LP080120-1s-3	AGG 3	12830000	330000	17600	1000	165	19	1060000	130000	88500000	2600000	2090	210	280	150	12400	2500	600	280	740	230	760	150
LP080120-1s-21	AGG 3	13390000	590000	29100	3000	277	98	890000	190000	85800000	6200000	2820	650	560	230	29700	6200	370	110	700	110	980	240
LP080120-1L-9	AGG 3	12270000	410000	8980	350	209	21	251900	5800	82300000	1400000	624	91	2.2	4.3	4790	390	14	10	72	33	150	39
LP080120-1s-20	AGG 3	12680000	350000	27480	930	1109	97	640000	39000	89100000	2000000	750	100	17	13	790	100	120	32	406	90	970	100
LP080120-1L-7	AGG 3	12160000	440000	4740	220	144	18	163000	14000	84200000	2100000	622	79	30	17	5180	280	31	16	75	33	86	31
LP080120-1s-24	AGG 3	13920000	350000	16950	980	342	31	1090000	110000	89100000	2300000	1082	74	15.2	9.8	20200	1700	276	49	1030	180	1590	190
LP080120-1s-8	AGG 3	13620000	410000	12230	500	201	17	502000	16000	87800000	1800000	1010	130	9	10	3160	260	93	28	187	41	490	47
LP080120-1s-25	AGG 3	13410000	360000	29300	4700	165	28	970000	200000	90800000	2700000	1210	110	67	42	6440	310	136	66	360	130	660	200
LP080120-1s-27	AGG 3	12900000	440000	5840	230	123	14	122700	3100	87400000	2500000	1610	140	0	1	3200	180	4.3	6	30	16	39	17
LP080120-1L-6	AGG 3	12790000	360000	6780	300	277	21	132500	4600	87500000	2700000	842	99	6.5	7.2	7160	320	13.6	9.7	78	22	146	33
LP080120-1s-16	AGG 3	12820000	400000	8840	380	286	19	175000	4900	85100000	2400000	748	72	2.2	4.3	4350	260	75	27	210	40	308	51
LP080120-1L-8	AGG 3	12530000	300000	4900	300	135	16	88600	3800	84100000	3100000	900	110	0	1	930	100	0	1	4.3	6	43	23
LP080120-1s-6	AGG 3	13750000	470000	7200	320	227	43	293000	16000	90100000	2600000	1970	140	2.2	4.3	5690	210	30	22	113	37	241	56
LP080120-1s-22	AGG 3	13130000	310000	19300	1300	306	26	689000	42000	87900000	1700000	1555	95	2.2	4.3	19300	680	160	35	404	80	691	96
LP080120-1L-1	AGG 3	13000000	420000	13220	680	208	20	471000	16000	84600000	2300000	2990	210	0	1	22630	950	27	16	104	35	289	41
LP080120-1s-7	AGG 3	13350000	370000	13240	560	270	24	635000	23000	86900000	2600000	798	95	0	1	3660	240	59	31	332	43	729	89
LP080120-1L-11	AGG 3	13200000	320000	8960	470	255	24	520000	51000	87600000	2300000	2420	170	78	35	14480	620	183	46	443	77	638	87
LP080120-1L-5	AGG 3	12210000	280000	12680	670	395	27	323900	7300	84100000	2100000	1622	85	0	1	16230	480	25	16	152	34	276	49
LP080120-1s-23	AGG 3	12560000	330000	7160	330	311	23	199800	5400	85000000	2400000	1133	89	7.1	7.8	2700	220	26	14	142	39	227	53
LP080120-1L-2	AGG 3	12510000	330000	97000	27000	247	33	515000	18000	82900000	3000000	2630	160	34000	12000	139000	38000	20000	6900	16000	5200	3800	1100
LP080120-1L-12	AGG 3	13130000	450000	9940	630	300	32	243700	8000	88000000	2300000	950	110	83	34	5540	340	169	62	325	91	470	110
LP080120-1s-1	AGG 3	12840000	380000	7680	360	196	18	182000	12000	88500000	2800000	794	94	11	11	20310	710	231	54	490	110	618	66
Rejected Grains																							
LP080120-1s-13	AGG 3	12740000	340000	25700	7400	200	21	580000	13000	86500000	2300000	3120	170	1100	500	13500	1600	790	310	900	260	850	130
LP080120-1s-2	AGG 3	12680000	410000	18600	4800	219	17	373000	11000	81300000	1900000	1180	98	1630	820	13000	2000	620	290	700	260	448	80
LP080120-1s-15	AGG 3	11020000	340000	6560	330	3108000	62000	269800	9100	29700	1000	124900	4800	46100	1400	307700	7400	70300	2100	58200	2000	15030	570
LP080120-1s-26	AGG 3	12690000	370000	69200	9400	393	31	194100	6800	82200000	1900000	670	72	11200	1700	37200	5500	5680	800	4690	670	1070	150
LP080120-1s-14	AGG 3	13230000	360000	4340	320	247	35	52000	12000	86600000	2400000	800	140	0	1	980	190	0	1	10.9	8.8	43	22
LP080120-1s-11	AGG 3	13350000	350000	10140	380	334	34	217000	13000	88100000	2100000	917	81	17	10	4300	330	531	97	930	120	602	72
LP080120-1s-19	AGG 3	14000000	400000	15400	2700	780	130	800000	150000	91300000	2900000	1620	230	1510	220	75100	6600	4320	760	5400	1100	3340	740
LP080120-1s-4	AGG 3	13360000	510000	8420	530	332	40	178000	17000	87900000	2300000	648	65	39	17	3240	180	141	37	308	61	393	71
Sample 080120-8																							
Grain	Unit	Si (ppm)	error	P (ppm)	error	Ti (ppm)	error	Y (ppm)	error	Zr (ppm)	error	Nb (ppm)	error	La (ppm)	error	Ce (ppm)	error	Pr (ppm)	error	Nd (ppm)	error	Sm (ppm)	error
LP080120-8s-100	AGG 3	1.2E+07	410000	112	8.8	12.3	3.2	915	63	440000	27000	3.69	0.42	0.47	0.29	25.5	3.3	0.82	0.43	7.7	4	6.7	2.3
LP080120-8s-110	AGG 3	1.2E+07	440000	65.3	8.2	5.8	1.6	1060	180	460000	19000	2.28	0.5	0.46	0.29	35.6	6	0.38	0.14	3.8	1.1	4.7	1.4
LP080120-8s-54	AGG 3	1.2E+07	430000	58.2	7.4	3.9	1.3	936	50	482000	23000	1.83	0.3	0.015	0.023	22.3	1.3	0.094	0.048	2.36	0.45	3.96	0.59
LP080120-8s-34	AGG 3	1.2E+07	400000	72.8	6.3	4.8	1.4	656	36	433000	16000	3.87	0.33	0	1	22.64	0.98	0.032	0.021	0.67	0.36	1.44	0.41
LP080120-8s-78	AGG 3	1.2E+07	410000	113	11	4.1	1.4	1330	130	440000	20000	5.5	0.58	0	1	38.1	3.4	0.166	0.082	2.68	0.66	5.7	1
LP080120-8s-147	AGG 3	1.2E+07	310000	68.8	6.3	4.9	1.1	533	26	464000	18000	2.57	0.29	0.024	0.024	16.97	0.91	0.067	0.035	0.85	0.25	1.58	0.53
LP080120-8s-107	AGG 3	1.2E+07	480000	67.1	6.7	6.3	1.4	250	10	434000	22000	0.7	0.16	0	1	5.78	0.39	0.01	0.011	0.24	0.13	0.89	0.27
LP080120-8s-63	AGG 3	1.2E+07	410000	55.6	6.6	4.5	1.3	710	110	463000	26000	1.93	0.29	0.028	0.046	17.7	2.3	0.031	0.024	1	0.39	3.1	1
LP080120-8s-82	AGG 3	1.2E+07	450000	48.7	4.7	4.2	1.5	613	47	462000	23000	3.41	0.49	0.005	0.01	29.7	2.4	0.057	0.032	0.77	0.37	1.37	0.37
LP080120-8s-88	AGG 3	1.2E+07	390000	40.9	6.2	4.1	1.4	710	120	459000	24000	1.35	0.2	0.027	0.023	16.3	2	0.085	0.04	1.69	0.5	2.97	0.72
LP080120-8s-38	AGG 3	1.2E+07	440000	123.2	8.2	5.1	1.1	1242	83	466000	25000	9.33	0.98	0.011	0.015	64.8	5.1	0.088	0.038	2.38	0.44	4.13	0.7
LP080120-8s-50	AGG 3	1.1E+07	360000	3720	710	8.4	1.6	956	53	452000	20000	2.1	0.34	43.3	9.9	117	27	12.9	3.4	43.4	9.3	13.3	2.3
LP080120-8s-126	AGG 3	1.2E+07	430000	39.2	5.1	1.91	0.89	194	12	438000	18000	1.17	0.2	0	1	9.14	0.67	0.006	0.013	0.054	0.06	0.69	0.28
LP080120-8s-65	AGG 3	1.2E+07	460000	94.6	7.6	5.7	1.2	971	62	463000	24000	5.24	0.47	0.0044	0.0088	27.5	1.8	0.055	0.033	1.3	0.52	3.35	0.56
LP080120-8s-130	AGG 3	1.2E+07	480000	99	10	3.6	1.4	1650	190	466000	22000	4.61	0.66	0.01	0.014	35.7	5.2	0.165	0.057	2.97	0.69	7	1.1
LP080120-8s-114	AGG 3	1.2E+07	420000	98	10	5.6	1.4	598	36	458000	23000	4.27	0.47	0.027	0.028	28.2	1.4	0.037	0.027	0.5	0.26	1.78	0.31
LP080120-8s-68	AGG 3	1.2E+07	330000	58.8	7	0.8	1	480	44	476000	19000	1.72	0.27	0	1	11.6	1.1	0.02	0.017	0.48	0.31	0.85	0.43
LP080120-8s-40	AGG 3	1.2E+07	370000	56.8	6.3	8.2	3.1	697	49	431000	20000	2.48	0.32	0.118	0.088	16.6	1	0.22	0.096	1.87	0.53	2.89	0.52
LP080120-8s-57	AGG 3	1.2E+07	350000	64.2	6.4	195	51	413	22	457000	18000	1.86	0.27	0.005	0.01	12.52	0.85	0.013	0.012	0.33	0.17	0.83	0.36
LP080120-8s-59	AGG 3	1.3E+07	510000	51.4	7.3	2.9	1.1	429	38	452000	27000	1.33	0.24	0.029	0.032	11.6	1.9	0.023	0.02	0.52	0.26	1.2	0.42
LP080120-8s-149	AGG 3	1.2E+07	510000	52.6	5.8	3.9	1.1	678	37	471000	24000	3.04	0.41	0.09	0.049	18.4	1.2	0.082	0.051	1.26	0.34	1.79	0.39
LP080120-8s-91	AGG 3	1.2E+07	440000	143	10	4.2	1.2	990	59	444000	23000	3.71	0.44	0.0047	0.0094	22.4	1.3	0.049	0.028	1.17	0.43	3.49	0.52
LP080120-8s-39	AGG 3	1.2E+07	360000	40.4	6.1	3.5	1.3	250.8	9.2	462000	17000	1.49	0.23	0	1	11.96	0.8	0.019	0.014	0.24	0.13	0.63	0.25
LP080120-8s-87	AGG 3	1.1E+07	380000	185	13	6.4	1.2	1387	99	483000	19000	2.54	0.49	0.016	0.024	27.2	2.7	0.337	0.091	4.11	0.64	8.3	1
LP080120-8s-67	AGG 3	1.2E+07	450000	60.4	6.2	3.9	1.4	636	38	460000	24000	3.34	0.43	0.014	0.015	22	1.6	0.031	0.024	0.51	0.18	1.7	0.44
LP080120-8L-13	AGG 3	1.1E+07	530000	174	93	8	1.5	487	35	458000	19000	3.99	0.38	3.8	3.9	23.6	5.7	0.81	0.72	3.8	2.9	2.14	0.86
LP080120-8s-138	AGG 3	1.2E+07	340000	58.4	5.7	3.21	0.95	538	34	460000	22000	2.76	0.41	0.005	0.01	16.9	1.2	0.046	0.03	0.32	0.16	1.45	0.32
LP080120-8s-21	AGG 3	1.2E+07	440000	53.1	6.8	4.2	1.1	401	18	467000	23000	2.77	0.34	0	1	14.1	1.1	0.043	0.026	0.45	0.23	0.66	0.29
LP080120-8L-43	AGG 3	1.1E+07	460000	56.4	4.9	4.6	1.1	562	50	475000	23000	2.28	0.27	0.011	0.016	15.7	1.4	0.042	0.028	1.16	0.42	1.71	0.61
LP080120-8s-132	AGG 3	1.2E+07	410000	99.1	6.7	4.8	1.3	1136	55	444000	20000	5.06	0.43	0.132	0.051	20.1	1.6	0.117	0.037	2.06	0.35	4.14	0.79
LP080120-8s-81	AGG 3	1.2E+07	300000	162	14	3.6	1.3	708	53	461000	19000	2.77	0.32	0.01	0.019	15	1.2	0.045	0.031	0.66	0.27	1.6	0.47
LP080120-8s-18	AGG 3	1.2E+07	410000	70.5	6.1	4.3	1.2	642	46	441000	23000	3.02	0.34	0.015	0.022	18.2	1.4	0.043	0.025	0.66	0.24	1.75	0.58
LP080120-8s-42	AGG 3	1.2E+07	260000	91.6	8.4	3.8	1.1	601	23	450000	16000	4.05	0.44	0.01	0.014	18.55	0.84	0.033	0.027	0.39	0.21	1.35	0.46
LP080120-8s-7	AGG 3	1.2E+07	470000	46	4.4	4.2	1.7	360	20	457000	18000	2.14	0.3	0	1	16.6	1.4	0.01	0.011	0.36	0.17	0.89	0.32
LP080120-8L-56	AGG 3	1.2E+07	400000	84.8	7.5	7	1	750	38	474000	20000	4.85	0.38	0	1	36.6	2.1	0.046	0.025	1.33	0.33	2.49	0.55
LP080120-8s-49	AGG 3	1.2E+07	370000	52.6	6.3	3	0.87	518	38	448000	16000	1.84	0.25	0.0049	0.0098	15	1.2	0.024	0.02	0.47	0.21	0.96	0.35
LP080120-8L-25	AGG 3	1.2E+07	430000	43.9	5.4	4.4	1.1	648	29	473000	25000	4.84	0.34	0.015	0.017	17	1.1	0.039	0.028	0.57	0.29	0.88	0.41
LP080120-8s-55	AGG 3	1.2E+07	470000	92.5	6.4	9.9	1.7	415	24	457000	18000	2.58	0.4	0.005	0.01	11.64	0.69	0.0072	0.0099	0.36	0.18	1.26	0.44
LP080120-8s-146	AGG 3	1.2E+07	390000	140	11	6.9	1.2	1300	100	444000	18000	8.73	0.66	0	1	35.6	2	0.111	0.057	1.88	0.45	5.06	0.78
LP080120-8s-23	AGG 3	1.2E+07	420000	105.4	7.2	14.1	1.7	563	21	457000	24000	3.22	0.42	0	1	15.04	0.99	0.03	0.023	0.61	0.39	2.12	0.41
LP080120-8s-64	AGG 3	1.2E+07	400000	136	10	7.9	1.2	1510	130	478000	25000	3.09	0.41	0.01	0.021	27.1	1.8	0.121	0.05	3.3	0.74	7.1	1.2
LP080120-8s-104	AGG 3	1.2E+07	380000	47.7	7.2	3.8	1.3	338	18	462000	18000	1.6	0.22	0	1	15.5	1	0.025	0.02	0.53	0.24	0.79	0.32
LP080120-8s-20	AGG 3	1.1E+07	370000	64.8	7.4	4.6	1.3	425	29	479000	22000	2.87	0.32	0.015	0.022	15.31	0.96	0.038	0.028	0.57	0.3	1.14	0.37
LP080120-8L-8	AGG 3	1.2E+07	380000	57.6	7	5.7	1.4	815	49	465000	24000	3.17	0.48	0.01	0.014	15.3	1.3	0.114	0.051	1.39	0.37	2.86	0.58
LP080120-8s-32	AGG 3	1.2E+07	360000	50.7	5.7	3.21	0.98	440	18	471000	20000	2.83	0.37	0.092	0.04	18.3	1.2	0.04	0.03	0.35	0.22	1.13	0.39

LP080120-8s-136	AGG 3	1.2E+07	440000	155.7	9.7	6.1	1.1	1167	68	463000	20000	3.73	0.42	0	1	22.9	1.5	0.091	0.036	1.8	0.43	4.57	0.78
LP080120-8L-11	AGG 3	1.2E+07	460000	50.3	6.5	6.2	1.4	554	31	453000	26000	3.04	0.35	0	1	18.2	1	0.037	0.024	0.4	0.18	1.15	0.44
LP080120-8L-51	AGG 3	1.2E+07	440000	152	14	6.7	1.4	624	50	466000	21000	3.09	0.41	0.0048	0.0096	13	1.3	0.036	0.027	0.71	0.23	2.48	0.62
LP080120-8s-76	AGG 3	1.2E+07	430000	150	15	4.6	1.2	2080	330	487000	25000	5.7	1.4	2.2	4.4	44	10	0.231	0.066	4.83	0.84	9.5	1.5
LP080120-8L-6	AGG 3	1.1E+07	480000	73.3	7.1	7.4	1.9	694	35	487000	23000	6.44	0.72	0.011	0.015	29.5	1.7	0.053	0.039	0.81	0.32	1.57	0.48
LP080120-8s-41	AGG 3	1.2E+07	470000	59	8.4	4.6	1.3	1010	210	463000	23000	2.22	0.35	0.04	0.028	25.4	4.3	0.116	0.053	2.38	0.82	5.2	1.5
LP080120-8L-22	AGG 3	1.1E+07	550000	126.1	8.1	17.7	3.4	865	47	470000	22000	2.64	0.41	0	1	11.63	0.8	0.087	0.036	2.28	0.56	4.06	0.65
LP080120-8s-33	AGG 3	1.2E+07	510000	79.5	9.1	4.6	1.2	390	23	472000	29000	3.5	0.48	0.0047	0.0093	14.31	0.86	0.012	0.014	0.2	0.16	0.9	0.43
LP080120-8s-69	AGG 3	1.2E+07	440000	52.9	5.7	4.1	1.4	589	29	473000	21000	2.89	0.38	0.006	0.012	24.5	1.1	0.043	0.027	0.46	0.21	1.48	0.51
LP080120-8s-129	AGG 3	1.3E+07	530000	49.2	5.5	2.73	0.85	372	24	463000	23000	2.03	0.29	0	1	18.1	1.3	0.05	0.031	0.53	0.28	0.78	0.33
LP080120-8s-47	AGG 3	1.2E+07	480000	40.2	5.1	1.7	1.2	615	66	461000	25000	1.58	0.24	0	1	12.4	1.2	0.092	0.052	1.03	0.38	2.31	0.57
LP080120-8L-20	AGG 3	1.2E+07	430000	61	7.1	5.6	1.2	614	35	455000	22000	4.94	0.45	0	1	20.1	1.5	0.012	0.015	0.61	0.22	1.39	0.46
LP080120-8L-41	AGG 3	1.2E+07	490000	49.9	7.7	3.7	1.1	581	91	464000	27000	2.06	0.29	0	1	17.2	1.8	0.031	0.02	0.7	0.28	1.97	0.64
LP080120-8L-38	AGG 3	1.2E+07	350000	73.2	7	4.9	1.4	735	34	448000	20000	5.31	0.48	0	1	8.56	0.59	0.036	0.021	0.5	0.27	1.47	0.36
LP080120-8L-9	AGG 3	1.2E+07	400000	109.1	8.7	7.8	1.5	698	39	463000	21000	5.82	0.5	0	1	17.4	1.1	0.022	0.019	0.49	0.24	1.47	0.47
LP080120-8s-80	AGG 3	1.3E+07	450000	50.6	5.1	3.53	0.93	762	45	452000	22000	3.36	0.44	0	1	23.3	1.9	0.077	0.038	1.1	0.35	1.73	0.38
LP080120-8s-102	AGG 3	1.2E+07	340000	112.4	7.7	6.6	1.1	1603	95	456000	12000	7.73	0.66	0.015	0.017	40.4	3	0.187	0.074	2.92	0.58	6.3	1.1
LP080120-8L-4	AGG 3	1.2E+07	370000	77.3	7.9	54.4	8.2	552	26	434000	23000	6.22	0.63	0.71	0.18	18.5	1.2	0.129	0.06	1.14	0.32	1.21	0.44
LP080120-8s-24	AGG 3	1.2E+07	380000	50.3	5.8	2.4	1.1	883	43	465000	20000	2.75	0.25	0.017	0.025	16.29	0.91	0.086	0.047	1.6	0.35	2.71	0.57
LP080120-8L-23	AGG 3	1.1E+07	430000	87.4	5.9	8.6	1.6	554	45	466000	24000	4.42	0.41	0.033	0.039	16.4	1.1	0.029	0.025	0.69	0.24	1.45	0.48
LP080120-8s-125	AGG 3	1.2E+07	350000	40.5	6.3	2.8	1.1	288	13	447000	18000	1.86	0.31	0.015	0.022	12.65	0.66	0.018	0.025	0.25	0.15	0.41	0.2
LP080120-8s-89	AGG 3	1.2E+07	320000	47	6.8	2.14	0.75	720	130	471000	21000	1.82	0.3	0.01	0.014	6.47	0.83	0.096	0.052	1.41	0.61	2.07	0.53
LP080120-8s-109	AGG 3	1.2E+07	340000	79.8	8.5	3.4	1.2	735	43	455000	18000	2.03	0.3	0	1	8.97	0.51	0.043	0.026	0.83	0.33	2.41	0.52
LP080120-8L-39	AGG 3	1.1E+07	380000	52.5	7.9	4.1	1.2	183	13	461000	27000	2.28	0.33	0.021	0.02	6.45	0.63	0.01	0.014	0.16	0.13	0.35	0.2
LP080120-8L-26	AGG 3	1.1E+07	310000	103.1	6.4	7.9	1.5	614	27	469000	22000	5.37	0.55	0.01	0.021	8.91	0.45	0.033	0.024	0.6	0.3	1.34	0.4
LP080120-8s-36	AGG 3	1.2E+07	340000	53.7	5.3	5.3	1.1	1370	160	465000	21000	5.22	0.81	0	1	30.4	4	0.022	0.017	0.66	0.29	2.11	0.7
LP080120-8s-16	AGG 3	1.1E+07	320000	66.7	6.5	6.3	1.4	498	28	460000	22000	2.31	0.34	0.005	0.011	8.5	0.51	0.088	0.043	0.84	0.22	1.98	0.67
LP080120-8s-31	AGG 3	1E+07	370000	1150	200	9.9	1.9	459	41	468000	19000	2.23	0.31	11.5	3	37.5	6.2	4.2	1.1	17.7	4.5	5	1.3
LP080120-8s-56	AGG 3	1.2E+07	440000	55.7	7.6	4.6	1.7	953	59	439000	24000	1.7	0.28	0.01	0.019	8.05	0.52	0.135	0.057	2.47	0.58	4.61	0.63
LP080120-8L-40	AGG 3	1.1E+07	300000	111.7	9.5	26.2	2.8	451	17	468000	23000	1.72	0.25	0.01	0.019	10.13	0.58	0.062	0.044	1.82	0.56	3.46	0.73
LP080120-8L-15	AGG 3	1.2E+07	650000	202	13	16.9	2.5	1530	130	444000	27000	4.19	0.42	0.012	0.016	16.6	1.1	0.106	0.043	2.19	0.54	5.07	0.91
LP080120-8s-115	AGG 3	1.2E+07	360000	73.1	6.6	2.9	1.1	578	26	447000	22000	2.69	0.25	0.009	0.018	25.8	1.3	0.019	0.016	0.6	0.26	1.43	0.31
LP080120-8s-79	AGG 3	1.2E+07	320000	182	10	7.5	1.6	2027	63	465000	20000	3.05	0.4	0	1	39.7	2.1	0.254	0.078	5.32	0.77	10.4	1
LP080120-8s-108	AGG 3	1.2E+07	450000	116	10	5.5	1.7	676	72	462000	25000	2.2	0.25	0	1	20.2	1.1	0.036	0.024	0.81	0.41	2.34	0.58
LP080120-8s-93	AGG 3	1.2E+07	490000	149	12	7.2	1.2	1506	85	456000	26000	2.03	0.28	0.006	0.011	29.9	1.6	0.114	0.037	3.59	0.69	9.12	0.97
LP080120-8s-62	AGG 3	1.2E+07	350000	155	27	3.8	1.2	940	140	472000	24000	2.4	0.33	2	1.3	37.3	9.2	0.64	0.35	3.6	1	4.1	1
LP080120-8s-10	AGG 3	1.1E+07	390000	226	40	8.6	1.4	568	28	456000	13000	2.48	0.41	1.15	0.55	21.1	1.2	0.55	0.37	3.3	1.5	2.34	0.68
LP080120-8s-111	AGG 3	1.2E+07	450000	100.9	8.8	7	1.3	641	28	474000	24000	2.09	0.35	0	1	18.4	1.3	0.058	0.027	0.93	0.38	2.33	0.66
LP080120-8s-105	AGG 3	1.2E+07	480000	157	12	3.9	1	780	120	449000	27000	2.85	0.69	0	1	16.1	3.8	0.056	0.032	0.73	0.26	2.82	0.6
LP080120-8s-83	AGG 3	1.3E+07	490000	160	14	1.12	0.63	1304	60	422000	18000	7.56	0.61	0.0041	0.0081	11.43	0.85	0.076	0.03	1.37	0.39	3.92	0.73
LP080120-8s-14	AGG 3	1.2E+07	510000	398	24	3.7	1	2810	150	452000	20000	4.1	0.39	0.055	0.035	3.85	0.44	0.159	0.051	3.89	0.85	13.2	1.7
LP080120-8s-26	AGG 3	1.2E+07	380000	550	280	4.1	1.3	698	40	448000	23000	7.34	0.85	1.58	0.82	49.1	4	1.13	0.54	7.3	3.9	5.5	2.1
LP080120-8s-2	AGG 3	1.1E+07	190000	111	6.6	5.3	1.7	884	35	470000	16000	2.25	0.31	0	1	7.79	0.48	0.068	0.033	1.09	0.36	2.58	0.62
LP080120-8s-148	AGG 3	1.2E+07	390000	269	20	3.8	1.3	1066	40	470000	22000	4.01	0.47	0	1	3.54	0.23	0.013	0.016	0.53	0.27	2.03	0.54
LP080120-8s-113	AGG 3	1.2E+07	410000	242	15	15	1.5	968	41	467000	24000	1.97	0.34	0.005	0.01	14.6	1.1	0.074	0.036	1.68	0.47	4.2	0.77
LP080120-8s-75	AGG 3	1.2E+07	420000	226	17	5.6	1.7	1298	55	463000	18000	7.72	0.59	0.69	0.16	22	1.3	0.6	0.15	3.27	0.67	5.01	0.6
LP080120-8L-42	AGG 3	1.2E+07	360000	346	18	8.4	1.2	1514	69	453000	16000	3.86	0.39	0.006	0.011	4.08	0.33	0.023	0.015	1.37	0.35	3.78	0.79
LP080120-8s-72	AGG 3	1.2E+07	240000	275	14	31	19	2497	89	445000	15000	3.74	0.38	0.125	0.064	28.7	1.3	0.325	0.078	7.54	0.96	14.5	1.3
LP080120-8s-3	AGG 3	1.2E+07	480000	202	11	4.26	0.96	756	44	467000	22000	2	0.35	0.103	0.071	2.48	0.32	0.05	0.03	1.04	0.41	2.36	0.6
LP080120-8s-45	AGG 3	1.2E+07	370000	90.8	7.9	13.7	1.8	233	12	463000	25000	1.29	0.23	0.009	0.018	3.71	0.24	0.069	0.042	1.05	0.26	2.2	0.48
LP080120-8s-15	AGG 3	1.2E+07	410000	131.7	6.7	16.1	1.8	622	33	473000	25000	4.81	0.42	0.02	0.019	52.7	3.8	0.281	0.067	4.39	0.79	6.41	0.69
LP080120-8L-29	AGG 3	1.2E+07	410000	378	20	13.5	6.2	1388	57	458000	27000	2.44	0.39	0.005	0.01	0.98	0.1	0.053	0.034	1.02	0.26	3.31	0.89
LP080120-8L-7	AGG 3	1.2E+07	350000	72	5.6	7.9	1.6	164.4	8.4	463000	18000	2.25	0.28	0.005	0.011	5.99	0.56	0.0063	0.0088	0.2	0.13	0.51	0.35
LP080120-8s-58	AGG 3	1.2E+07	490000	111	11	7.3	1.6	623	97	443000	20000	10.49	0.95	0.005	0.0099	34.8	1.4	0.076	0.033	0.95	0.32	2.76	0.7
LP080120-8L-55	AGG 3	1.1E+07	320000	92.3	6.4	6.1	1.6	456	19	477000	21000	2.26	0.31	0	1	10.43	0.56	0.024	0.021	0.71	0.29	1.21	0.28
LP080120-8L-5	AGG 3	1.1E+07	490000	110	10	8.1	1.4	2290	140	477000	22000	5.62	0.57	0.011	0.022	5.37	0.76	0.32	0.1	7.54	0.96	15.1	1.8
LP080120-8s-94	AGG 3	1.2E+07	450000	105.6	8.3	5.4	2.2	299	18	459000	24000	1.86	0.28	0	1	8.66	0.96	0.009	0.01	0.41	0.18	1.03	0.32
LP080120-8s-44	AGG 3	1.1E+07	270000	101.6	6.1	15.9	2.2	1535	68	469000	22000	1.79	0.28	0.043	0.035	6.76	0.53	0.52	0.11	7.9	1.1	12.7	1.1
LP080120-8s-145	AGG 3	1.2E+07	430000	138	12	19	2.4	505	38	465000	25000	1.71	0.28	0.006	0.011	5.68	0.41	0.066	0.031	1.25	0.31	2.63	0.54
LP080120-8s-143	AGG 3	1.2E+07	370000	43.7	5.6	7	1.1	147	29	471000	23000	1.45	0.28	0	1	1.88	0.62	0.014	0.016	0.14	0.12	0.73	0.4
LP080120-8s-119	AGG 3	1.2E+07	490000	48.6	5.8	4.9	1.5	1352	79	454000	22000	42.6	3	0.011	0.015	13.47	0.84	0.308	0.083	7.32	0.91	13.3	1.7
LP080120-8s-46	AGG 3	1.2E+07	330000	108.9	8.1	8.4	1.6	1380	180	458000	17000	10.04	0.94	0.01	0.021	12.9	1.1	0.137	0.046	2.86	0.88	6.1	1.6
LP080120-8s-66	AGG 3	1.2E+07	360000	225	38	11.2	1.8	1440	300	456000	17000	3.29	0.51	0.056	0.04	25.5	4.8	0.38	0.11	5.5	1.4	8.9	1.9
LP080120-8s-103	AGG 3	1.2E+07	330000	141.4	8.6	7.1	1.1	808	37	422000	19000	3.79	0.48	0	1	22.3	2.1	0.177	0.066	2.5	0.49	3.82	0.93
LP080120-8s-11	AGG 3	1.1E+07	330000	1370	440	4.6	1.6	1190	270	459000	19000	3.13	0.73	1.93	0.83	15.3	1.9	1.48	0.42	13.1	2.3	13.1	2.5
LP080120-8s-99	AGG 3	1.2E+07	450000	142	12	8	1.3	1714	99	472000	22000	53.2	3.5	0.42	0.11	25.8	1.8	0.53	0.11	5.07	0.83	10.3	1.6
LP080120-8s-70	AGG 3	1.2E+07	490000	94.3	6.9	10.6	1.3	445	25	467000	22000	9.45	0.81	0.02	0.027	10.24	0.81	0.042	0.029	0.73	0.33	1.54	0.35
LP080120-8s-90	AGG 3	1.1E+07	370000	96.6	8	2.5	1.3	931	75	453000	19000	4.22	0.41	0.01	0.013	39.8	1.9	0.125	0.039	2.39	0.63	5.1	0.75
LP080120-8s-144	AGG 3	1.1E+07	400000	103.8	9.3	8.5	1.6	660	25	483000	18000	4.14	0.44	0.333	0.09	6.23	0.57	0.35	0.1	4.08	0.57	4.77	0.93
LP080120-8s-92	AGG 3	1.2E+07	470000	108.5	8.8	24.7	6	416	25	440000	20000	2.22	0.25	0.011	0.022	19.7	9.3	0.122	0.053	1.34	0.34	2.46	0.48
LP080120-8s-116	AGG 3	1.2E+07	410000	105.9	7.5	8.3	1.4	532	28	459000	16000	1.82	0.27	0.052	0.042	19.9	1.2	0.099	0.05	1.66	0.37	3.71	0.72
LP080120-8L-50	AGG 3	1.2E+07	510000	61.7	5.3	11.3	1.6	1101	65	446000	27000	2.83	0.28	0.043	0.03	7.67	0.57	0.34	0.12	6.59	0.95	10.9	1.5
LP080120-8s-97	AGG 3	1.2E+07	470000	137.9	8	9.4	1.4	830	42	454000	18000	2.73	0.28	0.026	0.03	4.85	0.31	0.178	0.062	2.48	0.59	5.91	0.86
LP080120-8L-35	AGG 3	1.2E+07	330000	133.9	8.7	21.7	2.4	4730	300	466000	26000	74.5	5.3	0.04	0.035	90	6.5	0.77	0.13	14.7	1.7	34.6	2.1
LP080120-8s-85	AGG 3	1.3E+07	350000	74.1	6.8	8.3	1.6	412	18	447000	19000	3.06	0.38	0.073	0.063	7.8	1.4	0.164	0.095	1.64	0.69	2.68	0.67
LP080120-8s-17	AGG 3	1.2E+07	440000	564	33	4.1	0.8	2730	180	464000	25000	1.66	0.23	0.011	0.015	1.63	0.25	0.06	0.042	1.44	0.5	6.8	1
LP080120-8s-98	AGG 3	1.2E+07	360000	239	12	8.7	1.6	935	39	480000	18000	5.52	0.52	0	1	9.61	0.51	0.053	0.044	1.16	0.37	3.33	0.69
LP080120-8s-137	AGG 3	1.2E+07	410000	625	90	8.9	1	4000	180	472000	20000	7.12	0.65	0.33	0.21	92.8	6.9	0.61	0.14	8.5	1.3	18.7	1.7
LP080120-8s-124	AGG 3	1.2E+07	390000	195	13	7.8	1.4	878	46	461000	17000	2.29	0.33	0	1	8.71	0.55	0.084	0.047	0.98	0.45	2.84	0.56
LP080120-8L-21	AGG 3	1.2E+07	390000	131.2	6.3	8.8	1.8	707	39	459000	17000	6.54	0.61	0.042	0.029	14.73	0.92	0.041	0.04	1.13	0.46	2.3	0.51
LP080120-8s-133	AGG 3	1.1E+07	380000	153	8.8	13.4	2.1	1018	48	490000	25000	2.05	0.29	0.021	0.025	18.08	0.91	0.117	0.034	2.68	0.51	6.03	0.81
LP080120-8s-140	AGG 3	1.2E+07	480000	91.9	7.1	5.5	1	1114	58	458000	23000	2.77	0.34	0.0045	0.009	11.26	0.58	0.107	0.052	2.09	0.44	5.2	1.1
LP080120-8L-49	AGG 3	1.1E+07	420000	63.4	6	11.7	1.7	377	20	468000	24000	1.94	0.28	0.016	0.017	1.49	0.18	0.087	0.035	1.25	0.34	2.23	0.5
LP080120-8s-22	AGG 3	1.2E+07	300000	57.9	6.4	7.3	1.4	519	53	465000	16000	5.92	0.59	0.041	0.035	3.61	0.55	0.044	0.031	0.64	0.32	1.44	0.41
LP080120-8L-34	AGG 3	1.1E+07	330000	124	10	16.6	1.8	987	42	472000	22000	5.97	0.64	0.011	0.022	10.34	0.62	0.137	0.043	2.23	0.62	5.3	1
LP080120-8s-6	AGG 3	1.1E+07	370000	115.3	7.2	11.2	1.8	689	34	474000	26000	7.41	0.68	0.006	0.011	9.52	0.75	0.034	0.031	0.98	0.33	2.62	0.58
LP080120-8L-24	AGG 3	1.2E+07	420000	87.9	6.6	10.2	1.9	399	21	469000	27000	7.64	0.72	0.077	0.052	7.56	0.51	0.097	0.034	0.68	0.3	0.74	0.31
LP080120-8s-84	AGG 3	1.2E+07	290000	290	16	4.8	1.2	1351	68	488000	21000	9.2	1	0.057	0.037	10.3	0.73	0.062	0.041	1	0.22	2.68	0.61
LP080120-8s-135	AGG 3	1.2E+07	460000	710	300	4.8	1.6	1182	53	469000	22000	5.54	0.63	43	22	93	36	13.6	5.9	66	27	16.9	6.3
LP080120-8s-8	AGG 3	1.1E+07	340000	156.4	9.7	3.67	0.98	1857	80	462000	18000	1.78	0.27	0.33	0.11	14.17	0.94	0.438	0.094	6.5	1	9.72	0.91
LP080120-8s-117	AGG 3	1.2E+07	410000	143	11	11.8	1.2	1353	77	473000	25000	2.28	0.38	0.005	0.01	32.4	2.6	0.299	0.075	5.5	0.86	11.8	1.5
LP080120-8s-142	AGG 3	1.2E+07	460000	135	11	17.7	1.8	899	54	478000	25000	3.74	0.45	0.01	0.02	55	2.8	0.186	0.05	3.48	0.7	7.2	1.3
LP080120-8s-4	AGG 3	1.1E+07	310000	146	11	3.8	1	1060	140	457000	19000	4.31	0.38	0.01	0.015	18.7	1.6	0.124	0.057	1.83	0.49	5.4	1.9
LP080120-8L-14	AGG 3	1.1E+07	440000	122.9	5.4	25.3	3.3	867	45	463000	22000	2.71	0.29	0.067	0.044	23.9	1.4	0.53	0.11	6.49	0.84	11.4	1.4
LP080120-8s-60	AGG 3	1.2E+07	220000	197	11	23.2	2.2	950	35	477000	17000	4.35	0.53	0.04	0.028	30.3	1.5	0.071	0.038	1.5	0.36	3.82	0.72
LP080120-8s-27	AGG 3	1.1E+07	340000	157	10	14.8	1.8	1562	66	477000	20000	8.01	0.55	0.037	0.028	14.67	0.66	0.379	0.096	6.6	0.93	11.4	1.7
LP080120-8s-96	AGG 3	1.2E+07	500000	156	14	10.5	1.7	771	43	454000	18000	2.91	0.39	0.01	0.013	18.3	1.4	0.043	0.03	1.01	0.31	2.53	0.39
LP080120-8L-53	AGG 3	1.2E+07	440000	145	8.2	5.9	2.1	1090	49	471000	27000	11.5	1.1	0.018	0.026	16.4	1.1	0.045	0.031	1.32	0.38	3.13	0.55
LP080120-8s-74	AGG 3	1.2E+07	400000	110.6	7.9	13.4	3.6	1670	180	459000	19000	3.18	0.31	0.035	0.026	14.87	0.88	0.45	0.13	6.8	1.3	11	2.1
LP080120-8s-48	AGG 3	1.2E+07	420000	195	11	4.7	1.3	2040	110	445000	16000	3.18	0.36	0.078	0.036	17.8	1.2	0.313	0.075	5.27	0.72	10.7	1.4
LP080120-8L-37	AGG 3	1.1E+07	390000	211	27	22.6	2.4	794	43	486000	26000	3.21	0.4	0.02	0.023	6.9	0.53	0.023	0.015	1.18	0.31	2.87	0.64
LP080120-8s-52	AGG 3	1.2E+07	380000	88.3	9.8	9.1	1.6	499	22	463000	21000	4.67	0.51	0	1	9.55	0.57	0.037	0.025	1.36	0.37	2.24	0.42
LP080120-8s-112	AGG 3	1.2E+07	320000	77	7.9	9.5	1.4	460	46	450000	18000	3.55	0.39	0.06	0.065	10.59	0.83	0.25	0.11	3.83	0.8	5	1
LP080120-8s-127	AGG 3	1.2E+07	460000	292	17	16.7	6.7	1108	64	441000	24000	2.46	0.33	0.28	0.18	5.61	0.5	0.13	0.072	1.71	0.38	2.76	0.67
LP080120-8s-106	AGG 3	1.3E+07	430000	272	19	8.6	7.1	897	54	414000	19000	3.21	0.38	0.034	0.03	6.41	0.49	0.098	0.059	1.6	0.51	2.39	0.43
LP080120-8s-73	AGG 3	1.2E+07	330000	54	6.3	7.5	1.6	301	12	452000	14000	1.4	0.22	0.043	0.035	14.4	1.1	0.12	0.05	1.29	0.4	1.59	0.58
LP080120-8s-29	AGG 3	1.2E+07	380000	157	10	7.9	1.3	1515	81	434000	20000	7.41	0.64	0.015	0.022	69	4.2	0.232	0.06	3.38	0.51	7.23	0.89
LP080120-8L-46	AGG 3	1.2E+07	390000	100.4	6	11.3	2.1	588	30	467000	26000	2.68	0.37	0	1	8.44	0.65	0.04	0.035	0.68	0.24	1.98	0.45
LP080120-8s-37	AGG 3	1.2E+07	460000	101.8	7.7	28.6	2.8	559	31	463000	18000	2.79	0.29	0.01	0.019	33.1	2.9	0.127	0.044	2.17	0.39	4.31	0.89
LP080120-8s-95	AGG 3	1.2E+07	280000	107.9	7.8	34.8	2.5	415	24	478000	17000	2.12	0.31	0.006	0.011	47.9	2.7	0.35	0.1	5.7	1	7.5	1.1

LP080120-8s-134	AGG 3	1.2E+07	470000	106.8	7.5	19.2	2.2	467	27	453000	20000	4.12	0.47	0.018	0.024	21.7	5.4	0.118	0.055	1.79	0.4	2.61	0.56
LP080120-8s-86	AGG 3	1.2E+07	500000	75.7	6.4	8.3	1.3	404	20	471000	19000	1.81	0.37	0	1	8.27	0.52	0.02	0.016	0.78	0.25	1.94	0.48
LP080120-8s-19	AGG 3	1.2E+07	440000	124.3	9.2	5	1.6	611	41	465000	25000	2.89	0.32	0.02	0.025	18.72	0.96	0.033	0.027	0.52	0.23	2.41	0.57
LP080120-8s-141	AGG 3	1.2E+07	380000	107.4	9.1	24.9	6.4	610	30	467000	18000	2.34	0.28	0.4	0.21	11.09	0.58	0.181	0.065	1.21	0.35	2.42	0.49
LP080120-8s-61	AGG 3	1.2E+07	360000	142	11	4.2	1.3	911	46	468000	21000	7.4	0.9	0.027	0.03	5.35	0.41	0.066	0.03	1.11	0.27	3.33	0.74
LP080120-8L-10	AGG 3	1.2E+07	450000	61.3	7.1	7.7	1.2	180.9	9.2	456000	23000	2.23	0.35	0.02	0.019	6.81	0.43	0.031	0.02	0.41	0.2	0.9	0.33
LP080120-8L-47	AGG 3	1.1E+07	300000	95	10	17.8	1.6	447	22	478000	18000	3.32	0.29	0	1	14.59	0.83	0.06	0.031	1.16	0.32	2.19	0.5
LP080120-8L-19	AGG 3	1.1E+07	300000	104.7	9.5	23	2.4	416	19	453000	21000	2.33	0.27	0.01	0.019	47.6	2.1	0.195	0.072	2.59	0.56	5.5	1.1
LP080120-8s-118	AGG 3	1.2E+07	440000	110	10	6.3	1.1	530	29	460000	17000	3.77	0.36	0.005	0.011	28.6	1.5	0.095	0.031	1.89	0.59	4.48	0.73
LP080120-8s-128	AGG 3	1.2E+07	350000	120	11	28.2	2.2	456	18	452000	17000	2.43	0.22	0.025	0.034	14.4	0.78	0.128	0.04	1.97	0.48	3.55	0.61
LP080120-8s-25	AGG 3	1.2E+07	410000	121	9.6	51.8	7.9	370	21	465000	26000	2.33	0.34	1.2	1.3	38.1	3.2	0.53	0.31	5.4	1	6.3	1
LP080120-8L-31	AGG 3	1.2E+07	490000	158	13	13.5	1.8	384	19	448000	26000	1.81	0.32	0	1	4.98	0.55	0.092	0.034	1.55	0.41	5.36	0.8
LP080120-8L-2	AGG 3	1.2E+07	360000	66.3	7.1	8	1.5	181	9.8	453000	23000	3.77	0.38	0	1	2.95	0.28	0	1	0.09	0.1	0.2	0.14
LP080120-8s-122	AGG 3	1.3E+07	490000	84.7	6.1	9.7	2.3	539	29	440000	22000	3.94	0.42	0.0046	0.0093	7.73	0.52	0.074	0.034	1.23	0.33	2.26	0.5
LP080120-8s-13	AGG 3	1.2E+07	340000	86.1	7.4	10.8	1.8	548	23	470000	23000	3.26	0.4	0.01	0.014	9.5	0.66	0.07	0.037	1.4	0.47	3.69	0.98
LP080120-8s-5	AGG 3	1.2E+07	340000	103.9	6.6	14.9	2.3	606	28	462000	20000	5.45	0.42	0.005	0.01	11.14	0.84	0.074	0.037	1.23	0.37	3.67	0.66
LP080120-8L-1	AGG 3	1.2E+07	510000	88.5	6.8	26.4	2.9	269	12	466000	27000	3.29	0.35	0.0047	0.0094	22.3	1.1	0.074	0.037	1.41	0.44	2.96	0.67
LP080120-8s-35	AGG 3	1.2E+07	480000	63.2	6.8	10.4	1.4	234	18	467000	21000	2.14	0.27	0	1	13.27	0.84	0.01	0.012	0.4	0.27	0.84	0.31
LP080120-8s-9	AGG 3	1.1E+07	430000	72	7.2	4	1	242	15	466000	23000	2.72	0.35	0.021	0.032	6.41	0.49	0.056	0.035	0.7	0.38	1.69	0.51
LP080120-8s-53	AGG 3	1.1E+07	440000	118.9	9.1	5.6	1.3	930	50	481000	29000	3.51	0.38	0	1	22.5	1.8	0.037	0.029	1.17	0.37	3.17	0.53
LP080120-8L-30	AGG 3	1.2E+07	380000	168	14	12.2	1.2	781	49	443000	20000	3.47	0.43	0.038	0.033	4.68	0.47	0.102	0.045	2	0.53	4.78	0.89
LP080120-8L-48	AGG 3	1.1E+07	550000	50.7	5.8	4.8	1.4	160.6	8.7	481000	31000	1.85	0.32	0.006	0.012	4.56	0.49	0.013	0.015	0.14	0.12	0.44	0.27
LP080120-8L-12	AGG 3	1.2E+07	480000	357	35	12.2	2.7	1400	190	447000	23000	2.57	0.32	0.006	0.012	1.8	0.21	0.065	0.038	1.4	0.33	5.45	0.98
LP080120-8L-27	AGG 3	1.2E+07	450000	99.5	8.5	15.5	2.3	685	42	439000	22000	3.62	0.37	0	1	6.44	0.47	0.154	0.049	1.77	0.37	5.2	1.1
LP080120-8L-33	AGG 3	1.2E+07	430000	134.2	8.6	22.3	2.5	568	22	476000	26000	2.93	0.37	0.01	0.014	9.29	0.62	0.097	0.05	1.48	0.43	2.63	0.77
LP080120-8s-30	AGG 3	1.2E+07	510000	116.2	7.6	16.2	2.4	503	28	464000	25000	2.78	0.3	0.015	0.017	28.5	1.6	0.098	0.039	1.99	0.47	4.4	0.8
LP080120-8L-17	AGG 3	1.2E+07	530000	131.2	8.1	6.2	1.3	1504	68	449000	22000	3.35	0.3	0.043	0.03	9.95	0.69	0.81	0.15	11.9	1.3	15.3	1.8
LP080120-8s-120	AGG 3	1.2E+07	370000	123.8	7.9	21.6	1.6	617	31	453000	22000	1.38	0.21	0.028	0.028	7.79	0.53	0.114	0.035	2.32	0.55	3.82	0.52
LP080120-8s-12	AGG 3	1.1E+07	280000	132.9	9.4	9.8	1.8	1068	52	481000	25000	1.76	0.24	0.032	0.028	21.3	1.2	0.6	0.082	8.8	1.1	13.9	1.4
LP080120-8L-16	AGG 3	1.2E+07	490000	85	13	10.9	3.8	339	42	474000	22000	2.03	0.34	0.41	0.23	23.1	5.2	0.91	0.45	5.1	2.6	3.4	1.4
LP080120-8L-3	AGG 3	1.1E+07	340000	132.2	9.4	14.5	1.9	645	30	476000	23000	5.23	0.55	0	1	19.49	0.99	0.052	0.024	1	0.41	2.99	0.62
LP080120-8s-51	AGG 3	1.2E+07	440000	102	12	3.3	1.3	517	34	472000	23000	26.6	6.9	0	1	3.53	0.77	0.014	0.017	0.065	0.096	0.55	0.29
LP080120-8s-150	AGG 3	1.2E+07	550000	123.3	9.4	16.6	2.5	596	28	450000	21000	3.03	0.37	0	1	10.44	0.82	0.112	0.042	1.82	0.39	3.41	0.6
LP080120-8s-121	AGG 3	1.2E+07	470000	69.6	6.9	4.13	0.93	243	11	445000	22000	1.32	0.26	0.0046	0.0093	5.46	0.39	0.049	0.03	0.76	0.23	1.48	0.38
LP080120-8s-101	AGG 3	1.2E+07	350000	156.7	7.6	23	13	1438	65	464000	19000	4.85	0.46	0.105	0.054	27.4	1.5	0.435	0.084	7.83	0.87	11	1.3
LP080120-8s-131	AGG 3	1.2E+07	350000	72.5	6.2	7	1.3	568	28	472000	22000	5.13	0.6	0.005	0.011	38.7	1.9	0.049	0.029	1.44	0.48	2.35	0.48
LP080120-8s-123	AGG 3	1.2E+07	460000	86.8	6.4	12.3	1.4	340	19	472000	27000	1.54	0.32	0.01	0.021	12.78	0.84	0.063	0.039	0.83	0.36	2.09	0.62
LP080120-8s-28	AGG 3	1.2E+07	350000	95.7	7.7	16.2	1.8	373	18	452000	15000	1.91	0.28	0	1	16.86	0.77	0.101	0.041	2.27	0.48	4.11	0.84
LP080120-8L-32	AGG 3	1.2E+07	400000	119	11	15.8	2	500	25	468000	19000	2.18	0.27	0.053	0.041	15.32	0.87	0.229	0.068	4.26	0.79	7	1.1
LP080120-8s-77	AGG 3	1.2E+07	410000	67	5.6	5.11	0.95	355	14	449000	19000	1.29	0.22	0	1	3.23	0.34	0.013	0.015	0.67	0.24	1.57	0.55
LP080120-8L-18	AGG 3	1.2E+07	420000	168	13	6.2	1.4	1282	54	469000	17000	10.43	0.56	0.01	0.02	12.62	0.74	0.025	0.019	1.5	0.44	3.42	0.72
LP080120-8s-43	AGG 3	1.2E+07	310000	80	6.7	6.2	1.1	309	13	465000	17000	1.55	0.26	0.005	0.01	11.29	0.79	0.029	0.027	0.48	0.25	1.2	0.45
LP080120-8L-45	AGG 3	1.2E+07	410000	96.1	5.4	10	4.7	357	17	470000	24000	1.81	0.28	0	1	3.35	0.33	0.016	0.016	0.52	0.16	1.47	0.49
Rejected Grains																							
LP080120-8L-44	AGG 3	9760000	310000	155	10	232600	8100	1987	84	633	28	1109	34	2010	94	6440	320	773	38	3100	100	599	36
LP080120-8s-71	AGG 3	1E+07	370000	135.4	9.2	220600	8000	2490	110	627	30	1150	41	2066	94	7080	320	794	37	3230	140	648	35
LP080120-8L-54	AGG 3	9620000	360000	151.7	9.4	235100	8200	2930	140	624	27	1260	88	2240	130	7880	360	984	60	4120	210	851	37
LP080120-8L-36	AGG 3	9780000	340000	164.8	8.5	218400	7600	2660	140	729	37	1257	53	1496	59	6420	310	943	37	4400	160	954	46
LP080120-8L-28	AGG 3	9610000	350000	176	13	223400	6700	2970	140	736	83	1132	60	1560	110	6270	330	955	43	4530	230	998	41
LP080120-8s-139	AGG 3	1.1E+07	450000	4500	1600	5.9	1.6	579	70	454000	19000	4.56	0.46	172	99	400	210	51	26	240	120	49	22
LP080120-8s-1	AGG 3	1.2E+07	440000	156	11	8.1	1.2	737	42	456000	21000	2.23	0.4	0.005	0.01	7.03	0.73	0.031	0.019	0.72	0.39	2.37	0.55
LP080120-8L-52	AGG 3	9950000	390000	103.7	7	217400	9200	1521	83	398	24	763	35	1096	60	3690	230	446	25	1900	130	387	23
Sample 080120-9																							
Grain	Unit	Si (ppm)	error	P (ppm)	error	Ti (ppm)	error	Y (ppm)	error	Zr (ppm)	error	Nb (ppm)	error	La (ppm)	error	Ce (ppm)	error	Pr (ppm)	error	Nd (ppm)	error	Sm (ppm)	error
LP080120-9s-58	AGG 3	13410000	440000	7320	360	369	23	131600	4300	79400000	3700000	1470	180	10.9	8.8	7180	430	22	12	65	18	140	34
LP080120-9s-119	AGG 3	13300000	560000	10580	730	121	17	543000	64000	76300000	2400000	5010	870	50	31	19800	3000	80	37	238	66	504	91
LP080120-9s-137	AGG 3	12060000	580000	9510	540	770	270	371000	34000	76200000	3000000	1080	140	6	6.6	7410	870	200	51	466	87	780	110
LP080120-9s-166	AGG 3	12710000	440000	9720	780	352	67	377000	26000	77700000	3200000	1830	180	52	19	13000	1200	37	16	118	33	267	61
LP080120-9s-77	AGG 3	13130000	640000	8330	440	197	18	349000	18000	77900000	3200000	1250	100	0	1	13520	540	56	28	200	38	413	53
LP080120-9s-75	AGG 3	13270000	410000	17600	2000	939	96	359000	26000	78200000	3500000	1780	160	3770	330	68400	4900	5400	440	5400	480	2250	260
LP080120-9L-13	AGG 3	13400000	390000	39000	11000	193	10	254000	10000	84600000	2000000	754	80	4000	1600	16700	3600	1360	560	1030	340	350	76
LP080120-9s-81	AGG 3	13540000	480000	9310	550	135	17	466000	25000	78400000	2900000	1140	140	6.2	6.9	8850	430	102	39	290	47	596	84
LP080120-9s-51	AGG 3	13320000	460000	8780	450	163	17	274000	11000	80100000	3100000	600	87	0	1	2120	180	23	16	173	38	328	47
LP080120-9s-42	AGG 3	14520000	350000	13400	480	2160	610	623000	21000	88100000	2400000	2030	140	275	38	14120	850	406	76	867	90	1010	74
LP080120-9s-59	AGG 3	13990000	380000	10890	650	166	12	403000	38000	80220000	3300000	881	97	0	1	4280	360	56	23	262	51	648	91
LP080120-9s-40	AGG 3	13160000	570000	21300	6600	292	33	291000	25000	80500000	3200000	572	84	690	400	8700	1600	490	270	510	150	372	76
LP080120-9s-124	AGG 3	12500000	370000	11330	830	170	26	396000	24000	77100000	3500000	1950	200	730	240	12770	780	325	67	410	69	524	65
LP080120-9s-3	AGG 3	13470000	500000	8460	450	140	17	285000	20000	80300000	3100000	638	97	0	1	5220	340	27	15	94	33	218	38
LP080120-9s-2	AGG 3	12950000	460000	6540	460	217	15	217000	23000	80220000	2300000	334	49	2.1	4.2	3450	220	71	30	156	59	333	77
LP080120-9s-29	AGG 3	13450000	620000	6040	430	174	16	134500	6900	77900000	3700000	390	55	50	18	3120	250	76	22	121	40	131	36
LP080120-9s-78	AGG 3	12920000	580000	9540	340	186	29	447000	15000	73900000	4000000	490	77	14.6	9.5	4300	170	66	20	262	47	550	56
LP080120-9L-8	AGG 3	13530000	450000	9460	420	312	24	265000	10000	84900000	2200000	414	53	0	1	2510	110	35	15	175	37	342	49
LP080120-9s-153	AGG 3	12500000	550000	5940	280	132	12	227500	7600	73900000	3000000	329	66	15.2	9.8	3450	300	146	33	362	64	460	61
LP080120-9s-19	AGG 3	13250000	540000	13000	1700	160	13	194800	6500	74800000	2800000	310	38	240	160	2580	300	119	57	152	39	256	70
LP080120-9s-146	AGG 3	12440000	420000	7530	400	157	17	284000	17000	77300000	3500000	658	78	0	1	2730	210	38	16	114	32	350	50
LP080120-9s-76	AGG 3	14300000	550000	13330	600	4160	660	330000	14000	78800000	2400000	1570	110	590	150	4420	390	306	63	306	62	298	33
LP080120-9s-74	AGG 3	13370000	370000	11600	3800	193	21	161400	7600	78300000	3000000	420	65	270	140	4010	780	111	50	180	68	175	36
LP080120-9s-167	AGG 3	11660000	550000	6280	430	229	20	89700	3800	70800000	1900000	530	57	15	14	6370	400	27	15	36	19	90	27
LP080120-9s-122	AGG 3	12010000	390000	8620	330	33300	9600	315000	17000	74300000	2500000	5360	930	30	19	2640	210	46	19	134	40	320	49
LP080120-9s-16	AGG 3	12970000	480000	6060	350	160	17	140900	6900	81200000	2700000	388	63	4	5.5	4250	340	44	25	82	34	150	36
LP080120-9s-148	AGG 3	12490000	720000	7030	400	174	20	263000	10000	75700000	2100000	624	92	40	20	3380	230	50	15	142	34	315	33
LP080120-9s-170	AGG 3	12700000	460000	8230	490	116	12	396000	12000	75700000	3700000	662	84	0	1	4320	350	100	32	300	62	472	68
LP080120-9s-68	AGG 3	13310000	790000	8260	400	172	22	242000	19000	78300000	3500000	628	98	2.2	4.3	3030	300	48	21	104	37	228	37
LP080120-9s-96	AGG 3	12100000	590000	5950	340	125	13	122300	6000	77200000	3300000	381	50	4.3	6	2110	170	6	6.6	42	16	104	35
LP080120-9s-69	AGG 3	13240000	450000	7030	430	183	18	169500	9500	77100000	3500000	440	63	0	1	2470	180	12	8.7	80	27	188	42
LP080120-9s-62	AGG 3	13590000	390000	30600	1800	175	13	1205000	83000	84700000	2400000	3490	320	0	1	8590	860	90	22	387	61	1250	110
LP080120-9L-6	AGG 3	13340000	400000	16500	1000	97	14	815000	22000	82700000	2400000	1119	96	340	150	6040	620	330	110	402	97	667	91
LP080120-9s-38	AGG 3	13150000	420000	6110	320	172	16	103600	7700	77900000	2300000	323	51	0	1	533	60	2.1	4.2	26	14	94	30
LP080120-9s-159	AGG 3	12280000	640000	6450	470	125	14	242000	48000	69800000	3600000	400	57	0	1	1440	250	74	28	225	83	450	110
LP080120-9s-94	AGG 3	12240000	680000	6450	350	193	17	169000	11000	74100000	2400000	316	56	8.3	7.8	525	63	26	13	190	58	288	43
LP080120-9s-115	AGG 3	12580000	620000	8910	530	145	13	432000	14000	75600000	2900000	578	49	0	1	3720	290	48	15	194	51	335	54
LP080120-9s-163	AGG 3	12930000	570000	9940	580	220	20	331000	13000	75600000	3100000	780	100	0	1	8510	360	80	29	304	51	494	70
LP080120-9s-102	AGG 3	13100000	610000	12200	1400	484	82	318000	12000	78100000	3000000	366	63	115	53	5090	320	81	33	146	44	286	45
LP080120-9s-120	AGG 3	12960000	480000	26300	1200	85	12	751000	30000	81400000	1900000	1610	100	4.3	6	4430	170	71	27	98	30	354	81
LP080120-9s-30	AGG 3	13040000	400000	8870	610	152	11	262000	12000	83200000	3300000	431	80	0	1	4450	340	10	8.2	52	19	188	36
LP080120-9L-1	AGG 3	13540000	340000	9350	420	215	23	271700	8700	81200000	2300000	429	58	0	1	5120	270	11.5	8.4	44	18	184	48
LP080120-9s-156	AGG 3	11960000	610000	11100	1000	261	23	353000	22000	71400000	3400000	474	53	126	63	6670	570	140	50	260	62	360	63
LP080120-9s-17	AGG 3	12590000	430000	13080	800	380	170	882000	35000	77700000	2800000	1940	150	30	14	37300	2000	271	44	727	88	1090	98
LP080120-9s-47	AGG 3	13200000	460000	20440	630	199	38	886000	55000	81400000	2500000	4230	190	133	44	39300	2400	215	43	477	72	1030	110
LP080120-9s-107	AGG 3	13150000	520000	16430	860	270	20	537000	24000	77200000	2700000	2030	150	4.2	5.8	24300	1200	127	35	362	51	687	84
LP080120-9s-65	AGG 3	13010000	610000	13840	750	1060	160	539000	26000	81500000	3700000	662	80	320	200	2800	460	325	87	580	120	829	76
LP080120-9s-141	AGG 3	12570000	620000	11600	1200	277	22	282000	12000	76300000	3700000	1140	120	900	340	16400	1200	540	210	620	140	502	71
LP080120-9s-144	AGG 3	13040000	360000	24700	1600	200	23	371000	22000	75500000	3400000	1126	96	20	14	1170	150	73	28	250	100	410	140
LP080120-9s-116	AGG 3	12600000	600000	13400	1300	569	44	350000	15000	74500000	3900000	1068	96	620	640	12200	2100	340	250	550	200	374	60
LP080120-9s-111	AGG 3	12540000	480000	15200	1000	308	43	604000	31000	78700000	2000000	2060	210	280	200	27900	1200	310	130	471	98	810	130
LP080120-9s-14	AGG 3	13040000	330000	11480	480	245	24	365000	19000	81400000	3300000	700	120	6	6.6	8810	850	66	23	198	39	377	66
LP080120-9s-37	AGG 3	13420000	580000	9350	430	179	19	279000	11000	80600000	2500000	1380	140	112	50	10160	480	44	21	110	29	196	51
LP080120-9s-39	AGG 3	13550000	490000	12240	600	267	52	502000	20000	81900000	3000000	516	73	102	51	3990	260	106	33	186	40	408	82
LP080120-9s-64	AGG 3	14190000	530000	23500	1100	187	18	489000	34000	83200000	3500000	390	63	0	1	174	35	12.5	9	25	12	196	47
LP080120-9s-43	AGG 3	13150000	510000	19830	720	142	17	603000	24000	86800000	2500000	3800	260	0	1	5720	300	50	21	100	26	325	56
LP080120-9s-5	AGG 3	13560000	420000	9110	710	423	68	292000	39000	82900000	2500000	1660	190	252	48	12100	1800	780	170	950	180	690	120
LP080120-9L-5	AGG 3	14010000	420000	8570	380	265	12	191900	6600	85500000	3000000	960	100	0	1	12620	490	40	17	125	34	304	58
LP080120-9s-92	AGG 3	13650000	460000	15160	720	780	110	749000	54000	83600000	2300000	1710	140	670	270	44500	7300	730	130	1310	120	1570	150

LP080120-9s-87	AGG 3	12750000	460000	6190	190	142	19	121500	8000	77800000	2300000	360	45	0	1	4090	160	10	8.2	46	15	59	25
LP080120-9s-57	AGG 3	14090000	520000	13750	490	285	25	436000	15000	85300000	3100000	1030	120	42	21	7470	370	100	30	244	60	417	66
LP080120-9s-98	AGG 3	7800000	2400000	8300	1900	2200	2300	160000	67000	33000000	14000000	1380	530	160	170	6900	2600	270	240	115	59	200	97
LP080120-9s-25	AGG 3	12930000	480000	13070	740	186	16	626000	31000	79800000	3300000	742	88	4	5.5	18500	1100	160	33	563	55	950	87
LP080120-9s-70	AGG 3	13140000	500000	11800	490	223	19	508000	27000	81700000	3100000	464	62	6	6.6	15810	920	230	49	678	76	810	66
LP080120-9s-89	AGG 3	12650000	530000	8260	380	160	22	226700	9300	77900000	2900000	1248	84	0	1	6210	310	27	11	117	34	244	41
LP080120-9s-95	AGG 3	13490000	500000	4880	260	120	17	18800	6100	85100000	2700000	150	38	150	120	3800	2700	200	180	170	170	106	53
LP080120-9s-127	AGG 3	12720000	490000	8610	360	201	16	254000	11000	77500000	2900000	1000	110	0	1	20800	1200	26	13	94	29	228	47
LP080120-9s-12	AGG 3	12960000	390000	8010	470	300	28	186500	6800	82800000	3100000	430	72	24	15	10780	540	56	19	124	33	264	31
LP080120-9s-113	AGG 3	12350000	610000	66000	17000	294	52	185100	8400	72100000	2900000	465	58	3190	530	16800	1800	2500	500	2000	430	740	110
LP080120-9s-133	AGG 3	12240000	590000	6450	370	168	32	225000	24000	77100000	3000000	962	75	0	1	4560	300	77	24	154	38	415	75
LP080120-9s-117	AGG 3	13620000	700000	12820	470	1240	240	619000	22000	75700000	2600000	3060	180	119	29	8340	320	930	120	2100	230	2950	280
LP080120-9s-150	AGG 3	12910000	360000	7960	380	146	19	286000	8800	80600000	2500000	721	96	0	1	10900	620	44	20	171	33	400	42
LP080120-9s-34	AGG 3	13480000	380000	6370	300	216	19	227000	14000	80200000	3400000	1380	110	0	1	3990	260	22	13	94	26	288	44
LP080120-9s-10	AGG 3	13090000	450000	5060	280	226	15	66400	8500	81700000	2600000	350	53	0	1	15300	1300	40	22	174	46	202	43
LP080120-9s-67	AGG 3	13770000	560000	10740	550	151	14	365000	19000	80800000	3000000	958	70	0	1	5570	270	42	16	120	32	308	60
LP080120-9L-7	AGG 3	13690000	470000	3970	180	132	13	389200	9200	87900000	2600000	446	76	10	8.2	4320	250	162	36	525	65	683	89
LP080120-9s-82	AGG 3	13280000	470000	12180	610	234	20	510000	23000	86300000	3000000	4900	280	6	6.6	11490	360	71	21	235	53	514	75
LP080120-9s-56	AGG 3	13760000	560000	8100	350	290	25	271000	17000	79600000	3900000	296	63	37	15	5320	280	262	47	815	78	900	95
LP080120-9s-1	AGG 3	12930000	380000	8080	450	276	27	205000	35000	79300000	2200000	618	80	0	1	4070	370	88	42	192	71	242	85
LP080120-9s-151	AGG 3	12080000	670000	7710	290	235	21	199800	9900	73200000	2900000	834	81	0	1	5110	350	21	10	137	43	188	38
LP080120-9s-79	AGG 3	13000000	620000	6780	240	235	33	290000	13000	79700000	2800000	1570	140	4.2	5.8	8760	310	123	34	384	68	624	65
LP080120-9s-149	AGG 3	13130000	430000	9400	1400	284	68	144600	5100	82600000	2900000	1590	150	280	130	4060	410	78	32	92	38	163	44
LP080120-9s-26	AGG 3	12970000	530000	9110	380	364	25	329000	20000	78400000	2100000	1910	190	0	1	20070	870	52	23	176	43	358	72
LP080120-9s-45	AGG 3	13560000	440000	9300	350	258	23	333000	10000	83600000	2300000	2470	170	0	1	5730	300	23	13	66	19	246	44
LP080120-9s-162	AGG 3	12670000	510000	28400	1600	399	33	947000	49000	76800000	3000000	654	92	80	24	10480	440	1090	100	2590	190	3220	180
LP080120-9s-21	AGG 3	13820000	390000	24900	1700	561	54	1129000	86000	82700000	2500000	1200	130	9300	7600	36000	27000	5900	4300	4100	2300	2370	750
LP080120-9s-90	AGG 3	12920000	560000	8170	290	202	22	382000	12000	77500000	2700000	4770	370	0	1	6410	410	22	12	108	39	262	49
LP080120-9s-53	AGG 3	14080000	540000	17000	1100	220	18	450000	33000	81300000	3400000	564	69	0	1	1980	140	56	23	162	43	400	72
LP080120-9s-83	AGG 3	13530000	590000	8170	350	197	21	681000	75000	80300000	1900000	8670	700	0	1	11600	1400	112	31	331	70	690	130
LP080120-9s-35	AGG 3	13480000	390000	19500	1200	177	18	521000	15000	85400000	1900000	1042	82	10.4	8.5	6460	460	108	43	228	44	363	63
LP080120-9s-123	AGG 3	13110000	390000	8930	490	155	14	238000	11000	78550000	2800000	1180	110	0	1	9010	660	6.2	6.9	90	23	215	44
LP080120-9s-99	AGG 3	13400000	630000	5860	280	225	25	147700	5900	76800000	3000000	1740	150	2	4	4170	350	8.3	7.8	58	22	132	34
LP080120-9s-138	AGG 3	12630000	500000	4340	230	135	12	267000	22000	73500000	2800000	1480	140	25	15	3600	320	102	32	200	47	338	60
LP080120-9s-27	AGG 3	13260000	380000	9240	490	177	22	260700	9800	80700000	3000000	1510	120	98	27	16950	730	294	51	408	67	456	60
LP080120-9s-140	AGG 3	14100000	410000	11260	500	362	24	641000	25000	81900000	3600000	2130	190	4.3	6	7480	400	132	39	486	75	773	82
LP080120-9s-24	AGG 3	13780000	680000	12610	700	638	85	567000	29000	79700000	3500000	1310	120	73	31	102000	15000	450	89	1030	150	1380	170
LP080120-9s-4	AGG 3	13410000	460000	9900	530	212	21	242000	15000	76300000	3100000	1730	180	9300	4000	29100	9000	2800	1300	1840	770	460	130
LP080120-9s-31	AGG 3	13680000	580000	10000	400	541	25	270000	15000	85000000	3500000	566	61	6	6.6	18770	780	152	43	563	73	681	54
LP080120-9s-63	AGG 3	14030000	640000	7520	280	276	22	108600	2800	83200000	3200000	664	81	82	35	9920	490	140	31	129	36	150	32
LP080120-9s-129	AGG 3	12460000	410000	5560	950	144	26	88000	35000	76400000	3100000	400	110	0	1	6800	2400	22	17	50	38	94	61
LP080120-9s-86	AGG 3	14060000	510000	12150	730	294	23	469000	20000	80300000	2600000	1150	100	102	39	22810	870	220	68	306	47	506	76
LP080120-9L-12	AGG 3	14130000	270000	9610	390	244	17	461000	12000	83700000	2400000	930	110	0	1	7250	400	56	22	242	56	477	80
LP080120-9s-6	AGG 3	13420000	400000	12750	650	511	36	419000	42000	80000000	2500000	1360	180	0	1	27200	2500	158	36	484	82	530	100
LP080120-9s-136	AGG 3	12760000	650000	14900	1100	192	19	398000	12000	77220000	3300000	614	73	10	10	1590	180	68	28	188	49	410	53
LP080120-9s-147	AGG 3	12960000	550000	11670	490	200	18	371000	16000	79400000	3700000	1890	170	0	1	5670	270	24	17	50	20	220	49
LP080120-9s-152	AGG 3	12380000	550000	7680	370	182	19	234000	11000	74800000	3200000	829	87	0	1	7030	490	20	12	74	22	234	29
LP080120-9s-164	AGG 3	12950000	600000	26600	1400	510	180	639000	26000	76100000	2800000	4750	380	4600	4800	19000	12000	2100	1900	1900	1600	790	260
LP080120-9s-13	AGG 3	13190000	450000	13500	600	750	410	550000	30000	84200000	3000000	1230	170	66	22	23400	2100	328	51	646	88	854	81
LP080120-9s-11	AGG 3	13460000	410000	7230	340	162	18	256100	9500	84100000	2500000	2440	170	0	1	6920	280	24	14	94	19	231	53
LP080120-9s-7	AGG 3	14470000	530000	5830	270	537	79	154700	8300	86100000	2900000	312	58	268	53	7720	990	680	160	1010	260	500	110
LP080120-9s-131	AGG 3	12610000	410000	8090	520	114	13	825000	36000	79900000	2400000	3720	220	0	1	10860	460	85	24	262	41	632	80
LP080120-9s-130	AGG 3	13370000	580000	26900	1400	211	21	659000	23000	76400000	3200000	2450	190	14.6	9.5	13340	610	152	39	360	69	614	69
LP080120-9s-32	AGG 3	13830000	340000	9300	1200	236	27	315000	57000	89800000	3000000	1900	260	6	6.6	15900	1900	28	16	40	15	146	37
LP080120-9s-33	AGG 3	13500000	410000	12520	480	327	21	351000	12000	82000000	2500000	1220	150	0	1	14880	580	31	16	138	33	340	53
LP080120-9s-143	AGG 3	12740000	490000	10370	490	161	21	1088000	43000	77400000	3100000	3320	240	0	1	12090	500	198	41	502	65	1120	100
LP080120-9L-9	AGG 3	13740000	350000	7620	310	302	28	269000	19000	85900000	2800000	1100	120	0	1	11140	780	92	27	310	51	360	55
LP080120-9L-10	AGG 3	13960000	540000	18300	2600	264	23	113800	5500	86500000	2100000	560	72	1610	520	11700	1100	580	150	380	110	148	34
LP080120-9s-9	AGG 3	13120000	450000	11230	570	317	25	343000	14000	82700000	2500000	990	90	0	1	5120	310	71	20	185	38	344	56
LP080120-9s-108	AGG 3	12770000	530000	6660	300	187	19	143600	5600	77900000	2800000	476	74	0	1	5200	430	6.2	6.9	30	14	90	26
LP080120-9s-100	AGG 3	13780000	510000	11370	480	227	20	307000	9300	80000000	2300000	1100	130	3.8	5.3	12820	640	31	15	163	36	348	53
LP080120-9s-73	AGG 3	14330000	370000	52300	2900	450	30	1380000	110000	85100000	2700000	972	92	80	22	4130	260	134	26	400	54	913	89
LP080120-9s-15	AGG 3	13450000	430000	15200	2000	234	19	557000	79000	82700000	2900000	1330	160	250	120	5800	1100	610	280	870	240	1030	170
LP080120-9s-118	AGG 3	12740000	610000	15100	1000	265	18	316000	35000	79300000	3000000	460	87	0	1	160	49	4.3	6	46	22	190	36
LP080120-9s-106	AGG 3	13370000	500000	8560	290	231	19	313000	15000	82200000	3200000	920	130	10	8.2	18380	800	94	30	315	57	464	67
LP080120-9s-48	AGG 3	13570000	430000	17500	1100	166	17	715000	28000	81200000	3100000	1270	120	24	14	8510	450	286	58	790	110	1340	110
LP080120-9s-145	AGG 3	12700000	780000	7800	340	400	29	232000	12000	77000000	2800000	1310	170	2.1	4.2	6100	340	24	14	156	46	315	62
LP080120-9s-160	AGG 3	13190000	660000	33400	9100	395	50	439000	21000	81800000	2700000	1077	91	5600	2200	30000	10000	3100	1400	2700	1100	1080	180
LP080120-9s-121	AGG 3	12970000	430000	8930	390	1190	940	354000	52000	81100000	3500000	850	130	92	62	2540	330	194	96	165	63	333	74
LP080120-9s-168	AGG 3	12450000	600000	13570	720	254	20	464000	25000	74100000	3300000	1120	100	2	4	22100	1100	108	24	346	71	578	78
LP080120-9s-161	AGG 3	13340000	690000	9710	610	519	55	268000	17000	79100000	2700000	670	73	270	76	24200	1300	860	180	1180	250	1490	300
LP080120-9s-41	AGG 3	13320000	290000	8330	310	321	24	295700	8500	82300000	2700000	486	64	120	32	17000	1300	360	70	613	88	521	60
LP080120-9s-22	AGG 3	14110000	410000	12800	1300	349	40	285000	47000	83400000	2100000	496	69	92	38	9580	410	206	60	552	90	950	210
LP080120-9s-23	AGG 3	14210000	460000	16220	500	176	22	570000	19000	84500000	2700000	854	98	42	18	18890	940	512	83	1540	130	1680	140
LP080120-9s-8	AGG 3	13870000	480000	11170	360	403	33	242000	10000	82000000	2800000	704	90	84	22	14220	590	1280	120	1480	130	874	83
LP080120-9s-103	AGG 3	13190000	390000	8600	440	245	18	188500	8400	81600000	2800000	590	100	19	10	5020	250	110	32	222	52	326	41
LP080120-9s-104	AGG 3	13500000	490000	5200	240	149	17	97000	10000	79800000	2800000	358	56	0	1	2520	340	0	1	19	13	54	24
LP080120-9s-158	AGG 3	12780000	490000	6680	390	140	12	248000	14000	73300000	3300000	275	55	0	1	2700	220	58	23	202	54	312	62
Rejected Grains																							
LP080120-9s-66	AGG 3	13010000	570000	9990	490	247	25	522000	17000	79900000	3200000	1370	120	18	14	12220	860	144	41	222	53	400	48
LP080120-9L-14	AGG 3	13230000	360000	12320	700	145	14	268000	13000	81800000	2300000	508	77	0	1	4510	200	17	10	108	34	218	49
LP080120-9L-4	AGG 3	13160000	420000	12300	1100	160	18	462000	51000	80100000	1600000	1160	120	0	1	28100	3300	68	32	238	68	520	110
LP080120-9s-28	AGG 3	12870000	510000	9540	620	192	22	188000	12000	78400000	2800000	434	64	0	1	5050	380	42	22	144	29	252	52
LP080120-9s-126	AGG 3	11890000	460000	8130	370	168	15	176000	12000	71700000	3600000	512	73	0	1	5080	290	40	17	131	32	174	30
LP080120-9L-15	AGG 3	13080000	460000	12100	490	230	21	385000	13000	79800000	2900000	746	81	23	15	10500	420	79	28	262	38	450	60
LP080120-9s-125	AGG 3	11720000	590000	9940	600	131	14	455000	29000	71700000	4000000	11250	790	0	1	38800	2300	38	16	62	23	212	52
LP080120-9s-128	AGG 3	12770000	460000	7830	440	156	22	200700	6600	74900000	2700000	740	94	0	1	5050	360	46	21	70	25	196	39
LP080120-9s-169	AGG 3	11930000	540000	7320	380	190	17	157000	15000	73100000	3500000	322	58	16	9.5	3070	290	71	24	166	44	225	49
LP080120-9s-105	AGG 3	12300000	380000	6430	370	251	32	137600	5300	77000000	3300000	402	51	64	30	3470	290	36	19	87	25	158	38
LP080120-9s-139	AGG 3	13690000	470000	14610	670	452	49	587000	38000	85600000	3500000	5940	350	1610	160	33300	3000	1850	280	1720	190	990	130
LP080120-9s-54	AGG 3	14360000	590000	30600	1300	819	53	936000	39000	84900000	3200000	4990	350	1660	310	67200	5800	2500	400	2790	460	1600	250
LP080120-9s-50	AGG 3	10990000	330000	12090	600	3253000	80000	562000	18000	49500	2000	309000	10000	437000	16000	2569000	93000	393000	15000	276200	5700	53300	2100
LP080120-9L-11	AGG 3	11270000	310000	8390	380	3325000	45000	1250000	56000	42900	1600	247900	8600	157000	5100	1190000	100000	251300	9200	214100	7100	54800	2000
LP080120-9s-80	AGG 3	13430000	510000	50000	21000	660	120	258000	17000	83700000	3900000	442	70	2400	1400	11500	3400	1170	500	810	340	530	83
LP080120-9s-46	AGG 3	11320000	430000	6530	350	3112000	57000	656000	24000	31300	1100	258400	8600	83400	2700	655000	29000	164700	6600	156500	5300	49000	2300
LP080120-9s-109	AGG 3	10900000	490000	5840	300	3107000	94000	1030000	53000	34000	1700	512000	26000	88100	4100	649000	22000	163500	5900	151200	6000	45400	2000
LP080120-9s-155	AGG 3	10190000	430000	7100	410	2944000	61000	261000	12000	41200	1700	176600	8800	187500	6600	872000	31000	143500	6500	95000	4900	19060	880
LP080120-9L-3	AGG 3	11650000	480000	5420	350	3132000	68000	1259000	60000	27010	930	532000	19000	41700	1300	296000	12000	81500	2100	87500	3200	39100	1300
LP080120-9s-97	AGG 3	12100000	560000	10680	670	298	31	286000	16000	74800000	3400000	626	65	80	40	3290	280	69	29	119	33	285	34
LP080120-9s-91	AGG 3	12190000	530000	12760	800	730	220	347000	15000	71100000	2700000	1070	100	580	580	11110	630	200	140	350	140	344	54
LP080120-9s-134	AGG 3	12440000	580000	7960	380	106	13	261000	10000	75400000	2600000	904	84	0	1	4360	330	30	16	86	29	204	39
LP080120-9s-132	AGG 3	12430000	470000	14090	480	224	28	337000	12000	79400000	3100000	1420	110	33	16	3330	200	94	30	208	58	224	40
LP080120-9s-101	AGG 3	13590000	410000	15220	700	660	110	326000	11000	82800000	2100000	862	87	40	24	1190	160	174	45	504	60	674	93
LP080120-9s-110	AGG 3	13330000	520000	15220	670	850	200	483000	19000	80600000	2900000	1170	120	496	94	7810	820	788	98	1180	140	930	110
LP080120-9s-114	AGG 3	13550000	450000	26730	860	609	47	692000	18000	85300000	2300000	2380	190	358	47	12580	940	1620	150	2250	210	2000	240
LP080120-9s-44	AGG 3	13810000	440000	8990	390	239	26	241700	7100	84100000	2500000	970	110	292	50	7000	340	254	67	344	68	354	63
LP080120-9s-165	AGG 3	12370000	660000	9410	550	395	47	346000	25000	74000000	2900000	1180	120	420	92	8360	900	650	110	920	150	780	130
LP080120-9s-55	AGG 3	15870000	480000	9200	360	763	66	213900	6700	77200000	2700000	1523	87	296	48	9080	610	396	61	452	59	308	48
LP080120-9s-36	AGG 3	13400000	350000	14850	860	289	17	305000	18000	83300000	2900000	3720	220	156	37	5300	370	492	93	906	72	1850	220
LP080120-9s-49	AGG 3	14380000	530000	35300	6700	1310	880	668000	72000	87700000	2200000	1670	240	2300	1200	19000	5500	2590	890	2400	800	890	240
LP080120-9s-52	AGG 3	14460000	480000	29600	1100	2254	91	1510000	110000	88800000	2800000	2410	230	920	110	89100	2600	8840	570	11850	840	9330	490
LP080120-9s-84	AGG 3	13640000	530000	38900	1400	831	42	1797000	59000	81400000	2600000	4210	250	12000	6200	90000	14000	6600	1500	7290	910	5090	330
LP080120-9s-60	AGG 3	14130000	470000	70600	3200	1720	160	2597000	94000	81200000	1600000	4520	380	2050	150	31200	3100	9220	930	14400	1100	15700	1000
LP080120-9s-18	AGG 3	13630000	530000	41700	3200	399	59	1250000	170000	83900000	3500000	1278	96	1590	900	12000	2300	2500	1100	2130	970	1670	630
LP080120-9s-135	AGG 3	12000000	480000	16550	900	314	26	455000	18000	75800000	2400000	940	120	102	24	27300	1300	830	100	1260	150	1200	100
LP080120-9s-157	AGG 3	12680000	560000	5780	390	151	26	124200	7900	72900000	3300000	402	58	82	51	2390	200	100	47	85	27	110	32
LP080120-9s-72	AGG 3	13140000	580000	12870	940	820	240	369000	19000	77700000	3600000	672	81	152	55	18400	1000	342	87	610	110	768	97

LP080120-9s-88	AGG 3	12450000	480000	10700	2000	708	96	209500	8800	78400000	3200000	1024	94	2600	3200	12300	8000	1800	2000	1300	1100	490	160
LP080120-9s-71	AGG 3	14380000	450000	6260	350	248	33	98100	8900	84700000	3200000	338	52	76	30	3360	440	246	72	224	82	202	46
LP080120-9s-154	AGG 3	12640000	630000	9260	620	369	40	182000	11000	72400000	3500000	640	89	20	15	8390	490	38	19	98	27	179	50
Sample 130120-1																							
Grain	Unit	Si (ppm)	error	P (ppm)	error	Ti (ppm)	error	Y (ppm)	error	Zr (ppm)	error	Nb (ppm)	error	La (ppm)	error	Ce (ppm)	error	Pr (ppm)	error	Nd (ppm)	error	Sm (ppm)	error
LP130120-1-7	AGG 3	380000	8590	370	379	27	240000	10000	81800000	2500000	572	90	0	1	1720	140	45	20	130	33	261	62	109
LP130120-1-8	AGG 3	290000	8520	510	700	120	390000	15000	87600000	2400000	910	110	111	42	5910	330	543	95	1600	320	2040	300	3020
LP130120-1-10	AGG 3	360000	12000	520	570	150	366000	13000	83800000	1500000	774	88	39	22	4390	410	124	50	211	49	357	50	258
LP130120-1-11	AGG 3	380000	8510	310	307	20	221300	7700	86800000	2600000	604	84	0	1	12410	430	54	22	208	50	350	55	296
LP130120-1-6	AGG 3	500000	5350	270	240	36	76800	5600	88200000	2300000	627	65	410	130	31900	9400	640	210	670	260	274	75	370
LP130120-1-2	AGG 3	350000	9340	320	266	19	404000	14000	84800000	2200000	3040	190	0	1	7840	260	17	11	148	35	396	69	78
LP130120-1-4	AGG 3	320000	8310	360	225	19	338000	40000	82800000	2300000	467	98	11.4	9.1	4860	800	230	54	490	110	670	140	1340
LP130120-1-5	AGG 3	430000	10400	510	166	11	308000	12000	81600000	2800000	743	74	0	1	9360	420	9.5	8.8	80	29	227	39	167
LP130120-1-3	AGG 3	430000	40300	2300	307	28	597000	18000	82000000	2700000	1290	160	11700	4500	51000	13000	8700	1400	8800	1300	2720	210	502
LP130120-1-1	AGG 3	360000	13950	640	368	35	652000	26000	84300000	2900000	1260	120	0	1	6090	320	130	42	320	60	660	100	960
Sample 090120-2																							
Grain	Unit	Si (ppm)	error	P (ppm)	error	Ti (ppm)	error	Y (ppm)	error	Zr (ppm)	error	Nb (ppm)	error	La (ppm)	error	Ce (ppm)	error	Pr (ppm)	error	Nd (ppm)	error	Sm (ppm)	error
LP090120-2s-43	AGG 4	13550000	480000	9110	400	180	30	225000	14000	84600000	2900000	860	130	31	58	8000	730	25	15	85	27	192	45
LP090120-2L-15	AGG 4	12750000	430000	53000	10000	192	23	294000	11000	80300000	3000000	790	91	2820	760	9900	2700	1460	430	1450	410	530	110
LP090120-2s-46	AGG 4	12760000	460000	7220	350	211	32	270500	8500	82900000	2800000	452	87	0	1	5040	310	31	18	143	37	302	54
LP090120-2L-42	AGG 4	12540000	380000	8230	350	114	16	328000	12000	82000000	3100000	1090	120	9.6	9.6	2620	250	29	18	62	26	194	35
LP090120-2s-18	AGG 4	12520000	590000	7920	400	244	22	416000	11000	81700000	3100000	338	61	0	1	3480	250	87	28	329	59	730	100
LP090120-2s-48	AGG 4	14360000	430000	8890	810	513	93	595000	35000	92000000	2300000	1087	97	75	27	4620	370	156	38	479	87	990	140
LP090120-2L-45	AGG 4	12570000	360000	8850	520	164	17	262000	11000	85000000	2600000	400	68	1.9	3.8	1040	120	67	23	202	57	342	55
LP090120-2L-78	AGG 4	13070000	450000	9350	640	210	53	393000	57000	83600000	2700000	431	63	3.8	5.3	5230	420	48	26	175	49	337	73
LP090120-2L-63	AGG 4	12900000	430000	8930	330	258	20	251600	8400	79400000	2300000	408	72	0	1	4490	360	15	12	50	22	221	48
LP090120-2L-7	AGG 4	12570000	380000	8390	600	249	21	212000	22000	81300000	2300000	378	59	0	1	4710	310	28	12	67	24	194	44
LP090120-2s-71	AGG 4	12760000	490000	5130	220	158	15	168100	4600	80900000	2700000	700	96	5.8	6.4	11600	590	29	16	67	25	100	39
LP090120-2L-38	AGG 4	13390000	540000	4950	290	150	16	162500	5600	82600000	3000000	637	82	7.7	9.1	10030	430	29	15	31	16	158	44
LP090120-2L-47	AGG 4	12980000	450000	6080	760	153	20	229900	9100	85800000	2600000	1108	92	160	200	13380	570	35	23	102	35	194	36
LP090120-2s-17	AGG 4	13070000	480000	4950	260	150	18	255000	16000	83200000	2100000	520	110	3.8	7.7	8930	530	38	19	163	49	252	54
LP090120-2L-35	AGG 4	12550000	360000	4920	280	150	20	249000	30000	81800000	1900000	546	88	12	12	9020	760	63	26	167	48	217	65
LP090120-2s-30	AGG 4	13100000	470000	5800	250	157	22	204100	5600	80200000	2800000	1180	150	13	10	15460	790	35	19	112	25	177	44
LP090120-2L-28	AGG 4	12970000	570000	5500	310	159	23	191500	6800	82200000	2500000	715	97	3.8	5.3	8780	470	9.6	9.6	56	25	106	31
LP090120-2L-22	AGG 4	12790000	490000	5150	290	159	24	280000	15000	82400000	2300000	1110	120	5.8	8.5	17270	880	62	30	131	41	156	48
LP090120-2s-20	AGG 4	12970000	540000	5800	320	130	18	210000	15000	84100000	2100000	730	130	1.9	3.7	10700	1000	22	15	35	18	117	33
LP090120-2s-37	AGG 4	12700000	550000	8540	440	351	35	156500	8400	78900000	2600000	721	87	3.8	7.7	7800	490	21	15	81	27	146	49
LP090120-2L-11	AGG 4	13320000	420000	5020	310	162	17	345000	24000	82100000	2700000	473	77	3.8	5.3	11710	790	46	27	260	53	365	89
LP090120-2s-54	AGG 4	12830000	520000	8380	490	250	24	403000	16000	79400000	2300000	1850	170	119	49	25400	1300	152	47	248	58	456	88
LP090120-2L-25	AGG 4	13230000	500000	7390	350	217	20	191800	6600	85100000	2300000	1320	130	9.3	7.6	10260	580	17	14	63	20	148	33
LP090120-2s-5	AGG 4	13010000	660000	5190	210	159	20	268000	11000	82500000	2700000	1100	120	15	11	19540	660	33	16	119	31	188	38
LP090120-2s-15	AGG 4	13210000	440000	5450	230	210	120	253000	27000	80800000	2300000	950	130	1.9	3.8	10370	930	31	18	90	34	127	40
LP090120-2L-44	AGG 4	12970000	520000	7250	420	190	20	370000	16000	83800000	3200000	2060	210	3.8	7.7	16900	980	42	20	123	44	223	65
LP090120-2L-32	AGG 4	13020000	520000	7250	340	177	21	351000	13000	84000000	2600000	1850	150	0	1	20150	800	35	22	142	39	263	71
LP090120-2L-65	AGG 4	12580000	360000	8000	300	192	17	335000	23000	83900000	3300000	738	87	0	1	10980	850	31	17	106	40	244	71
LP090120-2L-59	AGG 4	12550000	520000	12400	2600	215	24	514000	22000	83200000	2900000	2320	230	810	620	23600	1600	420	270	470	170	502	85
LP090120-2s-40	AGG 4	12730000	430000	8140	410	376	27	392000	13000	83300000	2500000	400	62	35	15	5780	340	219	52	483	78	506	83
LP090120-2s-45	AGG 4	13190000	490000	6270	270	170	19	275000	20000	80900000	2900000	712	76	9.6	9.6	10780	940	31	18	138	53	244	43
LP090120-2s-21	AGG 4	12870000	490000	7350	310	180	17	234600	6800	80660000	2800000	1100	120	1.9	3.8	10520	590	27	22	77	28	165	45
LP090120-2s-53	AGG 4	12940000	430000	8940	580	109	15	751000	52000	81700000	3300000	4210	320	0	1	7050	490	42	24	115	36	452	77
LP090120-2L-71	AGG 4	12800000	430000	7100	380	152	12	605000	27000	84100000	2200000	1306	85	8	11	19220	820	137	30	390	59	604	78
LP090120-2s-66	AGG 4	12890000	530000	6160	450	146	24	301000	51000	79000000	2500000	1180	230	7.7	7.2	9500	1200	12	12	75	34	152	53
LP090120-2s-64	AGG 4	14250000	640000	5710	530	144	16	184400	8700	84500000	2300000	785	95	12	13	7550	490	29	21	79	34	158	46
LP090120-2s-12	AGG 4	12980000	490000	5550	260	124	20	191000	16000	83500000	2400000	660	87	17	14	6490	370	9.6	9.6	42	21	100	29
LP090120-2s-1	AGG 4	12960000	420000	5850	280	106	13	192000	14000	81400000	2800000	930	110	7	10	7280	730	7.4	7	30	16	72	26
LP090120-2L-17	AGG 4	12610000	440000	8220	360	201	20	282000	13000	82000000	2700000	1580	200	0	1	9990	600	19	17	85	26	244	52
LP090120-2s-50	AGG 4	13080000	540000	5440	200	138	19	285000	16000	82700000	2700000	674	78	9	11	11590	580	41	24	193	46	267	48
LP090120-2s-70	AGG 4	12440000	370000	6610	500	152	18	473000	59000	82200000	2400000	1140	180	5.8	8.5	13800	1800	102	34	246	53	520	120
LP090120-2L-46	AGG 4	13240000	470000	9170	700	191	17	426000	16000	84300000	3100000	1850	180	120	180	10930	510	48	51	163	42	233	44
LP090120-2s-4	AGG 4	12830000	460000	7770	320	171	18	357000	17000	81900000	2700000	1660	190	5.8	8.5	12200	740	40	25	171	48	302	59
LP090120-2s-55	AGG 4	12910000	500000	5400	240	179	21	171800	6900	80400000	2600000	870	100	69	26	10060	400	26	18	72	29	87	29
LP090120-2s-41	AGG 4	12990000	550000	8570	420	152	14	237600	8400	83000000	2500000	1710	140	0	1	5090	320	27	19	90	29	208	49
LP090120-2L-77	AGG 4	12880000	520000	5830	340	146	17	242200	9200	83700000	2800000	952	99	0	1	8920	550	19	15	60	25	129	37
LP090120-2s-32	AGG 4	12950000	510000	24000	10000	133	19	317000	84000	81600000	2400000	1060	280	1270	800	12900	2400	480	300	410	180	330	130
LP090120-2s-58	AGG 4	12530000	460000	5720	260	141	21	187100	6700	81100000	2800000	1042	90	3.8	7.7	8680	330	15	12	44	19	110	39
LP090120-2s-63	AGG 4	12690000	540000	10330	480	59000	36000	359000	25000	80100000	3000000	4900	2500	31	25	4170	260	71	31	204	40	288	47
LP090120-2s-56	AGG 4	12600000	490000	5150	270	146	19	181000	7200	79900000	2500000	644	82	1.9	3.8	7680	390	21	19	65	25	94	32
LP090120-2L-19	AGG 4	12470000	400000	6500	390	151	16	256800	7900	84300000	2700000	1110	100	17	15	10680	380	25	16	65	30	119	30
LP090120-2s-13	AGG 4	13770000	480000	35500	1700	423	65	1065000	53000	82400000	1700000	1150	110	63	36	1450	160	73	29	312	52	856	94
LP090120-2s-23	AGG 4	13040000	540000	47300	2400	324	27	1395000	69000	80700000	2800000	427	74	3.8	7.7	720	110	127	38	387	80	1050	140
LP090120-2L-70	AGG 4	12990000	430000	39300	1900	256	24	1065000	40000	83900000	2500000	327	59	3.8	7.7	252	65	33	23	123	43	385	68
LP090120-2s-51	AGG 4	12360000	510000	16260	730	355	27	287000	11000	77600000	2700000	690	110	38	16	5600	280	285	53	950	100	1850	160
LP090120-2s-22	AGG 4	12640000	390000	17600	830	214	22	454000	16000	79400000	3900000	969	88	1.9	3.8	4690	190	37	20	94	35	315	43
LP090120-2s-61	AGG 4	12570000	490000	5400	280	261	28	41300	1700	80400000	2400000	800	100	3.8	7.7	1520	130	31	15	77	38	154	54
LP090120-2s-39	AGG 4	12730000	420000	5880	330	359	26	59300	3200	83600000	2900000	325	62	3.8	5.3	4060	210	38	21	100	29	154	45
LP090120-2L-30	AGG 4	12490000	400000	4910	230	364	30	38200	1600	82800000	3100000	437	59	3.8	5.3	1880	160	46	21	119	40	265	52
LP090120-2s-2	AGG 4	13060000	500000	16400	1200	301	63	709000	94000	81800000	2500000	1460	140	40	21	4040	730	430	140	1050	210	1720	240
LP090120-2s-35	AGG 4	12780000	420000	21900	1300	330	180	615000	34000	83100000	3100000	663	80	1.9	3.8	1060	220	125	40	333	91	680	100
LP090120-2L-14	AGG 4	12970000	400000	7910	390	390	26	103700	3800	83400000	2800000	721	95	9.6	9.6	7730	400	63	26	213	46	338	73
LP090120-2s-10	AGG 4	12760000	380000	5640	450	121	19	130000	20000	83000000	2100000	870	160	0	1	10700	1800	15	12	38	23	108	37
LP090120-2L-18	AGG 4	13370000	350000	19430	730	295	36	1327000	54000	81900000	2800000	1540	160	67	25	45800	1400	800	110	2380	160	3810	240
LP090120-2s-79	AGG 4	13530000	420000	8500	400	273	26	175100	8400	81800000	2900000	708	74	120	230	4980	310	37	20	69	29	129	41
LP090120-2s-80	AGG 4	12770000	450000	5780	290	111	14	158600	9000	82700000	2800000	829	77	5.8	6.4	15690	920	29	31	100	34	144	37
LP090120-2L-52	AGG 4	13000000	450000	5960	370	127	17	209000	30000	85000000	2900000	900	120	0	1	570	160	0	1	11.5	8.4	69	25
LP090120-2L-24	AGG 4	13820000	580000	18480	660	150	19	574000	19000	89300000	2300000	930	120	44	37	980	160	27	16	52	22	212	39
LP090120-2s-59	AGG 4	12430000	300000	4980	280	135	19	124200	6400	79800000	2900000	663	72	12	12	8140	480	87	36	163	38	319	60
LP090120-2s-65	AGG 4	12770000	410000	13980	940	327	33	323000	18000	83500000	2200000	937	91	15	17	10580	700	70	25	170	37	294	64
LP090120-2L-16	AGG 4	12840000	470000	11970	610	193	18	455000	41000	83200000	2900000	687	95	63	41	6850	810	160	50	373	85	590	110
LP090120-2L-58	AGG 4	12690000	480000	9910	580	311	20	554000	21000	83400000	2600000	2510	180	11	13	7580	390	193	43	685	68	1180	120
LP090120-2L-64	AGG 4	12860000	450000	10660	920	155	15	427000	30000	82500000	3000000	1350	140	38	58	4410	300	146	37	430	140	730	220
LP090120-2s-74	AGG 4	12170000	360000	19000	1500	217	25	791000	36000	81200000	2600000	6820	540	27	14	14390	690	88	32	350	48	730	120
LP090120-2L-57	AGG 4	12630000	510000	10290	480	292	22	323000	16000	81400000	2500000	980	130	3.8	7.7	9020	580	46	23	154	39	313	68
LP090120-2s-75	AGG 4	12590000	450000	7550	390	351	33	408000	22000	80800000	2600000	608	91	29	19	2990	220	371	55	1150	130	1220	100
LP090120-2s-6	AGG 4	12970000	460000	4880	220	183	26	153700	6300	81400000	2300000	1120	130	3.8	5.3	3620	200	15	11	65	29	121	28
LP090120-2L-4	AGG 4	12480000	490000	7970	320	339	35	299000	16000	81700000	2500000	344	59	10	11	6280	420	113	44	323	51	660	92
LP090120-2L-3	AGG 4	12330000	550000	74000	16000	166	34	340000	17000	77600000	3100000	687	93	2130	580	20800	2300	2020	540	2200	540	830	160
LP090120-2s-7	AGG 4	12480000	380000	7110	390	209	25	361000	16000	81000000	2100000	930	100	19	15	2780	230	308	63	900	75	1130	110
LP090120-2s-29	AGG 4	12430000	530000	32500	1700	197	21	794000	27000	81500000	2300000	546	91	12	10	920	120	29	23	129	40	487	82
LP090120-2L-67	AGG 4	12550000	360000	7580	370	233	24	579000	22000	85200000	2500000	1250	120	30	20	7830	410	283	50	750	110	1250	130
LP090120-2s-68	AGG 4	12740000	480000	10600	1100	227	43	462000	98000	81300000	2900000	2140	540	23	17	15000	3000	163	61	470	120	740	150
LP090120-2L-39	AGG 4	13150000	310000	34000	5500	246	33	577000	32000	81600000	2700000	677	88	3300	3400	10600	8100	2000	1900	1900	1300	860	270
LP090120-2s-73	AGG 4	13180000	580000	7100	280	256	18	154600	7000	82700000	3200000	1110	120	0	1	2230	180	25	16	60	23	129	35
LP090120-2s-34	AGG 4	12160000	430000	11120	520	122	15	245100	7100	81100000	3100000	658	80	5.8	8.5	5850	340	63	30	167	31	294	51
LP090120-2s-52	AGG 4	13370000	420000	11270	400	270	25	707000	24000	83600000	3200000	690	110	48	22	8460	490	292	65	746	79	1390	150
LP090120-2L-10	AGG 4	12260000	420000	9070	370	641	45	557000	20000	83500000	2100000	237	61	9.6	7.9	1290	110	163	42	387	68	598	67
LP090120-2L-27	AGG 4	13160000	400000	13430	570	288	27	369000	13000	85500000	2800000	990	120	3.8	5.3	2260	180	54	23	177	52	396	69
LP090120-2L-36	AGG 4	12640000	450000	7880	310	153	16	263200	7900	84700000	2500000	2430	190	0	1	5350	300	21	19	60	24	150	30
LP090120-2s-25	AGG 4	13040000	380000	9190	460	325	25	407000	20000	78700000	2600000	1190	140	3.7	5.1	2680	180	128	40	320	52	531	89
LP090120-2s-77	AGG 4	12870000	410000	13910	710	144	18	376000	20000	82000000	2400000	1240	120	1.9	3.8	9090	590	73	33	110	43	240	43
LP090120-2L-9	AGG 4	12770000	560000	7470	370	308	19	138500	3900	82500000	2900000	1480	150	21	17	3390	230	35	15	75	27	135	28
LP090120-2L-69	AGG 4	13160000	420000	7710	450	225	25	303000	33000	84700000	2600000	1060	140	730	570	24900	1600	350	220	410	140	510	110
LP090120-2L-8	AGG 4	12650000	550000	8260	410	251	24	211000	27000	81100000	3500000	1710	480	6	12	3480	180	52	24	181	53	327	99
LP090120-2L-61	AGG 4	12720000	460000	10590	590	222	21	319000	17000	82700000	2500000	1990	140	81	32	11070	790	39	20	137	43	224	57
LP090120-2L-31	AGG 4	12630000	320000	15000	680	190	22	331900	7700	84100000	2300000	2550	180	19	17	5950	350	12	10	62	21	177	42
LP090120-2s-57	AGG 4	12990000	410000	25400	1200	530	100	1387000	60000	82000000	2500000	6830	410	31	15	70100	2800	225	47	654	74	1410	130
LP090120-2L-13	AGG 4	12120000	370000	11750	560	157	16	346000	22000	84900000	2600000	1540	140	7.7	9.1	5370	300	23	14	160	51	244	43
LP090120-2s-42	AGG 4	13190000	450000	5040	300	206	25	127400	9200	82600000	2500000	648	90	46	20	3670	380	56	24	138	41	160	42

LP090120-2s-28	AGG 4	12750000	470000	59000	15000	268	34	452000	19000	77900000	3300000	1560	160	3000	1900	36500	5300	1480	640	1430	510	890	150
LP090120-2s-69	AGG 4	13820000	560000	29600	1600	291	29	932000	65000	84600000	2600000	1120	140	15	12	2900	300	81	21	190	44	660	100
LP090120-2s-38	AGG 4	12870000	460000	35700	1600	463	30	934000	45000	83400000	2600000	500	55	1.9	3.8	4320	290	100	39	356	65	906	87
LP090120-2s-47	AGG 4	12730000	490000	13220	680	380	31	724000	25000	80500000	2200000	730	100	7.7	7.2	5700	420	225	53	663	75	1158	90
LP090120-2s-67	AGG 4	13220000	450000	20500	1400	327	30	543000	21000	81600000	2600000	713	85	1.9	3.8	7610	890	35	15	152	36	404	76
LP090120-2s-11	AGG 4	12890000	320000	9850	480	223	24	247000	11000	81900000	2300000	1140	110	17	12	16300	1100	23	14	117	33	260	57
LP090120-2L-5	AGG 4	12470000	300000	20310	960	377	26	450000	20000	83900000	2000000	552	76	5.8	8.5	3640	240	50	21	138	29	450	84
LP090120-2L-54	AGG 4	12700000	420000	6650	270	337	36	154400	6700	83800000	2400000	850	100	3.8	7.7	3200	190	46	21	85	31	225	54
LP090120-2L-33	AGG 4	13170000	420000	8290	320	393	33	189200	4800	85700000	1900000	1320	130	3.8	5.3	15030	650	50	25	169	44	269	50
LP090120-2L-1	AGG 4	12900000	540000	7120	340	228	24	329000	47000	82300000	3100000	3010	280	9.6	9.6	12970	680	221	73	680	220	1020	330
LP090120-2L-43	AGG 4	12760000	500000	7640	350	739	50	257500	9000	84100000	2800000	610	64	54	25	6090	320	810	100	1790	200	1740	170
LP090120-2L-29	AGG 4	13060000	520000	7480	360	203	19	250000	18000	83100000	2900000	588	92	3.8	5.3	7300	450	69	24	262	66	431	85
LP090120-2L-72	AGG 4	12570000	340000	7020	360	312	23	303000	8800	80660000	2600000	329	51	21	17	9770	520	254	38	813	84	1002	94
LP090120-2s-36	AGG 4	13840000	540000	8440	400	189	20	226000	12000	84600000	2200000	565	86	42	28	8000	510	77	37	115	46	219	62
LP090120-2s-60	AGG 4	12680000	430000	5810	420	281	24	68900	2300	83000000	2600000	335	53	0	1	2900	230	19	11	25	14	46	20
LP090120-2L-26	AGG 4	11130000	420000	388000	17000	203	23	336000	12000	72400000	2300000	2380	200	87800	4700	434000	20000	86800	4200	79000	3800	14700	1100
LP090120-2s-72	AGG 4	12850000	700000	9400	1400	376	39	118500	4000	82500000	3600000	1070	110	1700	1100	31300	4100	700	440	660	340	281	55
LP090120-2s-9	AGG 4	12620000	490000	8630	560	197	25	233000	12000	80900000	2300000	850	82	3.8	5.3	14870	570	215	43	463	83	550	88
LP090120-2L-6	AGG 4	12530000	470000	6640	350	245	27	143000	11000	82100000	2500000	1240	120	3.8	5.3	10290	550	54	27	113	34	237	63
LP090120-2s-16	AGG 4	12430000	420000	190000	67000	143	14	154000	8700	77300000	3400000	346	62	19000	7100	73000	25000	12300	4600	11100	3800	2230	700
LP090120-2s-78	AGG 4	12390000	330000	7450	430	333	29	94600	3500	81400000	3100000	840	62	1.9	3.8	13480	650	81	27	208	48	254	47
LP090120-2L-41	AGG 4	12940000	460000	10690	440	330	29	537000	20000	83100000	2700000	860	110	21	15	8790	560	412	78	1000	100	1360	160
LP090120-2s-14	AGG 4	12930000	420000	7300	380	218	29	158000	6100	82600000	2700000	1850	140	8	11	7240	400	17	15	63	22	202	46
LP090120-2L-73	AGG 4	13220000	440000	7590	420	200	19	135300	5700	82700000	1900000	1250	120	0	1	9990	460	23	15	67	23	104	35
LP090120-2L-60	AGG 4	13140000	510000	8510	380	325	25	171600	5000	83400000	2900000	987	92	3.8	7.7	7720	330	38	16	104	32	229	51
LP090120-2L-2	AGG 4	12590000	440000	9160	430	162	18	240800	7300	83600000	3000000	2130	150	0	1	19770	970	48	24	127	36	233	58
LP090120-2L-21	AGG 4	13420000	340000	8350	370	242	22	160800	5200	86000000	2900000	1070	120	7.7	9.1	23510	930	110	39	262	57	412	68
LP090120-2L-53	AGG 4	13040000	360000	7730	420	252	30	138500	4300	81100000	2400000	542	97	0	1	18920	850	27	15	85	26	177	33
LP090120-2s-24	AGG 4	12710000	520000	6020	280	322	32	73300	2100	82700000	3000000	188	52	9.6	9.6	1570	110	23	16	42	20	75	29
LP090120-2L-76	AGG 4	13080000	420000	7830	330	252	22	159000	6300	83100000	2100000	800	110	9.6	9.6	14900	560	60	23	138	38	267	66
LP090120-2L-48	AGG 4	13250000	330000	5450	280	144	18	55600	2200	87300000	2800000	198	40	0	1	529	71	1.9	3.8	17	17	15	12
LP090120-2s-26	AGG 4	12950000	410000	8220	410	219	22	167700	4400	81200000	2900000	815	72	1.9	3.8	14130	540	38	15	196	24	267	59
LP090120-2L-74	AGG 4	12470000	450000	5040	250	219	21	27500	1700	81900000	2100000	198	45	0	1	590	84	0	1	5.8	6.4	33	18
LP090120-2L-23	AGG 4	12940000	530000	11800	1200	263	24	349000	13000	85000000	2800000	3250	210	160	73	14160	800	131	40	248	65	323	59
LP090120-2s-33	AGG 4	13270000	530000	8580	430	229	27	294000	12000	81000000	3800000	448	81	12	10	5790	390	104	40	308	73	467	93
LP090120-2s-44	AGG 4	13170000	540000	7430	370	176	20	106300	4000	85900000	2900000	306	58	23	14	7090	460	63	27	112	37	173	43
LP090120-2L-68	AGG 4	13270000	470000	7530	400	216	23	139400	4600	85600000	2800000	654	87	5.8	8.5	19020	670	29	15	131	27	246	49
LP090120-2L-49	AGG 4	13530000	620000	8120	380	163	21	511000	33000	84400000	2500000	925	91	1.9	3.8	3890	270	90	37	312	80	592	90
LP090120-2L-12	AGG 4	13080000	420000	4310	210	114	13	38500	1400	83200000	2700000	220	48	3.7	7.4	1410	100	9	11	5.6	6.2	31	14
LP090120-2L-55	AGG 4	12820000	440000	8090	410	344	40	171100	5300	83600000	3000000	477	81	0	1	7420	380	33	19	112	37	262	55
LP090120-2s-27	AGG 4	13150000	580000	6270	360	228	20	177000	11000	80700000	2200000	277	53	0	1	8930	700	71	24	265	38	523	91
Rejected Grains																							
LP090120-2s-62	AGG 4	12780000	380000	15040	590	204	30	523000	20000	80600000	2700000	1200	120	24	14	9460	470	61	23	178	37	328	66
LP090120-2L-62	AGG 4	12390000	440000	8650	400	194	23	374000	17000	82600000	3100000	1450	150	0	1	13840	930	67	21	152	37	287	50
LP090120-2s-49	AGG 4	12620000	410000	23800	1100	484	33	2239000	91000	82700000	2200000	4610	280	7.4	8.8	69900	2900	469	82	1670	130	3180	190
LP090120-2s-19	AGG 4	12830000	420000	4180	300	120	22	39800	3400	78200000	2300000	233	61	8	12	629	75	12	12	5.8	6.4	23	17
LP090120-2L-20	AGG 4	11140000	460000	7370	390	3242000	72000	780000	28000	40000	2900	221000	11000	124300	5300	757000	47000	150400	7500	133800	5900	37200	1900
LP090120-2s-8	AGG 4	13250000	410000	22000	5700	660	130	567000	39000	76000000	2900000	1560	160	850	620	10100	3500	1310	920	1900	1100	1280	190
LP090120-2L-50	AGG 4	12580000	350000	8320	400	1020	210	160100	5500	80200000	3500000	1110	150	2400	2000	8200	4800	770	620	480	310	248	74
LP090120-2L-75	AGG 4	12010000	510000	260000	36000	790	240	1101000	56000	74700000	2100000	3620	280	54100	8600	259000	27000	33700	4800	26800	3800	7190	820
LP090120-2s-31	AGG 4	13260000	560000	11660	470	192	16	450000	37000	80200000	2600000	820	150	12	14	9000	1100	73	29	179	39	356	79
LP090120-2L-56	AGG 4	12720000	370000	7980	370	249	60	222500	7100	82500000	3100000	1380	150	5.8	6.4	5980	350	58	21	106	31	227	52
Sample 090120-3																							
Grain	Unit	Si (ppm)	error	P (ppm)	error	Ti (ppm)	error	Y (ppm)	error	Zr (ppm)	error	Nb (ppm)	error	La (ppm)	error	Ce (ppm)	error	Pr (ppm)	error	Nd (ppm)	error	Sm (ppm)	error
LP090120-3s-111	AGG 4	13150000	240000	12310	590	262	36	612000	27000	89900000	2300000	1730	210	0	1	4360	290	60	23	204	43	600	74
LP090120-3s-3	AGG 4	12190000	360000	100200	5700	191	21	367000	40000	84300000	2700000	578	72	12590	820	29800	1800	2810	240	1900	240	620	120
LP090120-3s-26	AGG 4	13860000	520000	8100	390	1010	620	437000	14000	86100000	2600000	1620	120	310	260	7030	360	190	110	222	68	350	60
LP090120-3s-79	AGG 4	13320000	310000	6420	300	177	25	189400	9300	85500000	2300000	600	60	0	1	2570	180	7.1	7.8	85	33	165	36
LP090120-3L-65	AGG 4	13000000	280000	10720	520	245	18	237700	4700	87100000	2300000	548	70	278	80	3380	220	102	34	176	47	220	41
LP090120-3L-36	AGG 4	13010000	350000	9120	390	356	28	225700	7400	86100000	2800000	387	77	17	15	4120	270	50	23	159	42	283	53
LP090120-3s-25	AGG 4	13640000	430000	10060	490	217	25	424000	34000	84000000	2700000	750	120	13	13	1250	210	75	31	291	56	527	76
LP090120-3L-50	AGG 4	12980000	410000	6940	330	162	19	154800	4300	85600000	1900000	461	62	0	1	2440	200	4.3	6	27	13	121	38
LP090120-3L-62	AGG 4	12950000	230000	12100	420	193	19	1509000	40000	88700000	2400000	1060	130	25	14	5970	370	772	89	2570	200	3690	190
LP090120-3s-103	AGG 4	13060000	280000	13820	810	190	22	973000	38000	89800000	2400000	960	100	22	15	19210	780	363	68	1100	130	1680	200
LP090120-3s-84	AGG 4	13140000	340000	17700	770	132	18	1109000	37000	86800000	1800000	1175	94	63	80	4090	290	223	56	750	130	1590	110
LP090120-3s-10	AGG 4	12240000	380000	8270	300	243	22	378000	32000	83600000	2200000	561	81	0	1	1110	120	46	24	145	44	382	55
LP090120-3s-15	AGG 4	12530000	410000	9920	590	211	16	650000	28000	83400000	3200000	552	82	0	1	7700	470	83	32	311	61	705	76
LP090120-3s-82	AGG 4	13180000	330000	13290	560	132	14	608000	22000	85900000	2900000	890	100	0	1	5640	320	55	22	181	39	367	53
LP090120-3L-49	AGG 4	12580000	400000	6980	330	137	17	185800	7500	86000000	2200000	428	72	0	1	4520	260	4.3	6	6.8	7.5	123	39
LP090120-3s-59	AGG 4	12880000	370000	9500	390	208	14	357000	17000	86100000	1900000	494	62	2.2	4.3	5380	270	21	15	100	30	227	48
LP090120-3L-26	AGG 4	13070000	370000	10200	1300	239	19	252400	7400	89600000	2100000	454	70	150	150	4780	620	76	63	159	95	217	63
LP090120-3L-16	AGG 4	13020000	320000	35200	1400	313	30	835000	19000	87800000	2100000	554	82	0	1	411	66	35	18	146	42	466	64
LP090120-3L-48	AGG 4	13260000	310000	11120	520	201	20	491000	13000	86900000	2500000	2710	190	0	1	29370	870	46	18	154	36	308	61
LP090120-3L-41	AGG 4	13030000	330000	11350	440	253	20	296000	11000	86000000	2600000	759	97	23	22	3150	180	30	28	43	20	191	35
LP090120-3s-117	AGG 4	14170000	310000	5710	330	670	140	321000	11000	92900000	2500000	1250	150	126	53	14880	560	65	22	159	39	228	56
LP090120-3s-118	AGG 4	13370000	380000	7750	290	175	21	609000	29000	87500000	2600000	1329	91	48	27	22190	840	194	55	477	74	790	110
LP090120-3L-7	AGG 4	12810000	300000	7980	370	204	17	180500	6400	86300000	2200000	770	97	4.3	6	9140	420	20	14	68	25	154	44
LP090120-3L-13	AGG 4	12880000	330000	4810	270	128	17	105200	3500	85800000	1800000	554	63	0	1	7810	370	0	1	44	16	61	25
LP090120-3s-29	AGG 4	13230000	300000	5000	250	131	12	254000	22000	87500000	2700000	423	73	2.2	4.3	6850	410	32	17	111	30	191	31
LP090120-3s-54	AGG 4	13040000	440000	5180	320	160	21	229000	12000	87100000	2600000	623	92	27	16	9370	280	43	17	107	28	152	40
LP090120-3s-115	AGG 4	13500000	480000	6280	340	154	12	313000	22000	89200000	2800000	970	130	0	1	16800	1400	26	16	72	27	152	40
LP090120-3s-52	AGG 4	12720000	400000	5140	280	155	20	336000	42000	87500000	2600000	630	110	2.2	4.3	11100	1100	41	16	260	70	354	85
LP090120-3s-105	AGG 4	13030000	270000	10940	910	255	21	319000	12000	88900000	2600000	1600	130	390	190	13400	770	196	88	252	67	243	56
LP090120-3L-45	AGG 4	12990000	430000	6560	290	149	18	411100	9800	86900000	2200000	2800	140	450	120	22300	970	175	63	217	38	271	50
LP090120-3s-65	AGG 4	13000000	300000	4630	240	155	20	69600	2700	88800000	2000000	632	66	0	1	5150	260	15	13	24	15	24	15
LP090120-3L-53	AGG 4	12800000	360000	8790	330	339	25	204600	5500	83900000	2300000	759	89	0	1	8670	260	26	14	109	38	271	48
LP090120-3s-6	AGG 4	12740000	610000	39000	17000	199	34	294300	9300	82400000	2300000	1033	83	4600	2500	21200	7800	2100	1100	1580	820	550	150
LP090120-3L-56	AGG 4	12970000	280000	7450	340	252	22	578000	25000	86300000	2800000	1740	130	36	25	30500	2200	184	34	472	67	600	110
LP090120-3s-14	AGG 4	12990000	430000	7930	360	187	19	479000	17000	82400000	2400000	2450	200	2.2	4.3	8990	510	24	14	67	21	198	34
LP090120-3s-74	AGG 4	13130000	330000	4640	360	128	17	216000	36000	85800000	2600000	420	60	0	1	6980	860	34	20	100	31	150	44
LP090120-3L-35	AGG 4	12920000	350000	5410	270	128	20	282000	13000	83900000	2600000	850	100	9.1	8.4	10140	560	39	18	152	41	204	43
LP090120-3L-80	AGG 4	12990000	410000	4960	240	256	23	178300	6800	87200000	2400000	575	63	2.3	4.5	13710	590	39	22	102	30	93	22
LP090120-3L-23	AGG 4	12870000	290000	6840	300	158	19	351300	8800	86300000	2700000	2180	160	0	1	12030	700	2.4	4.8	81	25	191	30
LP090120-3L-25	AGG 4	12900000	390000	5170	260	233	36	167000	7300	87900000	2800000	740	89	159	43	10260	580	54	27	76	27	59	24
LP090120-3s-63	AGG 4	12840000	350000	4930	160	138	21	337000	27000	86600000	1700000	508	65	8.7	8.1	11600	1000	52	23	215	43	315	53
LP090120-3s-95	AGG 4	13280000	430000	6990	270	305	31	348000	17000	91900000	3200000	1020	120	0	1	3620	280	131	37	359	52	557	87
LP090120-3L-3	AGG 4	13060000	350000	5980	340	135	16	354000	30000	85500000	2300000	1890	330	0	1	10100	620	11.9	9.5	48	21	111	33
LP090120-3s-56	AGG 4	12720000	380000	6640	360	158	12	269000	18000	88500000	3100000	910	110	0	1	9520	670	35	18	102	37	182	41
LP090120-3s-47	AGG 4	12810000	500000	9440	420	212	23	620000	43000	84900000	2400000	2070	130	14	12	19500	1500	76	26	244	55	448	47
LP090120-3L-18	AGG 4	13140000	400000	5190	240	162	21	342000	10000	87000000	3400000	1160	120	0	1	11060	520	6.5	7.2	41	20	130	31
LP090120-3L-15	AGG 4	12910000	500000	5800	280	169	14	157200	9900	85300000	2100000	1280	140	2.2	4.3	10480	450	14.6	9.5	18	14	78	30
LP090120-3s-108	AGG 4	13320000	420000	8240	340	235	23	908000	29000	87000000	3100000	3140	160	0	1	3190	180	0	1	37	20	217	46
LP090120-3s-76	AGG 4	13280000	340000	10600	2300	139	17	384000	21000	88600000	2400000	1410	190	2.1	4.2	9900	2700	24	18	133	53	330	100
LP090120-3s-17	AGG 4	13620000	440000	8270	460	208	18	430000	19000	84700000	2700000	1420	110	17	12	19070	770	178	58	615	97	890	100
LP090120-3s-45	AGG 4	12710000	400000	11580	410	214	21	546000	53000	86100000	1700000	1370	200	152	43	24700	1800	258	60	502	95	646	92
LP090120-3s-110	AGG 4	12900000	400000	7590	400	171	18	176000	6100	85800000	2600000	372	54	0	1	3460	200	15	12	52	23	120	47
LP090120-3L-29	AGG 4	13410000	520000	8690	430	203	24	262000	5000	89300000	2400000	1015	98	0	1	17990	700	36	17	110	34	250	44
LP090120-3s-89	AGG 4	13190000	440000	14680	550	322	20	743000	21000	87100000	2600000	789	68	0	1	2820	250	127	38	398	56	800	78
LP090120-3s-80	AGG 4	12640000	360000	14710	650	262	21	529000	18000	88600000	2100000	1770	140	0	1	17360	730	41	18	148	30	391	47
LP090120-3L-78	AGG 4	13500000	470000	7660	400	163	15	256700	7100	87000000	1800000	1190	100	4.3	6	19490	610	20	12	75	29	213	48
LP090120-3s-7	AGG 4	13550000	620000	12290	730	332	22	356000	35000	83100000	2600000	890	110	59	28	1770	420	191	99	250	87	363	74
LP090120-3s-57	AGG 4	13450000	590000	12700	470	355	41	490000	24000	87300000	2700000	870	110	8.7	8.1	14950	630	173	38	515	87	678	65
LP090120-3s-92	AGG 4	12530000	340000	6230	350	207	24	395000	36000	87900000	2800000	1500	150	0	1	3540	230	87	28	322	62	533	67
LP090120-3L-14	AGG 4	12720000	370000	47300	1700	158	18	1314000	66000	85900000	2300000	1050	100	0	1	1340	120	16	12	88	24	328	52
LP090120-3L-24	AGG 4	12750000	470000	8500	390	208	24	184600	6200	85000000	1900000	577	77	0	1	5160	460	32	14	127	39	224	46
LP090120-3s-112	AGG 4	12880000	310000	19200	970	347	30	456000	23000	89600000	3100000	904	97	0	1	4080	210	80	28	283	37	550	60
LP090120-3L-59	AGG 4	12930000	510000	14650	470	242	23	441000	11000	87700000	2500000	930	130	0	1	6030	270	17	12	181	38	335	77

LP090120-3s-119	AGG 4	13900000	250000	8880	450	324	27	321000	19000	94700000	2300000	1250	140	187	57	3680	370	413	79	591	99	688	90
LP090120-3L-74	AGG 4	12930000	310000	36200	1300	294	27	1029000	37000	86600000	2700000	507	91	0	1	1400	110	75	22	290	66	730	120
LP090120-3s-12	AGG 4	12620000	310000	6980	360	219	19	232600	8300	83100000	2300000	402	52	0	1	6510	290	63	22	233	31	313	61
LP090120-3s-28	AGG 4	13900000	480000	8920	370	311	33	180300	6200	88500000	2700000	1400	120	20	14	14050	610	128	43	200	44	293	41
LP090120-3s-68	AGG 4	13040000	480000	8070	300	239	23	276000	17000	83700000	2400000	1360	120	0	1	4030	280	76	27	348	70	593	73
LP090120-3s-8	AGG 4	12830000	430000	14680	590	5100	4500	341000	13000	84100000	3300000	1420	470	2.2	4.3	3330	470	4.5	6.3	48	20	120	33
LP090120-3s-13	AGG 4	12710000	310000	7070	270	152	20	245900	7100	84900000	2100000	1530	100	0	1	12020	520	36	20	187	40	302	52
LP090120-3s-18	AGG 4	13250000	450000	6370	140	224	23	154100	8300	84800000	2200000	513	91	8.7	8.1	7980	370	102	29	207	42	252	50
LP090120-3L-34	AGG 4	12750000	320000	8860	390	281	22	64200	2300	86600000	3400000	358	68	0	1	2020	110	20	11	122	29	265	59
LP090120-3s-73	AGG 4	12920000	370000	19630	660	230	25	573000	29000	86500000	2700000	843	88	9.1	8.4	2270	190	89	28	270	70	509	81
LP090120-3s-39	AGG 4	13040000	320000	11110	520	339	24	583000	19000	88100000	2600000	2140	140	8.7	8.1	23780	750	398	54	1120	120	1620	120
LP090120-3s-114	AGG 4	13140000	370000	17230	580	123	19	629000	25000	87000000	1600000	891	91	4.3	6	5080	290	100	31	359	63	645	83
LP090120-3L-2	AGG 4	12640000	370000	11300	330	189	18	334000	11000	85100000	2600000	611	88	2.2	4.3	2460	200	20	15	126	45	307	48
LP090120-3s-44	AGG 4	12450000	400000	15660	650	135	20	371000	14000	86400000	2400000	492	77	0	1	411	51	10.9	8.8	41	21	176	45
LP090120-3L-12	AGG 4	13530000	390000	13040	580	153	17	604000	21000	89300000	2700000	3190	160	137	64	21500	1000	135	54	290	62	540	82
LP090120-3s-85	AGG 4	13610000	390000	8950	450	2230	470	207300	8100	93700000	2700000	1180	150	168	34	8100	1100	760	110	950	130	643	96
LP090120-3s-37	AGG 4	12940000	420000	10360	430	154	18	478000	16000	87700000	2300000	1030	100	0	1	9420	350	70	22	258	65	445	79
LP090120-3L-51	AGG 4	12960000	300000	4890	200	228	20	75900	3300	86000000	2500000	317	45	0	1	2240	160	20	11	43	23	148	40
LP090120-3s-90	AGG 4	13550000	380000	12450	560	243	25	189500	7500	88000000	1800000	431	56	0	1	810	110	66	27	257	57	402	62
LP090120-3s-9	AGG 4	13740000	520000	7640	450	281	65	374000	29000	88800000	3500000	1040	150	50	25	7680	560	83	33	209	42	450	83
LP090120-3L-43	AGG 4	13100000	440000	7870	330	294	26	273100	5400	84900000	2000000	1840	140	0	1	3180	260	16	12	102	38	307	46
LP090120-3s-116	AGG 4	13300000	350000	11790	650	329	23	356000	10000	88000000	2100000	702	90	6.5	7.2	5850	290	159	36	581	64	860	130
LP090120-3s-94	AGG 4	13490000	350000	67000	25000	176	18	232500	6500	88800000	3300000	1431	93	5100	7300	7300	4200	1200	930	2200	1900	800	380
LP090120-3L-64	AGG 4	12900000	450000	6610	250	227	28	146600	7700	84000000	2600000	960	110	27	16	3900	280	39	22	94	33	81	24
LP090120-3s-5	AGG 4	12770000	310000	8320	300	182	25	303000	13000	87800000	2500000	1110	130	27	22	6800	360	43	20	148	39	184	48
LP090120-3L-31	AGG 4	12760000	380000	24320	980	322	31	666000	30000	87900000	2400000	481	81	4.5	6.3	3380	210	169	51	527	63	1060	130
LP090120-3s-77	AGG 4	12960000	420000	10240	480	523	37	241000	16000	85800000	2300000	840	110	13.6	9.7	1680	170	76	25	187	36	300	61
LP090120-3s-70	AGG 4	12260000	360000	21000	1300	232	22	530000	31000	86500000	2200000	411	62	0	1	457	76	37	23	107	30	363	66
LP090120-3s-55	AGG 4	13040000	460000	7250	400	401	22	230400	9100	87500000	3000000	789	79	15	13	3570	160	230	61	528	92	763	72
LP090120-3s-43	AGG 4	13990000	570000	10530	450	450	28	253800	9800	83900000	2900000	940	110	2.2	4.3	6440	340	25	14	152	32	254	52
LP090120-3s-106	AGG 4	12870000	430000	10480	470	137	15	287000	12000	86000000	2000000	980	100	26	15	3970	250	272	58	648	69	790	120
LP090120-3L-17	AGG 4	13170000	320000	5620	260	230	28	232200	8900	88300000	2700000	4890	270	2.2	4.3	5920	250	96	33	304	54	407	66
LP090120-3s-48	AGG 4	12700000	250000	8550	350	456	40	159600	6200	84600000	2100000	744	85	11	11	3810	190	23	14	160	42	174	49
LP090120-3s-42	AGG 4	13010000	340000	8100	540	207	18	484000	72000	89200000	3000000	1710	220	6.2	6.9	9720	760	306	62	700	130	1220	170
LP090120-3s-4	AGG 4	12780000	350000	15500	1800	270	43	516000	62000	84700000	2600000	2970	280	5200	2500	27400	8100	2900	1300	2200	910	760	220
LP090120-3s-16	AGG 4	13460000	340000	8700	1200	158	19	245000	49000	84300000	2500000	1300	150	16.7	9.8	4400	1100	22	14	100	54	152	65
LP090120-3s-97	AGG 4	13120000	360000	12220	520	224	18	894000	56000	87400000	2100000	1630	140	14.6	9.5	10460	700	213	38	646	81	1270	130
LP090120-3s-120	AGG 4	12990000	360000	7010	350	177	18	219000	15000	89200000	2400000	2010	190	0	1	4940	300	12.5	9	54	21	111	38
LP090120-3s-91	AGG 4	12890000	230000	20540	630	298	27	641000	18000	88400000	2200000	810	150	0	1	4860	360	108	32	304	64	659	81
LP090120-3s-2	AGG 4	12890000	310000	11220	530	232	23	285500	4600	81300000	3600000	1960	180	2.2	4.3	9280	470	46	23	320	300	276	58
LP090120-3s-69	AGG 4	13680000	270000	21000	510	898	56	466000	36000	90900000	2800000	1110	170	193	47	12200	2200	1090	340	1650	490	1280	250
LP090120-3L-46	AGG 4	13550000	420000	10950	590	313	28	481000	12000	87200000	1800000	1710	190	41	33	4930	260	78	29	213	41	377	56
LP090120-3s-41	AGG 4	12580000	440000	7440	500	178	15	182000	13000	86200000	1800000	491	58	4.3	6	5710	240	4.3	6	35	19	109	35
LP090120-3L-71	AGG 4	13480000	510000	9000	330	176	20	325100	9100	88900000	2200000	698	73	0	1	3320	230	28	14	128	28	291	44
LP090120-3s-51	AGG 4	12780000	450000	8280	340	299	26	497000	48000	86600000	2300000	2000	150	0	1	29800	1900	76	33	218	58	496	94
LP090120-3s-1	AGG 4	13030000	470000	8090	390	282	23	235800	9200	85500000	2200000	1760	170	4.3	8.7	13920	530	104	31	211	43	381	57
LP090120-3s-58	AGG 4	12650000	430000	8560	410	274	25	182100	7200	85600000	2500000	1200	110	0	1	3780	270	19	15	96	24	188	46
LP090120-3s-60	AGG 4	13760000	590000	8500	350	407	20	204000	13000	87200000	3000000	640	130	0	1	8760	470	55	21	175	38	279	58
LP090120-3s-19	AGG 4	13550000	640000	12630	510	384	30	411100	8300	84000000	3500000	1146	90	0	1	16260	610	86	26	219	48	406	64
LP090120-3s-102	AGG 4	13070000	390000	11710	560	319	16	380000	12000	85300000	1800000	1450	110	0	1	17670	890	50	18	113	33	384	52
LP090120-3s-109	AGG 4	12830000	320000	13140	480	301	18	411900	9700	88600000	2200000	2130	160	2.2	4.3	23880	790	11.9	9.5	86	28	274	50
LP090120-3s-72	AGG 4	13010000	410000	10990	360	305	26	323000	15000	88000000	2400000	1530	140	0	1	15790	800	6.8	7.5	85	28	215	53
LP090120-3L-68	AGG 4	13360000	420000	12860	530	407	32	388200	7800	91200000	2300000	1430	120	2.2	4.3	19700	700	62	28	224	47	441	53
LP090120-3s-99	AGG 4	13150000	290000	15260	670	322	28	469000	14000	88500000	2500000	850	100	33	17	3760	270	111	36	276	53	440	57
LP090120-3L-58	AGG 4	12710000	320000	10740	390	282	24	273300	8300	88300000	2000000	2320	180	0	1	7700	350	38	17	121	37	230	64
LP090120-3s-86	AGG 4	13250000	410000	10490	430	570	110	819000	27000	84800000	2500000	1100	100	55	28	4590	210	115	32	327	51	760	78
LP090120-3s-40	AGG 4	12790000	410000	13280	690	194	16	437000	15000	89900000	2500000	2880	190	0	1	22550	910	32	12	146	43	339	56
LP090120-3L-66	AGG 4	13260000	360000	8810	220	453	90	709000	24000	89100000	2200000	2690	280	640	230	10840	510	870	120	1440	160	1250	160
LP090120-3s-36	AGG 4	13320000	390000	13620	600	380	24	580000	23000	86900000	3000000	1120	120	16	10	29000	1000	268	40	754	73	952	97
LP090120-3s-62	AGG 4	13300000	390000	5760	250	122	17	200000	11000	86200000	2400000	711	73	4.3	6	4340	340	30	20	94	33	167	45
LP090120-3s-101	AGG 4	12810000	390000	12490	480	295	25	401000	33000	88000000	1700000	770	130	0	1	14600	1200	55	23	250	55	457	76
LP090120-3s-78	AGG 4	13380000	490000	10400	450	198	22	1013000	26000	84700000	2000000	1570	140	4.3	6	7870	360	206	55	690	95	1350	160
LP090120-3s-88	AGG 4	13710000	520000	27600	1500	219	20	687000	28000	83300000	1900000	952	69	0	1	2220	150	30	21	113	41	310	100
LP090120-3s-71	AGG 4	12830000	410000	9710	440	219	20	448000	11000	87500000	2800000	1200	120	10.9	8.8	33890	870	335	78	967	82	1470	140
LP090120-3s-64	AGG 4	12990000	450000	14920	790	328	28	1592000	63000	85700000	1800000	3130	210	35	20	9940	500	539	71	1180	100	1540	120
LP090120-3L-61	AGG 4	13080000	430000	7220	310	234	23	149200	6700	87700000	2400000	377	72	0	1	2000	180	43	21	92	35	154	34
LP090120-3L-75	AGG 4	13230000	330000	10740	430	450	37	242700	7800	87300000	3400000	910	110	0	1	7170	390	4.5	6.3	77	21	126	35
LP090120-3s-21	AGG 4	13380000	500000	7880	450	235	26	289000	16000	87800000	2700000	734	75	0	1	8180	470	89	30	239	53	376	80
LP090120-3L-69	AGG 4	13350000	390000	6870	270	268	32	272900	5900	88200000	3100000	880	99	0	1	6340	290	26	15	117	32	206	56
LP090120-3s-98	AGG 4	13200000	370000	9760	510	278	20	380000	13000	89300000	2400000	1540	200	4.5	6.3	27500	1000	128	39	357	52	604	77
LP090120-3L-55	AGG 4	13280000	610000	10250	460	482	30	266600	5400	90100000	1800000	1430	130	0	1	6960	290	28	16	111	29	215	50
LP090120-3L-1	AGG 4	13050000	320000	7530	430	249	19	186600	6400	85600000	3200000	700	85	0	1	3670	180	15	12	55	19	154	35
LP090120-3s-23	AGG 4	13270000	490000	18360	640	233	23	371000	14000	86500000	2300000	650	88	0	1	3820	360	6.5	7.2	67	21	317	55
LP090120-3L-72	AGG 4	13280000	400000	7640	310	280	29	176200	5100	90600000	2300000	1090	130	0	1	11180	330	40	19	104	33	194	44
LP090120-3L-10	AGG 4	13250000	340000	7400	280	194	21	223500	6800	84100000	1500000	850	110	0	1	5200	260	4.3	6	79	27	126	33
LP090120-3L-21	AGG 4	13090000	360000	11240	430	135	19	390000	11000	89300000	2100000	3730	230	14.6	9.5	32140	960	246	54	533	66	654	92
LP090120-3s-81	AGG 4	13000000	370000	8060	290	252	27	450000	24000	85600000	2300000	783	95	0	1	10100	690	126	36	487	75	800	100
LP090120-3L-32	AGG 4	13010000	460000	6910	270	126	19	305100	8500	86600000	1900000	598	62	8.7	8.1	4240	320	228	37	485	85	593	75
LP090120-3L-67	AGG 4	13560000	360000	6450	320	309	31	109200	4800	89800000	1500000	1250	110	0	1	7820	230	20	14	76	29	140	34
LP090120-3s-93	AGG 4	12760000	320000	8540	320	564	36	223400	6800	88300000	2100000	1017	93	2.2	4.3	13070	520	104	29	334	54	371	67
LP090120-3L-30	AGG 4	13620000	390000	6920	450	274	16	156500	4500	86400000	2800000	2250	150	0	1	7710	400	38	17	89	32	238	55
LP090120-3L-39	AGG 4	13270000	340000	15470	490	324	21	378000	9300	89400000	2000000	1900	140	0	1	3170	230	75	29	209	49	373	58
LP090120-3s-87	AGG 4	13320000	410000	7260	380	613	48	170000	6400	86200000	2000000	474	81	196	52	29600	1100	1450	160	2860	170	1800	140
LP090120-3L-27	AGG 4	12870000	260000	8300	380	223	17	171800	5500	85700000	3400000	1185	92	2.2	4.3	9710	240	45	19	125	36	348	63
LP090120-3L-54	AGG 4	13120000	410000	5300	330	215	19	66000	2500	88600000	3200000	409	59	0	1	4290	230	6.5	7.2	20	14	76	22
LP090120-3L-20	AGG 4	13180000	520000	14340	710	435	21	459000	13000	86800000	2800000	768	73	2.3	4.5	9590	390	104	25	239	56	433	66
LP090120-3L-44	AGG 4	13530000	360000	10020	350	154	20	311000	13000	87900000	2200000	1430	120	0	1	6810	340	35	17	106	36	237	49
LP090120-3L-9	AGG 4	13100000	460000	8080	330	2320	300	189000	4800	84800000	2600000	960	150	114	55	17010	670	226	66	659	76	725	88
LP090120-3L-33	AGG 4	12820000	320000	4590	300	119	13	6020	300	85700000	1800000	193	38	0	1	187	42	0	1	0	1	4.3	6
LP090120-3s-104	AGG 4	12670000	310000	6940	310	324	31	172600	7900	87900000	2100000	1920	110	0	1	4250	260	28	18	107	32	215	39
LP090120-3L-52	AGG 4	13440000	500000	6770	320	288	23	103600	4600	87600000	2600000	960	120	0	1	13560	550	54	24	146	38	200	47
LP090120-3L-63	AGG 4	12870000	340000	7440	400	447	30	114500	2100	88300000	2800000	1620	130	0	1	32700	1100	157	33	394	64	554	65
LP090120-3L-70	AGG 4	13660000	380000	11960	530	344	24	241600	7700	88300000	1800000	641	75	2.2	4.3	5540	330	23	16	98	24	200	43
LP090120-3L-6	AGG 4	13430000	350000	8620	270	309	25	193900	6600	84500000	2200000	709	79	2.3	4.5	22300	1100	65	23	219	51	393	55
LP090120-3L-8	AGG 4	13570000	350000	6810	280	256	26	139000	4900	88300000	2500000	724	83	0	1	6500	320	16	10	96	27	188	53
LP090120-3s-107	AGG 4	12830000	330000	12920	490	238	20	334300	9000	86900000	2200000	560	83	27	17	1740	180	111	33	256	59	439	52
LP090120-3L-47	AGG 4	13440000	430000	7200	310	241	20	181200	4800	87400000	2300000	783	98	0	1	6220	370	26	14	83	27	157	43
LP090120-3L-19	AGG 4	13380000	470000	11330	540	276	27	315600	8700	86700000	3000000	900	96	6.5	7.2	4260	310	112	37	322	48	487	81
LP090120-3s-27	AGG 4	13240000	600000	5200	350	257	31	129000	13000	83800000	2900000	710	120	22	15	3070	550	133	35	180	51	189	50
LP090120-3L-79	AGG 4	13300000	540000	6640	330	311	25	207000	12000	87100000	2000000	372	68	2.2	4.3	8670	430	91	32	341	59	439	88
LP090120-3L-73	AGG 4	13270000	450000	7690	290	354	25	228000	5500	88500000	1900000	760	100	0	1	2410	180	24	18	96	29	141	35
LP090120-3s-32	AGG 4	13200000	470000	7180	420	239	20	233700	9700	85500000	2800000	885	68	4.3	6	10360	440	89	23	295	46	425	62
LP090120-3L-11	AGG 4	13540000	390000	7460	340	419	28	117700	4400	88200000	1900000	380	55	4.3	6	6640	290	25	17	138	41	102	26
LP090120-3L-5	AGG 4	12960000	380000	6220	220	343	29	84500	2700	86100000	2800000	300	52	0	1	4640	170	0	1	67	20	107	26
LP090120-3s-33	AGG 4	12360000	340000	6300	200	162	19	85300	3400	88500000	2200000	445	63	0	1	2680	190	0	1	13.6	9.7	57	26
LP090120-3s-35	AGG 4	12790000	350000	8990	310	433	31	204700	5200	90900000	2600000	1073	93	0	1	14440	590	48	21	174	46	271	53
LP090120-3L-22	AGG 4	13070000	300000	6880	310	367	31	112800	4300	87100000	3000000	505	59	0	1	25020	670	124	35	302	43	433	59
LP090120-3L-38	AGG 4	12840000	460000	6710	340	421	29	112700	3200	89900000	3100000	407	66	2.2	4.3	22400	1100	126	38	266	36	406	52
LP090120-3L-60	AGG 4	12840000	380000	8510	400	268	18	195800	4300	88200000	2500000	561	84	0	1	3430	240	24	14	83	24	126	37
LP090120-3s-50	AGG 4	12920000	350000	7490	310	254	26	156800	4200	86000000	1800000	750	100	0	1	9960	420	83	25	196	41	309	50
LP090120-3L-28	AGG 4	12940000	390000	7940	370	178	22	157400	4900	88100000	2400000	1060	110	0	1	17300	570	55	17	111	28	263	57
LP090120-3s-61	AGG 4	13300000	530000	7990	410	455	26	108800	2400	86500000	2300000	491	50	2.2	4.3	7350	290	52	27	62	20	162	43
LP090120-3L-4	AGG 4	13000000	480000	7060	300	259	23	286400	7300	87400000	2200000	371	59	0	1	6240	190	102	32	291	35	502	87
LP090120-3s-30	AGG 4	13380000	560000	6000	230	140	24	95800	3400	85200000	2500000	437	46	4.3	6	6410	310	24	16	80	26	141	38
Rejected Grains																							
LP090120-3s-100	AGG 4	13500000	370000	9680	550	210	20	295600	8300	88300000	2100000	700	85	24	14	7940	280	82	29	252	48	356	64
LP090120-3L-37	AGG 4	12720000	400000	8450	370	161	17	218900	7300	87000000	2500000	522	87	0	1	4990	320	34	18	85	36	224	39

LP090120-3s-53	AGG 4	12390000	410000	8270	440	396	31	288000	18000	85500000	2900000	844	96	6.8	7.5	18380	750	170	36	433	77	491	63
LP090120-3s-83	AGG 4	14030000	370000	20400	2500	1040	220	750000	100000	92400000	2600000	1020	170	145	46	2550	170	173	41	298	54	585	75
LP090120-3s-113	AGG 4	13660000	360000	9320	470	2960	690	280000	24000	94500000	2500000	1780	330	990	260	5800	400	850	150	1270	200	1650	200
LP090120-3L-57	AGG 4	12730000	380000	3700	220	100	11	72900	3100	88100000	3100000	204	42	0	1	222	33	6.5	7.2	0	1	10.9	8.8
LP090120-3s-96	AGG 4	12760000	530000	49000	29000	179	19	325000	34000	85100000	2100000	489	64	5200	3300	22000	11000	2900	1800	2000	1300	850	360
LP090120-3s-31	AGG 4	12610000	230000	22200	1000	239	24	575000	20000	86100000	1800000	663	93	0	1	7460	350	30	15	102	32	425	68
LP090120-3s-46	AGG 4	12400000	340000	10450	400	528	39	476000	21000	87000000	2800000	510	81	33	16	2580	130	300	63	680	100	1000	110
LP090120-3s-34	AGG 4	13020000	400000	25500	1300	338	52	598000	18000	86100000	2700000	1560	180	20	14	4400	480	250	96	430	110	610	110
LP090120-3s-24	AGG 4	14470000	310000	9000	1200	300	110	341000	54000	96100000	2200000	1890	210	113	81	16600	1500	500	330	670	390	660	280
LP090120-3s-75	AGG 4	12830000	350000	11900	1500	355	30	960000	180000	86300000	2800000	2520	220	10.4	8.5	8000	1200	233	66	700	160	1150	240
LP090120-3L-77	AGG 4	12850000	390000	14210	820	402	26	585000	26000	87600000	1900000	4880	300	260	310	24200	1900	130	120	200	100	398	79
LP090120-3s-67	AGG 4	12900000	280000	8000	640	224	27	176400	9300	87500000	2400000	1120	130	39	19	8840	680	76	33	220	55	213	50
LP090120-3s-20	AGG 4	13190000	410000	7640	490	240	24	207000	8000	85400000	3000000	2160	370	30	17	3370	430	27	19	45	21	105	41
LP090120-3s-11	AGG 4	12620000	340000	10600	1000	209	24	312000	19000	84400000	2400000	830	140	86	52	11930	430	241	67	450	100	570	91

APPENDIX IIb: Detrital zircon trace element data for samples of the Arroyo Grande Group. Trace elements: Eu, Gd, Tb, Dy, Ho, Er, Tm, Yb, Lu, Hf.

Sample 070120-1																					
Grain	Unit	Eu (ppm)	error	Gd (ppm)	error	Tb (ppm)	error	Dy (ppm)	error	Ho (ppm)	error	Er (ppm)	error	Tm (ppm)	error	Yb (ppm)	error	Lu (ppm)	error	Hf (ppm)	error
LP070120-1s-70	AGG 1	1.19	0.17	10.93	0.7	3.26	0.34	42.2	2.6	14.39	0.89	70.8	3.8	18.62	0.85	216	14	34.09	0.93	7730	370
LP070120-1s-91	AGG 1	3.65	0.58	34.7	5.2	10.4	1.5	106	15	34.2	4.1	148	15	34.1	3	353	22	61.4	3.5	9470	400
LP070120-1s-61	AGG 1	3.05	0.34	42.9	2.2	15.38	0.88	202	12	76.9	3	359	21	88.4	5.7	1005	54	123.6	8.2	7060	410
LP070120-1L-50	AGG 1	0.58	0.13	8.6	1.1	2.74	0.22	35.5	2.4	12.94	0.5	67	3.5	17.25	0.77	199	13	33.1	1.3	8740	310
LP070120-1s-23	AGG 1	0.67	0.14	12.9	1.3	4.03	0.37	55.8	3.9	19.9	1	99.5	5.7	26.4	1.7	322	20	45.5	2.8	8990	660
LP070120-1s-66	AGG 1	0.88	0.15	8.32	0.88	2.43	0.2	35.7	2.5	15.9	0.9	85.2	4.2	22.9	1.2	321	17	54.4	2.8	9380	530
LP070120-1s-75	AGG 1	0.77	0.19	12.31	0.98	4.48	0.46	60	3.6	22.8	1.3	114.3	4.5	30.6	1.7	367	13	57.7	2.5	9770	450
LP070120-1s-68	AGG 1	1.71	0.23	31.9	3	9.9	1	116	11	40.2	3.7	188	16	40.2	3.2	421	28	56.5	4.7	7620	440
LP070120-1s-80	AGG 1	0.393	0.096	21.4	1.8	6.84	0.43	87.5	5.3	31.1	2.1	132.8	9.2	31.8	2.1	341	17	45.9	2.3	8550	490
LP070120-1s-96	AGG 1	0.413	0.087	16.6	1.2	5.53	0.41	64.2	3.8	24.2	1.6	114	8.3	29.1	1.7	299	16	42.9	2.3	9300	330
LP070120-1L-35	AGG 1	0.51	0.13	8.2	1.5	2.9	0.32	34.6	3	12.4	1	58.1	4.8	15.1	1.2	164	13	24.3	1.6	9780	430
LP070120-1s-63	AGG 1	2.07	0.25	56.8	4.6	15.7	1.1	190.9	9.2	67	3.9	295	21	69	3.7	713	51	91.8	4.1	8430	360
LP070120-1s-90	AGG 1	0.58	0.14	15.7	1.7	5.26	0.44	72.2	5.4	26.2	1.9	118.8	8.7	28.6	2	301	22	44.6	2	8590	450
LP070120-1L-59	AGG 1	0.252	0.09	17	1.5	6.34	0.49	83.6	5.1	31.1	1.9	143.2	8.2	34.9	1.9	387	23	56.4	2.8	9870	570
LP070120-1s-129	AGG 1	0.325	0.081	9	1.6	3.27	0.31	40	3.2	17.1	1.1	84.6	5.4	22.9	1	246	16	37.4	2.6	9770	510
LP070120-1s-22	AGG 1	0.083	0.043	5.27	0.76	2.34	0.2	34.8	2	15.1	1.2	75.9	4.2	21.2	1.2	283	15	41	1.7	11180	380
LP070120-1L-29	AGG 1	1.21	0.15	18.2	1.3	4.89	0.29	53.8	3.7	15.6	1.5	64.6	5.1	13.6	1.3	139	15	20.8	2.3	9900	430
LP070120-1s-104	AGG 1	1.66	0.26	25.1	1.8	7.9	0.6	98.4	4	33.2	1.7	154.6	7.6	33.6	1.9	365	21	49.7	2	7160	280
LP070120-1s-10	AGG 1	0.102	0.057	13.4	1.2	4.6	0.22	55.7	3	19.8	1	86.1	4.1	19.7	1.1	218	11	31.1	1.7	8110	380
LP070120-1L-52	AGG 1	0.7	0.15	17.9	2.6	5.11	0.67	65.1	7.5	24.2	2.5	111	12	26.1	2.8	302	29	46.8	4.9	9520	510
LP070120-1s-108	AGG 1	0.83	0.13	10.9	1.4	3.28	0.29	40.5	3.5	15.22	0.95	78.2	4	19.49	0.94	228	11	36.6	2	9140	470
LP070120-1L-41	AGG 1	0.48	0.12	31.9	2.4	9.67	0.78	113.6	8.7	40.2	2.8	175	12	39.8	3.3	391	39	52.6	5.6	9870	450
LP070120-1s-122	AGG 1	1.06	0.15	49.3	4.9	16.8	1.1	186	15	65.6	3.5	275	16	60.1	3.6	627	28	78.5	4.9	7200	360
LP070120-1s-78	AGG 1	0.82	0.15	16.5	2	6.73	0.61	86.2	3.9	34.5	2.3	155.5	6.9	39.6	1.9	428	14	63.7	3.3	8860	460
LP070120-1s-97	AGG 1	1.29	0.21	32.6	2.9	9.25	0.87	106.2	8.8	39.1	2.6	182	13	41.1	2.1	427	21	62.1	3.9	7910	430
LP070120-1s-2	AGG 1	0.48	0.13	11.9	1.4	4.35	0.39	54.6	3.6	20.1	1.3	89.5	4.5	22.1	1.2	235	13	34.2	1.8	9520	520
LP070120-1L-56	AGG 1	0.081	0.044	11.7	1.4	4.12	0.29	53.2	2.1	18.13	0.96	87.3	5.5	20.22	0.93	199	13	27.2	1.1	10750	400
LP070120-1s-40	AGG 1	0.309	0.083	19.2	1.8	7.36	0.49	108.6	5.8	42.1	2.6	213	11	53.8	3.2	626	33	87.8	6.1	9530	710
LP070120-1L-43	AGG 1	1	0.16	18.2	2.9	6.09	0.81	75.1	7.9	26.1	2.7	122	12	29.1	2.2	325	30	46.8	4.1	8380	360
LP070120-1L-31	AGG 1	0.399	0.099	11.2	1.2	3.95	0.33	51.2	2.6	20.7	1	101.5	4.9	25.8	1.5	274	14	45	1.7	9300	390
LP070120-1s-33	AGG 1	0.133	0.057	12.4	1.2	4.22	0.31	54.8	3.2	19.5	1.3	87.9	5.6	22.2	1.2	236	13	30.1	1.3	8810	400
LP070120-1L-17	AGG 1	0.235	0.083	10.8	1.5	4	0.31	49.2	3.6	17	1.3	83.3	4.7	19.2	1.5	193.7	8.4	29.7	1.4	9340	350
LP070120-1s-118	AGG 1	0.55	0.12	25	2.1	9.65	0.64	116.3	5.9	44.5	2.2	203.4	9.8	47.5	2.2	498	25	69.8	2.6	7820	290
LP070120-1s-93	AGG 1	0.59	0.14	20.1	2.8	6.58	0.83	79.2	7.2	28.7	2.4	119.8	9.2	26.2	2	284	26	37.2	2.6	9330	420
LP070120-1L-55	AGG 1	0.56	0.15	21.4	2.5	6.78	0.33	89.2	4.2	33.1	2.2	155.9	9	38	1.7	405	20	55.4	2.3	8920	350
LP070120-1s-79	AGG 1	2.74	0.46	50.9	6.7	14	2.1	150	18	48.2	6.1	200	22	43.1	3.8	415	31	53.3	4.3	8050	510
LP070120-1s-74	AGG 1	0.221	0.087	14.3	1.3	4.85	0.42	60.1	2.8	22.7	1	104.4	4.9	23.9	1.2	245	15	37.2	2.3	8040	400
LP070120-1s-5	AGG 1	0.79	0.14	21.9	2.5	6.5	0.54	76.7	4.5	26.1	1.3	114.3	5.7	26.9	1.3	274	14	37	1.8	7190	390
LP070120-1s-110	AGG 1	0.81	0.2	29.7	2.2	11.62	0.56	153	11	60.5	3	279	14	67.6	3.6	747	50	113.1	5.9	8830	440
LP070120-1L-9	AGG 1	0.253	0.071	6.18	0.81	2.02	0.27	26	3.1	9.6	1.4	50.3	6.2	11.8	1.4	141	15	21.8	2.2	9250	480
LP070120-1L-1	AGG 1	0.255	0.076	4.8	0.79	1.27	0.18	16.7	1.7	7.08	0.54	39.5	3.1	10.68	0.56	132.7	4.7	21.4	1.1	10500	490
LP070120-1L-45	AGG 1	0.253	0.089	14.5	1.8	5.08	0.53	77.8	7	28.9	2.4	125.3	7.6	28.8	2.2	296	21	41.1	2.8	10090	520
LP070120-1s-85	AGG 1	0.01	0.014	2.28	0.25	1.12	0.18	16.6	1.4	7.08	0.48	42.6	3	12.07	0.63	150	10	23.8	1.4	11140	540
LP070120-1s-71	AGG 1	1.56	0.28	57.2	4.7	21.1	1.1	281	22	105.7	7.3	476	33	108.8	5.9	1067	49	145	8.1	9330	380
LP070120-1s-41	AGG 1	1.97	0.55	42.9	5.4	11.7	1	151	10	51.5	3.3	243	14	51.9	2.9	530	24	68.8	4.9	9340	400
LP070120-1s-120	AGG 1	0.48	0.11	25.5	2.1	9.52	0.66	118.3	7.8	44.4	3.1	201	9.1	45.2	3	479	18	62.1	3.8	8890	470
LP070120-1L-28	AGG 1	0.67	0.13	35.9	2.7	11.7	0.73	148.6	5.1	54.5	2.1	253	13	53.5	2.8	517	27	69.7	2.9	10600	300
LP070120-1L-16	AGG 1	0.257	0.083	11.9	1.2	4.08	0.28	57	1.8	21.6	1.3	113.4	4.7	25.5	1.2	270	14	38.4	1.7	10520	580
LP070120-1L-40	AGG 1	0.41	0.11	12.5	1.5	3.91	0.31	57.2	3.2	23.6	1.4	131.8	6.1	34.3	2.1	393	17	63.7	3	9740	430
LP070120-1s-42	AGG 1	0.2	0.06	13.2	1.6	4.08	0.3	60.6	3.8	21.3	1.1	105.4	5.5	24.8	1.2	257	16	34	2.1	9120	350
LP070120-1L-34	AGG 1	0.43	0.11	25.1	2.1	8.28	0.48	115.2	5.2	37.9	1.8	181.3	7.9	39.7	1.5	391	16	56.4	3.1	9530	320
LP070120-1L-14	AGG 1	0.186	0.063	11	1.4	3.75	0.52	55.9	6.9	19.4	1.8	100.6	8.9	22.9	1.9	252	21	35.2	3.1	10010	500
LP070120-1L-39	AGG 1	0.45	0.13	24.4	3	8.77	0.96	116	9.2	43.6	2.4	196	13	44.7	2.8	415	26	59.3	3.9	10130	360
LP070120-1L-47	AGG 1	0.78	0.16	46	3.5	14.2	1	176	12	64.7	3.8	278	11	62.9	3.7	560	24	76.6	4.3	9130	430
LP070120-1L-21	AGG 1	0.274	0.067	19.4	1.6	6.49	0.49	89.3	5.2	36.5	2	165.6	8.5	39.6	2	406	26	56.1	3.5	10750	560
LP070120-1s-29	AGG 1	0.43	0.12	22.4	1.7	7.63	0.45	101.9	4.9	37.7	1.9	189.6	9.2	46.5	2.2	485	23	67.6	3	9660	370
LP070120-1L-15	AGG 1	1.67	0.2	29.9	2.2	10.38	0.48	145.7	6.5	57.4	3.1	281	14	68.1	3.5	753	36	109.1	6.5	9000	330
LP070120-1s-31	AGG 1	2.51	0.33	21.4	1.8	6.24	0.43	73.8	3.7	28	1.4	122.6	7.1	31.2	1.7	345	17	51.8	2.8	7990	520
LP070120-1s-7	AGG 1	1.7	0.25	26.7	2.5	8.67	0.67	120.3	7.7	46.5	3.2	219	13	52.7	4.2	573	43	80.6	5.5	7450	290
LP070120-1s-28	AGG 1	1.28	0.21	17	1.9	6	0.53	78.9	5	29.1	2	140.3	7.8	34.6	1.9	403	18	56.1	2.2	7740	410
LP070120-1L-25	AGG 1	0.45	0.093	8.19	0.89	2.77	0.24	36.5	1.9	12.63	0.64	65.1	3.4	15.77	0.63	178.3	8.7	26.9	1.5	10010	450
LP070120-1s-81	AGG 1	0.61	0.11	14	1.8	4.53	0.36	58.4	4.1	23.7	1.6	114.2	7.1	27.35	0.95	307	12	44.7	2.4	7810	450
LP070120-1s-52	AGG 1	0.279	0.082	51.8	5.3	18.4	2	224	21	71.4	4.5	331	23	81.5	5.3	905	52	107	6.1	9250	460
LP070120-1L-38	AGG 1	1.6	0.22	20.4	2	6.52	0.41	81.5	3.9	27.3	1.6	124.8	6.4	27.87	0.94	284	11	40.9	1.8	7580	330
LP070120-1s-57	AGG 1	0.91	0.13	26.5	2.8	10.64	0.64	139.2	8.8	53.5	3	270	12	63.1	2.4	680	32	95.7	5.1	8280	360
LP070120-1s-13	AGG 1	0.66	0.16	13.5	1.3	4.83	0.39	53	3.2	18.6	1.4	83.4	5.5	18.7	1.2	201.4	9	27.8	1.5	5690	260
LP070120-1s-25	AGG 1	0.52	0.11	15.4	1.4	4.71	0.37	62.5	3.4	21.5	1.1	99.2	4.5	23.4	1.3	253	14	33.7	1.6	9130	470
LP070120-1s-87	AGG 1	0.237	0.067	21.5	2.2	7.81	0.42	103.8	6.3	41.6	2.4	177.6	9.5	45.5	2.5	459	32	63.7	3.3	9540	520
LP070120-1s-37	AGG 1	0.057	0.035	9.5	1	3.41	0.29	38	3.5	10.78	0.76	39.1	1.7	7.59	0.55	68.4	3.9	7.46	0.55	11810	710
LP070120-1s-124	AGG 1	0.65	0.14	47.5	2.1	16.9	1.2	208	13	78.5	5.7	331	16	78.5	3.3	712	32	90.1	4.6	6130	380
LP070120-1s-20	AGG 1	2.39	0.23	31.4	2.4	9.15	0.79	97.6	6.3	34.6	2.1	137.7	7.5	30.1	2.3	339	23	41.8	2.2	7360	480
LP070120-1L-4	AGG 1	1.19	0.2	29.1	2.6	9.1	0.69	108.2	4.1	37.1	1.7	183	10	38.3	2.3	403	17	52.9	3	8630	420
LP070120-1L-10	AGG 1	0.73	0.13	64.2	4	20.58	0.98	269	16	90.3	4	382	16	84.3	4.4	798	34	104.1	3.8	9150	370
LP070120-1s-127	AGG 1	3.42	0.36	41.6	3.1	11.72	0.73	117.6	5.8	35.9	2	153.8	9	32.1	1.9	317	17	42	2.9	7890	430
LP070120-1s-32	AGG 1	0.7	0.14	13.6	1.4	4.11	0.32	51	4.1	17	1.1	74.7	4.6	20	1.4	221	19	27	2	8690	680
LP070120-1s-11	AGG 1	1.42	0.21	24.7	2.1	9.48	0.57	110.9	6.7	41.5	2.5	186.3	7.5	45.5	2.1	497	23	68.1	2.8	8380	410
LP070120-1L-33	AGG 1	1.61	0.21	25.5	2.8	7.78	0.94	86.2	8	26.4	2.2	119	10	26.6	1.8	263	19	35.5	2.4	9130	510
LP070120-1L-11	AGG 1	1.33	0.27	39.6	5.7	11.7	1.8	148	23	54	6.7	254	35	58.3	7.8	586	77	82	12	9360	360
LP070120-1L-24	AGG 1	0.66	0.13	8.9	1.7	2.85	0.38	37.4	4	11.5	1.3	56	5.1	15	1.7	159	13	25	2.3	8120	390
LP070120-1s-69	AGG 1	1.25	0.19	27.1	1.6	9.63	0.53	123.4	6.5	45.9	2.4	204	11	50.2	2.1	496	21	68.3	3.2	8150	290
LP070120-1s-51	AGG 1	4.2	0.3	60.4	4.2	19.3	1.1	246	12	83	4.3	391	17	91	4.1	926	51	132.5	5.9	7240	410
LP070120-1L-36	AGG 1	2.07	0.21	30.2	1.6	7.34	0.63	73.3	5	22.6	1.1	95	6	20.9	1	217	12	33.5	1.3	9850	380
LP070120-1L-22	AGG 1	0.56	0.11	15.9	1.8	4.97	0.38	63.7	3.2	22.1	1.2	106.1	4.7	23.9	1.4	241	13	35.3	2.7	8140	360
LP070120-1s-121	AGG 1	0.22	0.084	6.91	0.97	3.22	0.4	40.8	3.7	16.4	1.1	79.7	5.6	21.7	1.5	250	15	35	2.2	8920	580
LP070120-1s-113	AGG 1	0.77	0.13	37.9	2.4	20.7	1.2	291	15	115.8	4.7	498	26	121.1	6.4	1131	43	152.8	5.7	10180	390
LP070120-1s-59	AGG 1	4.38	0.47	38.1	3.8	11.45	0.75	103.9	7.2	28.7	2	111.3	7.5	22.9	1.7	241	14	28.2	2.3	8780	460
LP070120-1s-109	AGG 1	0.271	0.087	13.9	1.4	4.23	0.37	50.6	3.3	16.55	0.89	68.1	4	15.5	1	151.7	8.8	19.6	1.1	7640	410
LP070120-1s-117	AGG 1	0.43	0.1	10.63	0.99	3.52	0.3	40.4	2.3	14.98	0.96	63.9	4.3	15.46	0.87	156.5	6.6	22	0.99	8030	280
LP070120-1s-44	AGG 1	0.79	0.2	13.6	1.4	4.58	0.42	53.2	4.2	22	1.3	105.1	6.7	28	1.6	312	16	46.2	2.6	8570	420
LP070120-1s-9	AGG 1	0.329	0.096	21.9	3.5	7.31	0.87	90.8	9.6	32.7	3.7	150	13	34.3	2.9	346	24	47.1	4.1	9200	500
LP070120-1s-27	AGG 1	0.631	0.088	20	1.7	6.54	0.39	80.7	5.4	27.7	1.6	119.1	4.7	27.7	1.3	292	15	36.8	2.2	8800	390
LP070120-1s-39	AGG 1	0.45	0.14	10.2	1.3	3.03	0.22	37.7	2	14.04	0.81	59.1	4.4	14.29	0.94	165	10	24.5	1.5	9000	470
LP070120-1s-94	AGG 1	0.223	0.077	8.13	0.96	2.82	0.21	35.6	1.5	12.42	0.71	56.1	3.8	13.12	0.7	137.8	8.1	18.8	1	9770	420
LP070120-1s-56	AGG 1	1.89	0.16	24.1	2	6.01	0.4	69.2	4.2	22.9	1.2	95.2	5	21	1.1	213	8.9	29.1	1.2	7620	360
LP070120-1L-12	AGG 1	0.41	0.1	13	2.1	4.55	0.59	63.9	7.5	23.6	2.4	122	12	29.9	3.1	297	21	43.9	4.1	11060	580
LP070120-1L-20	AGG 1	2.11	0.33	34	3.4	10	1.1	121	12	36.8	3.1	154	12	32.9	2.5	324	26	40.4	2.7	8500	360
LP070120-1s-48	AGG 1	0.4	0.11	16.8	2	6.62	0.94	88	11	36.8	3.9	182	20	46.6	4.8	523	36	71.7	5.5	8420	340
LP070120-1s-17	AGG 1	0.314	0.091	19.1	1.9	6.61	0.48	91.5	6.1	31.9	1.6	156.2	6.5	39.1	2.5	419	27	56.1	3.8	9090	470
LP070120-1s-98	AGG 1	0.86	0.15	11.52	0.93	3.97	0.34	53.4	3.4	21.3	1.1	107.6	6.5	30.3	1.9	353	18	57.3	2.6	10630	370
LP070120-1s-38	AGG 1	2.43	0.26	19.9	2	7.39	0.36	102.9	4.8	35.5	1.6	179.7	8	45.2	2	508	23	69.3	5.2	14270	710
LP070120-1s-3	AGG 1	1.89	0.2	53.9	3.5	16.1	1	182.8	9.3	61.6	3	247	10	52.4	2.6	506	27	64.5	2.8	8110	280
LP070120-1s-50	AGG 1	0.83	0.17	66.9	5.9	19.9	1.3	253	19	85.1	5.9	367	17	76.6	4.5	775	42	92.1	5.7	6840	380
LP070120-1s-55	AGG 1	0.143	0.046	16.9	1.8	4.38	0.29	40.1	2.9	11.3	1	48.2	3.2	11.9	0.54	149.6	6.7	25.2	1.1	10340	530
LP070120-1s-92	AGG 1	0.45	0.12	7.81	0.94	2.69	0.28	37	2.9	15.14	0.83	77.2	4.3	21.3	1.4	231	11	35.9	2	9490	480

LP070120-1L-32	AGG 1	0.68	0.14	8.1	1.1	2.96	0.24	36.9	2	14.34	0.62	73.7	3.6	18.9	1	195.4	9	32.3	1.5	7720	330
LP070120-1s-82	AGG 1	0.164	0.066	6.7	0.89	2.67	0.32	33.9	2.4	13	0.74	64.1	2.5	15.56	0.97	183.6	9.7	25.4	1.5	9770	430
LP070120-1s-111	AGG 1	0.71	0.16	17.9	3.4	6.36	0.92	87	12	34.7	3.9	151	16	40.9	4.9	432	46	61	4.5	9700	480
LP070120-1s-86	AGG 1	0.64	0.17	15.9	2	5.36	0.39	74.3	4.7	26.7	2.1	123.3	7.8	30	2.1	316	19	45.8	2.3	9020	540
LP070120-1s-119	AGG 1	1.08	0.16	19.1	1.7	5.74	0.4	69.9	4.6	23.9	1.4	104.4	6.7	23.6	1.6	245	13	33.9	1.6	8710	490
LP070120-1L-51	AGG 1	1.96	0.25	53.8	4.8	15.4	1	183	12	58.5	2.7	261	17	54.7	3	531	26	72.4	6.2	8750	320
LP070120-1s-62	AGG 1	0.59	0.1	10.29	0.79	4.13	0.27	54.2	3.1	19.5	1.5	92.9	5	23.5	1.1	265	13	36.7	1.5	8580	410
LP070120-1s-128	AGG 1	0.209	0.059	27.5	1.8	10.5	0.7	128.5	9	45.8	3.3	206	16	48.2	3.3	477	38	63.8	3.3	9670	420
LP070120-1s-49	AGG 1	0.84	0.2	34	2.6	10.84	0.74	133	11	47.9	2.1	205	11	46.6	1.8	471	18	58.4	3.6	7670	320
LP070120-1L-8	AGG 1	1.56	0.17	23.8	2.3	7.92	0.65	99.8	6.8	35	1.6	179.5	8.4	42.6	1.1	470	22	64.9	3.2	8550	420
LP070120-1s-102	AGG 1	0.41	0.11	9.6	1.1	4.03	0.28	57.6	3.9	24.4	1.5	121.3	5.7	35.3	1.7	385	26	57.2	3.5	9640	570
LP070120-1s-24	AGG 1	4.52	0.41	42.5	2.6	12.59	0.79	161.4	9.9	57.3	3.4	272	13	63.4	2.8	684	32	89	4.6	9740	460
LP070120-1s-73	AGG 1	0.39	0.11	22.3	3	7.43	0.73	98.9	8.2	37.6	2.5	164	12	37.4	2.6	387	30	52.2	3.3	8420	270
LP070120-1s-58	AGG 1	0.289	0.093	20.1	1.8	11.04	0.64	191.5	8.2	88.2	3.5	498	17	137.9	5.8	1553	59	219.6	8.9	10480	540
LP070120-1s-72	AGG 1	0.289	0.066	13	1.3	4.74	0.26	63.5	4.3	24.4	1.5	120.5	6.1	31.3	1.8	334	20	48.8	3.1	9270	470
LP070120-1s-88	AGG 1	2.08	0.26	33.4	2.2	10.91	0.73	134.5	6.3	49.8	3.3	227.8	9.9	52.3	2.1	551	33	82.2	4.3	8550	370
LP070120-1s-1	AGG 1	0.446	0.089	6.32	0.77	1.76	0.17	25.2	1.5	9.85	0.68	51	2.3	13.88	0.69	176.9	8.4	29.9	1.8	8420	380
LP070120-1s-8	AGG 1	0.132	0.061	1.68	0.48	0.625	0.089	10.1	1.1	4.83	0.33	31	1.3	10.58	0.91	152.1	8.7	27.3	1.8	8510	540
LP070120-1s-125	AGG 1	0.258	0.045	24.6	2.5	9.03	0.54	112.4	7.2	39.7	1.5	177.9	9.3	46.3	2.8	491	27	68.8	3.7	9520	420
LP070120-1s-34	AGG 1	2.47	0.26	26	2.2	6.81	0.45	76.6	4.4	25	2	105.4	5.5	25.4	1.2	258	11	35.2	2.5	7290	410
LP070120-1s-101	AGG 1	1.57	0.42	18.4	2.6	6.25	0.52	81.3	6.7	31.1	1.9	135.6	9.8	34.2	2.7	356	17	50	3.1	7610	480
LP070120-1s-43	AGG 1	1.66	0.24	35.4	2.7	9.39	0.49	105.7	6	34	1.4	157.9	6.7	34.9	1.9	372	11	51.3	1.8	7690	260
LP070120-1s-21	AGG 1	2.92	0.28	23.9	2	3.91	0.28	22.7	1.7	3.26	0.33	6.71	0.55	0.95	0.13	7.7	0.99	0.676	0.086	9200	450
LP070120-1L-7	AGG 1	0.38	0.12	10.1	1	4.3	0.38	65.3	3	23.4	1.3	120.8	7.1	29.9	1.7	325	17	42.6	2.8	9710	560
LP070120-1s-114	AGG 1	0.367	0.089	9.7	1.1	2.4	0.19	18.8	1.1	4.18	0.32	12.7	1	2.12	0.25	15.9	1.1	1.94	0.2	8850	310
LP070120-1s-6	AGG 1	0.98	0.15	41.3	2.8	12	1	142	8.1	47.2	3	208	15	42.9	2.8	450	35	55.8	3.9	7680	490
LP070120-1s-16	AGG 1	11.3	1.4	169	13	47.5	3.4	604	38	188	11	772	38	170	10	1770	120	238	11	9700	560
LP070120-1s-83	AGG 1	1.28	0.19	26.2	2	7.72	0.49	92.2	5.8	30.9	1.6	145.1	6.9	34.4	1.9	352	18	51.7	2.9	7940	370
LP070120-1s-4	AGG 1	0.249	0.073	3.41	0.69	0.99	0.14	11.7	1.2	4.32	0.26	21.2	1.4	5.77	0.39	68.4	3.2	11.44	0.71	8120	410
LP070120-1s-95	AGG 1	1.32	0.17	16.4	1.7	4.96	0.43	56.6	4	18	1.1	78.8	3.8	18.04	0.93	205	14	29.2	1.5	9180	410
LP070120-1s-60	AGG 1	0.166	0.051	11.9	1.4	4.4	0.33	55.7	3.6	22.8	1.3	104.6	6.8	25.4	1.5	301	18	41.8	2.4	9980	550
Rejected Grains																					
LP070120-1s-105	AGG 1	3.58	0.4	84	11	28.4	3.1	350	39	127	15	580	80	129	15	1260	150	180	17	7430	290
LP070120-1s-116	AGG 1	0.41	0.1	23.9	2.1	8.23	0.56	102.9	7.5	35	2.1	157	11	34	2.2	350	19	47.9	2.7	10250	550
LP070120-1s-54	AGG 1	4.35	0.68	84.4	9.9	26.7	2.7	278	23	90.1	6.5	375	32	87.1	6.8	908	96	121.5	8.4	9020	440
LP070120-1L-62	AGG 1	0.83	0.16	46.7	3.9	15.7	1	208.9	9.9	69.8	2.9	320	18	65.6	2.6	645	32	83.6	4.7	8620	380
LP070120-1s-106	AGG 1	4.43	0.32	167	11	55	2.5	652	30	223	11	874	42	179.3	9	1747	78	216	10	6470	310
LP070120-1L-6	AGG 1	1.08	0.2	109.4	7	39.4	2.5	499	24	169	9	790	33	160.7	7.6	1514	78	186.1	8.9	8620	420
LP070120-1L-23	AGG 1	0.464	0.088	8.6	1.2	2.8	0.31	40.3	4	15.98	0.72	78.5	5.1	20.3	1.5	237	15	40.1	2.3	9570	420
LP070120-1L-2	AGG 1	0.76	0.13	10.5	1.3	3.71	0.34	56.5	2.6	22	1.3	111.2	6.5	29.8	1.5	358	15	59.4	3	9220	410
LP070120-1s-26	AGG 1	1.23	0.23	16.6	1.8	5.84	0.51	78.7	5.3	31.2	1.7	158.2	7.4	38.7	2.2	472	24	73.1	4.2	8530	460
LP070120-1L-13	AGG 1	0.46	0.12	7.8	1.4	2.66	0.27	36.4	3.6	14.4	1.2	74.8	6.2	19.8	1.5	234	23	39.5	2.9	8910	500
LP070120-1L-61	AGG 1	3.66	0.34	42.7	2.9	12.86	0.86	152.8	9	54.7	3.2	243	15	58.7	3.5	568	36	78.6	4.1	6710	330
LP070120-1L-53	AGG 1	2.95	0.39	417	20	140.5	7.3	1890	110	659	40	2740	110	584	27	5250	280	690	36	12820	610
LP070120-1L-26	AGG 1	0.98	0.17	14.4	1.6	4.1	0.35	53.6	3.1	21.28	0.99	105.4	5.4	26.3	1.5	294	13	46.9	1.5	8830	380
LP070120-1L-49	AGG 1	1.54	0.23	19	1.5	5.62	0.38	67.8	3.5	26.5	1.5	128.3	5.6	31.3	1.4	372	17	62.2	2.8	9130	320
LP070120-1s-12	AGG 1	0.82	0.18	7.3	1.1	2.55	0.27	34	1.7	12.76	0.87	60.2	2.7	16.48	0.98	192.3	9.7	30.1	1.7	7830	370
LP070120-1L-48	AGG 1	1.04	0.19	10.9	1.3	3.26	0.32	46.7	3.2	16.54	0.76	83.3	4.4	21	1.1	247	14	41.2	2.3	7680	360
LP070120-1L-19	AGG 1	1.32	0.15	16.2	1.3	6.12	0.42	73.3	4.1	28.1	1.6	144.7	7.9	34.7	2.3	376	18	62.6	2.2	9320	450
LP070120-1s-46	AGG 1	0.98	0.17	14.2	1.1	4.06	0.27	50.7	2.4	20.04	0.78	96.2	4.8	24.9	1.2	302	14	47.7	2.5	8920	340
LP070120-1L-42	AGG 1	1.02	0.13	13.2	1.3	4.17	0.32	55	2.4	19	1	92.1	4.1	22.4	1	247	15	38.8	2.5	8970	450
LP070120-1L-46	AGG 1	1.24	0.13	16.1	1.7	5.05	0.45	70.6	4.3	26.9	1.6	133.7	6.3	34.2	1.4	389	20	62.5	3.1	9360	380
LP070120-1L-60	AGG 1	1.27	0.23	15.1	1.4	4.29	0.33	52.6	2.3	19.23	0.96	97.1	4.3	23.3	1.2	285	11	44.1	1.5	7850	280
LP070120-1s-107	AGG 1	1.24	0.17	12.3	1.7	3.92	0.3	52	3.4	19.8	1.2	89.6	5	22.7	1.2	267	14	41.2	2.5	7570	360
LP070120-1s-18	AGG 1	1.32	0.21	14.2	1.3	4.99	0.36	60.2	3.3	22.1	1.1	111	5.1	28.4	1.5	337	24	48.2	2.5	7720	420
LP070120-1s-126	AGG 1	3.48	0.4	29.8	2.5	9.66	0.94	115.6	8.8	40.6	2.1	175	11	42	3.1	460	26	66.1	3.4	8370	450
LP070120-1L-27	AGG 1	1.03	0.15	11.1	1.3	3.14	0.25	42.4	2.4	16.56	0.91	82.8	4.8	21.3	1.2	247.8	8.1	39.8	2.2	10460	380
LP070120-1s-115	AGG 1	0.85	0.11	8.7	1.1	2.78	0.3	39.4	2.9	15.42	0.54	79	4.3	21.03	0.98	238.2	7.5	41.1	2.1	7410	320
LP070120-1s-103	AGG 1	1.71	0.24	15.4	1.7	4.63	0.45	68.3	4.3	30.8	2.7	168	11	46.6	3	628	37	112.3	5.7	8370	440
LP070120-1L-37	AGG 1	91.4	3.9	359	17	48.8	2.8	301	15	59.6	2.1	200	10	29.6	1.7	220	11	30.2	1.6	32.4	1.9
LP070120-1s-67	AGG 1	15	1.5	51.6	6.1	7.75	0.9	54.5	5.5	9.69	0.79	27	2.9	3.95	0.35	22.8	2.5	2.55	0.34	7.42	0.58
LP070120-1s-89	AGG 1	0.52	0.11	19.3	1.6	6.09	0.39	79.4	4.5	27.2	1.5	123.8	6	27.7	1.5	299	15	42.4	2.6	9260	500
LP070120-1s-112	AGG 1	0.251	0.062	5.6	1.1	2.38	0.18	28.5	2.3	12.5	1	58.1	5	15.6	1.5	179	12	31.9	2.4	7490	330
LP070120-1s-30	AGG 1	1.27	0.24	36.9	3.9	11.18	0.82	135.9	9.1	46.5	2.5	196	11	44	2.1	453	28	60.2	2.9	8440	420
LP070120-1s-77	AGG 1	5	3.1	57	13	14.5	2	169	19	60.8	8.3	262	42	59.7	8.6	563	63	82	13	9100	510
LP070120-1s-36	AGG 1	0.531	0.096	14.3	2	4.98	0.37	67.2	4.7	26.7	1.8	128.5	8.5	34.1	2.2	399	22	57.5	3.6	11110	650
LP070120-1s-45	AGG 1	4.56	0.29	65.6	4.9	13.7	1.2	133.6	7.6	43.8	2.4	195	10	38.9	2.4	421	17	56.5	3.4	9410	450
LP070120-1s-99	AGG 1	40	2.3	143.5	9.9	23.4	1.4	140.5	7.3	26.8	1.8	73.1	4.1	9.11	0.8	50.8	3.6	6.05	0.52	13.19	0.99
LP070120-1L-57	AGG 1	26.7	1.7	17.6	1.7	1.69	0.22	9.3	1.1	1.74	0.23	4.39	0.5	0.76	0.13	5.38	0.62	1.2	0.14	4.81	0.61
LP070120-1L-18	AGG 1	0.346	0.092	10.6	1.3	3.69	0.21	62.8	4	25.7	1.5	133.9	5.6	36.7	1.7	413	23	64.7	3.7	10260	470
LP070120-1s-53	AGG 1	0.55	0.14	18.3	1.5	7.36	0.56	100.6	7.8	34.6	2	157	9.4	34.8	2	372	20	49.9	3.1	10390	610
LP070120-1s-14	AGG 1	1.05	0.19	12.4	1.4	3.95	0.38	54.1	3.9	19.6	1.1	101	4.6	27.4	1.8	294	17	45.8	2	8910	460
LP070120-1L-30	AGG 1	51.4	5.1	253	26	61.1	6.4	516	54	122	11	432	39	82.2	6.5	735	51	95.6	7.5	7950	360
LP070120-1s-19	AGG 1	0.77	0.11	16.7	1.5	5.71	0.56	67.5	5.4	23.5	1.9	109	7.2	25.8	1.4	279	15	38.2	2.3	9020	510
LP070120-1s-100	AGG 1	5.02	0.71	39	2.8	12.95	0.9	133.1	8.5	43	2.4	164.7	9.5	38.1	3.6	398	26	52.9	3.4	8540	590
LP070120-1s-84	AGG 1	1.03	0.18	25.6	2.7	9.54	0.72	132.3	7.1	52	3	224.8	9.9	58.6	3.5	678	39	99.7	4.3	10430	500
LP070120-1s-76	AGG 1	18.2	1.3	24.6	2.2	9.62	0.88	122.4	7.8	44.8	3	213	13	52.9	3.5	570	28	79.4	5	10150	360
LP070120-1L-58	AGG 1	6.94	0.86	38.9	5.6	13.3	1.7	160	17	51.3	4.2	258	22	65	5.9	715	63	104.6	8.3	10980	520
LP070120-1s-15	AGG 1	18.9	2.3	120	10	30.8	2.5	316	29	83.6	7.4	295	17	59.2	3	531	39	60.5	2.5	7960	250
LP070120-1L-44	AGG 1	39.4	7.4	188	34	54.2	9.8	610	110	169	30	650	120	141	23	1350	220	169	26	10670	580
LP070120-1s-47	AGG 1	0.63	0.13	12	1.4	4.42	0.35	55.2	3.4	22.5	1.2	99.8	4	25.2	1.6	262.6	8.9	37	1.8	7440	290
LP070120-1s-123	AGG 1	2.06	0.34	30.4	2.4	13.46	0.91	193.1	8.3	79.5	2.6	409	17	114.8	5.1	1381	71	190.7	8.4	10950	560
LP070120-1s-35	AGG 1	18.4	3.1	104	20	30.5	6.6	321	73	105	24	470	110	95	21	1020	210	128	28	10260	400

Sample 070120-2

Grain	Unit	Eu (ppm)	error	Gd (ppm)	error	Tb (ppm)	error	Dy (ppm)	error	Ho (ppm)	error	Er (ppm)	error	Tm (ppm)	error	Yb (ppm)	error	Lu (ppm)	error	Hf (ppm)	error
LP070120-2L-20	AGG 2	1.33	0.35	40	3.9	13.4	1	158	12	51.2	3.9	203	10	50.4	3.4	572	44	72.6	3.9	13550	850
LP070120-2s-42	AGG 2	0.69	0.22	43	4.8	12.9	1.1	166.1	8.1	59.3	3.4	271	11	62.2	3	681	28	93.8	4	14310	430
LP070120-2L-10	AGG 2	0.096	0.067	14.7	1.9	6.34	0.67	96.9	8.1	37.8	3	193	10	49.5	3.6	507	38	68.4	3.8	14350	620
LP070120-2s-16	AGG 2	7.38	0.81	55.6	5.6	16.4	1.1	219	11	88.6	4.9	454	28	133.7	6.5	1637	71	279	17	12430	500
LP070120-2s-6	AGG 2	2.44	0.5	24.1	2.5	8.78	0.62	113.8	6.1	45.3	2.2	254	14	73.3	3	935	39	160.7	6.3	12540	520
LP070120-2s-5	AGG 2	2.37	0.42	37.3	3.3	12.05	0.85	165.6	8.6	66.2	3.1	335	13	91.4	4.7	1026	43	165.7	8.1	13760	480
LP070120-2L-23	AGG 2	1.31	0.33	19.7	2.8	6.94	0.62	104.1	6.9	45.3	3.4	235	17	66	5.6	859	43	135.3	8.6	12180	520
LP070120-2L-15	AGG 2	1.58	0.42	15.8	2.5	5.46	0.69	83.7	8.7	32.4	2.3	197	15	56.9	3.9	710	64	123.8	7.2	13160	720
LP070120-2L-5	AGG 2	1.24	0.28	24	3.2	9.5	1.5	135	17	50.1	5.3	256	26	65.2	6.6	801	91	109.9	8.7	13780	700
LP070120-2L-17	AGG 2	0.59	0.2	9	2.1	3.25	0.48	45.4	2.9	19.8	1.3	108.8	7.9	34.1	2	412	22	67.4	3.4	13060	520
LP070120-2L-2	AGG 2	4.47	0.88	62	12	20	3.1	247	41	88	12	451	57	114	15	1270	140	186	22	11960	550
LP070120-2s-9	AGG 2	3.16	0.37	37.6	3.6	10.65	0.79	108	6.3	29.6	2.1	108.8	7.5	19.66	0.98	172.6	7.6	20.6	1.3	15880	410
LP070120-2s-13	AGG 2	8.91	0.78	74.3	5.3	19.8	1.2	205	10	60.9	2.4	257	10	59	2.7	597	23	77.9	3.7	11810	470
LP070120-2s-19	AGG 2	1.37	0.31	19.2	2.5	8.12	0.77	112	6.1	44.1	2.4	234	13	67.4	3.1	778	28	129.2	5.4	12950	380
LP070120-2s-33	AGG 2	1.58	0.38	15.7	3	5.8	1.1	87	13	38.9	5.1	223	25	66.5	8.3	950	120	190	24	17230	530
LP070120-2s-18	AGG 2	0.2	0.11	45.8	4.7	19.5	1.2	286	17	112.1	4.2	517	21	128.5	6.7	1306	57	174.2	9.3	17010	660
LP070120-2s-26	AGG 2	1.59	0.37	61.8	6.8	24.3	2	309	27	105.4	7.5	429	33	100.9	8.7	1008	74	133	11	17850	520
LP070120-2s-3	AGG 2	0.95	0.25	18.5	2.9	6.91	0.92	88	7.5	33.2	3	156	12	37.2	2.5	420	22	58.7	2.3	19510	910
LP070120-2L-12	AGG 2	0.24	0.15	5.3	1.6	2.31	0.3	29.9	2.6	11.5	1	54.6	3.9	14.8	1.1	181	11	23.1	1.5	13800	600
LP070120-2s-41	AGG 2	7.99	0.86	73.5	6.5	23.3	1.8	263	16	89.1	5.7	398	21	98.5	6	946	45	143.9	6.9	13010	580
LP070120-2s-24	AGG 2	1.54	0.29	43.1	5.6	21.7	2.4	324	40	131	14	661	58	183	18	1940	210	273	24	18670	590

LP070120-2s-2	AGG 2	2.64	0.4	58	5.6	22.2	2.1	345	24	126.4	8.9	663	53	167	14	1850	200	270	24	14810	540
LP070120-2s-40	AGG 2	0.17	0.13	2.14	0.66	0.8	0.29	14.7	2.8	8.67	0.86	65.2	3.5	24.7	1.6	361	15	71.8	2.5	11240	410
LP070120-2s-8	AGG 2	4.61	0.52	71.5	5.8	23.6	1.4	272	14	93.5	5.2	428	15	106.2	4	1108	48	152.2	6.3	12690	350
LP070120-2s-20	AGG 2	6.21	0.65	113.9	8.8	34.7	2.3	446	21	148.5	6.5	659	30	149.3	6.5	1530	70	202.5	6	10270	270
LP070120-2s-1	AGG 2	0.4	0.19	23.9	2.6	9.9	0.89	147	10	54.7	2.5	274	14	70.6	3.6	768	45	107.8	3.8	13780	490
LP070120-2s-12	AGG 2	0.24	0.13	19.2	2.5	8.43	0.78	121.6	7.1	46.2	2	222.8	8.5	58.3	2.7	624	32	88.4	3.7	15670	630
LP070120-2L-14	AGG 2	0.49	0.17	23.7	7	10.4	1.9	149	16	64.1	3.9	326	24	96.7	9	1140	180	161	24	13900	570
LP070120-2s-36	AGG 2	0.135	0.08	38.7	4.8	13.4	0.98	172.5	9.6	63.4	3	297	12	76.1	3.6	737	32	94.2	3.7	14780	370
LP070120-2s-21	AGG 2	1.83	0.35	26.2	3.5	8.68	0.73	113	8.2	43.9	3.3	224	12	60.1	3.2	731	40	108.2	4.8	12510	440
LP070120-2L-16	AGG 2	0.8	0.2	13.9	2.6	4.99	0.52	79.1	7	29.1	1.4	154.4	7.7	41.2	3.4	463	25	63.1	3.9	12760	580
LP070120-2L-4	AGG 2	3.19	0.69	32.1	5.2	11.8	1.5	167	16	59.8	5.3	323	28	97	10	1110	120	162	20	14140	430
LP070120-2L-19	AGG 2	0.34	0.13	11.7	2	4.53	0.55	66.3	5.2	23.6	2	128.9	7.1	31.5	2	388	22	51.2	2.5	11350	460
LP070120-2s-22	AGG 2	0.6	0.21	5.7	1.7	2.08	0.33	28.7	2.2	11.38	0.8	57.2	3.5	16.2	1.1	200	12	32.5	1.9	12720	520
LP070120-2s-27	AGG 2	6.42	0.47	89.9	6.7	28.9	1.5	359	16	130.4	6.1	579	26	143.9	5.4	1523	52	194.5	8.9	16420	540
LP070120-2s-7	AGG 2	3.28	0.61	38.8	4.1	12.36	0.98	133.3	7.5	44.6	2.5	184.1	8.8	43.3	2.5	450	27	62.9	2.7	12050	430
LP070120-2s-29	AGG 2	0.89	0.32	46.8	4.3	18	1.4	220	12	79.1	3.3	355	15	81.3	3.1	787	40	104.4	4.6	15810	480
LP070120-2L-6	AGG 2	14.6	7.5	130	68	34	18	310	150	80	34	310	110	66	22	680	180	85	20	13630	730
LP070120-2s-38	AGG 2	2.81	0.49	67	11	18.2	2.7	192	24	62.1	6.2	259	22	56.6	4.4	585	37	74.5	5.5	12930	430
LP070120-2s-23	AGG 2	1.52	0.31	11	1.5	2.26	0.4	26.4	2.7	10	1	40.7	3.8	10.5	1.1	119.4	7.3	17.8	1.9	15670	560
LP070120-2L-24	AGG 2	1.92	0.33	18.2	3.1	5.48	0.58	75.6	5.8	25.4	1.4	120.8	5.5	34.2	2	393	21	59.1	2.9	11170	620
LP070120-2L-22	AGG 2	0.42	0.16	17.8	2.8	5.83	0.63	76.2	5.3	24.9	1.9	119.8	5.6	28.7	1.2	300	21	39.6	2.7	10910	630
LP070120-2s-11	AGG 2	1.63	0.3	81.7	4.6	22.7	1.3	248.3	8.9	74.1	3	297	14	62.1	2.9	573	21	77.4	3.9	12930	490
LP070120-2s-35	AGG 2	2.42	0.45	125	13	39.6	3.1	472	38	155	12	647	48	148	13	1340	110	170	12	10540	370
LP070120-2s-39	AGG 2	2.36	0.56	77.4	6.1	25.1	1.5	305	16	102.6	5.5	439	20	98.2	5.7	946	49	128.7	6.6	13200	530
LP070120-2L-9	AGG 2	0.28	0.13	38.7	4.4	12.8	1	178	14	59.9	3.8	257	16	61.1	4	614	45	76.6	2.9	11510	570
LP070120-2L-1	AGG 2	1.19	0.32	77.1	5.8	24	1.3	302	22	100.5	5	416	20	95.9	5.4	931	65	116.6	6.6	12260	580
LP070120-2s-28	AGG 2	2.23	0.36	51	4.7	17	1.2	220	11	85.9	4	390	18	94.7	4.1	979	54	136.9	5.2	10880	420
LP070120-2s-31	AGG 2	1.51	0.32	25	2.4	7.04	0.54	78.4	4.1	25.3	1.3	109.9	6.2	24.6	1.3	259	13	34.3	1.8	13490	450
LP070120-2s-4	AGG 2	0.073	0.064	11.8	1.8	4.79	0.55	75.3	5	29.8	1.6	166	11	41	3.1	461	29	62.6	3.1	18610	630
LP070120-2s-15	AGG 2	0.34	0.13	26.1	3.3	10.52	0.77	159.5	6.8	57.4	3.7	298	23	79.2	7.6	930	100	121	13	17810	700
LP070120-2L-21	AGG 2	0.24	0.14	13.2	2	6.02	0.83	91.1	5.6	37.2	2.3	182	12	50.6	3	575	40	74	3.3	16210	960
LP070120-2s-34	AGG 2	0.72	0.25	24.9	2.9	9.31	0.75	126.3	6.8	47.9	1.9	221	11	54.5	2.6	565	23	80.7	2.9	14070	470
LP070120-2s-37	AGG 2	1.21	0.39	33.7	3.8	13.28	0.84	223.7	9.1	90.3	3.7	474	13	141	6	1523	61	192.2	8.8	15470	660
LP070120-2L-13	AGG 2	1.65	0.31	57.8	5.5	16	1.3	190	10	68.6	3.5	310	19	76	3.4	858	72	106.6	5.3	10950	600
LP070120-2L-7	AGG 2	3.12	0.32	37.3	4.6	12.39	0.82	150	12	54.4	2.8	240	16	54.2	3.6	563	32	72.3	3.1	10820	430
LP070120-2L-8	AGG 2	1.6	0.32	28	3.4	8.32	0.74	103.7	6.8	36.9	2.1	161.1	8.3	41.7	2.6	411	23	51.5	2.4	10580	490
LP070120-2L-18	AGG 2	0.27	0.13	31.4	4.6	10.2	0.7	142.8	7.9	50.1	3.1	245	12	58.5	3.2	582	30	75.7	4.5	13460	660
LP070120-2s-14	AGG 2	0.24	0.12	3.1	1.1	0.95	0.17	20.3	2.5	7.55	0.75	45.2	3.1	14.4	1	180	10	29.5	1.3	13610	370
LP070120-2s-32	AGG 2	6.32	0.74	70.4	5.5	21.6	1.2	258	11	86.3	3.3	372	14	87	3.7	856	38	125.4	5.5	12400	330
LP070120-2s-30	AGG 2	0.34	0.12	3.15	0.79	1.45	0.26	18.4	2.4	8.34	0.58	51	4.1	15.06	0.73	186.2	9.7	34.5	1.6	14180	540
Rejected Grains																					
LP070120-2L-3	AGG 2	66	4.8	171	11	24.6	1.7	139.5	8.6	23.7	1.4	57	4.2	6.64	0.66	40.1	3.5	3.59	0.37	17.3	1.8
LP070120-2L-11	AGG 2	15.4	6.6	45	18	7.1	2.7	52	14	10.3	2	26.2	4.2	3.58	0.34	23.8	2.4	2.69	0.42	9	1.6
LP070120-2s-10	AGG 2	1.63	0.21	21.2	2.5	8.2	0.73	108.4	6.4	42.5	2.2	216	11	58.5	2.7	691	21	105.2	4	13200	420
LP070120-2s-17	AGG 2	7.1	1.5	59	11	18.2	2.3	209	22	78.1	6.7	357	29	96.7	6.9	1088	87	149.6	7.6	20230	630
LP070120-2s-25	AGG 2	1.21	0.34	61.9	4.7	17.7	1.2	209	11	70.3	2.4	320.8	9.7	76.8	2.8	805	31	112.6	5.5	14240	450

Sample 080120-1

Grain	Unit	Eu (ppm)	error	Gd (ppm)	error	Tb (ppm)	error	Dy (ppm)	error	Ho (ppm)	error	Er (ppm)	error	Tm (ppm)	error	Yb (ppm)	error	Lu (ppm)	error	Hf (ppm)	error
LP080120-1s-12	AGG 3	40	22	3090	220	10450	520	37400	1400	61000	2200	106900	2900	84600	3600	214400	6700	138200	4000	3112000	76000
LP080120-1L-13	AGG 3	254	69	1870	150	4350	210	11680	440	16530	540	24100	940	17390	820	41000	1100	22950	970	2326000	49000
LP080120-1L-4	AGG 3	2450	270	7470	820	14200	1100	38700	3100	49800	4100	69800	6100	51000	3500	126700	8900	76700	5500	2184000	46000
LP080120-1s-10	AGG 3	1040	110	4450	320	9380	460	24700	1200	30800	1700	43600	2300	30000	2000	71600	4800	45200	2700	2292000	66000
LP080120-1L-10	AGG 3	597	89	4300	300	8910	680	25400	1400	34100	2200	50800	2400	36500	1500	88000	4000	56800	1800	1957000	45000
LP080120-1s-17	AGG 3	352	70	1200	120	3010	200	10360	570	16520	680	30100	1500	24600	1200	63000	2600	43900	1500	2018000	68000
LP080120-1s-18	AGG 3	432	77	3580	290	7570	530	24300	1000	35300	1500	55700	2300	39700	1600	97800	5600	63400	3100	2059000	40000
LP080120-1s-5	AGG 3	303	53	3170	220	7380	280	23640	710	33900	1000	51500	1700	37800	1400	83300	2700	51000	1700	2592000	77000
LP080120-1L-3	AGG 3	232	49	1490	170	3560	380	11840	850	16500	1400	26200	2000	19700	1300	44600	2900	27800	1500	2287000	57000
LP080120-1s-9	AGG 3	220	44	2160	220	5610	300	17640	790	26090	970	40800	1400	28600	1200	67900	2700	41400	1400	2723000	86000
LP080120-1s-3	AGG 3	523	90	4050	480	11700	1600	37900	4400	55800	6200	91200	9500	68200	6500	171000	14000	108000	10000	2715000	83000
LP080120-1s-21	AGG 3	870	190	4500	1000	10300	2300	33200	7500	50000	11000	80000	15000	59000	12000	144000	31000	94000	17000	2410000	100000
LP080120-1L-9	AGG 3	125	36	960	110	2760	220	9500	450	13860	430	23800	1300	17790	480	43600	1400	28500	1100	2777000	83000
LP080120-1s-20	AGG 3	257	62	5810	420	12170	760	31900	1800	35700	1600	49300	3000	34300	2600	76200	4900	47100	3400	2432000	72000
LP080120-1L-7	AGG 3	250	48	547	98	1350	140	4290	350	7780	590	14700	1300	14350	920	46400	3000	39300	1800	2271000	71000
LP080120-1s-24	AGG 3	3030	350	7110	730	16200	1600	46900	4700	65200	5500	98500	9200	68600	5200	164000	11000	99770	7900	2146000	61000
LP080120-1s-8	AGG 3	444	86	2400	220	6110	310	21130	960	30400	2000	48000	2300	37500	1600	94000	4100	58000	2000	2360000	77000
LP080120-1s-25	AGG 3	660	180	4500	1100	11600	2700	37400	7900	54000	11000	90000	17000	63000	11000	151000	26000	99000	15000	2940000	61000
LP080120-1s-27	AGG 3	38	21	392	81	1110	120	4220	220	6560	330	11500	480	8970	330	20200	980	12590	660	2249000	92000
LP080120-1L-6	AGG 3	101	31	583	73	1630	130	4840	290	7340	390	12620	740	10610	540	27230	950	18020	650	2449000	34000
LP080120-1s-16	AGG 3	289	59	1490	150	2910	160	8080	400	10700	440	14630	610	9880	400	22900	1100	13100	420	2198000	63000
LP080120-1L-8	AGG 3	97	31	363	55	980	110	3260	260	4980	490	8020	460	5880	320	14050	720	7990	550	2777000	86000
LP080120-1s-6	AGG 3	162	48	1410	130	3530	370	11730	760	16800	1300	29100	1100	21400	1200	51900	2200	29500	1200	2640000	64000
LP080120-1s-22	AGG 3	840	100	3350	240	8220	320	28300	2000	40700	2300	66900	4900	50900	3800	131100	8300	85200	7000	2768000	57000
LP080120-1L-1	AGG 3	210	47	1570	140	4850	410	17010	870	27700	1100	46100	1700	38310	960	95600	3500	60100	2100	2850000	100000
LP080120-1s-7	AGG 3	611	99	3450	320	8540	340	27800	1000	39300	1400	59000	2300	42300	1500	97600	4500	60500	2800	2308000	67000
LP080120-1L-11	AGG 3	630	100	2500	270	6240	630	19500	2200	28600	2400	47700	4800	39600	4000	102400	9900	66300	6600	2512000	81000
LP080120-1L-5	AGG 3	256	60	1420	120	4130	250	13340	580	18700	1100	29800	1400	22680	830	58500	2500	32700	1200	2466000	77000
LP080120-1s-23	AGG 3	56	27	922	72	2850	220	8450	360	11150	590	17800	730	13230	610	28800	1200	17260	820	2378000	49000
LP080120-1L-2	AGG 3	970	210	4350	660	7650	600	20500	1200	28800	1300	48300	1500	35900	1100	87400	3800	54900	1300	2385000	80000
LP080120-1L-12	AGG 3	1150	340	1960	260	4150	390	10890	770	13860	850	21830	930	15410	830	36900	1700	21200	700	2613000	84000
LP080120-1s-1	AGG 3	590	130	1810	150	3300	290	8300	620	10100	810	14500	1200	10810	430	25400	1200	16050	780	2229000	49000
Rejected Grains																					
LP080120-1s-13	AGG 3	1190	130	3850	280	8480	340	23260	560	31300	1300	47300	1600	33250	920	81600	3700	51400	2300	2521000	90000
LP080120-1s-2	AGG 3	333	58	2010	190	4510	260	14010	600	21030	750	32800	1100	25200	1000	66200	2600	41700	1700	2582000	89000
LP080120-1s-15	AGG 3	13160	680	12660	530	14750	510	23560	940	17280	750	16200	800	6610	440	8980	370	4250	250	2340	260
LP080120-1s-26	AGG 3	155	41	1710	230	3270	280	8200	380	11080	600	17370	770	11610	580	28000	1400	16790	540	2161000	56000
LP080120-1s-14	AGG 3	73	28	290	110	590	170	2020	520	2340	550	4440	910	3900	520	12800	1200	9930	640	2724000	93000
LP080120-1s-11	AGG 3	1320	230	1380	230	2850	270	7730	560	9990	520	18380	680	17020	920	49300	1400	37200	1400	3250000	110000
LP080120-1s-19	AGG 3	6100	1200	6000	1300	13700	3200	34500	7200	36900	8000	50800	8900	44500	9500	95000	16000	53900	6600	3220000	150000
LP080120-1s-4	AGG 3	720	120	1720	230	3400	300	8300	1000	8880	490	11590	860	8340	600	21700	1900	13360	670	2990000	120000

Sample 080120-8

Grain	Unit	Eu (ppm)	error	Gd (ppm)	error	Tb (ppm)	error	Dy (ppm)	error	Ho (ppm)	error	Er (ppm)	error	Tm (ppm)	error	Yb (ppm)	error	Lu (ppm)	error	Hf (ppm)	error
LP080120-8s-100	AGG 3	1.43	0.52	19.7	3.4	5.78	0.7	80.3	7.8	28.1	2.2	150.7	7.8	40.6	2.2	490	23	71.9	3.9	8930	510
LP080120-8s-110	AGG 3	1.58	0.36	22	5.5	7.6	1.7	96	19	36.4	7.3	184	30	48.4	7	554	63	87.3	9.6	9150	500
LP080120-8s-54	AGG 3	1.63	0.21	18.7	1.6	6.63	0.52	86.3	5.5	32.7	1.7	157	8.3	42.3	2.2	502	24	77	3.6	9540	430
LP080120-8s-34	AGG 3	0.54	0.086	9.6	1	3.85	0.41	51.4	3.7	21.6	1.3	111.6	7.4	32.2	1.9	380	19	60.1	2.8	9170	500
LP080120-8s-78	AGG 3	2.14	0.36	27	2.9	9.2	1.2	123	13	46.7	5.1	235	21	59.2	4.8	690	62	98.3	8.7	9060	530
LP080120-8s-147	AGG 3	0.383	0.094	7.7	1.2	3.08	0.22	42.3	2.5	16.64	0.98	91.3	5	24.1	1.1	305	15	51.5	2.8	10180	360
LP080120-8s-107	AGG 3	0.223	0.066	4.03	0.8	1.51	0.21	20.1	1.2	7.66	0.67	42.5	2.6	11.87	0.72	143.9	8.5	23.7	1.7	9350	540
LP080120-8s-63	AGG 3	0.89	0.21	13.1	3.3	4.46	0.97	62	11	24.3	4.3	125	23	32.5	3.8	395	47	59.9	5.6	9640	500
LP080120-8s-82	AGG 3	0.69	0.12	6.9	1.1	2.4	0.3	37.1	3.1	15.8	1.2	98.1	6.4	31.7	2.5	446	37	90.3	7.5	9310	420
LP080120-8s-88	AGG 3	1.25	0.29	12.9	2.9	4.51	0.96	59	12	23.1	3.9	119	20	33.2	5.5	400	63	69	10	9300	480
LP080120-8s-38	AGG 3	1.71	0.22	25.1	2.5	8.57	0.85	114.2	7.8	44	3.7	204	14	52	2.5	590	34	83.7	4.7	9320	490
LP080120-8s-50	AGG 3	2.65	0.44	26.4	3.1	7.1	0.67	89.5	5.7	32.8	2.3	156.8	9.7	38.8	2.1	470	31	70.6	4.3	8370	530
LP080120-8s-126	AGG 3	0.23	0.071	1.77	0.43	0.9	0.12	13.5	1.3	5.5	0.54	32.7	2.4	10.45	0.83	145.9	9.7	28.2	1.7	9520	500
LP080120-8s-65	AGG 3	1.95	0.26	16.7	1.8	6.53	0.61	88.4	4.7	33	2.6	155.5	7.1	41.6	2.5	489	22	69.4	4.1	8710	610

LP080120-8s-130	AGG 3	2.68	0.39	32.1	4.3	12	1.7	146	17	57.9	7.7	267	29	68.1	7.1	773	88	110	11	9100	600
LP080120-8s-114	AGG 3	0.428	0.096	9.8	1	3.92	0.38	51.4	3.5	19.7	1.3	106.3	7.1	27.5	2	327	18	48.2	3	10500	500
LP080120-8s-68	AGG 3	0.4	0.11	4.3	0.78	1.82	0.27	29.8	3.3	13.7	1.5	85.6	7.9	27.3	1.7	385	30	74	5	9320	420
LP080120-8s-40	AGG 3	0.96	0.2	13.1	1.4	4.74	0.46	62.1	6.3	24.9	2	123	7.8	32.4	2.4	375	28	57.5	4.7	8590	420
LP080120-8s-57	AGG 3	0.39	0.12	6	1	1.99	0.18	27.3	2.7	12.16	0.82	70.3	5.3	21.1	1.3	286	17	48.7	3.5	9330	420
LP080120-8s-59	AGG 3	0.53	0.13	5.9	1.2	2.03	0.32	29.5	4	12.6	1.6	74.2	8.8	21.6	2.3	310	27	54.4	3.1	9100	460
LP080120-8s-149	AGG 3	0.78	0.16	9.9	1.4	3.57	0.37	48.4	3.5	21.2	1.1	112.4	7	32	1.6	418	17	70.7	3.6	8560	470
LP080120-8s-91	AGG 3	0.66	0.14	21.7	2	6.83	0.5	92.7	5.3	34.5	1.8	161.5	9.1	40.9	1.9	459	30	65	4.1	10910	770
LP080120-8s-39	AGG 3	0.27	0.1	3.22	0.68	1.07	0.2	17.7	1.6	7.22	0.53	41.7	2.9	13.51	0.91	185	10	34.9	1.8	9450	350
LP080120-8s-87	AGG 3	3.08	0.37	34.9	3.1	11.03	0.88	141.6	9.1	48.8	2.8	234	17	57.3	3.5	562	42	84.4	5.4	8250	320
LP080120-8s-67	AGG 3	0.52	0.15	8	1.3	3.12	0.37	44.5	3.9	20	1.7	113.3	8.6	31.7	2.3	422	28	70.5	4.9	9180	450
LP080120-8L-13	AGG 3	0.52	0.15	8	1	2.75	0.26	37.8	3.1	15.8	1.1	83.4	5.6	23.5	1.7	291	24	47.2	3.5	8940	520
LP080120-8s-138	AGG 3	0.49	0.13	6	1	2.68	0.28	35.2	2.2	16.18	0.92	89.9	4.8	27.5	1.7	354	24	64.1	5.2	9260	390
LP080120-8s-21	AGG 3	0.46	0.16	5	1.1	2.06	0.26	27.3	2.6	12.76	0.88	69.7	3.6	20.5	1.1	276	18	51.3	3.1	9730	540
LP080120-8L-43	AGG 3	0.83	0.21	8.4	1.3	2.97	0.53	40.3	4.1	17.7	1.9	97	10	28.8	2.2	381	30	68	7.1	9250	520
LP080120-8s-132	AGG 3	1.68	0.2	18.5	1.9	7.08	0.72	93.8	5.4	36.9	2.1	189	9	49.1	2.9	585	36	89.6	4.6	8450	350
LP080120-8s-81	AGG 3	0.71	0.21	10.5	1.1	4.15	0.42	55.6	4.9	23.3	1.6	120	10	34.5	2.1	410	20	67.6	3.1	9570	430
LP080120-8s-18	AGG 3	0.79	0.19	9	1.3	3.03	0.26	51.2	2.7	20.8	1.7	115.4	9.7	32.7	2	417	28	72.3	5.8	9430	500
LP080120-8s-42	AGG 3	0.422	0.085	9.2	0.93	3.31	0.27	49.8	3.9	19.4	1.5	103.3	5.2	27.3	2.1	319	15	50	2.4	9300	510
LP080120-8s-7	AGG 3	0.45	0.1	4.83	0.82	1.83	0.26	27.5	2.1	10.96	0.76	62.4	3.7	19.4	1.2	264	17	46	1.9	9740	460
LP080120-8L-56	AGG 3	0.72	0.13	12.6	1.5	4.34	0.38	62.4	3.8	24.2	1.2	123.8	6.5	34.8	1.8	403	20	60.5	3.2	9350	450
LP080120-8s-49	AGG 3	0.42	0.1	4.77	0.93	1.73	0.27	31.7	2.4	14.42	0.99	91.4	5.2	27.7	1.8	396	20	75	3.7	8700	440
LP080120-8L-25	AGG 3	0.4	0.13	6.62	0.88	2.5	0.26	42.7	2.9	19.8	1.4	115.8	6.6	36.6	1.9	476	27	88.3	4.2	9990	520
LP080120-8s-55	AGG 3	0.114	0.043	6.4	1	2.76	0.36	34.6	2.2	13.7	0.76	68.2	4.4	16.74	0.87	185	10	27.8	1.8	10790	520
LP080120-8s-146	AGG 3	2.15	0.32	25	2.7	8.59	0.9	113.2	7.8	43.6	2.7	198	11	52.2	3.8	582	31	89.5	5	9270	490
LP080120-8s-23	AGG 3	0.54	0.11	11.1	1.4	3.63	0.35	48.2	3.3	18.7	1.3	91.5	4.5	23.9	1.4	282	16	41.8	2.4	9180	360
LP080120-8s-64	AGG 3	1.7	0.34	32.8	3.6	10.7	1.1	137	13	50.7	4.5	258	23	62.4	5.3	709	57	107.1	9.3	9770	350
LP080120-8s-104	AGG 3	0.44	0.13	4.89	0.8	1.92	0.26	24.2	1.7	10.28	0.61	54.8	2.9	15.92	0.69	218	13	36.7	1.8	9460	510
LP080120-8s-20	AGG 3	0.46	0.12	6.4	1.1	2.22	0.34	32.9	2.8	13.46	0.98	74.1	6	22.6	1.9	280	18	49.8	3.1	9840	430
LP080120-8L-8	AGG 3	1.47	0.26	14.1	1.7	4.51	0.46	57.8	4.3	25.5	2	142	11	39.2	3.1	523	26	97.6	5.8	9480	430
LP080120-8s-32	AGG 3	0.48	0.15	4.88	0.88	2.22	0.28	32.6	1.9	13.53	0.77	75	5.4	21.9	1.1	293	24	50.7	2.7	9740	400
LP080120-8s-136	AGG 3	1.13	0.18	20.8	2.5	7.48	0.62	93.8	7.3	37.5	2.5	190	12	49.2	3.6	580	38	89	6.7	9360	430
LP080120-8L-11	AGG 3	0.78	0.12	6.6	1	2.5	0.28	35	2.6	16.9	1.4	92.4	5.7	28.9	2	392	24	71.1	3.3	7710	460
LP080120-8L-51	AGG 3	1.11	0.21	10.2	1.4	3.89	0.38	55.2	4.8	20.8	1.9	109.6	7.5	29.6	2	347	32	54.6	3	9360	470
LP080120-8s-76	AGG 3	2.1	0.34	44.5	7.4	14.6	2.4	198	35	70	11	357	53	89	14	990	140	141	20	9760	500
LP080120-8L-6	AGG 3	0.86	0.16	11.6	1.4	3.84	0.31	55.9	3.7	22.2	1.4	121.5	7	33.1	2.1	432	21	69.6	3.3	9220	430
LP080120-8s-41	AGG 3	1.92	0.51	22.7	5.4	6.9	1.4	94	19	34.3	7.4	170	33	44.8	8.1	525	85	85	15	9190	580
LP080120-8L-22	AGG 3	0.78	0.16	20.6	2	6.98	0.51	86.4	5.8	30.1	1.7	139.3	8.5	32.3	2.1	340	26	46.2	3.5	9170	510
LP080120-8s-33	AGG 3	0.238	0.09	4.2	0.88	2	0.29	29	2.2	12.5	1.1	67.6	4.9	19.6	1.2	253	17	37.8	2.4	10870	580
LP080120-8s-69	AGG 3	0.7	0.15	6.71	0.73	2.75	0.29	42.3	3.8	18	1	103.4	5.8	28.8	1.3	371	20	67.6	4	9150	470
LP080120-8s-129	AGG 3	0.31	0.1	4.71	0.45	1.54	0.21	24.3	2.2	10.63	0.92	60	4.6	19.8	1.6	269	20	52.2	4.7	9570	490
LP080120-8s-47	AGG 3	1.14	0.26	10.5	1.8	3.48	0.54	46.7	5.5	19.5	2.2	102.2	9.8	30.6	3.9	397	36	68.4	4.7	9130	470
LP080120-8L-20	AGG 3	0.544	0.087	8.2	1.1	2.73	0.24	42.9	2.6	19.6	1.3	111.1	7.9	34	1.7	447	29	80.7	3.7	9150	400
LP080120-8L-41	AGG 3	0.76	0.18	9.5	1.7	3.2	0.69	46	8.1	18.5	2.9	101	17	29	3.7	375	39	65.7	6.6	9930	410
LP080120-8L-38	AGG 3	0.6	0.2	9.8	1.1	4.03	0.46	55.9	3.1	24	1.4	133.3	8	37.4	2.1	489	25	78.8	5	10010	500
LP080120-8L-9	AGG 3	0.43	0.14	9.13	0.93	4.19	0.37	57.6	4	24	1.5	119.8	6.1	34.1	1.6	422	28	63.5	4.3	9490	520
LP080120-8s-80	AGG 3	0.84	0.18	10.6	1.2	3.71	0.46	53	4.4	23	1.8	121.3	9	36.5	2	488	28	82.7	4.7	8940	410
LP080120-8s-102	AGG 3	2.29	0.4	29.5	2.3	10.32	0.81	139	12	52.6	3.2	271	15	70.3	4.4	880	63	135.7	7.7	9420	380
LP080120-8L-4	AGG 3	0.75	0.18	6.5	1.1	2.78	0.28	42.7	3.5	17.7	1.6	101.6	7.5	29.6	2.4	381	22	60.6	5.3	8630	410
LP080120-8s-24	AGG 3	1.35	0.14	14	1.8	5.37	0.49	67.3	3.7	26.9	1.7	151.3	7.5	44	2.1	558	38	97.7	5.7	9620	440
LP080120-8L-23	AGG 3	0.69	0.17	8.1	1.2	2.89	0.32	43.2	4.6	19	2	95	10	29	2.6	357	26	57.2	5.4	9570	420
LP080120-8s-125	AGG 3	0.201	0.079	3.62	0.59	1.32	0.18	20.7	1.8	8.59	0.71	52.5	3.3	15.7	1.1	201.3	9.8	39	2	9750	360
LP080120-8s-89	AGG 3	1.14	0.33	13.4	3.5	4.5	1.1	61	12	24.1	4.3	117	20	31.1	5.2	390	76	57	8.3	8780	280
LP080120-8s-109	AGG 3	1.21	0.2	12.2	1.4	4.46	0.47	61.5	3.3	23.7	1.6	126.2	7	32.8	1.8	390	22	59.4	3	7130	300
LP080120-8L-39	AGG 3	0.183	0.058	2.19	0.56	0.76	0.16	11.3	1.4	5.68	0.52	30.9	2.8	9.45	0.68	127	11	21.1	1.4	9310	380
LP080120-8L-26	AGG 3	0.59	0.1	9.4	1.1	3.38	0.3	50.2	3.2	19.6	1.2	110.7	7.4	29	1.3	357	17	55.8	3.1	8690	460
LP080120-8s-36	AGG 3	1.42	0.31	14.4	2.5	5.82	0.79	94	12	40.8	5.1	239	28	70.2	7.1	937	89	161	16	8380	360
LP080120-8s-16	AGG 3	0.88	0.15	8.2	1	3.13	0.32	44.9	3.4	16.5	1.2	83	4.5	22.7	1.2	284	13	42.1	2.3	8220	270
LP080120-8s-31	AGG 3	0.71	0.21	10.6	1.7	3.08	0.39	40.2	4.6	15.1	1.6	80	7.9	21.4	2.1	253	26	39	3.2	9490	470
LP080120-8s-56	AGG 3	1.5	0.36	19.9	2	6.64	0.65	86.5	6.5	33.2	2	159.1	8.8	41.9	2.9	493	38	68.3	3.9	6490	420
LP080120-8L-40	AGG 3	0.95	0.21	14.2	1.7	3.91	0.36	48.8	3.5	16.69	0.97	77.9	3.2	17.77	0.96	185.9	7.9	27	1.4	6120	300
LP080120-8L-15	AGG 3	1.94	0.32	27	2.7	10.28	0.8	136	7.6	54.3	3.1	273	19	65.7	4.1	737	47	103.1	7.4	7530	360
LP080120-8s-115	AGG 3	0.49	0.12	8.9	1.4	2.92	0.28	43.8	2.9	18.4	1.4	102.6	6	28.6	1.5	363	17	59.5	3.2	10940	530
LP080120-8s-79	AGG 3	1.98	0.22	45.3	3.6	15.6	0.96	197	9.1	72.8	3.5	332	18	80.8	4.2	857	34	119.8	4.8	10290	580
LP080120-8s-108	AGG 3	0.45	0.14	10.7	1.9	3.71	0.6	60.4	8.6	22.6	2.9	114	12	30.5	2.4	352	28	53.5	3.2	11020	860
LP080120-8s-93	AGG 3	1.64	0.26	32.7	3	11.84	0.79	152	10	53.5	3.5	252	17	57.9	3.2	612	39	83.3	4.4	9310	520
LP080120-8s-62	AGG 3	1.33	0.3	18.3	4.1	6.7	1.4	83	15	32.5	6.3	169	28	44.3	7.6	527	84	80	11	10750	480
LP080120-8s-10	AGG 3	0.55	0.16	10.5	1.5	3.46	0.31	52.7	3	19.2	1.1	98.6	5.3	25.2	1.1	301	15	45.4	2	10010	530
LP080120-8s-111	AGG 3	0.71	0.16	11.2	1.1	3.83	0.34	53.2	2.9	20.9	1.4	105.5	6	28.7	1.5	322	23	47.5	2.8	10290	570
LP080120-8s-105	AGG 3	1.24	0.24	14.8	2.7	5.27	0.67	71.2	9.5	26.5	3.9	131	19	31.3	4.2	354	42	53.8	6.8	8750	450
LP080120-8s-83	AGG 3	0.553	0.098	21.4	2	7.8	0.62	116.7	6.2	43.3	3	209	10	56.8	2.8	635	30	78.9	4.8	10710	470
LP080120-8s-14	AGG 3	0.69	0.15	68.7	6.2	23.4	2	297	22	102	6.3	478	24	107.5	5.6	1145	83	142	7.9	11550	670
LP080120-8s-26	AGG 3	1.49	0.57	15	3.2	4.45	0.51	52.9	4.3	21	1.5	110.2	7.9	33.7	2.8	415	38	68.5	4	11410	590
LP080120-8s-2	AGG 3	0.56	0.12	14.7	1.3	6.28	0.51	83.7	5.9	31.2	1.5	154.8	7.3	37.1	1.7	394	15	57.4	2	9630	320
LP080120-8s-148	AGG 3	0.064	0.055	15.7	1.8	6.76	0.51	100.1	4.8	38.1	2.1	188	10	43.1	2.1	459	20	60.6	2.9	11130	480
LP080120-8s-113	AGG 3	1.24	0.18	21.6	1.6	7.22	0.57	93.5	5.1	34.4	1.7	158.7	7.8	38.1	2.1	395	23	54.1	4	8470	390
LP080120-8s-75	AGG 3	0.76	0.19	25.9	2.7	8.57	0.57	120.6	5.7	44.7	2.4	205	9.9	48.1	2.7	502	30	69.4	2.9	10050	520
LP080120-8L-42	AGG 3	0.066	0.039	24.9	2.4	9.33	0.62	143.4	6.9	57.1	2.8	255	12	64.1	3.2	628	29	83.3	5.7	10870	490
LP080120-8s-72	AGG 3	4.21	0.43	65.9	4.3	21.8	1.1	273	13	91.6	3.4	402	13	91.2	4.5	921	37	123.8	6.5	7560	340
LP080120-8s-3	AGG 3	0.166	0.075	14.3	1.7	5.36	0.42	79.7	5.4	27.5	2.4	127	11	30.5	2.5	319	18	41.8	2.8	11100	610
LP080120-8s-45	AGG 3	0.203	0.072	10.1	1.5	2.54	0.36	26.6	1.9	8.15	0.66	31.6	2.6	6.88	0.54	69.4	4.3	8.97	0.6	9100	450
LP080120-8s-15	AGG 3	1.69	0.28	22.1	2.2	6.19	0.54	72.9	5.2	22.5	1.2	99.3	5.4	22.8	1.2	221	12	29.7	2	7880	410
LP080120-8L-29	AGG 3	0.129	0.067	25.6	2.3	10.31	0.7	130.9	6.6	52	3	235	12	56	3.3	588	33	75.7	3.4	10350	510
LP080120-8L-7	AGG 3	0.217	0.066	2.47	0.49	0.96	0.16	13	1.2	5.47	0.49	28.7	2.3	7.78	0.62	99.3	5.3	15.9	1.1	7530	380
LP080120-8s-58	AGG 3	0.34	0.13	12.7	2.7	4.88	0.92	65	11	23.7	3.4	109	18	27.9	4.3	305	36	43.3	5	9450	520
LP080120-8L-55	AGG 3	0.4	0.14	6.74	0.93	2.38	0.28	36.1	2.4	14.4	0.77	81.9	5	22.7	1.5	281	16	45.5	2.3	10670	640
LP080120-8L-5	AGG 3	0.75	0.18	74.3	4.6	22.01	0.96	282	20	89.1	4.9	377	23	80.6	4.9	731	41	94.1	5.7	7740	410
LP080120-8s-94	AGG 3	0.283	0.075	6.1	1.1	2.33	0.2	30.7	2.7	9.87	0.66	45.6	2.9	11.34	0.85	141	16	17.3	1.2	10000	500
LP080120-8s-44	AGG 3	1.21	0.21	47.4	3.8	13.96	0.92	178	10	60.9	2.6	250	12	53.5	2.6	495	22	67.5	3.8	8010	330
LP080120-8s-145	AGG 3	0.278	0.07	12.1	1.7	3.85	0.44	50.7	4.9	18.2	1.6	83.6	6.7	20.9	2.1	220	13	29.6	2.2	9120	490
LP080120-8s-143	AGG 3	0.049	0.039	2.15	0.54	0.91	0.21	12.5	2.9	5.3	1.1	28.8	6.2	7.4	1.5	81	14	13.3	2.4	9480	490
LP080120-8s-119	AGG 3	0.22	0.13	37.7	2.8	11.53	0.81	142.1	9	48.7	2.8	199	12	42.2	2.6	366	22	42.9	2.8	9270	460
LP080120-8s-46	AGG 3	0.248	0.092	30.6	6.3	11	1.6	143	20	51.1	7	216	25	50.2	5.8	499	57	63.8	7.8	8200	390
LP080120-8s-66	AGG 3	3.89	0.78	37.4	8.3	10.9	2.1	147	32	50	11	231	49	57	12	660	140	90	21	8030	240
LP080120-8s-103	AGG 3	1.16	0.22	17.1	1.7	5.54	0.49	73.1	4.2	26.2	1.3	131.7	7.8	32.5	1.8	343	20	48.7	2.6	7440	230
LP080120-8s-11	AGG 3	2.48	0.43	45	11	13.3	3.2	146	35	45	10	182	37	38.9	7.3	380	67	49.6	8.6	9810	530
LP080120-8s-99	AGG 3	1.16	0.22	39.3	2.8	14.3	1	174	11	61	2.6	274	15	62.7	3.6	614	37	76	4	10250	390
LP080120-8s-70	AGG 3	0.217	0.079	10	1.4	3.26	0.28	40	2.5	14.99	0.93	73.6	5	17.5	1.5	183	11	24.5	1.3	9290	430
LP080120-8s-90	AGG 3	1.3	0.3	22.4	2.5	6.85	0.55	90	7.9	32.6	2.1	151.4	9.7	38.9	2.5	415	23	59.1	3.2	9840	410

LP080120-8s-144	AGG 3	0.83	0.13	19.5	2.2	6.38	0.59	75.1	5	24.3	1.6	106.6	5.8	23.6	1.4	233	17	30.9	2.8	7100	320
LP080120-8s-92	AGG 3	0.36	0.11	9.7	1.2	3.17	0.3	42.3	2.7	14.82	0.81	69.5	3.9	16.9	1.3	175.2	9.3	24	1.3	8890	470
LP080120-8s-116	AGG 3	1.68	0.29	15.6	1.9	4.71	0.43	54.6	3.8	18.4	1.5	81.3	5.2	19.1	1.4	207	11	31.7	1.7	8240	530
LP080120-8L-50	AGG 3	0.5	0.15	39.8	3	11.25	0.79	131.1	8.5	44.1	2.9	178	12	37.5	2.1	367	24	45.2	2.7	6160	400
LP080120-8s-97	AGG 3	0.538	0.095	26	2.9	8.16	0.63	91.3	6.7	30.8	1.9	136	6.2	29.8	1.8	293	15	40.1	2.4	8410	440
LP080120-8L-35	AGG 3	1.13	0.18	166.3	7.1	54	3.2	637	33	187	11	669	28	125.9	7.5	1081	47	112.7	4.9	7510	270
LP080120-8s-85	AGG 3	0.36	0.14	10	1.6	3.22	0.31	40.6	3.3	14.55	0.95	63.4	3.2	15.2	1	158	12	20.7	1.3	9420	590
LP080120-8s-17	AGG 3	0.095	0.071	45.7	4.7	19.5	1.8	266	21	99.2	6	444	30	102.3	4.8	1037	53	135.5	7.1	11320	540
LP080120-8s-98	AGG 3	0.245	0.078	17.4	1.5	6.41	0.48	85.9	5.8	30.6	1.7	132.3	6.6	31.4	1.7	343	19	45.4	1.9	10190	410
LP080120-8s-137	AGG 3	6.16	0.44	90.2	4.2	30	2	388	18	130.8	7.3	581	32	129.9	5.6	1328	67	172	10	8160	420
LP080120-8s-124	AGG 3	0.113	0.059	16.5	1.8	6.12	0.57	83.4	4.3	30.6	2	138.2	7.2	33.7	1.9	350	15	44.9	2.2	10600	560
LP080120-8L-21	AGG 3	0.22	0.11	13.2	1.7	5.35	0.56	68.8	5.4	25	1.6	123	8.9	27.2	1.6	282	13	39.7	2.1	10080	470
LP080120-8s-133	AGG 3	1.95	0.23	26.4	2.2	7.97	0.71	108.1	7.3	38.1	1.7	183	11	40.4	2.5	431	22	61.7	3.1	8240	350
LP080120-8s-140	AGG 3	0.278	0.081	25.3	1.7	8.68	0.65	109.2	7.9	39	2.1	186	11	44.2	2.7	443	25	63.3	4.2	10280	680
LP080120-8L-49	AGG 3	0.309	0.088	10.4	1.1	3.3	0.32	42.1	2.5	14.26	0.77	63.2	4.4	14.7	1	148	11	20.6	1.2	6430	300
LP080120-8s-22	AGG 3	0.6	0.17	7	1.4	2.73	0.35	40.5	4.9	16.3	1.8	87.3	8.4	25.9	2.2	333	31	56.5	3.9	11430	490
LP080120-8L-34	AGG 3	0.205	0.071	26.5	2.2	8.49	0.54	108.3	4.9	36.9	2.1	168.9	8.3	36.9	1.6	367	20	46.2	1.8	8630	250
LP080120-8s-6	AGG 3	0.141	0.063	13.6	1.7	5.37	0.33	69.2	4.3	25.1	1.3	123.6	6.6	27.7	1.7	285	13	37.4	1.5	9450	460
LP080120-8L-24	AGG 3	0.062	0.045	5.71	0.81	2.21	0.18	33.8	2.6	12.88	0.89	71.9	4.9	20.4	1.3	240	13	38.8	2.4	12650	660
LP080120-8s-84	AGG 3	0.142	0.06	19.4	1.9	7.58	0.61	115.4	6.5	48.1	3.4	231	16	57.3	3.6	586	39	83.7	5.7	10890	550
LP080120-8s-135	AGG 3	0.3	0.11	28.3	6	9.4	1.1	115.5	9.1	41	2.2	197	7.7	45.5	3	485	27	64.3	3.1	11210	630
LP080120-8s-8	AGG 3	1.68	0.25	43.1	3.5	14.1	1.1	189.6	9.3	65.4	3	305	16	70.2	3.6	712	44	95.9	4.4	7750	280
LP080120-8s-117	AGG 3	3.33	0.39	47.2	3.2	13.2	1	154.5	9.7	51.2	2.9	211	12	47.9	3.1	461	33	56.4	3.7	8670	360
LP080120-8s-142	AGG 3	2.01	0.3	27.2	3	7.91	0.62	86.3	4.6	30.2	1.3	138.7	8.9	33.9	2	353	21	48.2	2.8	7820	380
LP080120-8s-4	AGG 3	0.3	0.1	30.8	6.6	9.4	1.6	109	16	41.8	5.8	180	23	40.9	3.7	439	57	53	4.4	9540	420
LP080120-8L-14	AGG 3	3.5	0.31	31.6	2.9	9.45	0.72	103.6	7.6	33.5	2.5	139.1	8.8	31.1	1.5	318	22	40	2.3	8190	450
LP080120-8s-60	AGG 3	1.02	0.17	20	2.1	7.1	0.51	92.9	4.4	33.2	1.5	161.2	8	38.3	1.6	406	17	54.9	2.1	8890	410
LP080120-8s-27	AGG 3	0.5	0.12	46	4.1	14.05	0.97	169.1	9	56.5	2.8	244	12	55.4	3.2	531	24	68.9	2.1	9540	370
LP080120-8s-96	AGG 3	0.5	0.14	15.8	1.7	5.58	0.67	71	4.4	26.7	1.7	129.2	7.5	32.3	2.1	342	20	44.9	2.5	9020	400
LP080120-8L-53	AGG 3	0.135	0.068	18.4	1.7	7.72	0.68	103.2	6.8	38.2	2.2	187	12	43.4	2.9	468	23	64	4.1	10560	480
LP080120-8s-74	AGG 3	0.53	0.18	42.8	5.1	13.5	1.7	173	20	60.1	7.2	264	29	60.8	6.5	596	74	80.2	8.2	7600	400
LP080120-8s-48	AGG 3	1.23	0.18	45.2	3.6	16.2	1.4	209	11	75.6	5.8	342	15	83.6	4.8	817	53	113.9	5.7	8590	370
LP080120-8L-37	AGG 3	0.41	0.17	16.7	1.5	5.92	0.45	78.1	4.9	27.7	1.5	134.4	5.5	34.3	1.7	345	12	46.9	2.3	9430	450
LP080120-8s-52	AGG 3	0.185	0.072	10.7	1.5	3.7	0.3	51.4	3.3	18.5	1.1	86.4	4.2	20.6	1.1	210	12	27.9	1.3	9310	390
LP080120-8s-112	AGG 3	0.244	0.092	16.5	1.9	5.01	0.65	56.4	6.4	17.6	1.6	71	7.7	15.9	1.5	147	11	19.6	1.8	9020	320
LP080120-8s-127	AGG 3	0.155	0.068	15.6	1.4	6.61	0.64	97.2	6.1	38.9	1.8	183	9.3	45.4	2	478	25	65.9	3.9	10400	500
LP080120-8s-106	AGG 3	0.318	0.091	9.7	1.4	4.6	0.51	68.3	5.3	29	1.8	177.6	9.2	57.4	3.7	820	49	124.5	5.4	9440	550
LP080120-8s-73	AGG 3	0.365	0.084	7	1.1	2.14	0.29	25.3	1.8	9.52	0.77	47.3	3.1	12.06	0.83	141.8	7.5	20.3	0.99	7430	310
LP080120-8s-29	AGG 3	1.07	0.18	36	2.3	11.83	0.72	163	11	58.1	3.1	253	11	57.3	3.4	579	30	75.3	2.9	7540	410
LP080120-8L-46	AGG 3	0.37	0.12	11.2	1.3	4.22	0.4	56.3	4	21.3	1.2	99.7	5	25.7	1.3	272	18	37.5	2.2	8710	360
LP080120-8s-37	AGG 3	1.26	0.13	14.1	1.1	4.83	0.42	57.2	4.5	19.5	1.3	87.3	6	19.4	1.2	200	12	29.1	1.9	8040	430
LP080120-8s-95	AGG 3	2.18	0.24	20.3	1.9	4.85	0.38	49.4	3.3	15.4	1	59.9	2.8	12.95	0.95	129.8	9.4	16.8	1.1	7500	290
LP080120-8s-134	AGG 3	0.252	0.06	12.6	1.7	3.79	0.32	51.3	4	16.33	0.9	80.5	6.2	17.5	1	204	11	27.8	1.7	9690	460
LP080120-8s-86	AGG 3	0.246	0.089	9.3	1.1	3.01	0.29	42.3	3.5	14.4	1	64.9	3.9	14.52	0.82	168	11	22.4	1.4	8690	460
LP080120-8s-19	AGG 3	0.68	0.15	11.2	1.4	3.95	0.39	57.2	3.8	21.5	1.3	108	9.1	26.5	1.5	311	19	46.8	2.1	9700	390
LP080120-8s-141	AGG 3	0.37	0.11	11.9	1.4	4.27	0.37	55.9	3.8	20.1	1.1	102.3	4.9	24	1.2	252	12	33.8	1.9	9010	440
LP080120-8s-61	AGG 3	0.29	0.093	18.8	2.9	5.94	0.65	85.7	5.9	32.1	2.2	153	12	37.7	3.2	418	32	58	4.5	9500	450
LP080120-8L-10	AGG 3	0.29	0.084	2.98	0.88	1.08	0.22	14.6	1.4	5.84	0.51	29.9	2.4	8.17	0.57	101.7	6.8	14.57	0.78	6750	400
LP080120-8L-47	AGG 3	0.25	0.13	10.5	1.4	3.61	0.29	47.5	2.7	16.59	0.87	73.6	3.7	17.91	0.94	191	12	24.3	1.3	9540	360
LP080120-8L-19	AGG 3	1.03	0.17	16.9	2.1	4.9	0.42	49.5	3.7	16.2	1	68.3	3.6	15.4	1.2	159.4	8.1	23.6	1	6560	250
LP080120-8s-118	AGG 3	0.3	0.13	18.8	1.7	5.98	0.47	66.1	3.8	20.9	1.4	79.8	4.9	17.71	0.95	164.9	9.1	20.6	1.2	8960	440
LP080120-8s-128	AGG 3	0.49	0.13	12.1	1.9	3.78	0.35	47.2	3	15.19	0.96	73.8	4.6	16.35	0.69	181.1	9.4	24	1.3	8100	340
LP080120-8s-25	AGG 3	2.2	0.34	18.2	2.1	4.72	0.42	46.2	3.7	13.2	0.73	55.6	3.2	12.8	1	122.3	9.3	15.9	1.1	7250	340
LP080120-8L-31	AGG 3	0.196	0.066	17.7	1.9	4.68	0.4	47.7	3.3	13.49	0.95	54.6	2.9	11.82	0.8	106.2	7.1	14	1	10360	470
LP080120-8L-2	AGG 3	0.167	0.07	2.3	0.63	0.81	0.13	13.5	1.3	4.99	0.43	31.4	2.4	9.03	0.47	120.7	8.3	19.8	1.5	9540	440
LP080120-8s-122	AGG 3	0.185	0.078	11.2	1.4	4.04	0.32	52.6	3.4	19.3	1.3	88.6	5.5	19.9	1.2	211	13	27.2	1.4	8810	380
LP080120-8s-13	AGG 3	0.54	0.15	14.2	1.8	4.57	0.27	55.2	3.7	19.1	1.2	92.2	5.6	20.9	1.2	216	12	30.1	1.6	9710	410
LP080120-8s-5	AGG 3	0.144	0.054	15.2	1.4	5.25	0.49	63	3.9	21.5	1.5	101.4	4.7	24	1.6	242	13	33	1.6	9660	480
LP080120-8L-1	AGG 3	0.339	0.075	8.8	1.1	2.65	0.23	31.6	2.5	10.11	0.74	42.5	3.3	10.82	0.97	112.2	7.6	14.75	0.81	8990	410
LP080120-8s-35	AGG 3	0.152	0.067	4.2	0.89	1.79	0.22	21.5	2.1	7.94	0.69	41	3.1	10.36	0.61	117.2	7.3	16.8	1.1	8960	620
LP080120-8s-9	AGG 3	0.195	0.08	5.7	1	2	0.19	25.4	2.2	8.6	0.54	41.4	3.1	10.67	0.74	117.1	7.1	16.99	0.99	9180	420
LP080120-8s-53	AGG 3	0.4	0.11	16.6	2.4	6.24	0.71	84.7	7.6	32.9	2.2	150.8	8.7	36	2.1	367	20	50.9	3.5	10720	550
LP080120-8L-30	AGG 3	0.084	0.051	21.6	2.7	6.95	0.45	81.8	4.6	29.5	1.9	124.7	8.4	28.7	1.8	304	15	39.3	3	9590	440
LP080120-8L-48	AGG 3	0.219	0.084	1.84	0.63	0.73	0.14	11.3	1.3	4.85	0.46	26.8	2.3	8.17	0.73	112.3	8.2	19.5	1.3	10960	650
LP080120-8L-12	AGG 3	0.4	0.11	32.8	4	12.2	1.3	160	14	50.2	6.1	212	33	45.3	8.4	442	85	57	12	10810	500
LP080120-8L-27	AGG 3	0.338	0.079	18.7	2.2	6.13	0.55	76.3	5.4	26.4	1.5	114.8	5.8	25.8	1.6	267	15	34.4	2	8920	390
LP080120-8L-33	AGG 3	0.176	0.082	12.5	1.8	4.62	0.34	58.7	3.7	20.9	1.1	97.2	5.6	22.7	1.3	257	20	33.3	1.8	9290	470
LP080120-8s-30	AGG 3	0.79	0.15	14.1	1.6	4.2	0.43	51.3	3.4	16.7	1.1	77.6	6	17.8	1	190	12	27.2	1.9	8320	470
LP080120-8L-17	AGG 3	0.8	0.18	54.6	4	15.6	1	183.5	8.3	58.2	3.2	231	13	50.7	2.3	481	31	63	5.3	8360	380
LP080120-8s-120	AGG 3	0.89	0.14	14.9	1.5	5.08	0.41	61.1	3.3	19.87	0.98	93.5	4.5	23.14	0.9	240	11	35	1.9	7280	260
LP080120-8s-12	AGG 3	1.37	0.22	45	3.2	11.79	0.68	123.1	5.7	39.8	1.5	159.4	6.5	35.7	1.4	346	19	45.2	2.3	9100	360
LP080120-8L-16	AGG 3	1.34	0.46	7.8	2.2	2.47	0.55	29.8	5.2	11.4	1.6	56.8	4.8	15.2	1.4	204	15	33	1.9	10400	500
LP080120-8L-3	AGG 3	0.42	0.13	14.1	1.9	4.95	0.39	64.8	2.9	24.4	1.6	110.5	4.3	27.3	1.6	279	15	39.3	2	9000	370
LP080120-8s-51	AGG 3	0.11	0.062	7.3	1.9	3.42	0.69	47.2	6.7	17.4	1.6	85.7	5.8	21.4	2.1	224	28	29.1	4.2	10180	430
LP080120-8s-150	AGG 3	0.207	0.07	14.4	1.6	4.82	0.49	59.8	3.7	20.8	1.4	98.6	5.2	23.2	1.4	243	14	31.7	2	8260	410
LP080120-8s-121	AGG 3	0.154	0.071	5.7	1	1.81	0.25	23.5	1.9	8	0.59	37.9	2.8	9.55	0.61	103.9	7.8	14.5	0.95	8720	490
LP080120-8s-101	AGG 3	2	0.27	44.5	3.2	13.4	0.98	161.9	8.2	51.4	2.6	225	11	47.8	2.8	475	30	60.9	2.7	8490	360
LP080120-8s-131	AGG 3	0.51	0.14	11.7	1.4	4.1	0.28	52.1	3.1	19.8	1.3	90.4	4.1	22.5	1.1	247	14	32.6	1.5	9030	330
LP080120-8s-123	AGG 3	0.65	0.16	7.5	1.1	2.54	0.27	32.1	1.9	12	1	53.5	3	12.36	0.78	138.1	7.9	19.9	1.3	7820	430
LP080120-8s-28	AGG 3	0.82	0.18	12.3	1.6	3.32	0.4	37.1	2.2	12.92	0.83	55.6	3.7	13.06	0.78	134.3	6.2	19	1.2	7720	300
LP080120-8L-32	AGG 3	2.01	0.29	19.8	1.6	4.65	0.31	55.8	4.6	18	1.3	77.8	4.8	16.9	1	175	11	22.8	1.3	8130	400
LP080120-8s-77	AGG 3	0.62	0.13	8.1	1.2	2.74	0.27	35.2	2.7	12.88	0.83	60.8	3.7	14.63	0.76	157.8	8.3	22.6	1.5	6990	340
LP080120-8L-18	AGG 3	0.166	0.065	20.7	2	8.31	0.56	119.6	5.2	46	2.8	209	13	49.1	2.4	526	31	66.8	4.1	9150	360
LP080120-8s-43	AGG 3	0.188	0.072	5.53	0.76	2.02	0.24	27.2	1.9	10.27	0.54	51.3	2.6	13.14	0.81	147.8	8.2	22.6	1.6	9030	340
LP080120-8L-45	AGG 3	0.62	0.15	7.9	1.3	2.58	0.23	34.9	2.9	12.62	0.79	60.3	3.1	15.58	0.96	172.9	9.5	24.8	1.3	7220	270
Rejected Grains																					
LP080120-8L-44	AGG 3	125.5	5.8	467	26	62.5	3.5	403	23	74.7	4.4	213	11	31.4	1.6	217	13	26.7	1.4	39.4	2.8
LP080120-8s-71	AGG 3	128.8	6.6	501	31	71.5	4	457	24	88.6	5.3	261	15	41.3	2.3	292	15	37.6	2.2	39.1	2.1
LP080120-8L-54	AGG 3	158.2	8.1	648	26	91.5	5.9	584	34	113.5	6.1	325	13	48.1	3.3	317	15	40.8	2.1	40.5	3.2
LP080120-8L-36	AGG 3	184.1	8.6	722	38	99.1	5	615	32	111.7	4.9	302	20	38.7	2.8	232	14	26	1.9	35.7	2.2
LP080120-8L-28	AGG 3	200	14	777	46	115.9	7	673	35	122	7.6	325	22	43.1	1.8	264	11	30.7	2.1	33.4	2.5
LP080120-8s-139	AGG 3	6.2	2.6	47	18	7.8	2.4	65	13	19.9	2.5	89.3	7.5	19.9	1.4	205	13	29.8	1.9	9070	460
LP080120-8s-1	AGG 3	0.32	0.1	12.2	1.5	5.31	0.46	68.7	4	26.1	1.3	120	5.4	29.3	1.3	312	18	43.2	2	11040	540
LP080120-8L-52	AGG 3	84	5.3	329	17	49.6	2.7	314	21	58.5	3.1	159	11	23.1	1.4	152.9	9.1	20	1.4	21.1	1.7

Sample 080120-9

Grain	Unit	Eu (ppm)	error	Gd (ppm)	error	Tb (ppm)	error	Dy (ppm)	error	Ho (ppm)	error	Er (ppm)	error	Tm (ppm)	error	Yb (ppm)	error	Lu (ppm)	error	Hf (ppm)	error
LP080120-9s-58	AGG 3	143	28	595	73	1570	150	4760	350	6940	410	11330	590	9330	620	24100	1300	15190	740	2143000	86000
LP080120-9s-119	AGG 3	930	170	2750	500	7100	1100	20700	2600	29900	3500	45600	5200	36900	2900	104000	8500	65600	4900	2436000	75000
LP080120-9s-137	AGG 3	890	120	3060	290	6310	590	16300	1300	20200	2100	29000	2400	20700	1500	46700	3100	30100	2300	1857000	76000
LP080120-9s-166	AGG 3	504	71	1490	150	4010	430	13900	1400	20900	1800	32500	2000	25900	1900	70900	5700	47000	2100	2463000	99000

LP080120-9s-77	AGG 3	780	100	2180	160	4920	360	14760	990	18470	840	27300	1300	19400	1200	47700	2100	28600	1500	1886000	97000
LP080120-9s-75	AGG 3	2660	220	3840	320	6750	540	16700	1100	18400	1100	25500	1400	17900	1100	41900	2900	25300	1700	2470000	110000
LP080120-9L-13	AGG 3	447	89	1340	150	2990	230	8910	400	12830	720	20540	730	16810	620	43800	1600	32700	1300	2378000	65000
LP080120-9s-81	AGG 3	398	65	2580	240	6000	380	17800	1000	25340	850	38000	1600	29000	1500	72400	3300	46600	1700	2271000	69000
LP080120-9s-51	AGG 3	111	27	1720	170	4160	330	11840	630	15270	810	23600	1200	16750	710	39400	2000	23000	1000	2177000	56000
LP080120-9s-42	AGG 3	478	45	3700	260	8060	410	24470	870	32600	1200	50000	1800	37400	1300	99000	3900	58100	2200	2657000	65000
LP080120-9s-59	AGG 3	162	42	2740	310	6010	480	17700	1800	22600	2000	33100	2800	23100	1700	53900	3300	30100	2300	2260000	110000
LP080120-9s-40	AGG 3	286	69	1650	210	4050	420	11210	990	16900	1300	23900	1900	17900	1400	44700	2800	27300	1300	2123000	74000
LP080120-9s-124	AGG 3	366	59	2020	120	5010	310	14200	1100	22000	1400	35100	1600	27900	1500	71200	2800	45200	2400	2030000	110000
LP080120-9s-3	AGG 3	236	51	1090	160	2990	250	9580	820	14500	1400	25500	2200	21500	1600	55600	4100	37600	2900	2230000	81000
LP080120-9s-2	AGG 3	242	71	1220	230	2800	330	8180	880	12100	1200	19100	2500	14300	1600	35200	4600	23200	3400	2017000	64000
LP080120-9s-29	AGG 3	167	40	633	90	1460	170	4610	390	7380	370	12240	750	10690	570	29900	1500	21600	1100	2108000	92000
LP080120-9s-78	AGG 3	538	62	2470	170	6270	540	17880	770	24900	1300	34800	1800	26600	1100	66900	2800	37700	1700	1884000	87000
LP080120-9L-8	AGG 3	209	49	1460	130	3810	240	10980	500	14760	720	22150	830	17170	620	39900	1100	25700	1300	2054000	58000
LP080120-9s-153	AGG 3	789	89	1690	200	3680	340	9970	710	12660	640	18870	920	13920	810	38100	2200	25300	1300	1921000	85000
LP080120-9s-19	AGG 3	142	31	946	90	2410	200	7710	560	10270	500	16560	840	13510	610	33300	1200	21570	610	2212000	96000
LP080120-9s-146	AGG 3	198	46	1700	120	4170	420	11950	720	15300	1100	22600	1200	15140	920	36000	2200	20900	1200	1867000	73000
LP080120-9s-76	AGG 3	90	33	1140	120	3330	220	11440	580	18080	720	31000	1200	26700	1200	68800	2800	44800	1300	2460000	88000
LP080120-9s-74	AGG 3	164	41	638	67	1700	150	5430	340	7620	420	12790	680	10490	490	30510	940	20210	820	2146000	77000
LP080120-9s-167	AGG 3	67	29	374	87	1000	120	3050	170	4860	410	7470	300	6070	470	17000	1100	10080	520	2133000	85000
LP080120-9s-122	AGG 3	76	27	1680	180	4240	240	12590	550	18900	1300	28700	1600	20900	1100	47600	2600	27400	1500	2108000	84000
LP080120-9s-16	AGG 3	96	38	509	90	1414	99	4390	310	7150	460	12760	620	10110	560	31700	1300	21910	710	2368000	96000
LP080120-9s-148	AGG 3	173	39	1340	130	2990	260	9640	730	13560	800	21810	810	17200	880	45200	2200	28600	1000	2020000	76000
LP080120-9s-170	AGG 3	320	54	2150	120	5150	320	14130	590	21600	1100	33000	1100	26200	1400	69600	2600	45900	2000	2290000	110000
LP080120-9s-68	AGG 3	194	42	1060	130	2760	270	8700	720	11830	760	19900	1600	15900	1300	44100	3300	27300	1800	2103000	82000
LP080120-9s-96	AGG 3	104	32	529	92	1300	130	4240	380	6140	320	10430	400	8630	420	24600	1300	16500	740	2183000	87000
LP080120-9s-69	AGG 3	93	34	810	110	2120	130	6270	450	8910	470	14100	1000	10960	470	29400	1300	17500	1000	2149000	97000
LP080120-9s-62	AGG 3	144	26	7660	560	17390	900	49800	2700	68200	3100	96900	5100	72200	3200	164400	5400	93000	5400	2030000	64000
LP080120-9L-6	AGG 3	100	31	3750	260	11080	520	33800	1300	47800	1700	75700	3100	55000	1700	121700	4200	73100	2500	2710000	100000
LP080120-9s-38	AGG 3	63	27	576	94	1400	140	4070	390	6760	480	9990	870	7390	560	20000	1000	13160	730	1883000	68000
LP080120-9s-159	AGG 3	237	60	2100	460	4130	940	11100	2300	15400	3200	24800	5200	18500	3800	40500	7000	24400	4300	1804000	81000
LP080120-9s-94	AGG 3	158	38	1290	230	2870	450	8030	760	9210	760	14210	930	10030	850	24100	2300	13310	930	1765000	90000
LP080120-9s-115	AGG 3	306	57	1860	170	4640	340	15740	790	22700	1000	37400	1800	30300	1300	75300	4700	50700	2700	1945000	79000
LP080120-9s-163	AGG 3	293	60	2030	170	4430	440	13430	760	18560	910	29100	1700	21290	870	53500	3800	30400	1600	1833000	60000
LP080120-9s-102	AGG 3	150	32	1540	120	3730	330	11690	540	17280	870	25600	890	19630	940	46400	2500	27800	1200	2449000	95000
LP080120-9s-120	AGG 3	63	17	2240	140	7340	440	25830	940	41400	2300	71300	3300	55200	2600	146900	5200	91900	4000	2650000	120000
LP080120-9s-30	AGG 3	94	28	990	110	2830	280	9340	430	14590	890	23000	1400	18200	1000	43100	2200	28750	990	2486000	98000
LP080120-9L-1	AGG 3	91	30	1080	120	2940	200	10040	590	14710	760	23540	960	17780	930	43100	2200	27200	1200	2535000	74000
LP080120-9s-156	AGG 3	190	44	1798	93	4430	290	14260	990	20300	1300	33200	1700	22500	1000	54900	2800	32800	2100	1980000	110000
LP080120-9s-17	AGG 3	1470	180	5110	350	11710	570	34500	1400	48000	2000	79800	2600	59400	2200	145300	6300	87800	3600	1789000	58000
LP080120-9s-47	AGG 3	790	120	4540	310	11300	770	34800	1900	46600	2300	74500	3700	56000	3000	138400	8400	82400	3800	1914000	51000
LP080120-9s-107	AGG 3	336	52	2850	290	6720	380	20300	1500	29900	1600	45500	2800	36200	1700	94000	4200	58100	3100	2185000	90000
LP080120-9s-65	AGG 3	30	16	3700	230	8070	580	21840	970	30400	1600	40600	1600	28500	1300	57600	4100	32800	1500	1991000	98000
LP080120-9s-141	AGG 3	362	64	1800	140	3930	250	11420	540	16270	680	25900	1200	18160	770	43900	2200	26400	1000	1985000	84000
LP080120-9s-144	AGG 3	260	140	1620	390	4280	650	14700	1400	22900	1700	38900	2000	36400	2100	107200	3900	69000	2900	2531000	93000
LP080120-9s-116	AGG 3	347	51	1860	200	4170	250	12360	580	19400	1000	30700	1900	22600	1300	58900	2800	36000	1300	1714000	73000
LP080120-9s-111	AGG 3	847	78	3190	190	8570	380	24800	1400	35800	1600	55200	2000	40500	1900	95300	5000	55500	2200	1921000	92000
LP080120-9s-14	AGG 3	754	93	1730	120	4200	280	14000	1100	20800	1400	32800	2000	25100	1500	65100	3700	44500	2300	1791000	72000
LP080120-9s-37	AGG 3	261	53	1031	98	2650	230	9140	450	14020	770	25080	880	22740	890	62400	3000	42300	1400	2281000	93000
LP080120-9s-39	AGG 3	184	42	2320	140	6050	410	18910	930	28900	1300	45600	2000	33600	1200	84500	3400	50100	1900	2220000	74000
LP080120-9s-64	AGG 3	15	9.9	1860	220	6320	470	21800	1300	24100	1300	28700	1600	19000	1400	40000	2900	18200	1000	2672000	81000
LP080120-9s-43	AGG 3	58	23	1840	170	6600	390	22200	1300	34600	1600	56800	1900	42000	1300	98600	4000	54100	1700	2665000	93000
LP080120-9s-5	AGG 3	1210	220	1890	290	4100	540	11700	1800	16400	2300	23700	2700	18800	2300	48500	5900	30400	3100	2345000	85000
LP080120-9L-5	AGG 3	257	48	1158	98	2540	170	7200	400	9840	570	16470	580	11990	480	29500	1100	18200	880	2512000	82000
LP080120-9s-92	AGG 3	1960	200	5540	430	11670	960	33000	1900	42700	3300	64200	4700	45500	2700	106700	6300	61400	3700	1983000	77000
LP080120-9s-87	AGG 3	129	38	407	61	1080	120	3610	340	6400	420	11830	800	10490	830	32500	1800	23000	1800	2139000	77000
LP080120-9s-57	AGG 3	513	75	1880	170	5180	250	16470	870	24410	940	40400	1500	29900	1800	78900	2100	46000	2300	2149000	88000
LP080120-9s-98	AGG 3	109	78	790	360	1710	770	6400	2900	8700	3900	15900	6700	11300	5000	30000	14000	16400	7300	1030000	450000
LP080120-9s-25	AGG 3	1250	120	4000	280	8590	410	25800	1600	36700	1600	56400	3400	42900	1500	105600	6000	67600	3500	1959000	80000
LP080120-9s-70	AGG 3	1430	120	3040	210	6840	380	18040	780	26300	1800	41500	1700	33300	1100	87800	4100	52700	2900	1801000	80000
LP080120-9s-89	AGG 3	124	30	1350	140	3220	210	9260	370	13340	790	20600	1200	16160	830	36200	1300	21450	890	2089000	85000
LP080120-9s-95	AGG 3	320	190	428	99	900	180	1130	170	850	290	660	220	350	100	760	290	450	150	2900000	120000
LP080120-9s-127	AGG 3	364	62	1060	140	2770	220	8900	490	12760	670	22700	1400	18700	1200	51800	3000	36800	2200	2050000	97000
LP080120-9s-12	AGG 3	202	53	1040	130	2570	280	7340	390	9910	570	15720	730	11840	750	28800	1500	17030	760	2072000	62000
LP080120-9s-113	AGG 3	400	120	1480	150	3050	250	8580	510	10800	630	16900	1100	11220	840	25900	1600	16390	850	2063000	68000
LP080120-9s-133	AGG 3	222	36	1470	220	3470	510	9980	1200	13500	1500	20700	2400	14700	1300	38400	3100	21700	2100	1771000	88000
LP080120-9s-117	AGG 3	5070	470	6780	630	12610	650	28700	1200	35900	1700	54000	2100	41800	2300	108000	4600	64700	3800	2880000	130000
LP080120-9s-150	AGG 3	216	38	1560	160	3630	190	10340	490	15500	690	23530	890	19000	940	46500	2100	29100	850	2003000	92000
LP080120-9s-34	AGG 3	79	29	1450	190	3240	340	10100	910	13190	900	20700	1500	13800	1000	33500	2700	18700	800	2265000	79000
LP080120-9s-10	AGG 3	262	61	620	100	1140	220	2910	270	3420	450	5110	530	3800	420	10220	880	6870	450	2251000	70000
LP080120-9s-67	AGG 3	64	25	1780	150	4500	400	14150	960	19640	750	31600	1300	23710	700	57200	3200	31400	1700	2378000	67000
LP080120-9L-7	AGG 3	304	52	2400	160	5970	330	17390	620	23590	730	35400	1400	25900	910	55400	2500	27700	840	2335000	58000
LP080120-9s-82	AGG 3	44	17	2550	170	7060	430	20410	890	29600	1400	46000	1800	34560	910	80000	2700	47000	1600	2265000	85000
LP080120-9s-56	AGG 3	1067	92	2520	220	4950	250	12790	740	15400	1000	21900	1500	15600	1100	37600	2600	21100	1400	2027000	61000
LP080120-9s-1	AGG 3	67	24	1280	300	2560	460	8600	1800	12100	2100	17600	2900	11100	1600	27900	3900	14800	1900	2309000	67000
LP080120-9s-151	AGG 3	100	32	1020	130	2660	170	8720	530	11910	650	18700	1000	13860	720	34700	1300	19600	1000	2112000	85000
LP080120-9s-79	AGG 3	211	38	1940	160	4610	240	12680	820	16350	730	24500	1200	18000	1100	44500	2300	25700	1200	2350000	120000
LP080120-9s-149	AGG 3	78	31	664	93	1850	150	5320	200	7840	460	12370	530	10010	560	22700	870	13700	400	2369000	76000
LP080120-9s-26	AGG 3	364	52	1920	190	4920	470	14500	1200	19700	1000	29600	2000	22360	970	56400	2400	33000	1400	2340000	93000
LP080120-9s-45	AGG 3	56	28	1370	120	3340	220	11250	530	17700	830	29600	1100	22040	750	53600	1900	30600	1200	2494000	88000
LP080120-9s-162	AGG 3	850	160	10340	460	19180	790	45200	2100	55200	2500	77800	4200	47300	2400	105100	4600	63000	3300	2035000	97000
LP080120-9s-21	AGG 3	550	150	8000	760	17400	1300	46300	3400	60600	3100	83300	5400	55900	3100	123300	7000	69900	4500	2048000	53000
LP080120-9s-90	AGG 3	47	21	1530	140	4330	270	14130	760	22160	920	34100	1600	26200	1400	66600	3300	37000	1300	2456000	85000
LP080120-9s-53	AGG 3	67	28	2130	290	5940	500	18000	1400	26800	1500	38800	2800	28300	1700	67900	4100	42000	2100	2310000	96000
LP080120-9s-83	AGG 3	27	16	3700	440	9200	1000	30200	3200	42600	4600	62900	6400	44400	4900	96300	9600	52000	5300	2298000	73000
LP080120-9s-35	AGG 3	188	57	3170	260	8650	390	23700	1100	29200	1000	37600	1800	22600	1300	48100	2300	27100	1400	2600000	100000
LP080120-9s-123	AGG 3	51	26	1090	140	2870	230	9830	590	13820	710	21650	990	17250	770	42300	2500	24600	1200	2370000	120000
LP080120-9s-99	AGG 3	11.6	9.4	678	90	1880	170	5600	280	8270	490	13530	700	10200	630	26600	1700	15280	850	2031000	92000
LP080120-9s-138	AGG 3	202	46	1420	150	3670	450	12300	1200	16100	1600	26200	2700	19800	1800	43900	3500	23500	1500	1854000	58000
LP080120-9s-27	AGG 3	699	96	1540	130	3820	280	11090	580	14920	630	24600	1200	18700	910	45200	1800	27300	1300	2119000	86000
LP080120-9s-140	AGG 3	116	39	3830	240	8680	440	26500	1000	37500	1600	58900	2400	42000	1600	100800	3400	58800	2500	2406000	96000
LP080120-9s-24	AGG 3	1630	150	4550	350	9380	480	25100	1300	31900	1400	46900	2700	34800	1500	81100	4500	48500	3000	1841000	79000
LP080120-9s-4	AGG 3	289	96	1120	110	2650	240	8780	590	13360	910	22000	1400	17700	1100	42300	2900	25400	1000	2213000	83000
LP080120-9s-31	AGG 3	1090	110	2240	220	4440	290	11710	580	15920	950	23200	1100	16570	760	39500	2100	23500	1000	1862000	50000
LP080120-9s-63	AGG 3	280	49	602	65	1510	100	3950	280	5670	340	8640	460	6830	430	17550	790	11690	470	2620000	110000
LP080120-9s-129	AGG 3	60	39	320	160	1090	470	3000	1300	5400	2200	8200	3100	6400	2400	17400	6300	10200	2900	2073000	61000
LP080120-9s-86	AGG 3	611	85	2510	220	6290	360	19500	1100	27500	1100	43300	2400	31800	1300	78200	3200	45800	1800	2258000	93000
LP080120-9L-12	AGG 3	184	53	2440	150	5620	320	17700	820	26000	1300	41200	1600	29500	1100	70100	2700	43100	1500	2203000	82000
LP080120-9s-6	AGG 3	587	95	2570	320	5910	640	17800	2200	25400	2800	40300	3500	28600	2800	71100	5900	44200	4200	1893000	92000
LP080120-9s-136	AGG 3	84	24	2270	180	5530	390	16130	950	23000	1500	36700	1200	25400	1500	61600	2100	35700	1100	2076000	82000
LP080120-9s-147	AGG 3	27	15	1610	140	4030	300	13040	700	20700	1100	32500	1300	24200	1300	60400	2500	34300	1600	2419000	84000
LP080120-9s-152	AGG 3	64	27	1010	130	2470	180	8630	490	13920	590	21900	1200	18680	950	46100	1900	26700	1300	2100000	110000
LP080120-9s-164	AGG 3	257	86	3250	230	8320	590	24040	990	35600	1600	59600	2700	46400	1900	122500	5600	78900	4100	2420000	120000
LP080120-9s-13	AGG 3	1210	120	3670	380	7420	530	23500	1600	33000	2000	49400	3200	36700	2300	95600	5000	56400	3400	1699000	59000
LP080120-9s-11	AGG 3	36	17	1240	110	3150	300	10010	590	15410	850	23800	1000	18020	830	42800	1800	25000	1500	2244000	74000
LP080120-9s-7	AGG 3	1190	260	1200	110	1690	170	5050	300	7150	490	12900	840	11300	610	31200	1900	24500	1700	1490000	86000

LP080120-9s-131	AGG 3	23	15	3550	230	9330	440	33200	1700	46800	1800	80500	2600	56900	3100	130800	4900	72400	2400	2049000	73000
LP080120-9s-130	AGG 3	740	110	2600	190	7510	400	24300	1100	39400	1400	66200	2400	50900	1900	135700	6800	86500	2200	2380000	110000
LP080120-9s-32	AGG 3	109	28	960	240	2980	610	10100	1900	16000	3000	29200	5200	24100	4100	62000	8300	42000	4900	2678000	77000
LP080120-9s-33	AGG 3	384	45	1630	110	4480	250	13400	490	21160	900	31400	1100	23520	900	59600	2200	35600	1700	2099000	80000
LP080120-9s-143	AGG 3	101	34	4380	250	12320	450	41300	1800	62700	3300	100400	3800	76500	3100	183900	6400	100400	4200	2080000	100000
LP080120-9L-9	AGG 3	407	75	1440	160	3960	470	11570	900	15000	1200	23700	1800	17900	1400	45100	2900	27700	1400	2446000	70000
LP080120-9L-10	AGG 3	167	44	628	91	1370	100	3930	220	5930	350	9320	400	7520	460	19830	750	13010	670	2171000	78000
LP080120-9s-9	AGG 3	284	53	1760	170	4410	310	13000	1000	18720	610	29840	830	22300	1100	53700	2500	32800	1600	1919000	62000
LP080120-9s-108	AGG 3	113	27	645	72	1600	160	4890	330	7980	430	13830	540	12060	580	30000	1400	19500	1000	2395000	89000
LP080120-9s-100	AGG 3	193	37	1490	170	3720	310	11390	570	17860	930	28300	1100	20250	820	55000	2500	33900	1600	2164000	61000
LP080120-9s-73	AGG 3	698	60	5320	380	13880	920	50200	3800	79400	4600	125300	7100	92100	6000	215000	11000	122600	9500	2480000	76000
LP080120-9s-15	AGG 3	1270	350	3780	690	8100	1100	24800	3600	31800	3600	43100	3300	26900	1700	66300	3800	37100	1700	1821000	74000
LP080120-9s-118	AGG 3	6.9	7.7	1320	160	4050	390	13000	1300	15200	1500	20900	2500	14100	1600	33600	4900	17200	1700	2973000	99000
LP080120-9s-106	AGG 3	516	61	2090	190	4270	240	12630	740	18100	1000	28500	1200	21400	1100	54500	1900	33000	2100	2004000	94000
LP080120-9s-48	AGG 3	890	110	5060	340	11770	630	32840	970	45100	2500	66200	3300	46600	2500	111400	4600	63600	2000	2009000	81000
LP080120-9s-145	AGG 3	158	41	1390	130	3430	240	9970	570	13510	830	21000	1000	16410	820	37000	2200	20400	1500	2072000	93000
LP080120-9s-160	AGG 3	720	200	2700	180	6290	470	18800	1300	26300	1400	40100	2000	30300	1500	69500	3400	41400	1800	2244000	79000
LP080120-9s-121	AGG 3	120	64	1680	270	4420	660	14100	2100	20100	3100	31300	4900	23600	3300	58100	6700	34800	3700	2593000	83000
LP080120-9s-168	AGG 3	520	91	2410	170	5880	410	18200	1300	26100	1600	43800	2200	30800	1700	77400	3100	47800	2500	2059000	74000
LP080120-9s-161	AGG 3	2270	480	3120	490	5280	700	12700	1300	14670	790	22000	1400	16020	910	40100	2300	22700	1000	2186000	70000
LP080120-9s-41	AGG 3	1360	140	1880	200	4480	270	12460	630	16630	870	25700	860	18980	670	46400	2100	30300	1300	1726000	59000
LP080120-9s-22	AGG 3	1700	460	3670	930	6800	1600	13700	3200	14500	2400	19400	2500	12700	1300	29900	2100	18100	1000	2046000	58000
LP080120-9s-23	AGG 3	590	70	5320	270	10000	460	24830	910	31500	1300	45100	2000	31100	1300	71200	2300	42700	2000	2243000	95000
LP080120-9s-8	AGG 3	1150	110	1730	150	3260	230	9390	410	11570	590	17890	750	14840	770	40700	1300	27800	1300	2223000	68000
LP080120-9s-103	AGG 3	153	33	1110	170	2490	160	7040	460	10980	750	16300	910	11500	680	28100	1400	15500	930	1942000	68000
LP080120-9s-104	AGG 3	79	31	299	85	1000	180	3390	460	5100	560	8660	840	7180	750	18300	1500	11650	780	2752000	99000
LP080120-9s-158	AGG 3	299	57	1470	140	3030	260	9280	600	14180	760	21820	990	16630	920	42200	2100	25800	1300	1960000	100000
Rejected Grains																					
LP080120-9s-66	AGG 3	478	49	2030	130	6010	370	18130	800	30000	1400	47500	2400	37600	1200	89700	2600	53600	1800	1639000	73000
LP080120-9L-14	AGG 3	182	40	1240	120	3180	230	10030	600	15860	700	24590	910	19600	1100	48200	1900	31700	1600	1933000	57000
LP080120-9L-4	AGG 3	590	140	2160	330	4980	670	17700	2300	26000	3000	39900	4200	31300	3200	77900	9400	47800	5200	2047000	83000
LP080120-9s-28	AGG 3	378	75	850	120	2140	240	7130	490	9760	820	17400	1100	14220	880	38400	1800	24700	1600	1915000	71000
LP080120-9s-126	AGG 3	424	61	855	97	1950	200	6200	390	9220	690	16000	1000	12870	950	35400	1900	24200	1600	1875000	73000
LP080120-9L-15	AGG 3	922	85	1860	170	4320	310	12970	730	19600	880	34000	1300	28040	840	75300	2900	52600	1800	1751000	55000
LP080120-9s-125	AGG 3	149	33	1060	130	3370	190	13260	710	22100	1300	42100	2500	38000	2600	104100	4700	63600	3700	2400000	110000
LP080120-9s-128	AGG 3	251	51	946	82	2180	210	7010	420	10450	690	18010	770	14050	890	38200	1800	25400	1200	2020000	92000
LP080120-9s-169	AGG 3	409	78	990	140	1940	230	6140	680	8230	620	12800	1200	10950	890	29400	2200	19100	1500	1671000	80000
LP080120-9s-105	AGG 3	252	62	788	95	1710	150	5210	400	7220	410	11820	560	9850	520	24200	1200	16520	860	1995000	80000
LP080120-9s-139	AGG 3	1200	150	2340	220	6600	390	20400	1300	31500	2200	56800	5100	46400	3500	121300	6600	81200	4300	3143000	97000
LP080120-9s-54	AGG 3	1060	140	5180	290	12300	450	38900	2100	52600	3100	83100	4400	62400	2600	156700	5800	89200	5600	2820000	100000
LP080120-9s-50	AGG 3	50000	1900	35800	1700	34500	1200	48800	1900	33200	1200	29500	1000	13330	530	21590	950	12030	650	3670	190
LP080120-9L-11	AGG 3	36700	1800	48800	1900	60400	2200	91300	3300	71200	2400	66200	2400	31040	730	47700	1700	25720	820	4130	270
LP080120-9s-80	AGG 3	600	98	2030	130	4100	340	11280	750	13100	1100	18600	1600	13390	840	34000	2300	20930	900	2155000	79000
LP080120-9s-46	AGG 3	28600	1100	39400	1800	42500	1600	59900	1700	39400	1600	35600	1900	14920	730	21720	970	11000	470	3590	220
LP080120-9s-109	AGG 3	22000	1400	47100	2100	54800	3000	82700	3800	66000	4000	61400	3500	28300	1600	42000	2300	25500	1300	3740	210
LP080120-9s-155	AGG 3	18920	960	15410	520	14970	760	22100	1300	15920	900	15060	870	6120	440	9270	610	5120	470	4970	350
LP080120-9L-3	AGG 3	30900	1300	45200	1600	55600	2200	86900	3500	69600	2500	68300	2300	31400	1000	50200	1700	26200	1200	2860	240
LP080120-9s-97	AGG 3	173	42	1440	120	3580	240	11080	640	16080	750	25700	1100	18310	920	44800	2200	27500	1600	1979000	76000
LP080120-9s-91	AGG 3	318	74	1630	180	4080	300	12550	870	18590	890	31500	1700	24500	1200	61600	3000	40200	1900	1940000	110000
LP080120-9s-134	AGG 3	120	37	1110	120	3390	290	9530	680	14000	640	21400	1100	16780	680	43300	2300	27100	1400	2112000	82000
LP080120-9s-132	AGG 3	151	37	1320	150	3830	260	12830	530	19590	950	33700	1500	27300	1200	74600	3100	45000	1900	2340000	100000
LP080120-9s-101	AGG 3	596	91	2620	370	5120	420	13190	580	17700	760	31300	1200	27900	1300	75500	4300	52200	2100	2726000	84000
LP080120-9s-110	AGG 3	1210	140	2980	260	7260	540	19040	980	25400	1400	40800	1400	37100	1300	102700	3000	67700	2500	2700000	110000
LP080120-9s-114	AGG 3	3010	330	3870	260	9090	510	26400	1200	37550	760	68600	2500	60800	1900	170800	4700	114600	4400	2900000	85000
LP080120-9s-44	AGG 3	930	110	1310	110	3620	230	10050	520	12830	510	18500	1000	14430	680	33800	1600	19810	860	2618000	86000
LP080120-9s-165	AGG 3	930	140	2130	180	4950	420	14500	1300	19600	1400	31900	2600	26200	2100	74700	4400	50200	3500	1970000	82000
LP080120-9s-55	AGG 3	490	100	895	97	2410	190	7660	430	12190	650	20450	770	18110	900	54700	2000	36700	1400	2561000	76000
LP080120-9s-36	AGG 3	7410	530	5050	320	9170	550	16500	1100	16850	940	25200	1100	19900	1300	53300	2200	35200	1900	3000000	110000
LP080120-9s-49	AGG 3	1140	350	2570	460	6830	810	23600	2500	36200	4100	64000	8300	53700	6700	136000	17000	84200	9200	2650000	87000
LP080120-9s-52	AGG 3	17720	680	16590	780	32700	1700	78000	3400	77100	3500	94100	4100	55100	2900	117000	6200	58800	2800	2504000	86000
LP080120-9s-84	AGG 3	8440	550	14960	690	31000	1300	82000	3900	87600	4000	115300	3700	77600	3300	162000	6700	92600	3000	2082000	65000
LP080120-9s-60	AGG 3	26900	2300	40300	2600	75900	4800	152000	10000	134000	7000	149500	6900	89000	4900	174900	9000	91600	3800	2800000	100000
LP080120-9s-18	AGG 3	2500	1000	5300	1100	14600	2700	44700	5900	66000	6900	106000	10000	83600	6400	204000	13000	125700	8500	2663000	94000
LP080120-9s-135	AGG 3	1760	220	3180	190	7020	420	19720	730	25360	820	37900	1900	29800	1300	72500	4200	43900	1400	1792000	65000
LP080120-9s-157	AGG 3	146	34	530	100	1230	180	4190	400	6770	560	11000	1100	9890	760	28700	2500	17700	1700	2370000	89000
LP080120-9s-72	AGG 3	550	130	2370	260	5260	420	14720	660	18900	850	30600	1100	22600	1300	58500	2800	33100	1600	1758000	99000
LP080120-9s-88	AGG 3	424	63	1650	180	3330	240	8880	610	10930	730	16900	1000	13020	550	32000	1600	18500	1200	1899000	82000
LP080120-9s-71	AGG 3	418	68	748	98	1850	150	4580	330	5280	390	5940	400	3940	250	9470	340	5410	370	2109000	73000
LP080120-9s-154	AGG 3	193	48	860	100	2140	190	6850	600	10550	690	17030	890	12480	700	34300	2700	19700	1200	1870000	72000

Sample 130120-1

Grain	Unit	Eu (ppm)	error	Gd (ppm)	error	Tb (ppm)	error	Dy (ppm)	error	Ho (ppm)	error	Er (ppm)	error	Tm (ppm)	error	Yb (ppm)	error	Lu (ppm)	error	Hf (ppm)	error
LP130120-1-7	AGG 3	31	1440	170	3510	210	9100	690	12980	810	20620	990	15180	650	35700	1600	21600	1100	2089000	73000	11710000
LP130120-1-8	AGG 3	450	5820	530	9480	950	21400	1500	21580	830	28400	1300	17830	920	40200	2000	24500	1500	2298000	42000	12640000
LP130120-1-10	AGG 3	92	1780	190	4480	310	14950	670	22740	760	34100	1900	24800	1100	61900	2500	36300	1700	2256000	64000	12580000
LP130120-1-11	AGG 3	56	1480	130	2970	200	8810	320	12120	530	18570	570	15380	720	37200	1200	23970	810	2385000	68000	12450000
LP130120-1-6	AGG 3	120	590	140	1440	270	3620	470	4310	430	6770	530	4890	420	15380	680	10470	740	2741000	94000	12130000
LP130120-1-2	AGG 3	31	2030	180	5000	400	15950	820	23000	1100	38500	1500	26720	870	64700	1800	37200	1100	2691000	68000	11890000
LP130120-1-4	AGG 3	270	2090	260	4030	640	11700	1600	17000	1500	29100	3300	23700	2100	69600	5000	46900	4400	1431000	39000	11810000
LP130120-1-5	AGG 3	36	1280	160	3420	200	11390	560	16520	790	28500	1200	22000	1200	53000	2100	31800	1500	2680000	80000	12070000
LP130120-1-3	AGG 3	93	5340	380	10800	350	28200	1100	36400	2000	52400	2200	35500	1200	77800	3300	44800	1600	2159000	73000	11380000
LP130120-1-1	AGG 3	100	3490	210	9030	400	28100	1100	37000	1800	60200	2400	42500	1500	100900	4000	59000	2400	1778000	46000	11870000

Sample 090120-2

Grain	Unit	Eu (ppm)	error	Gd (ppm)	error	Tb (ppm)	error	Dy (ppm)	error	Ho (ppm)	error	Er (ppm)	error	Tm (ppm)	error	Yb (ppm)	error	Lu (ppm)	error	Hf (ppm)	error
LP090120-2s-43	AGG 4	169	40	1000	120	2760	260	8260	530	12070	900	20100	1400	16800	1400	45500	3900	29200	1800	2390000	75000
LP090120-2L-15	AGG 4	141	47	1580	140	3850	320	11200	540	16880	880	25800	1100	19260	790	51300	2200	32500	1300	2326000	66000
LP090120-2s-46	AGG 4	163	40	1320	140	3510	260	10000	530	15340	730	23600	1000	17670	870	42600	1900	26000	1200	2480000	89000
LP090120-2L-42	AGG 4	51	30	1310	110	3670	220	12200	600	18720	770	30100	1100	22100	1100	56400	2500	33000	1300	2642000	80000
LP090120-2s-18	AGG 4	344	49	2990	170	6770	340	18920	960	25400	1000	34900	1200	25300	1100	55700	2300	33400	1600	2356000	91000
LP090120-2s-48	AGG 4	710	110	4600	290	9710	670	27500	1400	33800	2000	48900	2800	34400	1500	80100	3300	48800	2400	2284000	76000
LP090120-2L-45	AGG 4	197	45	1750	170	4110	330	11180	570	15350	660	23500	1300	16620	950	42100	1900	26900	1300	1912000	61000
LP090120-2L-78	AGG 4	118	41	1890	350	4960	790	14700	2100	22200	3400	36600	4900	29000	3700	65100	7500	40700	4000	2920000	100000
LP090120-2L-63	AGG 4	145	50	1170	100	2710	210	9460	520	14040	610	23000	1100	17300	720	41600	1600	24500	1100	2440000	83000
LP090120-2L-7	AGG 4	117	34	890	130	2430	350	8100	1000	11600	1200	20000	2200	14900	1500	38700	3900	26000	2000	2149000	84000
LP090120-2s-71	AGG 4	254	50	618	83	1480	100	4840	310	8520	420	15640	800	14180	790	43700	1500	35400	1400	2255000	94000
LP090120-2L-38	AGG 4	233	55	500	91	1520	170	4850	390	8040	430	15120	580	14180	720	43100	1900	35200	1600	2380000	68000
LP090120-2L-47	AGG 4	299	62	767	80	1830	200	6810	430	11360	770	21400	1100	19600	1100	57900	3000	45300	2000	2371000	67000
LP090120-2s-17	AGG 4	391	55	1200	110	2650	270	8470	460	13600	1000	25300	1500	21400	1100	61100	2800	47100	2100	2430000	74000
LP090120-2L-35	AGG 4	404	96	980	140	2300	290	7540	940	12600	1400	23000	2500	21600	2400	65000	6000	52200	5700	2456000	91000
LP090120-2s-30	AGG 4	276	56	800	100	2150	160	6630	460	10650	540	18790	810	16530	770	50600	2300	37200	1500	2336000	82000
LP090120-2L-28	AGG 4	288	57	647	80	1770	190	6300	490	10390	580	19180	880	17020	880	49300	2500	39000	1900	2359000	60000
LP090120-2L-22	AGG 4	299	66	835	95	2200	140	7400	450	14340	820	26100	1000	24800	1100	76300	3000	55200	2400	2263000	69000
LP090120-2s-20	AGG 4	272	65	662	95	1680	220	6110	560	9980	820	20300	1700	19700	1500	63300	3300	52200	2800	2379000	66000
LP090120-2s-37	AGG 4	175	55	790	110	1890	190	6000	570	8410	530	13570	800	10310	540	24400	1400	16400	1100	2350000	78000
LP090120-2L-11	AGG 4	669	75	1620	210	3560	560	11500	1100	17900	1800	33100	3100	27800	2100	81600	5400	64300	4200	2313000	85000
LP090120-2s-54	AGG 4	520	100	1890	130	4270	330	13700	680	20980	760	35200	1900	30100	1100	82500	3500	55100	2600	1966000	73000
LP090120-2L-25	AGG 4	115	32	715	81	1940	190	6470	410	9810	480	17430	730	14570	850	40600	1200	27900	1200	2710000	100000

LP090120-2s-5	AGG 4	496	84	1040	140	2800	190	9070	610	13870	630	24600	1100	21600	690	63000	3200	45800	2200	2076000	79000
LP090120-2s-15	AGG 4	259	68	800	170	2130	350	7210	990	12300	1400	24200	2700	22000	2100	65300	4700	51200	3800	2313000	82000
LP090120-2L-44	AGG 4	494	91	1470	210	3690	380	12930	950	20200	1100	35400	1700	29100	1600	84200	3900	55400	2600	2315000	70000
LP090120-2L-32	AGG 4	372	70	1450	120	3610	190	12180	610	19330	820	34770	860	26900	1000	76100	4200	51800	2500	2250000	73000
LP090120-2L-65	AGG 4	278	53	1370	190	3590	430	12100	1200	18300	1500	32600	2700	25900	1800	65900	5500	46800	3000	2535000	69000
LP090120-2L-59	AGG 4	820	110	2230	250	5690	360	18400	1100	28800	1400	48600	1700	38800	1100	104500	5500	65300	2200	2211000	78000
LP090120-2s-40	AGG 4	950	120	2210	210	5180	410	15020	760	21480	890	35400	1100	28200	1200	75100	4000	49900	2100	1768000	68000
LP090120-2s-45	AGG 4	376	49	1140	180	2700	270	9090	920	14100	1500	24200	2100	21700	1500	62400	4000	44100	2200	2390000	110000
LP090120-2s-21	AGG 4	244	58	1000	130	2510	220	8030	490	12690	670	22940	980	18930	820	54200	2500	35600	1400	2349000	97000
LP090120-2s-53	AGG 4	607	91	2930	250	8430	400	29800	2100	43200	2500	69900	4500	54300	3800	134000	7600	83500	5500	2227000	88000
LP090120-2L-71	AGG 4	1000	130	2980	220	7230	600	21900	1100	33100	1900	57000	2300	46600	2300	124000	5500	85600	2300	2321000	65000
LP090120-2s-66	AGG 4	288	74	1080	300	2710	620	10200	2400	16200	3300	29200	4700	25000	3400	68500	6800	49300	4500	2097000	64000
LP090120-2s-64	AGG 4	295	79	586	87	1710	220	5570	410	9410	670	17600	1200	16100	1000	52500	3000	40400	2100	2431000	69000
LP090120-2s-12	AGG 4	229	58	530	140	1310	210	5110	610	8800	1100	18900	1400	18300	1300	60000	3700	51400	2300	2481000	95000
LP090120-2s-1	AGG 4	175	51	440	91	1340	150	4700	430	8880	880	18600	1300	17700	1100	61300	4400	52300	3000	2420000	96000
LP090120-2L-17	AGG 4	340	45	1040	150	2790	260	9570	490	15990	830	26600	1500	23500	1100	69200	2900	48200	2600	2138000	99000
LP090120-2s-50	AGG 4	434	62	1090	120	2450	190	8830	690	14300	1000	26800	2100	24000	1200	77700	4600	62000	3700	2414000	98000
LP090120-2s-70	AGG 4	760	170	2340	370	5700	1100	17500	2900	28100	4000	46300	7000	36200	4700	99000	13000	67200	7200	2209000	72000
LP090120-2L-46	AGG 4	547	85	1410	150	4240	280	14010	940	22500	1200	40400	1500	34700	1500	98300	4900	67900	2300	2143000	73000
LP090120-2s-4	AGG 4	528	66	1500	180	3970	280	12250	980	20200	1600	33100	2400	28700	1800	78700	4000	52000	3300	2161000	76000
LP090120-2s-55	AGG 4	181	49	564	75	1370	100	4720	240	8480	460	16740	700	15560	600	51000	2300	39500	1400	2400000	79000
LP090120-2s-41	AGG 4	109	44	1100	98	2550	220	8440	580	13000	640	21900	1200	18820	740	51100	2100	32900	1400	2560000	100000
LP090120-2L-77	AGG 4	267	66	690	110	1820	200	6810	490	11950	750	22800	1200	20990	830	64100	3200	50900	2200	2113000	82000
LP090120-2s-32	AGG 4	500	180	1380	580	3200	1200	10900	3500	17100	5100	31200	8000	26600	6600	79000	16000	56700	9100	2262000	80000
LP090120-2s-58	AGG 4	212	52	541	83	1610	140	5520	280	9290	570	17600	650	16550	880	50700	3000	34700	1400	2147000	59000
LP090120-2s-63	AGG 4	490	100	1330	160	3650	430	13100	1300	19900	1900	35000	2900	28800	2200	83900	5400	57200	4400	2205000	66000
LP090120-2s-56	AGG 4	209	39	423	61	1460	150	4760	270	8510	450	16840	920	16200	1000	53600	2000	42900	1900	2131000	73000
LP090120-2L-19	AGG 4	248	47	851	80	2090	180	7970	460	13070	490	26700	1300	23130	870	67900	3000	50700	2200	2245000	91000
LP090120-2s-13	AGG 4	205	51	4710	260	13590	770	44600	1900	62600	3600	92100	4000	68900	3900	162200	8300	98800	4400	2644000	61000
LP090120-2s-23	AGG 4	169	41	6210	440	16600	1200	55800	3000	79900	3700	118200	5400	85300	3700	181200	9500	104100	3600	2399000	87000
LP090120-2L-70	AGG 4	34	19	3230	190	10520	570	39000	1400	60300	2700	97700	2700	74200	2900	176800	7900	102800	3600	2829000	92000
LP090120-2s-51	AGG 4	1530	170	6520	390	10650	610	19700	870	16070	830	13750	820	7010	460	13590	740	6260	350	2237000	99000
LP090120-2s-22	AGG 4	75	30	1790	180	4850	230	17410	790	25500	1100	43400	1600	34100	1300	81900	4000	49300	1800	2547000	99000
LP090120-2s-61	AGG 4	68	30	602	79	1070	120	2380	300	2260	270	2610	220	1540	140	2710	220	1350	170	2270000	110000
LP090120-2s-39	AGG 4	165	33	591	68	880	130	2460	230	3360	330	4370	320	3320	210	8800	600	5380	360	2108000	76000
LP090120-2L-30	AGG 4	94	34	820	100	1250	130	2360	160	2090	180	2250	200	1200	120	2580	220	1200	120	2592000	99000
LP090120-2s-2	AGG 4	1630	350	5970	710	13800	1800	34100	3800	41200	4100	52600	5300	34700	3500	77900	6400	42500	4300	2441000	70000
LP090120-2s-35	AGG 4	152	56	3370	400	8080	750	26900	1800	35800	2500	56600	3700	39500	2200	93600	4600	55300	1900	2504000	92000
LP090120-2L-14	AGG 4	145	33	1240	130	2230	220	5300	350	5650	280	6720	410	4560	300	9000	490	4780	320	2591000	85000
LP090120-2s-10	AGG 4	169	57	473	94	1310	240	4340	700	6530	840	12300	2000	10400	1500	29400	4000	19200	2100	2590000	100000
LP090120-2L-18	AGG 4	6970	370	11820	580	22560	690	60100	2600	75900	3500	107100	4000	78900	3100	186900	9300	110400	4000	1928000	60000
LP090120-2s-79	AGG 4	15	13	800	110	2240	190	7230	550	9970	510	15470	830	11690	620	28100	1300	16570	910	2880000	120000
LP090120-2s-80	AGG 4	291	55	860	100	1760	150	5390	370	8230	540	13810	750	11650	610	31900	1500	21500	1100	2380000	81000
LP090120-2L-52	AGG 4	79	35	630	140	2030	360	7200	1100	10700	1700	19200	2500	15800	2400	40200	5500	26300	3200	2860000	94000
LP090120-2L-24	AGG 4	92	32	1690	170	5450	350	21410	900	34500	1400	59200	2200	49100	1600	124400	4300	75000	2300	3138000	90000
LP090120-2s-59	AGG 4	239	44	880	110	1980	260	5300	360	6910	660	10310	620	7800	520	17840	960	10800	430	2401000	98000
LP090120-2s-65	AGG 4	352	78	1370	180	3710	340	12750	930	18400	1400	30000	1600	24900	1600	64700	3300	43000	1600	2331000	69000
LP090120-2L-16	AGG 4	610	120	2520	360	5920	680	18200	1900	26100	2500	40400	3200	31300	2200	81900	6000	54000	3200	2043000	56000
LP090120-2L-58	AGG 4	175	45	4530	300	9950	550	27100	1200	33500	1600	48200	2000	32300	1400	70400	2500	38300	1700	2330000	100000
LP090120-2L-64	AGG 4	900	620	3490	830	7400	1400	20400	2900	26700	2300	39300	2600	28600	1800	63700	2700	39600	2300	2041000	69000
LP090120-2s-74	AGG 4	259	56	4240	260	10840	490	34400	1500	49500	2100	76600	4300	50900	2600	118500	5600	66600	2500	2293000	77000
LP090120-2L-57	AGG 4	85	27	1670	190	3950	350	13320	840	19100	1400	29300	1300	22700	1200	55500	3800	31600	1600	2408000	64000
LP090120-2s-75	AGG 4	650	97	4120	260	8340	480	21670	920	26500	1100	35800	1800	23230	980	50100	2800	29300	1600	1801000	67000
LP090120-2s-6	AGG 4	113	42	561	90	1610	150	5570	330	9050	450	15280	650	13310	860	36700	1700	22930	950	2012000	55000
LP090120-2L-4	AGG 4	669	88	2420	200	4700	400	12860	880	17110	950	25800	1200	19110	980	44400	1800	25800	1700	2195000	73000
LP090120-2L-3	AGG 4	640	140	2140	220	4750	390	13740	820	19310	800	31200	2100	22560	950	54000	2800	33400	1400	2067000	91000
LP090120-2s-7	AGG 4	588	85	3190	180	6650	360	17300	1100	21700	1100	30300	1800	20400	1000	46600	2300	26000	1400	1947000	54000
LP090120-2s-29	AGG 4	88	28	2970	230	9170	560	30900	1300	44500	2500	69200	3400	53800	2900	132900	7700	77300	3300	2660000	100000
LP090120-2L-67	AGG 4	566	72	4700	360	10300	600	28000	1300	35800	1700	50300	2700	32400	1500	72500	3100	38100	2000	1787000	59000
LP090120-2s-68	AGG 4	760	140	3090	660	7200	1400	19700	3900	26600	5900	38100	8400	27400	6000	66000	15000	38800	8400	2240000	100000
LP090120-2L-39	AGG 4	79	32	3340	500	8140	610	24700	1900	33700	1700	51600	2500	37200	1700	88200	3000	52400	2100	2712000	90000
LP090120-2s-73	AGG 4	34	19	749	82	1840	130	6200	260	9040	540	14760	640	11200	800	29900	1900	16750	650	2458000	95000
LP090120-2s-34	AGG 4	288	66	1280	130	3130	190	9550	510	14030	740	23300	1100	17790	800	46000	2600	28700	1100	1905000	67000
LP090120-2s-52	AGG 4	667	78	6310	320	12650	730	34400	1800	44500	1600	58700	2600	39300	1800	90800	4900	50200	1700	2460000	75000
LP090120-2L-10	AGG 4	579	80	3110	280	7690	530	24690	990	32500	1300	52600	2000	38100	1900	98100	4000	58600	2000	1837000	66000
LP090120-2L-27	AGG 4	51	23	2030	160	4880	330	15220	900	22200	810	33000	1300	24000	1100	58100	2600	33420	990	2556000	96000
LP090120-2L-36	AGG 4	19	16	910	110	2930	220	10190	580	15310	620	25710	900	20050	910	49100	2500	30360	880	2679000	87000
LP090120-2s-25	AGG 4	305	63	2670	250	6210	430	18110	850	24900	1100	38100	1300	27200	1200	62700	2700	38400	1800	2079000	69000
LP090120-2s-77	AGG 4	190	72	1360	130	3760	330	12960	770	20500	1300	35500	1600	29100	1500	77000	3800	46700	2300	2626000	77000
LP090120-2L-9	AGG 4	28	17	663	91	1720	130	5790	390	7690	410	13140	810	10720	580	25020	870	15280	780	2330000	110000
LP090120-2L-69	AGG 4	519	90	1910	320	4110	510	11900	1300	16600	2100	27100	2900	22100	1900	52400	3900	33900	2600	2390000	100000
LP090120-2L-8	AGG 4	98	37	1540	330	3300	590	10400	1600	13300	2100	20100	2900	14400	1800	33500	3300	20300	2000	2346000	60000
LP090120-2L-61	AGG 4	210	50	1410	190	3630	330	11770	780	18080	820	30500	1800	23200	1400	58800	3700	36700	1300	2510000	65000
LP090120-2L-31	AGG 4	66	30	1180	100	3260	240	11730	610	18630	740	35300	1400	28700	1100	77800	2700	55200	2600	2860000	120000
LP090120-2s-57	AGG 4	1850	180	6660	440	15460	710	50800	2200	71800	2800	115600	4700	88100	4000	225000	11000	139400	5300	2060000	79000
LP090120-2L-13	AGG 4	122	40	1650	150	4310	410	14230	870	20200	1300	33300	2000	24700	1300	56500	2800	34900	2300	2449000	74000
LP090120-2s-42	AGG 4	250	58	602	93	1360	210	4270	460	6700	660	12310	810	10480	760	30800	2100	22800	1300	2256000	79000
LP090120-2s-28	AGG 4	556	87	2810	290	6160	420	18620	870	26400	1300	42700	1500	32000	1200	79300	2600	49700	2000	2204000	78000
LP090120-2s-69	AGG 4	226	44	4060	450	10940	900	36400	3000	55000	4000	84500	5600	63300	4100	150000	10000	87500	4600	2800000	110000
LP090120-2s-38	AGG 4	740	100	4920	300	12470	740	39100	2600	53400	3300	87400	5000	65400	5900	151100	8200	88700	3400	2372000	91000
LP090120-2s-47	AGG 4	759	98	4790	270	11020	730	33100	1500	44200	1600	65300	2600	47300	2500	105700	5200	60100	2700	2090000	74000
LP090120-2s-67	AGG 4	402	69	2420	180	6250	490	20380	990	30700	1300	48400	2200	38100	1900	95000	5200	58100	2800	2510000	83000
LP090120-2s-11	AGG 4	160	47	1190	120	2880	240	9550	710	13770	610	22400	1200	18300	1000	45600	1900	28100	1400	2456000	80000
LP090120-2L-5	AGG 4	246	55	2020	200	5170	350	18650	950	26300	1600	40600	2600	31900	1800	79000	3500	46400	2600	2577000	90000
LP090120-2L-54	AGG 4	53	20	914	81	2130	150	6470	510	9140	700	13920	880	10300	410	24000	1100	14940	780	2213000	70000
LP090120-2L-33	AGG 4	100	35	1200	110	2690	280	7750	350	10510	560	17250	810	13230	680	31300	1200	19090	790	2233000	83000
LP090120-2L-1	AGG 4	380	110	2960	660	6300	1200	15600	2700	21100	3400	29000	4300	20000	3100	48500	6000	27600	3100	2413000	76000
LP090120-2L-43	AGG 4	1190	130	3910	230	6390	400	15110	820	16090	570	20890	870	13190	530	28200	1100	15540	810	2003000	48000
LP090120-2L-29	AGG 4	312	92	1930	300	3720	510	11300	1100	14700	1300	21900	2100	17200	1400	40300	2900	24000	1600	1838000	53000
LP090120-2L-72	AGG 4	820	100	3100	200	5520	410	14410	760	17920	730	25520	800	17640	810	42300	2300	24320	930	1891000	67000
LP090120-2s-36	AGG 4	280	77	930	130	2530	200	8060	580	12050	770	20500	1200	16060	900	41100	2100	22900	1200	2950000	130000
LP090120-2s-60	AGG 4	79	36	299	55	740	130	2560	180	3520	300	6310	400	5450	340	13640	540	9060	550	1922000	77000
LP090120-2L-26	AGG 4	6070	420	11050	770	11550	980	19900	1000	20500	1200	25700	1100	16920	880	39400	1700	25650	910	2293000	89000
LP090120-2s-72	AGG 4	256	49	890	100	1790	150	4920	260	6830	480	10710	540	8010	490	19800	1100	12540	490	2174000	75000
LP090120-2s-9	AGG 4	577	94	1810	170	3780	370	10080	850	13490	920	19800	1100	13740	760	32100	1600	19600	1200	1982000	67000
LP090120-2L-6	AGG 4	162	44	960	150	2170	220	5930	560	8100	800	12700	1400	9810	930	25000	2400	15000	1200	2530000	100000
LP090120-2s-16	AGG 4	423	81	2420	590	2810	370	6790	680	7980	450	13240	670	11440	660	30500	1800	22210	920	2520000	110000
LP090120-2s-78	AGG 4	263	60	850	110	1710	190	4250	210	5580	430	8070	490	6150	270	14920	730	8660	400	2149000	74000
LP090120-2L-41	AGG 4	532	63	4510	260	9610	500	26200	1200	32000	1300	45800	1700	31000	1200	70600	2600	39700	1500	2336000	67000
LP090120-2s-14	AGG 4	38	18	634	91	1670	190	5480	290	9080	460	15660	800	13190	640	34000	1300	22610	680	2560000	110000
LP090120-2L-73	AGG 4	38	18	446	58	1210	130	4510	260	7210	330	13580	620	11630	550	30900	1400	20610	900	2697000	86000
LP090120-2L-60	AGG 4	96	27	880	130	2010	160	6730	500	9870	470	16430	790	13010	700	34500	1900	21260	950	2320000	100000
LP090120-2L-2	AGG 4	171	47	1200	140	2720	240	8670	410	13300	710	23400	1200	18780	900	50700	1900	32200	1500	2401000	86000
LP090120-2L-21	AGG 4	391	81	1380	160	2650	220	7070	380	9490	520	14460	610	10780	600	25200	1300	16160	850	2207000	79000
LP090120-2L-53	AGG 4	387	61	667	70	1650	120	5170	270	8320	410	14040	580	10850	630	30400	1200	20700	770	2014000	69000
LP090120-2s-24	AGG 4	90	35	351	63	918	85	2920	230	3690	260	6310	380	4610	330	12360	570	8080	430	2217000	77000

LP090120-2L-76	AGG 4	137	35	970	130	2320	310	6430	350	8980	490	14690	690	10550	590	24100	1300	14380	650	2548000	73000
LP090120-2L-48	AGG 4	75	29	167	45	436	76	1640	180	2950	240	6030	280	5380	290	16060	850	12900	600	1974000	56000
LP090120-2s-26	AGG 4	111	35	1054	92	2460	140	7090	440	9860	570	14850	540	10820	620	25030	920	14330	680	2388000	78000
LP090120-2L-74	AGG 4	90	27	188	43	482	77	1350	150	1540	140	2200	200	1470	150	3390	260	2080	210	2251000	87000
LP090120-2L-23	AGG 4	235	61	1600	170	3980	270	13200	650	20070	990	33800	1400	27730	870	72400	3300	43200	1400	2509000	82000
LP090120-2s-33	AGG 4	491	90	1830	170	4200	330	11280	570	16570	670	25200	1100	19300	1000	48000	3300	27530	740	2121000	70000
LP090120-2s-44	AGG 4	278	66	680	110	1280	110	4030	240	5410	370	9460	460	7580	510	19000	1100	11710	520	2139000	83000
LP090120-2L-68	AGG 4	103	34	1030	110	1960	190	5690	300	7660	430	12050	560	8890	490	21620	630	13890	690	2399000	77000
LP090120-2L-49	AGG 4	323	47	2980	280	6290	490	20500	1300	31100	2200	46700	3200	33800	2000	82900	5200	50000	2800	2131000	72000
LP090120-2L-12	AGG 4	60	25	113	38	388	64	1260	150	2020	180	4070	270	3630	280	11230	690	8880	380	3014000	95000
LP090120-2L-55	AGG 4	160	47	880	92	2180	190	6540	370	9340	480	15190	810	12220	550	29870	970	19800	950	2100000	72000
LP090120-2s-27	AGG 4	600	94	1810	160	3370	350	8690	660	9660	520	14870	930	10600	680	26700	1500	16800	1000	2129000	66000
Rejected Grains																					
LP090120-2s-62	AGG 4	525	67	2090	190	5610	320	18290	870	27380	960	44900	1400	36500	1800	98200	4200	66300	2400	2168000	87000
LP090120-2L-62	AGG 4	720	100	1510	160	4130	230	12990	680	19630	860	32700	1900	26700	1400	74700	3900	48800	1600	2227000	60000
LP090120-2s-49	AGG 4	6840	390	13820	590	31100	1500	84500	3500	108700	6200	156200	5500	112400	5200	274000	11000	171200	8700	1817000	65000
LP090120-2s-19	AGG 4	38	20	109	60	313	58	1030	150	1960	280	4000	310	3600	280	13000	1100	10170	690	2830000	110000
LP090120-2L-20	AGG 4	30700	1100	35300	1300	40800	1800	65500	3500	49300	2400	45300	2100	20350	920	29900	1200	16240	890	4320	250
LP090120-2s-8	AGG 4	830	230	3970	400	8970	770	27200	2100	34000	2300	50800	3100	37400	2900	82500	5600	48000	2900	2194000	67000
LP090120-2L-50	AGG 4	143	42	1020	120	2420	140	6960	330	9270	370	14660	670	10050	560	24700	1000	15200	700	2146000	81000
LP090120-2L-75	AGG 4	2790	250	11460	710	19500	1300	51200	2700	66400	3700	94900	5500	65100	4400	154000	11000	91300	5600	2033000	95000
LP090120-2s-31	AGG 4	417	80	1810	240	4240	450	14600	1500	24800	2500	40100	3300	35200	3100	95100	9400	64200	3700	2422000	96000
LP090120-2L-56	AGG 4	96	39	1170	120	2780	220	8500	480	12640	750	20600	1100	15900	1000	39400	2300	24200	1000	2247000	75000
Sample 090120-3																					
Grain	Unit	Eu (ppm)	error	Gd (ppm)	error	Tb (ppm)	error	Dy (ppm)	error	Ho (ppm)	error	Er (ppm)	error	Tm (ppm)	error	Yb (ppm)	error	Lu (ppm)	error	Hf (ppm)	error
LP090120-3s-111	AGG 4	538	55	3850	260	8920	460	24300	1400	32800	1800	49700	2400	36700	2200	86100	6100	48500	2400	2382000	90000
LP090120-3s-3	AGG 4	652	74	2280	320	5420	710	15700	1400	20200	2100	32200	3600	22800	1800	51800	3500	32500	3100	2378000	67000
LP090120-3s-26	AGG 4	148	41	1880	160	4750	370	15600	690	22620	850	37300	1700	31200	1600	80600	3700	51600	2500	2970000	120000
LP090120-3s-79	AGG 4	146	26	880	130	2020	240	6180	470	9880	640	16400	970	13620	790	35500	1600	26000	1100	2490000	84000
LP090120-3L-65	AGG 4	82	24	1100	110	2840	180	8650	500	12820	460	19650	650	14540	690	33500	1300	22070	860	2392000	71000
LP090120-3L-36	AGG 4	227	44	1540	190	3310	260	9340	420	12530	680	18740	760	14250	690	31600	1200	19800	720	2145000	57000
LP090120-3s-25	AGG 4	198	51	2690	310	6220	590	18500	1900	23600	1600	38200	4200	26400	2400	68000	6700	40400	2900	2131000	58000
LP090120-3L-50	AGG 4	88	27	588	82	1770	160	5080	300	8330	410	13960	640	11310	560	31500	1400	20780	820	2467000	60000
LP090120-3L-62	AGG 4	2920	190	13170	490	26700	1500	67700	1900	86200	2000	116200	2900	74400	2100	163700	4600	97000	3100	1809000	74000
LP090120-3s-103	AGG 4	2050	200	6810	390	14440	580	37600	1700	50200	1900	72400	2000	54200	2300	133000	4400	84900	2800	2376000	72000
LP090120-3s-84	AGG 4	247	74	7650	440	17740	550	50300	1800	67900	2300	98100	4300	66300	3200	149100	6600	85400	2700	2574000	69000
LP090120-3s-10	AGG 4	92	37	1880	290	4620	550	15300	1700	22700	2100	33500	2800	26000	2100	61100	5300	36900	2100	2103000	73000
LP090120-3s-15	AGG 4	498	71	3570	260	8660	500	25800	1200	36900	1300	58000	3000	40700	1800	100300	4000	62400	2500	2628000	65000
LP090120-3s-82	AGG 4	379	72	2400	170	6380	300	20660	820	32800	1500	56200	2000	44100	1800	119100	4700	78800	2600	2138000	85000
LP090120-3L-49	AGG 4	88	29	495	83	1470	140	5340	410	9160	540	16960	560	15490	800	44700	1400	33400	1100	2861000	89000
LP090120-3s-59	AGG 4	93	31	1470	200	3790	300	13290	690	19260	700	30800	1300	23800	1400	56000	2300	34100	1100	2678000	88000
LP090120-3L-26	AGG 4	63	21	995	87	3040	170	8940	320	13220	480	22040	890	16080	780	39400	1600	24820	970	2658000	82000
LP090120-3L-16	AGG 4	56	22	3150	240	10530	520	33300	1100	48700	1700	73000	3200	54900	1800	135100	5700	76600	2200	2674000	58000
LP090120-3L-48	AGG 4	304	58	1790	120	5180	300	17100	760	27560	600	44800	1500	37500	1500	90100	3200	57500	1700	2586000	90000
LP090120-3L-41	AGG 4	88	28	1100	130	2690	240	9450	430	15320	890	27200	1500	23700	1100	62400	2600	42000	1900	2506000	75000
LP090120-3s-117	AGG 4	336	46	1050	100	2580	220	9400	440	15530	890	29000	1000	25700	930	79000	3400	59700	2200	2473000	61000
LP090120-3s-118	AGG 4	1300	150	3160	240	8120	400	23500	1200	34300	1400	53800	1000	40100	1800	104200	5200	65200	2900	2542000	75000
LP090120-3L-7	AGG 4	295	32	706	90	1870	230	5990	360	9440	650	15960	890	14740	700	42000	1600	29900	1400	2195000	71000
LP090120-3L-13	AGG 4	128	36	292	53	890	130	2610	170	4690	250	9680	340	8770	450	28880	980	26170	860	2553000	61000
LP090120-3s-29	AGG 4	425	55	900	140	2230	270	6540	610	11800	1100	22100	1800	20100	1300	64400	4300	50400	2700	2419000	93000
LP090120-3s-54	AGG 4	295	53	760	130	1900	220	6260	410	10590	680	21240	990	19400	1100	62900	3500	52200	2300	2433000	80000
LP090120-3s-115	AGG 4	318	58	920	170	2610	250	8970	640	14900	1100	30100	1900	27600	1700	81300	3100	65200	3100	2209000	77000
LP090120-3s-52	AGG 4	540	100	1650	280	3760	590	12700	1900	17900	2900	31400	4700	25700	3100	73500	9000	50300	5500	2474000	81000
LP090120-3s-105	AGG 4	301	76	1310	120	3220	310	11470	390	16400	730	29800	1000	24680	790	68400	1700	46000	1300	2525000	80000
LP090120-3L-45	AGG 4	558	67	1600	160	4050	270	13150	540	20600	1100	37300	1500	32420	960	89600	3400	69200	2700	2495000	74000
LP090120-3s-65	AGG 4	10.1	9.4	304	87	626	75	1950	220	3320	210	5960	400	5500	230	18810	750	16190	590	2609000	61000
LP090120-3L-53	AGG 4	192	35	940	100	2260	180	7300	410	11090	440	19390	760	15330	650	40700	1400	27800	1200	2289000	68000
LP090120-3s-6	AGG 4	540	120	1480	190	3480	280	10880	790	15670	820	27000	1700	23300	1400	63500	3600	42800	2000	2130000	69000
LP090120-3L-56	AGG 4	527	89	2530	270	5450	430	17300	1200	28000	2200	49800	3100	47100	3800	131200	9300	96100	4300	2336000	52000
LP090120-3s-14	AGG 4	481	87	1340	130	3820	270	14600	770	25200	1000	47100	2100	42400	1800	127200	6400	90600	2500	2305000	83000
LP090120-3s-74	AGG 4	313	79	890	210	2020	440	6200	1200	9700	1800	18700	3300	17600	2700	56100	7500	48600	6600	2577000	64000
LP090120-3L-35	AGG 4	403	83	1080	110	2660	220	8490	670	13500	1000	25500	1000	21800	1200	63600	2800	46900	2100	2135000	69000
LP090120-3L-80	AGG 4	258	60	680	100	1620	160	5570	380	8850	520	15370	580	12500	910	34700	1900	25580	750	1889000	74000
LP090120-3L-23	AGG 4	379	60	936	94	3060	230	11230	420	18160	570	33600	1400	27400	1300	77200	3100	55700	2300	2439000	69000
LP090120-3L-25	AGG 4	198	43	539	93	1510	160	5080	340	7530	460	15840	810	14910	840	47600	2500	38000	2000	2423000	64000
LP090120-3s-63	AGG 4	593	87	1400	180	3100	410	10700	1100	17300	1700	31300	3200	27700	2700	76200	6300	60500	5500	2362000	83000
LP090120-3s-95	AGG 4	218	50	2140	190	4980	320	13710	620	18700	1300	30300	1200	23600	1000	60000	2500	38800	2000	2077000	49000
LP090120-3L-3	AGG 4	317	78	980	100	2510	270	10100	1100	16400	1400	33200	3100	28500	2400	89400	7300	66500	3800	2308000	75000
LP090120-3s-56	AGG 4	360	110	940	170	2570	300	8170	680	13800	1300	25700	2100	22900	2100	63200	5100	46500	2800	2415000	92000
LP090120-3s-47	AGG 4	788	90	2410	240	6590	610	22900	1800	32100	2400	57000	3800	47300	3600	123100	9200	77900	5100	2133000	68000
LP090120-3L-18	AGG 4	345	64	870	140	2370	160	8780	580	16010	780	30900	1100	29200	1200	88500	3300	72600	3200	2445000	73000
LP090120-3L-15	AGG 4	229	58	593	56	1580	180	4980	410	7860	680	14400	1100	12270	790	38000	2400	27000	1100	2269000	47000
LP090120-3s-108	AGG 4	788	91	1940	150	6780	340	26850	910	47000	1900	83600	4400	70600	2200	186800	8200	127400	4200	2168000	72000
LP090120-3s-76	AGG 4	380	130	1760	400	4490	710	13800	1500	20900	1500	33100	2300	23300	1700	57700	4500	36500	2400	2790000	130000
LP090120-3s-17	AGG 4	1290	110	3330	220	6870	470	19000	1000	23900	1300	35200	1600	25000	1200	59600	2600	37800	1500	2405000	85000
LP090120-3s-45	AGG 4	860	130	2350	230	6210	670	19400	2100	27900	2500	48400	4900	40300	4100	105000	10000	71800	7700	2323000	72000
LP090120-3s-110	AGG 4	234	48	608	84	1620	140	5600	320	9280	430	16600	510	13560	750	37900	1800	28490	820	2316000	85000
LP090120-3L-29	AGG 4	271	47	1030	110	2780	230	9050	440	13590	540	24750	990	21200	780	55900	1300	38000	1400	2513000	86000
LP090120-3s-89	AGG 4	234	58	4420	200	10920	550	32300	1100	43600	1300	64900	2600	44100	2000	100400	4100	58400	1200	2328000	85000
LP090120-3s-80	AGG 4	336	48	2020	180	5820	350	18010	990	29000	1100	49200	2100	40100	1800	100000	3300	65200	3500	2447000	62000
LP090120-3L-78	AGG 4	222	43	1056	84	2320	210	8140	450	13040	610	23140	900	20170	680	54100	2300	40100	1500	2685000	66000
LP090120-3s-7	AGG 4	280	100	1580	210	4440	410	13500	1200	20000	1800	30900	2800	23000	1900	58400	5000	33800	2300	2401000	74000
LP090120-3s-57	AGG 4	548	79	2800	220	6700	500	18800	1300	25300	1500	39900	1700	27900	1400	69400	2800	41500	1600	2310000	110000
LP090120-3s-92	AGG 4	111	34	2750	410	6240	670	18100	1900	24900	3000	35400	3900	24900	2500	53300	4800	31100	3700	1850000	53000
LP090120-3L-14	AGG 4	213	37	2720	190	10090	360	40800	1200	70400	2900	123200	2300	104600	3600	258100	8500	165400	6600	2896000	69000
LP090120-3L-24	AGG 4	310	63	970	100	2140	190	6680	300	10090	430	16000	520	12670	500	32800	1600	22600	1200	2215000	66000
LP090120-3s-112	AGG 4	421	77	2690	170	6400	420	19130	750	26300	1400	40900	1900	28900	1400	72600	4000	43200	1700	2432000	74000
LP090120-3L-59	AGG 4	111	34	2120	160	5680	310	16790	720	24700	1000	37900	1600	28100	1200	63200	1900	38400	1300	2647000	64000
LP090120-3s-119	AGG 4	1400	180	2520	220	5460	380	13670	950	16800	1100	26800	1900	19700	1400	47200	2900	29800	1900	2819000	81000
LP090120-3L-74	AGG 4	181	48	4560	340	12980	480	39800	1100	59700	1700	96800	3700	67800	2200	160000	5500	97300	3200	2568000	71000
LP090120-3s-12	AGG 4	510	63	1210	160	2640	210	8160	470	11710	780	21050	920	17870	730	49400	1600	33500	1700	2351000	64000
LP090120-3s-28	AGG 4	336	61	920	110	2160	190	6720	370	9840	430	14940	560	12830	460	35300	1700	21600	1100	2370000	84000
LP090120-3s-68	AGG 4	150	43	2250	250	4720	510	13400	1100	15800	1200	23500	1800	16000	1100	34500	2300	19000	1200	2409000	72000
LP090120-3s-8	AGG 4	171	50	960	160	3060	260	10830	670	18610	900	33300	1100	26600	1100	72300	2700	46300	2600	2615000	83000
LP090120-3s-13	AGG 4	242	32	1430	100	3540	270	10220	840	14060	670	23300	1000	17130	620	43100	1800	25200	920	2450000	56000
LP090120-3s-18	AGG 4	502	68	950	100	1880	200	5470	530	7790	410	13300	770	10360	650	27000	1400	17900	1000	1914000	69000
LP090120-3L-34	AGG 4	139	30	980	120	1740	190	3550	240	3630	240	3930	240	2430	210	4710	200	2630	190	2818000	94000
LP090120-3s-73	AGG 4	331	60	2460	260	6590	450	22300	980	35600	1300	58200	2000	45100	1500	112700	3600	72800	2500	2466000	67000
LP090120-3s-39	AGG 4	1460	110	5240	230	10750	470	28800	1500	36300	1400	49800	2000	35400	1900	75400	3100	45300	2000	2461000	89000
LP090120-3s-114	AGG 4	459	77	3490	320	8050	420	26100	1400	38700	1800	57900	2300	42800	1000	98200	3700	59500	2100	2433000	73000
LP090120-3L-2	AGG 4	208	38	1520	130	3780	190	12740	550	19180	930	30500	1100	22480	830	53900	2800	34800	1200	2233000	81000
LP090120-3s-44	AGG 4	39	18	1310	170	4770	240	13990	710	19150	690	28700	1200	18800	1000	42400	2300	23800	2400	2980000	100000
LP090120-3L-12	AGG 4	217	58	2710	220	6500	330	21240	690	33700	1100	54600	2600	40900	1200	101800	4000	64500	2800	2261000	65000
LP090120-3s-85	AGG 4	1020	130	1700	220	4240	350	10430	870	11450	830	15870	990	13600	1000	32600	1700	19900	1100	3020000	110000
LP090120-3s-37	AGG 4	389	69	2160	160	5470	320	17590	600	26700	1000	41200	1400	33070	840	83100	2600	53300	1400	2466000	56000
LP090120-3L-51	AGG 4	237	50	750	100	1500	120	3550	290	4290	180	4940	320	2740	240	5500	400	2800	190	2408000	70000

LP090120-3s-90	AGG 4	53	20	1410	100	2960	260	8490	430	10120	590	15050	600	11320	390	28800	1400	15840	740	2789000	83000
LP090120-3s-9	AGG 4	345	67	1970	200	4610	530	14700	1300	21200	1700	32900	2800	25500	1900	62600	3500	39900	2300	2741000	84000
LP090120-3L-43	AGG 4	14	10	1420	110	3380	260	10680	540	15100	680	24230	960	17690	820	41700	1400	23460	800	2307000	73000
LP090120-3s-116	AGG 4	267	59	3120	150	5870	210	17840	770	20620	940	29760	910	19160	960	46300	2600	26420	890	2574000	73000
LP090120-3s-94	AGG 4	181	64	1740	370	3060	420	9150	790	12800	630	20710	640	15910	780	40600	1400	26400	1200	2590000	110000
LP090120-3L-64	AGG 4	111	41	549	84	1440	150	5000	430	7160	450	14640	730	12670	810	35500	2200	23300	1800	2826000	90000
LP090120-3s-5	AGG 4	400	62	830	100	2540	190	9210	590	15930	820	30200	1600	28000	1300	78600	4100	62700	4400	2289000	74000
LP090120-3L-31	AGG 4	639	85	4480	230	10210	460	29600	1600	38300	1300	57600	2000	38700	1600	90800	3200	52800	2600	2225000	66000
LP090120-3s-77	AGG 4	121	42	1490	190	3560	370	10680	810	14630	970	20900	1300	15200	1000	35000	2400	20670	900	2309000	82000
LP090120-3s-70	AGG 4	43	21	2470	320	7020	610	21300	1900	30000	2700	46900	4000	34700	3700	80700	7000	48300	4500	2843000	82000
LP090120-3s-55	AGG 4	292	46	2350	230	4690	280	12250	620	15280	660	20750	900	12870	660	29800	1300	17540	770	2019000	67000
LP090120-3s-43	AGG 4	194	43	1320	180	3750	170	10820	580	13800	540	22540	910	16840	820	38400	1500	23480	960	2292000	83000
LP090120-3s-106	AGG 4	491	81	3110	280	6050	290	14550	600	16170	650	21340	750	14010	480	29300	1000	16350	520	2110000	62000
LP090120-3L-17	AGG 4	123	39	1480	130	3540	280	10210	650	13710	860	22270	790	15760	580	37600	1700	22800	1000	2015000	65000
LP090120-3s-48	AGG 4	152	39	1010	110	2530	220	6850	350	9550	540	14350	560	10740	560	25060	760	15600	810	2216000	68000
LP090120-3s-42	AGG 4	347	70	3810	470	7900	1100	23000	3400	28700	4200	39300	5100	27500	3400	62900	7300	39400	4300	2475000	78000
LP090120-3s-4	AGG 4	205	52	2570	310	6460	760	20500	2200	30500	2700	49600	4800	37600	3100	93100	8500	58000	3700	2253000	76000
LP090120-3s-16	AGG 4	106	38	1020	360	2740	700	9600	2200	14200	3100	23200	4200	18900	2900	51400	5800	33400	3000	2460000	110000
LP090120-3s-97	AGG 4	571	69	5290	320	12730	880	38700	1900	53300	3300	80000	4600	57400	3000	129600	5300	78200	3500	2267000	67000
LP090120-3s-120	AGG 4	12.1	9.8	807	92	2560	260	8720	600	12800	1300	20100	1500	15830	700	39400	1500	23300	1300	3060000	100000
LP090120-3s-91	AGG 4	280	51	3050	190	8090	550	26000	1000	37100	1000	60400	2700	43400	1300	103900	3600	65100	3400	2528000	54000
LP090120-3s-2	AGG 4	121	37	1380	120	3400	180	11480	550	16870	810	26100	1100	19460	830	48300	1900	29700	1600	2123000	68000
LP090120-3s-69	AGG 4	1380	270	3170	380	6970	730	20500	1900	25400	1800	39500	2800	30000	2000	71800	3500	43200	1700	2720000	67000
LP090120-3L-46	AGG 4	76	27	2200	140	6130	480	19350	910	29050	980	43000	1400	32200	1400	72100	1800	42700	1200	2474000	87000
LP090120-3s-41	AGG 4	157	35	800	170	1950	260	6480	470	10200	810	16800	1500	13400	890	35600	2300	24700	1600	2189000	59000
LP090120-3L-71	AGG 4	83	33	1570	110	3690	150	12640	730	18080	610	29230	800	20880	670	48800	1800	29700	1300	2610000	66000
LP090120-3s-51	AGG 4	482	83	2490	290	6010	680	18300	1900	26800	2200	44300	3600	34200	2600	94200	6500	57600	3700	2370000	120000
LP090120-3s-1	AGG 4	109	35	1480	150	3260	210	10140	600	13750	740	22000	1100	17160	880	42800	1500	25860	890	2743000	79000
LP090120-3s-58	AGG 4	72	24	910	100	2220	220	7180	500	9730	570	15880	580	12010	490	29700	1300	18550	880	2270000	56000
LP090120-3s-60	AGG 4	459	58	1350	130	2840	240	8610	520	11520	870	19200	1100	14060	760	36200	1700	22900	1300	2090000	80000
LP090120-3s-19	AGG 4	551	70	2080	130	5770	370	16620	700	23700	1200	37700	1600	27400	2000	69800	3900	39000	1600	2273000	73000
LP090120-3s-102	AGG 4	373	43	1770	190	4800	310	14990	740	21620	670	34100	1600	25160	840	61400	1900	35700	1500	2380000	84000
LP090120-3s-109	AGG 4	343	66	1640	130	4430	260	15680	630	22570	790	37400	1400	29400	1400	75500	3800	48100	1400	2715000	75000
LP090120-3s-72	AGG 4	198	56	1230	160	3680	310	11400	740	17020	710	28500	1100	23080	880	57500	2200	37700	1200	2551000	83000
LP090120-3L-68	AGG 4	452	53	2060	180	5040	340	14890	470	22010	880	35100	1200	26600	810	68800	3000	42200	1600	2370000	65000
LP090120-3s-99	AGG 4	203	32	2290	170	5780	380	18450	800	25920	900	42000	1200	30820	990	72300	2700	43800	2000	2451000	57000
LP090120-3L-58	AGG 4	76	30	1166	81	3130	290	10030	320	16170	550	25800	730	19830	740	47200	1600	29300	1600	2600000	72000
LP090120-3s-86	AGG 4	614	98	4290	300	10550	450	34000	1400	49500	1700	76300	2600	56400	2300	137000	4000	80400	2800	1920000	67000
LP090120-3s-40	AGG 4	326	44	1840	140	5010	300	16850	620	23910	930	40500	1200	32100	1400	78900	3100	48900	1800	2713000	89000
LP090120-3L-66	AGG 4	1230	330	4370	270	10520	350	29800	1300	40500	1200	62500	3200	45200	2200	95500	4100	55000	3000	2493000	62000
LP090120-3s-36	AGG 4	380	67	3310	220	7910	470	22630	800	32200	1300	51500	1500	39400	1400	99400	3400	62700	2300	1928000	55000
LP090120-3s-62	AGG 4	60	20	779	87	2090	250	7280	760	10890	960	18360	970	15490	640	44700	2000	29900	1500	2670000	110000
LP090120-3s-101	AGG 4	610	140	2380	350	5690	560	16900	1800	24900	2100	37000	2500	26300	1900	66900	4800	40400	2700	2262000	65000
LP090120-3s-78	AGG 4	681	68	6600	260	15850	650	43800	1300	63100	1900	88900	3100	61100	2200	132100	5400	73500	3100	2246000	78000
LP090120-3s-88	AGG 4	237	58	2110	220	6770	560	24800	1200	39600	2200	68800	3700	53900	2200	142200	6400	87500	3500	2928000	86000
LP090120-3s-71	AGG 4	1374	99	4480	260	8430	450	21750	900	26200	1100	36100	1500	23700	1100	53100	1600	32730	880	2153000	60000
LP090120-3s-64	AGG 4	940	120	7050	400	18950	830	58800	2400	87800	3300	127300	4500	91700	4700	217000	11000	128500	4800	2256000	78000
LP090120-3L-61	AGG 4	287	44	583	79	1280	130	4440	310	7440	360	13640	640	12720	700	34800	2000	26700	1400	1651000	43000
LP090120-3L-75	AGG 4	139	42	1100	120	2920	210	9380	340	13980	530	22000	1100	17350	660	43200	1800	26260	830	2442000	78000
LP090120-3s-21	AGG 4	210	61	1760	160	4110	420	12180	930	17060	780	27200	1800	18800	1300	44100	2500	26620	980	2320000	77000
LP090120-3L-69	AGG 4	67	28	1300	110	2880	180	9590	470	14400	600	23600	1000	18690	830	48400	2100	29440	980	2456000	76000
LP090120-3s-98	AGG 4	324	60	2470	200	5450	370	15490	710	21390	860	32540	980	25000	1100	61300	2000	40500	1200	2097000	43000
LP090120-3L-55	AGG 4	203	44	1260	93	3140	190	9670	400	14390	580	23040	820	17740	610	46000	1900	28040	860	2340000	58000
LP090120-3L-1	AGG 4	23	12	849	92	2140	140	7370	490	10580	480	16610	960	11910	550	29100	1600	17150	770	2525000	76000
LP090120-3s-23	AGG 4	199	41	1700	140	4910	290	15780	680	22400	1300	31200	1600	21800	1400	51300	2700	28400	2100	2605000	47000
LP090120-3L-72	AGG 4	133	43	930	110	2090	140	6640	360	10010	520	16270	580	11790	530	26800	1200	17290	660	2295000	63000
LP090120-3L-10	AGG 4	89	32	840	120	2190	190	7630	230	11800	560	20330	720	16770	850	42300	1300	28900	1800	2330000	68000
LP090120-3L-21	AGG 4	403	52	2490	230	5060	400	16000	1000	21720	820	33600	1300	24240	940	56700	2200	35400	1300	2099000	83000
LP090120-3s-81	AGG 4	419	68	3470	320	7340	640	21400	1200	25800	1400	39000	2100	26900	1400	63500	3100	36400	1500	2126000	82000
LP090120-3L-32	AGG 4	473	76	2370	150	4760	230	13160	510	17160	560	24800	1100	17620	910	40700	2200	24570	730	2025000	66000
LP090120-3L-67	AGG 4	70	23	596	71	1130	140	4100	310	6420	320	10450	400	8540	470	23140	890	14510	790	2793000	75000
LP090120-3s-93	AGG 4	301	56	1670	150	3290	220	9930	660	13610	510	19900	1000	14940	600	34000	1100	21950	790	2278000	89000
LP090120-3L-30	AGG 4	53	18	810	140	2000	170	6660	360	9330	550	14880	590	11250	610	28900	1600	17410	490	2761000	81000
LP090120-3L-39	AGG 4	33	20	1960	170	5160	250	14910	630	22700	570	34700	1500	27300	1000	66900	2300	39170	900	2940000	86000
LP090120-3s-87	AGG 4	2170	160	3220	260	4600	270	9640	430	10110	490	12000	670	7050	430	14590	640	7850	520	1857000	65000
LP090120-3L-27	AGG 4	155	36	1170	110	2520	210	7550	520	10140	630	15790	720	11950	510	27960	920	17070	600	2305000	69000
LP090120-3L-54	AGG 4	58	27	230	44	652	80	2240	190	3580	270	5850	350	4570	230	12020	570	8170	420	2603000	79000
LP090120-3L-20	AGG 4	688	81	2180	180	5280	380	16830	840	24700	1100	41000	1700	31600	1600	79000	2900	50600	1600	2062000	78000
LP090120-3L-44	AGG 4	86	31	1190	120	3600	170	11780	360	17380	740	28200	1500	21110	770	51000	1800	31700	1400	2615000	84000
LP090120-3L-9	AGG 4	743	82	2130	160	3870	210	9130	560	11200	480	15540	850	10090	510	23300	1100	13520	530	2007000	50000
LP090120-3L-33	AGG 4	19	17	38	18	72	31	191	40	252	49	394	77	226	54	516	89	232	55	2358000	66000
LP090120-3s-104	AGG 4	53	24	1030	100	2310	210	6800	330	10300	450	15900	630	11150	380	27400	1100	15940	810	2611000	70000
LP090120-3L-52	AGG 4	127	31	914	93	1560	160	4380	300	6190	290	8130	430	6020	270	15990	710	9280	370	2490000	89000
LP090120-3L-63	AGG 4	573	94	1390	140	2240	190	5560	350	6440	360	8250	390	6130	290	13680	640	8090	400	2016000	87000
LP090120-3L-70	AGG 4	66	25	1240	110	2820	190	9290	300	13260	840	20080	850	14600	750	32940	960	20490	790	2853000	78000
LP090120-3L-6	AGG 4	374	75	1310	120	2840	180	8360	410	11070	370	15900	670	11790	510	29300	1400	18500	780	2079000	56000
LP090120-3L-8	AGG 4	65	26	940	140	1980	210	5920	270	7960	420	13240	530	9030	350	23000	940	14420	480	2530000	82000
LP090120-3s-107	AGG 4	35	17	1770	210	4640	210	12990	480	18060	680	28800	1200	21130	790	49600	1200	29600	1400	2530000	87000
LP090120-3L-47	AGG 4	23	16	730	58	2090	170	6400	370	9590	520	16500	980	13180	570	33920	800	22390	860	2770000	100000
LP090120-3L-19	AGG 4	99	29	1930	150	4540	320	14030	740	17540	780	26400	1200	20170	790	48800	2700	28600	1200	2337000	64000
LP090120-3s-27	AGG 4	309	71	520	100	1370	190	4390	630	6560	680	11700	1100	10550	760	32700	1800	23400	1200	3090000	110000
LP090120-3L-79	AGG 4	433	87	1340	130	3150	280	7980	490	11190	690	17680	920	13060	820	31400	1700	20970	730	2062000	62000
LP090120-3L-73	AGG 4	97	31	1019	85	2380	190	8180	470	12100	440	20880	940	15210	740	37300	1100	22520	990	2297000	70000
LP090120-3s-32	AGG 4	186	49	1580	160	3510	180	9940	670	13620	680	19290	890	14570	600	34300	1500	20800	1000	2300000	58000
LP090120-3L-11	AGG 4	97	27	652	79	1520	160	4400	180	6080	300	10300	530	7880	480	19310	820	12540	530	2364000	77000
LP090120-3L-5	AGG 4	83	25	424	52	1100	120	3140	210	4270	250	6770	330	4720	360	12130	450	7870	370	2308000	99000
LP090120-3s-33	AGG 4	34	17	294	63	920	120	3020	240	4760	280	7970	420	6400	390	17900	1100	12880	590	2877000	90000
LP090120-3s-35	AGG 4	287	60	1360	170	2620	200	7940	590	11620	590	17590	760	12900	570	31400	1000	20110	670	2168000	80000
LP090120-3L-22	AGG 4	626	94	1420	110	2290	160	5530	330	5440	220	7580	340	4520	240	10300	380	6090	430	1910000	66000
LP090120-3L-38	AGG 4	696	78	1490	140	2370	200	5640	310	5530	180	7360	280	4760	270	11330	570	6440	370	1819000	49000
LP090120-3L-60	AGG 4	164	47	1030	110	2640	150	7550	350	10270	360	16820	680	11890	500	28910	830	17890	750	2274000	63000
LP090120-3s-50	AGG 4	157	42	1050	110	2460	240	7380	460	8870	410	12990	390	9650	310	21750	820	12750	640	2432000	68000
LP090120-3L-28	AGG 4	97	29	1140	120	2400	180	6250	400	8050	400	12870	550	9710	400	23800	1100	14030	680	2714000	66000
LP090120-3s-61	AGG 4	109	29	619	78	1270	100	3660	220	5580	380	8260	340	6690	380	16520	680	10770	390	2320000	75000
LP090120-3L-4	AGG 4	633	73	2290	130	4560	240	12670	470	16450	810	24440	570	17500	910	40300	1700	24120	900	2069000	68000
LP090120-3s-30	AGG 4	239	49	574	79	1060	140	3280	240	5160	340	8520	490	7530	350	20790	860	14890	640	2438000	87000
Rejected Grains																					
LP090120-3s-100	AGG 4	710	69	1610	160	3890	240	10990	680	15040	660	25810	930	19810	870	54100	2000	37900	1300	2235000	58000
LP090120-3L-37	AGG 4	389	70	1030	170	2360	170	7090	370	11050	750	19100	910	15680	850	43500	2100	31900	760	2348000	74000
LP090120-3s-53	AGG 4	700	100	2300	210	4630	390	12540	850	16640	890	24800	1200	17940	870	44000	2500	26600	2000	2007000	72000
LP090120-3s-83	AGG 4	309	64	3410	310	8700	1000	29100	4400	41600	6100	60800	9400	45300	7400	103000	17000	56600	8200	2710000	160000
LP090120-3s-113	AGG 4	1070	150	4910	510	7690	700	15500	1700	15100	1400	18000	1700	11200	1000	24900	2400	14300	1100	2370000	62000
LP090120-3L-57	AGG 4	61	31	126	37	348	68	1730	180	3620	270	7330	310	7150	450	25100	1400	21830	780	951000	33000
LP090120-3s-96	AGG 4	213	76	1800	280	3920	460	11700	1200	18600	2300	27600	3100	21500	2500	45700	4800	29900	3100	2810000	140000
LP090120-3s-31	AGG 4	629	72	2170	190	6280	400	21400	1100	32200	1100	53500	2600	39500	1700	108000	2900	67000	1900	2162000	51000
LP090120-3s-46	AGG 4	1350	140	3440	210	7580	410	21500	1100	28300	1200	39200	2000	27300	1500	59400	2000	36500	1500	1808000	43000

LP090120-3s-34	AGG 4	350	130	2730	220	7670	360	22950	780	34300	1400	56900	3200	44600	2500	118000	13000	71500	7100	2780000	100000
LP090120-3s-24	AGG 4	880	470	2390	590	4330	940	12800	1700	17900	1800	28000	2600	20400	2100	50800	5100	30500	2300	2540000	66000
LP090120-3s-75	AGG 4	256	52	6000	1000	14300	2700	42100	6700	57700	9000	88000	13000	56500	9000	124000	19000	70000	11000	2595000	76000
LP090120-3L-77	AGG 4	556	59	2570	150	6460	430	22700	1000	33600	1300	52700	2000	39400	1500	92700	4000	55600	2000	2505000	90000
LP090120-3s-67	AGG 4	212	73	893	99	2060	170	6310	420	9680	560	14730	980	13000	1100	34100	2900	22600	2300	2596000	64000
LP090120-3s-20	AGG 4	198	76	580	130	1570	270	6420	500	10820	560	20800	1300	17160	990	51800	3800	34900	3000	2930000	120000
LP090120-3s-11	AGG 4	1400	420	1940	170	4160	330	12380	740	17200	1100	25700	1600	19100	1300	48700	4600	31700	2300	2236000	61000

APPENDIX IIIa: Detrital zircon trace element data for samples of the Sierra Las Pintas Group. Trace elements: Si, P, Ti, Y, Zr, Nb, La, Ce, Pr, Nd, Sm.

Sample 100120-1																							
Grain	Unit	Si (ppm)	error	P (ppm)	error	Ti (ppm)	error	Y (ppm)	error	Zr (ppm)	error	Nb (ppm)	error	La (ppm)	error	Ce (ppm)	error	Pr (ppm)	error	Nd (ppm)	error	Sm (ppm)	error
LP100120-1L-40	SP1	207800	9400	216	18	13.1	2.1	1232	40	603000	24000	4.07	0.57	0.128	0.055	42	2	0.82	0.14	14.8	1.9	24.7	1.8
LP100120-1s-44	SP1	201800	8100	91.4	8.6	4.9	1.8	583	50	571000	25000	3.66	0.56	0.006	0.012	16.87	0.88	0.082	0.045	1.41	0.49	3.6	1
LP100120-1L-10	SP1	206800	9600	261	23	15.1	2.1	3050	370	596000	22000	8	1	0.04	0.035	144	14	0.504	0.08	9	1.1	22	2.6
LP100120-1s-40	SP1	219300	8900	188	34	7.1	1.4	1296	86	587000	28000	11.5	1.2	1.6	0.85	51.1	5.5	0.61	0.28	4.7	1.4	7.1	1.4
LP100120-1s-91	SP1	229200	9100	401	26	15.6	4.2	3250	160	607000	25000	24.6	1.5	1.7	1.1	67	14	1.9	1.2	16.1	6.4	26.9	4.3
LP100120-1L-54	SP1	219700	6300	172	21	13.6	1.7	1081	85	603000	21000	4.65	0.47	41.6	6.7	621	91	24.2	4	107	16	25.5	3.4
LP100120-1s-56	SP1	202000	10000	2010	890	13.4	1.8	1372	95	570000	25000	1.9	0.25	15.4	8.8	43	19	3.8	1.8	24	14	10.8	2.1
LP100120-1s-70	SP1	219000	13000	760	270	4.4	2.2	770	64	540000	28000	2.04	0.31	4.1	1.6	18.4	2.7	0.83	0.35	4.5	1.4	4.55	0.99
LP100120-1L-32	SP1	220000	11000	155	16	4.4	2	920	120	609000	23000	4.88	0.77	0	1	6.92	0.88	0.015	0.018	0.63	0.31	2.78	0.65
LP100120-1s-49	SP1	217300	9400	110.6	8.9	6	1.5	600	28	586000	20000	2.38	0.21	0	1	7.12	0.47	0.034	0.021	0.84	0.28	2.11	0.55
LP100120-1s-12	SP1	217000	9300	160	11	19.1	2.1	857	24	596000	25000	2.72	0.37	0	1	7.06	0.49	0.134	0.047	1.55	0.52	4.8	1.1
LP100120-1s-59	SP1	219300	7800	319	18	7.3	1.9	7040	310	604000	31000	8.14	0.56	0.041	0.036	21.4	1.4	0.979	0.094	21.1	2.3	48	2.8
LP100120-1L-79	SP1	208500	8400	146	15	6.1	1.2	728	30	596000	30000	2.18	0.29	0	1	5.7	0.56	0.038	0.022	0.98	0.37	3.38	0.69
LP100120-1L-83	SP1	215000	11000	107.3	9.6	5.5	1.3	714	83	597000	26000	1.65	0.25	0	1	1.54	0.23	0.027	0.021	1.16	0.54	3.72	0.93
LP100120-1s-37	SP1	216600	8300	90.2	8.9	5.7	1.6	468	42	574000	19000	1.3	0.27	0.006	0.012	5.09	0.47	0.104	0.061	1.1	0.49	2.61	0.61
LP100120-1s-66	SP1	215100	9700	99	10	48	24	583	27	592000	23000	2.38	0.3	0.012	0.016	6.01	0.43	0.06	0.027	0.93	0.35	2.39	0.62
LP100120-1s-74	SP1	249300	9000	133.7	8.2	27	25	1500	42	675000	25000	3.9	0.44	0.023	0.022	5.8	0.45	0.187	0.063	3.9	0.68	9.5	1.5
LP100120-1s-46	SP1	206000	11000	510	190	5.3	2.1	2410	160	597000	29000	3.89	0.49	2.6	1.8	16.6	5.6	2	1.4	16.3	5.8	18.4	1.9
LP100120-1s-77	SP1	229000	10000	168	10	10.2	1.7	1306	57	612000	18000	4.72	0.47	0.011	0.015	11.98	0.71	0.094	0.051	2.95	0.55	4.19	0.65
LP100120-1L-73	SP1	210600	8900	301	51	10.6	2.1	1211	56	607000	17000	2.73	0.41	1.42	0.56	7.5	1.6	0.76	0.19	6.1	1.4	6.51	0.91
LP100120-1L-13	SP1	213200	8500	146.4	8.7	9.6	1.8	933	40	599000	19000	2.47	0.31	0.006	0.012	3.55	0.37	0.143	0.052	2.53	0.5	4.98	0.92
LP100120-1L-69	SP1	233000	10000	490	150	6.2	1.9	437	22	627000	24000	1.6	0.26	5.8	2.3	17.8	5	1.47	0.63	6.7	2.7	2.48	0.73
LP100120-1s-13	SP1	213000	11000	119	11	4.3	1.9	893	66	585000	25000	12.67	0.93	0.006	0.012	25	1.6	0.067	0.045	1.03	0.43	2.84	0.65
LP100120-1L-45	SP1	219000	12000	151	12	4.6	2	1245	42	612000	24000	12.14	0.85	0.012	0.023	42.3	2.4	0.045	0.029	0.97	0.35	2.53	0.61
LP100120-1s-5	SP1	215800	8200	666	42	6.6	2.1	5230	250	592000	25000	25	2	0.076	0.057	41.3	3.5	0.36	0.12	9.7	1.2	29.4	2.8
LP100120-1L-3	SP1	217600	7300	146	10	7.9	1.5	1114	61	597000	22000	3.82	0.41	0.011	0.016	7.57	0.7	0.06	0.038	1.77	0.49	4.87	0.72
LP100120-1L-56	SP1	215000	10000	110.2	8.4	11.2	2	767	66	590000	24000	1.25	0.25	0.006	0.012	1.63	0.22	0.091	0.043	2.1	0.78	5.17	0.91
LP100120-1L-66	SP1	248000	11000	450	31	48	5.6	1507	54	674000	29000	3.04	0.39	1.61	0.27	10.28	0.72	0.85	0.12	7.4	1.2	8.81	0.88
LP100120-1L-21	SP1	204200	9900	172	14	12.1	1.9	904	35	589000	26000	2.41	0.34	0.012	0.023	11.77	0.53	0.049	0.031	0.79	0.32	3.09	0.6
LP100120-1L-38	SP1	207000	10000	192	14	8.7	2	1700	140	593000	20000	1.84	0.26	0.012	0.023	16.5	1.3	0.098	0.051	1.96	0.67	6.4	1.3
LP100120-1s-14	SP1	207600	9200	253	21	18.7	2.4	915	35	566000	21000	1.86	0.34	0	1	8.35	0.66	0.052	0.034	1.03	0.47	3.19	0.76
LP100120-1L-64	SP1	221500	9500	206	16	18.2	2.2	886	43	605000	30000	1.95	0.3	0	1	9.06	0.72	0.019	0.019	1.06	0.48	2.79	0.75
LP100120-1L-34	SP1	201800	8800	232	14	14.9	2.1	1132	50	625000	20000	2.03	0.33	0.006	0.012	12.29	0.83	0.034	0.029	1.24	0.4	4.01	0.81
LP100120-1s-28	SP1	215000	11000	213	12	12.2	2.1	1644	88	592000	23000	2.65	0.43	0.012	0.016	18.8	1.5	0.108	0.043	2.17	0.39	7.08	0.82
LP100120-1L-89	SP1	209000	6900	219	13	3.7	1.2	2100	170	618000	24000	3.1	0.51	0.011	0.016	15.3	1.4	0.278	0.084	5.41	0.93	11.8	2
LP100120-1s-23	SP1	213400	8600	390	57	13.6	2.2	1457	55	573000	22000	2.03	0.36	0.8	0.33	14.74	0.89	0.38	0.11	4.19	0.99	6.54	0.99
LP100120-1L-59	SP1	213000	12000	263	15	9.6	2.3	1160	55	611000	21000	1.96	0.34	0	1	12.87	0.6	0.042	0.029	0.99	0.38	3.46	0.66
LP100120-1s-54	SP1	208000	13000	164	12	11.1	2.6	1881	68	591000	25000	4.05	0.49	0.041	0.032	10.51	0.69	0.213	0.086	4.06	0.77	9.4	1.4
LP100120-1L-18	SP1	222900	9000	317	14	15	2.6	2780	100	617000	23000	14.46	0.93	0.017	0.019	104.1	3	0.271	0.082	5	1	11	1.3
LP100120-1s-27	SP1	210800	6700	658	59	8.6	2.3	2630	530	583000	25000	31.7	7	8.5	3.2	129	15	1.37	0.41	6.3	1.2	8.7	2.3
LP100120-1s-106	SP1	220300	8300	234	21	8.1	1.8	2090	200	607000	27000	6.4	0.57	0.011	0.023	56.4	3.1	0.191	0.068	3.5	0.84	8.9	1.5
LP100120-1L-29	SP1	207700	8500	291	20	17.2	2.8	1570	56	616000	26000	2.1	0.31	0.023	0.036	23.8	1.2	0.279	0.085	5.5	0.82	9.1	1.2
LP100120-1s-55	SP1	210900	9300	143	13	4.4	1.9	546	29	580000	25000	2.27	0.32	0	1	5.58	0.51	0.022	0.016	0.91	0.32	1.55	0.52
LP100120-1s-45	SP1	216100	8500	296	29	2.7	1.7	2100	130	577000	25000	5.42	0.8	0.71	0.27	19.3	1.3	0.325	0.085	3.7	0.84	8.3	1.2
LP100120-1s-51	SP1	211500	9600	118.5	9.1	6.9	1.4	555	26	569000	21000	3.27	0.4	0.006	0.012	14.8	1.2	0.03	0.028	0.68	0.29	1.37	0.43
LP100120-1s-15	SP1	220700	8900	162	16	7.1	1.6	2170	140	587000	21000	5.71	0.69	0.018	0.019	15.1	1.5	0.301	0.077	5.5	0.85	10	1.7
LP100120-1s-33	SP1	220500	9300	187	12	13.3	1.8	1196	40	567000	22000	5.01	0.51	0.012	0.016	21.3	1	0.119	0.051	1.87	0.49	4.39	0.71
LP100120-1s-58	SP1	210500	9000	131.6	8.9	7.9	2	676	29	595000	28000	3.36	0.55	0.012	0.016	14.39	0.96	0.056	0.025	0.64	0.22	1.63	0.51
LP100120-1s-67	SP1	212500	9600	192	43	9.2	1.8	961	63	601000	25000	2.26	0.35	1.4	1.1	12.6	2.3	0.5	0.27	4.2	1.3	5.02	0.88
LP100120-1L-77	SP1	229000	10000	360	30	10.9	2	3490	250	614000	29000	5.36	0.63	0.03	0.03	48.2	3.9	0.62	0.13	11	1.3	22.3	2.1
LP100120-1L-84	SP1	228000	11000	199	14	5.8	1.4	1121	39	615000	22000	5.1	0.5	0	1	14.97	0.86	0.045	0.035	1.02	0.36	3.1	0.66
LP100120-1s-92	SP1	209000	10000	164	10	19.7	2.7	1598	74	590000	26000	2.36	0.43	0.023	0.022	17.5	1.1	0.251	0.049	5.59	0.84	10.3	1.1
LP100120-1s-21	SP1	218000	10000	218	20	11.7	2.1	2270	110	573000	20000	10.77	0.98	0.006	0.012	19.61	0.93	0.205	0.066	3.11	0.59	6.6	1
LP100120-1s-90	SP1	212000	12000	246	21	12.9	2.4	1254	67	564000	22000	4.37	0.52	0.069	0.05	25.3	1.4	0.165	0.056	2.18	0.48	4.99	0.88
LP100120-1s-75	SP1	216000	11000	265	30	10.6	1.9	3510	290	595000	21000	5.57	0.55	0.75	0.46	18.8	1.9	1.2	0.23	16.1	2	24.8	2.4
LP100120-1s-69	SP1	219600	9400	326	19	4.5	2.1	1153	52	604000	18000	6.02	0.56	0.022	0.026	8.83	0.64	0.043	0.024	0.62	0.34	3.11	0.68
LP100120-1L-19	SP1	221200	8200	120.6	7.3	7	1.9	1447	68	597000	18000	5.13	0.55	0.023	0.027	8.79	0.64	0.177	0.08	2.8	0.6	6.23	0.84
LP100120-1s-24	SP1	211000	11000	132.5	9.4	10.2	1.7	516	27	592000	26000	3.17	0.52	0.018	0.026	13.8	0.88	0.022	0.02	0.64	0.23	2.18	0.69
LP100120-1s-104	SP1	204000	13000	99	11	8.4	2.1	649	67	567000	26000	2.36	0.29	0.046	0.036	14.9	1.6	0.038	0.029	1.2	0.51	2.45	0.56
LP100120-1s-108	SP1	214000	8600	115.9	8.8	3.7	1.6	1630	110	603000	23000	3.27	0.49	0.023	0.022	17	1.5	0.267	0.073	4.95	0.74	8.8	1.1
LP100120-1L-63	SP1	227700	7400	191	17	14.8	2.3	1691	84	611000	25000	3.84	0.61	0.047	0.037	21.6	1.9	0.284	0.059	5.11	0.73	8.7	1
LP100120-1L-5	SP1	222000	12000	168	15	6	1.6	1594	42	601000	26000	10.68	0.75	0.006	0.011	13.97	0.87	0.139	0.073	2.26	0.58	4.97	0.84
LP100120-1L-71	SP1	218000	10000	181	13	7.4	1.9	818	37	627000	21000	4.35	0.37	0	1	25.8	1.2	0.049	0.035	0.86	0.39	2.84	0.62
LP100120-1L-36	SP1	213500	8500	202	23	6	1.6	938	40	615000	22000	3.22	0.45	0.07	0.051	15.39	0.98	0.09	0.038	1.87	0.54	4.22	0.84
LP100120-1s-84	SP1	210800	9200	123	10	4.9	1.8	754	89	573000	26000	2.64	0.27	0	1	10.6	1	0.052	0.029	1.16	0.4	2.62	0.76
LP100120-1L-12	SP1	208800	8600	196	18	24.7	2.8	1710	160	583000	17000	2.41	0.38	0.012	0.016	17.3	1.5	0.199	0.074	3.9	0.95	8.5	1.4
LP100120-1s-22	SP1	209300	8800	195	29	10.2	1.9	987	39	583000	20000	4.34	0.38	0.18	0.13	10.33	0.75	0.205	0.092	1.6	0.49	3.68	0.92
LP100120-1s-32	SP1	215200	9700	207	43	5.3	1.7	1494	69	587000	25000	8.62	0.75	0.51	0.73	24.4	2.4	0.26	0.3	2.6	1.7	3.63	0.69
LP100120-1s-34	SP1	211700	5600	372	81	7.2	2	762	35	560000	26000	4.2	0.44	0.66	0.28	16.1	1.1	0.41	0.17	2.53	0.87	2.71	0.51
LP100120-1L-42	SP1	205900	9200	122.2	8.7	6.5	3.6	925	42	601000	23000	5.06	0.47	0.052	0.041	48	65	0.106	0.049	1.4	0.42	3.07	0.63
LP100120-1s-41	SP1	218000	14000	198	19	11.4	1.4	2170	260	598000	32000	4.19	0.71	0.111	0.059	11.3	1.8	0.49	0.13	7.8	1.5	12.6	1.7
LP100120-1s-7	SP1	224200	9900	181	15	11.5	4.1	1738	66	610000	25000	5.8	0.65	0.023	0.027	14.05	0.96	0.218	0.067	3.35	0.66	7.9	1.1
LP100120-1s-30	SP1	210700	9200	550	86	12.1	3.2	1492	75	564000	21000	4.75	0.51	7.2	1.5	24.1	2.8	2.16	0.42	10.5	1.9	9.3	1
LP100120-1s-20	SP1	222900	9400	237	18	16.5	2.4	3390	120	595000	21000	5.78	0.77	0.152	0.091	17.8	1.7	0.52	0.11	10.6	1.2	20.2	1.8
LP100120-1s-86	SP1	223000	11000	229	18	26.4	2.3	2744	89	618000	25000	19.8	1	0.04	0.035	157.2	6.4	0.49	0.13	7.36	0.9	21.4	1.8
LP100120-1L-15	SP1	225800	9000	122	12	5.7	1.6	1032	52	612000	24000	6.53	0.5	0.017	0.025	14.64	0.96	0.098	0.053	1.37	0.37	2.94	0.67
LP100120-1s-1	SP1	209000	11000	234	17	13.2	2.4	3170	240	588000	22000	5.4	0.99	0.082	0.057	18	2	0.69	0.16	9.9	1.1	22	2.5
LP100120-1L-51	SP1	215800	8900	600	130	8.4	1.5	1652	57	623000	21000	6.37	0.76	6	1.7	29.4	4.3	1.57	0.42	8.9	2.2	5.63	0.74
LP100120-1L-43	SP1	215500	9800	430	100	8.5	1.3	1119	33	612000	22000	5	0.46	5.9	3.1	22.1	5.3	1.42	0.54	8	2.4	4.4	1
LP100120-1L-23	SP1	217600	9500	142	12	4.7	1.6	930	44	633000	30000	4.98	0.57	0	1	9.83	0.63	0.06	0.029	0.94	0.39	3.5	0.72
LP100120-1L-74	SP1	221800	9200	197	11	5	2	935	42	614000	25000	4.9	0.65	0.006	0.012	18.5	1.2	0.042	0.027	1.29	0.45	2	0.52
LP100120-1L-85	SP1	219700	7400	281	17	12.6	2.2	2069	60	620000	23000	7.45	0.37	0	1	19.24	0.71	0.209	0.062	3.43	0.53	7.4	1.1
LP100120-1L-1	SP1	213300	9900	255	17	27.6	3.5	1416	73	618000	15000	3.92	0.48	0.017	0.025	24.1	1.6	0.24	0.097	3.17	0.54	6.6	1.1
LP100120-1s-61	SP1	214000	12000	105	20	4.8	1.5	970	130	564000	22000	3.14	0.43	0.32	0.3	13.9	1.6	0.24	0.12	2.3	0.67	3.61	0.87
LP100120-1L-76	SP1	215000	11000	156	15	4.3	1.5	1072	33	649000	25000	5.02	0.5	0.035	0.031	24.67	0.99	0.083	0.046	1.32	0.32	2.84	0.54
LP100120-1L-35	SP1	218000	10000	230	23	6.4	1.9	1077	35	608000	18000	5.16	0.61	0.32	0.27	14.7	1.1	0.098	0.098	1.24	0.6	2.91	0.76
LP100120-1s-31	SP1	210600	9700	201	27	20.8	2.3	1280	120	580000	24000	2.36	0.32	0.58	0.38	16.9	1.1	0.46	0.17	4.57	0.88	7.8	1.1
LP100120-1L-31	SP1	215300	6300	180	21	14.3	2	1840	210	624000	25000	3.7	0.61	0.041	0.032	22.8	2.2	0.33	0.11	4.77	0.93	8.9	1.5
LP100120-1s-87	SP1	211900	9400	105	8.3	6.7	1.7	1312	66	615000	26000	2.5	0.32	0.006	0.012	6.63	0.44	0.18	0.07	4.2	0.8	6.4	1
LP100120-1L-20	SP1	218500	8600	158	13	7.7	1.9	824	43	586000	23000	5.26	0.44	0	1	22.1	1.4	0.038	0.027	1.08	0.43	2.04	0.57
LP100120-1s-83	SP1	222800	9200	315	30	10.4	2.2	6370	620	595000	26000	11.9	1.8	0.15	0.07	25.1	3.6	1.03	0.17	19.7	2.4	41.6	3.7
LP100120-1L-48	SP1	209000	7600	1220	730	4.9	2	738	26	599000	22000	3.61	0.47	18	12	49	22	5.1	3.2	22	13	7	2.7
LP100120-1s-42	SP1	209000	8300	86	10	6.8	1.9	686	70	566000	24000	2.54	0.33	0.017	0.019	7.89	0.94	0.045	0.029	1.21	0.39	3.2	0.71
LP100120-1s-57	SP1	203300	8800	133	12	10.6	2.2	1160	160	593000	25000	2.91	0.42	0.012	0.023	10.5	1.1	0.198	0.076	2.58	0.72	5.6	1.1
LP100120-1s-85	SP1	217400	9400	1760	790	5.8	1.8	774	81	600000	23000	2.47	0.3	34	29	74	52	7.9	4.9	35	20	8.9	3.4
LP100120-1s-105	SP1	209000	11000	1030	210	18.8	2.2	2300	270	567000	28000	3.41	0.5	5.2	1.6	33.9	4.2	2.78	0.64	18.6	3.1	16.5	1.9
LP100120-1s-102	SP1	214000	10000	221	37	11	4.9	3030	800	583000	28000	7.7	1.7	0.34	0.34	15.6	3.8	0.6	0.15	9.9	2.9	18.5	5.5
LP100120-1s-9	SP1	217500	7200	253	20	18.3	2.6	1720	100	598000	27000	4.24	0.37	0.164	0.093	19.7	1	0.282	0.071	4.31	0.6	8.2	1.2
LP100120-1L-87	SP1	227600	9400	571	33	17.2	2.1	6010	320	623000	22000	9.3	0.93	0.143	0.057	13.98	0.81	1.38	0.21	22	1.4	46.2	3.9
LP100120-1s-11	SP1	230000	12000	324	19	12.7	2.4	3370	180	656000	28000	6.15	0.62	0.61	0.35	39.2	1.7	0.74	0.16	11.9	1.4	22.1	2.2
LP100120-1L-60	SP1	219100	8200	105.7	7.9	9	1.3	664	26	613000	22000	1.87	0.4	0	1	9.01	0.54	0.121	0.05	2.03	0.58	5.12	0.83
LP100120-1s-95	SP1	224000	12000	193	21	11.5	1.8	947	57	589000	28000	3.74	0.5	0.91	0.25	34.5	5	1.42	0.36	10.5	2.3	10	1.5
LP100120-1s-29	SP1	219000	10000	179	12	23.1	2	870	40	578000	26000	4.21	0.34	0.011	0.016	13.92	0.63	0.104	0.04	1.9	0.48	4.84	0.86
LP100120-1s-35	SP1	214000	10000	146	12	21.8	3	1568	58	585000	22000	1.3	0.22	0.017	0.019	3.19	0.31	0.253	0.093	3.74	0.78	6.3	1
LP100120-1L-28	SP1	215900	9000	203	16	12.4	1.6	550	20	618000	24000	2.23	0.35	0.033	0.033	3.09	0.29	0.116	0.052	2.03	0.47	5.58	0.84
LP100120-1L-88	SP1	217000	10000	239	15	42.6	3.2	1852	71	642000	26000	2.08	0.38	0.22	0.079	49.7	1.7	1.57	0.21	21.4	1.3	25.7	2.3
LP100120-1s-52	SP1	210800	9200	99.7	8	8.7	1.8	962	65	588000	22000	13.2	1.1	0.058	0.041	11.23	0.93	0.157	0.043	1.59	0.42	4.57	0.69
LP100120-1L-82	SP1	214000	10000	247	23	5.2	1.2	1011	56	612000	30000	37	2.6	0.024	0.022	12.77	0.72	0.117	0.063	2.34	0.62	3.13	0.76
LP100120-1L-53	SP1	212000	11000	191	17	26.8	3.3	1680	130	595000	22000	3.56	0.37	0.035	0.035	18.7	1.1	0.58	0.14	8.7	1.7	13.4	2
LP100120-1L-4	SP1	217100	7400	165	12	11.8	2.2	1021	32	606000	25000	9.04	0.5	0.149	0.062	22.2	1.7	0.481	0.098	4.83	0.88	7.6	0.86
LP100120-1s-89	SP1	223000	12000	359	38	31	2.8	2060	200	575000	25000	5.84	0.59	0.22	0.11	21.8	1.8	0.95	0.23	17	3	23.9	4.3
LP100120-1s-73	SP1	225000	10000	376	20	3.4	1.5	1591	60	612000	24000	3.98	0.36	0.1	0.062	24.6	1.2	0.645	0.098	9.37	0.8	16.9	1.7
LP100120-1L-80	SP1	219900	9100	221	17	7.3	1.9	1492	59	616000	28000	29.2	2	0	1	22.8	1.7	0.068	0.037	1.52	0.52	4.9	0.88
LP100120-1L-24	SP1	221300	7100	210	15	16.4	1.9	2120	130	633000	21000	3.61	0.25	0.087	0.058	13.06	0.89	0.708	0.091	11.4	1.1	14.1	1.6
LP100120-1s-101	SP1	216000	10000	189	15	4	1.4	1510	200	581000	26000	12.13	0.95	0.017	0.019	10.8	1.4	0.109	0.051	1.78	0.87	5.8	1.3

LP100120-1s-99	SP1	212500	9900	269	41	25.1	5.8	1380	180	603000	27000	6.87	0.96	0.127	0.052	48	11	1.43	0.69	17.5	7.3	23	10
LP100120-1L-30	SP1	210000	8100	189	12	380	380	907	30	606000	27000	4.2	1.6	0.041	0.036	6.27	0.36	0.17	0.07	2.61	0.5	6.7	1.3
LP100120-1s-110	SP1	213000	13000	286	12	24.8	2.7	1179	41	613000	20000	3.69	0.38	0.011	0.016	7.37	0.39	0.09	0.045	2.39	0.62	6.8	1.2
LP100120-1s-16	SP1	219500	9300	127.1	8.4	12.4	1.5	969	44	607000	22000	9.73	0.71	0	1	13.64	0.76	0.071	0.035	1.31	0.34	4.54	0.7
LP100120-1s-2	SP1	217000	12000	237	16	8.1	1.6	1301	56	571000	20000	4.59	0.49	0.018	0.026	45.3	3.5	0.089	0.039	2.71	0.54	5.92	0.75
LP100120-1L-25	SP1	221100	7200	313	64	23.5	2.7	977	39	612000	21000	5.81	0.48	6	4	28.3	8.6	2.2	1.5	10.3	6	5.8	1.2
LP100120-1L-55	SP1	212000	11000	191	15	26	3.2	677	33	616000	20000	3.97	0.37	0.006	0.012	9.95	0.64	0.072	0.035	0.7	0.3	2.12	0.62
LP100120-1L-86	SP1	214600	8800	125.4	7.7	13.2	2.5	476	21	639000	24000	2.74	0.26	0.012	0.016	18.14	0.83	0.053	0.033	1.11	0.34	2.46	0.85
LP100120-1L-70	SP1	220800	6900	250	18	16.4	2.3	1758	53	634000	24000	4.21	0.46	0.047	0.033	30.2	1.9	0.72	0.12	11.2	1.2	20	1.8
LP100120-1s-6	SP1	219700	7900	312	19	26.4	2.7	1753	64	572000	22000	5.98	0.41	0.035	0.035	39.1	1.8	0.249	0.07	4.11	0.72	9.9	1.1
LP100120-1L-26	SP1	214500	7300	264	13	22.4	2.1	1443	77	610000	24000	3.28	0.4	0.023	0.022	9.18	0.63	0.181	0.068	3.59	0.72	7.2	1.3
LP100120-1L-16	SP1	206800	6500	478	83	17.5	2.2	1142	52	607000	17000	6.81	0.48	9.1	3.5	95.9	6.8	2.31	0.77	12.9	3.1	9.5	1.4
LP100120-1s-64	SP1	211600	8700	261	20	6.7	1.8	971	33	600000	22000	5.13	0.43	0.017	0.035	38.4	1.8	0.108	0.06	1.79	0.5	4.14	0.63
LP100120-1s-98	SP1	213000	12000	208	14	25.4	2.5	1287	62	571000	25000	2.49	0.4	0.006	0.011	15.46	0.58	0.083	0.047	1.92	0.53	5.68	0.84
LP100120-1s-25	SP1	215000	12000	273	21	11	2	1405	69	580000	24000	3.62	0.45	0.064	0.063	27.6	1.5	0.1	0.061	1.73	0.52	4.92	0.67
LP100120-1s-63	SP1	211000	13000	495	38	12.7	2.1	2560	110	574000	22000	9.84	0.65	0	1	89	4.6	0.115	0.051	2.92	0.47	10.7	1.2
LP100120-1s-88	SP1	219000	13000	110.3	8.5	10.1	2	471	20	574000	22000	2.21	0.3	0	1	10.48	0.58	0.026	0.02	0.6	0.34	1.65	0.5
LP100120-1s-94	SP1	218000	11000	246	15	9.4	1.6	2029	70	585000	21000	19.2	1.3	0.04	0.046	30.2	1.7	0.232	0.046	4.25	0.82	10.6	1.2
LP100120-1s-18	SP1	214100	8900	301	21	59.6	2.8	1217	50	583000	21000	4.09	0.4	0.047	0.041	18.26	0.79	0.253	0.076	4.4	0.87	8.8	1.3
LP100120-1L-8	SP1	215500	8700	131.9	9.6	12.7	2	714	21	599000	26000	4.12	0.45	0.04	0.035	12.17	0.57	0.248	0.078	3.65	0.73	5.9	1.1
LP100120-1L-9	SP1	207900	9900	283	17	55.9	3.7	1930	190	602000	24000	2.91	0.33	0.21	0.11	20.5	1.3	0.94	0.21	13.6	2.6	18.2	3
LP100120-1L-68	SP1	224000	11000	122.5	9	4.9	2.1	1634	79	622000	26000	3.1	0.35	0.118	0.077	11.49	0.73	0.82	0.18	12.8	1.4	16.7	1.6
LP100120-1s-38	SP1	212600	8100	132.3	9.1	7.1	2.3	1149	89	571000	19000	5.79	0.56	0.011	0.022	8.61	0.74	0.043	0.026	1.63	0.46	4.62	0.91
LP100120-1L-67	SP1	229400	6100	261	15	15.6	2.1	1618	59	624000	23000	4.58	0.49	0.006	0.011	7.75	0.53	0.171	0.063	2.81	0.59	7.7	1.2
LP100120-1s-53	SP1	213600	8200	920	390	20.3	2.2	2004	89	582000	23000	5.7	0.47	17	11	123	24	6.4	4	34	17	18.2	2.5
LP100120-1s-68	SP1	216900	9300	143	12	11	1.9	864	30	583000	18000	7.77	0.62	0	1	11.61	0.75	0.052	0.029	1.57	0.45	3.79	0.69
LP100120-1s-71	SP1	223000	10000	343	27	42.8	3	1461	89	586000	23000	5.69	0.5	0.035	0.035	48.1	3.6	0.224	0.054	3.66	0.58	7.9	1.5
LP100120-1s-109	SP1	217300	7300	136	10	5.5	1.9	894	34	617000	28000	12.6	1	0.006	0.011	10.72	0.5	0.023	0.022	0.51	0.27	1.84	0.67
LP100120-1L-61	SP1	208600	7900	201	14	7.8	1.9	831	49	596000	25000	5.25	0.46	0	1	39.8	2.2	0.026	0.023	0.77	0.3	2.3	0.62
LP100120-1s-107	SP1	218000	10000	225	30	15.5	3.9	1740	370	586000	28000	3.64	0.45	0.029	0.029	11.3	2.2	0.27	0.13	5.3	2	9	2.6
LP100120-1L-78	SP1	224000	12000	207	14	21.2	2.5	793	35	618000	30000	2.85	0.36	0	1	7.9	0.68	0.061	0.035	0.7	0.19	3.23	0.63
LP100120-1s-96	SP1	213000	13000	580	110	106	40	3440	320	574000	25000	7.4	0.94	0.38	0.26	119	11	1.16	0.21	18.2	3.2	29.9	3.6
LP100120-1L-37	SP1	212000	10000	222	15	5.1	1.5	959	57	580000	19000	4.33	0.53	0.046	0.04	50.6	3.2	0.151	0.06	2.47	0.63	4.98	0.98
LP100120-1L-7	SP1	221400	7700	158	11	6.8	1.6	823	38	635000	19000	6.77	0.67	0.78	0.83	19.8	1.2	0.27	0.17	1.77	0.79	2.35	0.52
LP100120-1s-60	SP1	223000	11000	307	26	32	2.3	2203	88	598000	26000	4.68	0.52	0.07	0.058	43.3	2.2	0.71	0.12	10.2	1.3	18.2	2.1
LP100120-1s-82	SP1	224000	10000	289	19	42	17	2710	130	599000	26000	3.77	0.34	0.069	0.067	40.3	2	0.73	0.1	11.9	1.3	18.4	1.1
LP100120-1s-50	SP1	210500	8500	180	13	15.4	2.2	753	34	598000	19000	3.4	0.42	0.028	0.032	10.45	0.8	0.115	0.058	1.89	0.51	3.96	0.81
LP100120-1s-8	SP1	220000	10000	650	140	7.1	1.7	1650	110	599000	23000	12.15	0.69	2	0.73	58	4.4	1.56	0.54	10.6	3.5	7.4	1.8
LP100120-1s-17	SP1	218000	11000	432	16	9.2	2.1	2700	110	587000	22000	18.79	0.9	0.053	0.038	105.4	3.5	0.208	0.073	2.69	0.62	7.9	1
LP100120-1s-39	SP1	214500	9500	42.2	6.9	3.8	1.8	119	11	595000	20000	1.38	0.3	0.023	0.028	4.9	1.1	0.019	0.022	0.29	0.24	0.18	0.16
LP100120-1L-65	SP1	222000	10000	796	55	19.8	2.3	2520	120	654000	24000	3.82	0.35	0	1	3.97	0.46	0.053	0.04	1.92	0.49	5.58	0.97
LP100120-1L-14	SP1	210600	7900	267	54	23.7	2.9	1230	180	621000	27000	4.48	0.55	0	1	9.5	1.1	0.087	0.049	1.99	0.45	5.3	1.1
LP100120-1L-41	SP1	210500	7500	264	17	29.7	3.2	985	40	598000	27000	8.14	0.65	1.24	0.51	40.4	1.7	0.38	0.16	3.7	1.1	4.7	0.7
LP100120-1s-100	SP1	214000	11000	290	17	39	3.3	1180	40	574000	24000	4.38	0.42	0.034	0.034	61.3	2.9	0.341	0.096	5.66	0.97	11.3	1.6
LP100120-1s-43	SP1	220000	10000	578	46	15.9	2	1990	150	573000	24000	1.77	0.27	0.006	0.012	7.56	0.65	0.317	0.086	5.75	0.9	13.8	1.7
LP100120-1L-75	SP1	215400	9700	183	12	19.8	2.8	1003	39	628000	20000	3.23	0.36	0.012	0.024	18.02	0.8	0.182	0.052	3.08	0.58	6.51	0.92
LP100120-1s-3	SP1	205300	9200	136.9	8.9	27.2	2	561	26	580000	21000	3.04	0.34	0.006	0.012	11.28	0.78	0.186	0.055	3.19	0.79	5.34	0.92
LP100120-1L-81	SP1	209800	7400	237	17	25.3	2.9	1016	39	633000	26000	2.89	0.38	0.024	0.022	26.4	1.2	0.163	0.06	4.16	0.74	7.25	0.98
LP100120-1s-65	SP1	228000	10000	54	6	4	1.3	343	20	627000	31000	2.13	0.34	0	1	18.2	1.2	0.011	0.016	0.69	0.21	1.37	0.37
LP100120-1s-4	SP1	206200	8000	168	16	14.5	2.6	1284	50	594000	22000	2.12	0.36	0.059	0.042	15.23	0.89	0.516	0.099	10.6	1.6	14.2	1.4
LP100120-1s-78	SP1	228000	9700	124	14	8.2	2.1	1190	150	617000	18000	5.56	0.51	0.012	0.016	33	2.6	0.109	0.049	1.6	0.41	6.1	1.3
LP100120-1s-48	SP1	212000	11000	367	39	5.9	1.6	1890	100	586000	23000	8.7	1.1	0.56	0.4	68.6	3.7	0.39	0.16	5.6	1.3	10.6	1
LP100120-1L-72	SP1	215000	12000	137	11	23.2	2.7	411	15	626000	19000	2.57	0.34	0.018	0.026	25.5	1.5	0.132	0.044	2.11	0.5	4.05	0.87
LP100120-1s-79	SP1	227000	10000	127	9.6	11.8	2.3	873	31	603000	20000	3.71	0.44	0.012	0.016	55.1	3.3	0.374	0.089	5.64	0.71	8.5	1.1
LP100120-1L-17	SP1	214700	8500	105	10	9.4	1.5	576	36	637000	17000	2.42	0.37	0.035	0.03	46.1	3.3	0.294	0.078	6.2	1	9.5	1.9
LP100120-1s-72	SP1	223000	12000	132	12	10.5	1.8	371	22	606000	25000	1.6	0.33	0.017	0.025	19.8	1.1	0.064	0.032	0.86	0.26	2.54	0.63
LP100120-1s-93	SP1	223300	7700	224	21	7.4	1.6	1139	53	615000	25000	3.27	0.35	0.057	0.047	49.1	2.3	0.229	0.086	2.6	0.68	5.9	1.1
LP100120-1L-27	SP1	215300	9900	186	14	17.4	2	484	20	607000	15000	2.29	0.23	0.075	0.048	49.5	2	0.52	0.097	6.58	0.79	8.8	1.4
LP100120-1s-103	SP1	211600	6400	328	26	10.6	1.9	976	43	609000	34000	2.95	0.33	0.006	0.011	11.3	0.83	0.04	0.028	1.48	0.39	2.99	0.64
Rejected Grains																							
LP100120-1L-11	SP1	217600	8400	614	82	4.6	1.7	1361	50	605000	17000	9.17	0.75	10.3	1.8	56.7	4	3.3	0.61	15	2.6	6.3	1.3
LP100120-1s-47	SP1	206900	8800	189	14	10.8	2.1	991	56	588000	19000	3.39	0.45	0.012	0.023	22.8	1.3	0.119	0.042	1.96	0.51	3.78	0.77
LP100120-1s-62	SP1	200400	8800	141	8.5	6.5	1.8	672	31	564000	28000	3.36	0.4	0	1	15.48	0.76	0.075	0.038	1.31	0.43	2.64	0.67
LP100120-1L-58	SP1	216900	8100	152	12	5.8	1.5	828	31	591000	24000	2.6	0.35	0.006	0.012	9.62	0.61	0.144	0.048	1.85	0.5	3.89	0.81
LP100120-1s-97	SP1	209100	7200	170	18	8.3	1.8	907	38	572000	29000	3.64	0.38	0.006	0.011	21.4	1.1	0.064	0.036	1.56	0.39	3.31	0.56
LP100120-1s-80	SP1	221000	12000	170	10	12.2	1.7	540	35	597000	18000	1.91	0.37	0	1	10.63	0.65	0.12	0.039	1.42	0.4	2.42	0.51
LP100120-1L-52	SP1	213000	14000	148.4	9.5	7.9	1.9	900	39	591000	20000	3.54	0.44	0	1	11.36	0.7	0.064	0.038	1.29	0.37	3.07	0.72
LP100120-1L-50	SP1	223000	11000	158	13	9.5	2.1	1104	75	610000	20000	4.58	0.43	0.012	0.016	48.2	2.7	0.117	0.06	2.32	0.47	4.89	0.89
LP100120-1s-36	SP1	212900	7100	246	67	9	3.6	606	39	574000	25000	1.89	0.26	370	290	11.1	4	38	29	126	97	16.7	9.7
LP100120-1L-46	SP1	220100	8100	187	15	108	18	2433	91	611000	26000	3.31	0.44	2.42	0.62	9.41	0.66	1.17	0.23	10.4	1.3	17.3	2.1
LP100120-1s-76	SP1	228900	8100	176	11	4.7	1.6	583	30	603000	22000	2.5	0.3	0	1	2.64	0.35	0.049	0.031	1	0.33	2.16	0.57
LP100120-1L-22	SP1	188000	10000	149.7	8.5	265700	6500	3830	150	261	11	1057	35	334	10	2131	86	416	18	2280	77	720	39
LP100120-1L-62	SP1	183400	7600	120	11	265600	5600	846	43	212	13	744	44	263	14	1090	48	144.5	7.5	592	27	141.2	5.4
LP100120-1L-44	SP1	175700	7000	123.1	9.6	267800	5700	687	67	120.1	8	613	36	266	13	1008	86	139	14	587	51	145	18
LP100120-1L-39	SP1	177400	8100	132.3	8.1	258900	3900	1905	91	246.7	9	648	28	289	15	1347	65	226	11	1075	73	315	19
LP100120-1L-47	SP1	180500	6500	128	10	264200	6600	830	110	197	12	558	36	185	17	759	64	111	12	481	57	121	16
LP100120-1L-2	SP1	216000	10000	716	84	137	31	665	40	519000	21000	4.96	0.65	15.6	5.1	30.6	6.5	3.14	0.82	13.9	3.1	3.26	0.69
LP100120-1L-6	SP1	214100	6900	136	12	20.4	2.7	983	49	580000	24000	6.38	0.51	0.195	0.081	14	1	0.398	0.098	2.93	0.68	5.56	0.76
LP100120-1L-49	SP1	205600	9000	161	14	41.6	2.5	589	23	612000	18000	2.98	0.3	0	1	12.61	0.78	0.094	0.04	1.65	0.41	5.1	1
LP100120-1s-81	SP1	217000	12000	258	17	13.9	1.9	1607	57	567000	27000	9.08	0.53	0.067	0.043	49.7	4	0.137	0.048	2.84	0.56	6.8	1.3
LP100120-1s-26	SP1	219100	8500	416	37	10.5	1.9	2270	170	610000	33000	6.44	0.73	3.49	0.45	69	5.4	3.87	0.5	25.8	3.3	20.3	1.8
LP100120-1s-19	SP1	219000	12000	116	11	11.2	1.9	482	16	605000	31000	2.12	0.24	0.088	0.056	13.78	0.67	0.245	0.082	2.39	0.58	3.42	0.75
LP100120-1s-10	SP1	221900	8400	140	13	25.9	2.4	510	20	592000	22000	3.49	0.43	0.012	0.016	20	1.2	0.071	0.036	1.4	0.39	3.47	0.87

Sample 110120-1

Grain	Unit	Si (ppm)	error	P (ppm)	error	Ti (ppm)	error	Y (ppm)	error	Zr (ppm)	error	Nb (ppm)	error	La (ppm)	error	Ce (ppm)	error	Pr (ppm)	error	Nd (ppm)	error	Sm (ppm)	error
LP110120-1L-4	SP2	222800	7100	172	32	8.1	1.4	772	30	619000	16000	4.67	0.25	1.19	0.58	28.6	1.8	0.39	0.17	3.57	0.83	4.77	0.81
LP110120-1L-11	SP2	229700	5300	364	44	8.5	1.8	1236	35	653000	18000	5.62	0.47	2.7	1	20.3	2	0.88	0.3	5.5	1.4	4.53	0.74
LP110120-1L-55	SP2	225900	7100	81.7	7.1	3.3	1.4	322	11	625000	20000	2.19	0.24	0	1	2.87	0.26	0	1	0.18	0.14	0.65	0.36
LP110120-1s-10	SP2	222700	7300	151.1	8.5	8	1.6	1251	57	608000	19000	3.53	0.28	0	1	3.5	0.32	0.108	0.049	2.82	0.51	6.6	1
LP110120-1L-122	SP2	220400	7100	125.8	6.3	14.4	1.8	554	17	655000	14000	2.22	0.33	0	1	1.41	0.16	0.035	0.024	0.84	0.3	2.05	0.45
LP110120-1L-100	SP2	220500	4900	112.1	7.8	7.5	1.7	692	86	645000	14000	2.16	0.37	0.011	0.015	2.57	0.33	0.042	0.027	1.46	0.43	3.99	0.97
LP110120-1s-46	SP2	219400	8700	184	11	10.5	2	1300	110	612000	23000	3.53	0.43	0.046	0.027	12.49	0.95	0.279	0.064	4.89	0.87	8.5	1.2
LP110120-1L-73	SP2	218900	8600	245	44	10	1.2	700	29	634000	16000	2.44	0.3	1.64	0.9	15.6	2	0.47	0.21	3.3	1.2	2.99	0.57
LP110120-1L-36	SP2	214400	6200	196	19	6.5	1.4	1530	150	610000	16000	3.09	0.36	0	1	4.52	0.48	0.225	0.076	4.8	1.2	12.7	2.7
LP110120-1L-21	SP2	218300	5900	600	73	10.7	1.8	1153	31	636000	20000	6.96	0.48	9.5	1.8	35.8	4.5	4.58	0.91	22.9	3.8	10.2	1.3
LP110120-1s-27	SP2	218900	8800	462	22	9.1	1.3	2310	110	605000	19000	4.67	0.6	0.193	0.071	33.1	1.6	0.352	0.06	4.31	0.71	7.4	1.1
LP110120-1L-64	SP2	224000	5400	210	19	13.1	5.1	855	24	635000	16000	2.72	0.3	0	1	10.58	0.49	0.016	0.015	0.75	0.32	2.07	0.42
LP110120-1s-13	SP2	228200	9800	400	24	23.8	2.6	3940	190	685000	20000	7.36	0.61	0.29	0.15	7.38	0.63	0.289	0.08	5.92	0.92	18.2	1.7
LP110120-1L-44	SP2	227500	6300	266	15	11	1.8	1862	53	613000	16000	3.25	0.28	0	1	19.92	0.73	0.098	0.036	1.89	0.45	6.56	0.82
LP110120-1s-57	SP2	213700	6100	235	13	9.6	1.3	1763	68	601000	16000	3.52	0.35	0.07	0.051	11.06	0.94	0.129	0.055	2.43	0.47	8.2	1.2
LP110120-1L-61	SP2	216400	5100	145	11	9.6	1.4	537	16	633000	17000	2.59	0.34	0	1	10.3	0.49	0.008	0.011	0.37	0.17	1.11	0.35
LP110120-1s-18	SP2	211000	10000	142	11	6.2	2	1138	74	614000	22000	7.76	0.72	0	1	39.7	1.9	0.036	0.03	1.41	0.32	4.21	0.7
LP110120-1s-40	SP2	229000	10000	642	80	21.8	3.1	4420	150	598000	22000	16.1	1.1	9.3	2.6	72.6	6.9	4.28	0.97	29.6	5.2	32.5	2.1
LP110120-1L-93	SP2	221900	6500	201	13	17.1	1.9	1287	58	634000	16000	5.21	0.49	0.173	0.084	19.8	1	0.237	0.063	3.86	0.8	6	1.1
LP110120-1L-98	SP2	218700	4700	129.7	7.9	7.7	1.8	926	30	668000	18000	5.65	0.51	0.184	0.046	19.33	0.73	0.312	0.088	2.7	0.54	3.52	0.68
LP110120-1s-54	SP2	227600	4600	161	11	12.5	1.8	1068	37	653000	21000	4.59	0.47	0.241	0.086	21.05	0.95	0.535	0.084	4.4	0.71	5.8	1.1
LP110120-1s-66	SP2	215200	6800	416	39	11	3.1	3890	490	619000	14000	9.8	1.5	0.18	0.099	35	5.8	0.94	0.33	11.5	3	19.1	3.4
LP110120-1L-15	SP2	230200	6600	147.7	9.8	9.2	2	514	16	647000	19000	4.62	0.43	0.006	0.012	17.7	1.1	0.069	0.037	0.77	0.24	1.54	0.45
LP110120-1L-77	SP2	224500	6900	2910	880	6.6	1.7	1440	100	655000	20000	10.1	1.2	46	14	121	26	11.6	3.4	49	14	12.4	2.2
LP110120-1L-43	SP2	220100	6500	289	21	16.6	1.8	1279	36	623000	18000	5.87	0.43	0.59	0.26	29.4	1.3	0.163	0.066	2.16	0.5	4.47	0.76
LP110120-1L-17	SP2	222400	6600	454	16	15.2	2.3	4710	130	625000	15000	18.5	1.1	0.035	0.03	90	2.4	0.556	0.088	8.6	1	20.1	1.6
LP110120-1L-34	SP2	220400	5700	243	17	9.7	1.6	1317	41	617000	15000	8.62	0.64	0.058	0.055	35.3	1.8	0.151	0.064	1.47	0.47	3.27	0.61
LP110120-1L-40	SP2	234200	7700	198	12	8.7	1.7	1604	40	629000	19000	7.35	0.48	0.011	0.015	22.41	0.75	0.094	0.044	1.69	0.38	5.59	0.99
LP110120-1L-85	SP2	232100	5600	256	35	19.5	2.1	1655	61	661000	16000	4.4	0.45	0.52	0.16	21.5	1.2	0.77	0.15	9	1.2	10.9	1.2
LP110120-1L-3	SP2	228800	7600	185.2	8	12.1	2	1026	37	632000	18000	5.64	0.47	0	1	23.7	1.2	0.041	0.024	0.98	0.24	2.98	0.68
LP110120-1L-28	SP2	224100	6400	168	23	9.2	2.2	628	17	634000	17000	4.07	0.51	0.47	0.56	15	1.8	0.113	0.084	1.37	0.63	2.69	0.54
LP110120-1L-82	SP2	220000	5300	233	11	12.5	1.7	1338	44	648000	14000	6.72	0.48	0	1	29.5	1.3	0.091	0.041	2.21	0.39	3.57	0.62

LP110120-1L-27	SP2	219000	7200	151	11	3.8	2.1	1053	27	636000	15000	9.31	0.56	0	1	43.6	1.7	0.045	0.027	1.22	0.43	2.77	0.61
LP110120-1L-86	SP2	223300	5200	212	14	10.9	1.7	1316	54	651000	18000	6.72	0.66	0.011	0.015	30.9	1.1	0.141	0.041	2.53	0.63	5.22	0.74
LP110120-1L-95	SP2	225500	5800	281	14	3.5	1.2	3990	130	648000	17000	10.32	0.85	0	1	34.7	1.4	0.531	0.067	10.14	0.81	18.8	1.4
LP110120-1s-17	SP2	224800	7900	430	120	20.2	2.5	1675	53	613000	17000	5.14	0.45	4.1	2.4	31.9	5	1.49	0.7	11.4	4	9.4	1.8
LP110120-1s-35	SP2	218300	5900	172	12	15.1	1.9	1011	38	629000	22000	4.6	0.43	0	1	23.5	1.1	0.126	0.039	1.71	0.44	3.01	0.54
LP110120-1L-32	SP2	220800	7600	164.4	9.3	6.4	1.9	1307	37	641000	16000	6.54	0.58	0	1	20.9	1.1	0.121	0.039	1.83	0.44	5.53	0.7
LP110120-1L-76	SP2	225000	5800	410	24	7.8	1.3	3110	100	653000	19000	22.44	0.96	0.127	0.045	48.6	1.7	0.314	0.063	3.95	0.55	9.5	1.1
LP110120-1L-16	SP2	244100	8100	126	11	3.1	1.5	886	25	668000	22000	5.79	0.33	0.2	0.15	20.3	1	0.114	0.036	1.12	0.31	2.47	0.4
LP110120-1L-128	SP2	232000	7300	312	15	9.7	1.9	3860	130	632000	21000	15.9	1.1	0.017	0.019	91.2	3.3	0.428	0.081	8.1	1.1	18.9	1.5
LP110120-1s-69	SP2	206400	7200	129.5	9	10.3	1.9	743	34	586000	21000	2.87	0.3	0	1	14	0.5	0.045	0.027	1.07	0.29	3.25	0.87
LP110120-1L-90	SP2	220100	7300	107.9	7	10.7	1.8	850	26	650000	17000	2.64	0.33	0	1	14.59	0.76	0.048	0.019	2.12	0.53	4.06	0.73
LP110120-1L-102	SP2	221900	5800	174	11	14.2	3.8	1121	30	652000	19000	6.44	0.53	0.029	0.023	15.48	0.54	0.06	0.027	0.54	0.25	2.75	0.41
LP110120-1s-14	SP2	236100	8700	174	10	15.6	2	1227	63	599000	18000	3.09	0.31	0.006	0.012	21.1	1.6	0.181	0.07	2.69	0.53	5.82	0.99
LP110120-1s-59	SP2	221900	7200	205	12	8.9	1.4	2106	77	607000	18000	6.04	0.51	0.018	0.02	16.6	0.76	0.217	0.064	4.28	0.66	10.15	0.91
LP110120-1L-10	SP2	235100	8100	123	10	30.3	6.8	1021	28	656000	22000	5.13	0.33	0.023	0.027	14.71	0.7	0.061	0.029	1.3	0.37	3.34	0.69
LP110120-1L-130	SP2	220300	5500	174.9	9.3	16	1.9	706	24	644000	15000	3.56	0.35	0	1	18.23	0.78	0.041	0.026	0.88	0.24	2.03	0.53
LP110120-1L-23	SP2	223000	5900	153	12	4.9	1.6	842	25	638000	20000	5.37	0.34	0.011	0.015	18.08	0.92	0.023	0.016	1.04	0.36	2.88	0.65
LP110120-1L-6	SP2	232700	5300	123	13	6.6	1.2	842	16	636000	17000	4.64	0.55	0	1	17.36	0.63	0.043	0.022	1.22	0.48	2.18	0.38
LP110120-1L-56	SP2	221000	5500	170	10	8.8	2	1077	41	643000	18000	5.33	0.58	0	1	18.29	0.96	0.052	0.031	1.3	0.45	2.84	0.62
LP110120-1L-101	SP2	217100	6400	138.3	7.8	5.7	1.2	844	28	661000	18000	4.19	0.38	0	1	13.24	0.74	0.073	0.028	1.1	0.3	2.37	0.53
LP110120-1s-67	SP2	238000	7800	101.1	8	8.8	2.1	546	19	648000	22000	2.08	0.27	0	1	12.08	0.49	0.082	0.038	1.07	0.37	2.24	0.63
LP110120-1s-42	SP2	224900	7800	133	11	8.6	1.7	1002	47	616000	15000	4.47	0.39	0.067	0.04	25.3	1.2	0.138	0.042	1.6	0.37	3.62	0.75
LP110120-1s-32	SP2	225300	6800	254	13	25.9	1.9	1840	55	618000	25000	4.71	0.45	0.011	0.015	19.34	0.93	0.282	0.089	4.92	0.55	10.1	1
LP110120-1L-12	SP2	224100	5500	1680	450	12.1	4.1	1378	45	615000	19000	7.77	0.29	27	10	67	22	6.7	2.6	38	14	9.5	2.9
LP110120-1L-115	SP2	221400	6100	103	5.8	5.8	1.1	688	21	665000	15000	3.98	0.38	0.012	0.016	10.61	0.57	0.038	0.029	0.68	0.28	1.81	0.46
LP110120-1L-74	SP2	225700	6400	106.5	5.9	5.2	1.4	624	14	654800	8200	3.65	0.27	0.017	0.018	11.69	0.73	0.047	0.026	1.05	0.39	1.84	0.54
LP110120-1L-72	SP2	220900	7000	181	10	15.9	1.5	825	23	612000	13000	4.32	0.51	0	1	18.39	0.74	0.011	0.013	0.69	0.24	2.02	0.54
LP110120-1s-30	SP2	215000	5600	215	15	10.4	1.7	3570	160	634000	12000	8.41	0.52	0.017	0.019	19.9	1.3	0.512	0.066	11.4	1.1	23.2	2.5
LP110120-1s-24	SP2	230300	8600	2070	120	13	1.9	4860	210	609000	21000	10.21	0.59	17	1.4	80.1	4.5	6.05	0.52	45.6	3.5	35.2	2
LP110120-1s-43	SP2	225000	7700	246	18	10.6	2	2234	74	608000	19000	9.83	0.59	0.011	0.015	22.95	0.69	0.221	0.088	4.18	0.69	10.4	1.1
LP110120-1L-69	SP2	219400	5600	833	87	7.6	1.3	730	20	635000	16000	4.58	0.45	8.6	5.3	30.3	6.6	2.48	0.7	12.7	3.6	5.1	1
LP110120-1L-89	SP2	223000	8200	122	11	5.4	2.2	1423	74	650000	15000	4.72	0.42	0	1	16.73	0.8	0.183	0.045	3.39	0.84	7.56	0.84
LP110120-1s-58	SP2	218900	8200	122.2	9.9	8.2	1.5	688	26	622000	16000	3.68	0.32	0	1	15.75	0.86	0.043	0.027	1	0.31	3.02	0.66
LP110120-1L-88	SP2	215600	5100	138	11	6.7	1.8	1133	61	639000	16000	3.99	0.44	0.024	0.022	15.8	1.1	0.065	0.032	1.32	0.41	4.45	0.42
LP110120-1L-1	SP2	228500	7100	145.3	8.1	6.9	1.6	1360	38	669000	18000	6.49	0.43	0.023	0.021	15.69	0.8	0.187	0.067	2.26	0.45	5.06	0.79
LP110120-1s-11	SP2	217700	6500	110.4	8	11	2.4	481	15	628000	15000	3.29	0.39	0.017	0.024	13.47	0.45	0.048	0.026	0.55	0.23	1.21	0.41
LP110120-1s-16	SP2	216300	7500	221	12	26.6	2.3	875	22	594000	15000	3.06	0.27	0	1	14.93	0.81	0.111	0.045	2.33	0.56	4.72	0.7
LP110120-1s-55	SP2	225500	7100	150	10	4.1	1.2	1376	38	607000	20000	4.33	0.49	0	1	9.44	0.53	0.129	0.04	2.16	0.46	5.04	0.79
LP110120-1L-121	SP2	226400	5200	332	16	17.4	3.6	2082	83	659000	16000	5.21	0.39	2.3	1.3	22	2.1	0.9	0.24	9	1	12.4	1.4
LP110120-1s-29	SP2	244300	6500	483	22	13.9	2.5	3660	180	721000	19000	14.06	0.81	2.76	0.97	45.1	3.6	1.2	0.34	10.6	1.7	16.1	1.6
LP110120-1L-68	SP2	219300	6300	133	12	6.3	1.1	1155	31	630000	12000	4.01	0.47	0	1	14.79	0.85	0.069	0.037	2.09	0.48	3.98	0.7
LP110120-1s-68	SP2	215600	6100	115	11	5.2	1.2	653	26	591000	18000	3.77	0.48	0	1	11.12	0.72	0.041	0.024	0.81	0.31	2.1	0.48
LP110120-1L-70	SP2	216400	5600	193	14	40	15	1489	47	595000	15000	8.09	0.51	0.25	0.11	9.93	0.63	0.11	0.04	2.52	0.55	3.64	0.81
LP110120-1s-65	SP2	236400	7800	246	20	78.8	9.1	3020	230	680000	17000	9.92	0.58	1.05	0.15	264	11	2.24	0.24	32	2.6	45.2	4.6
LP110120-1s-22	SP2	220600	4700	895	54	42.6	8.1	3990	130	661000	15000	5.06	0.6	0.61	0.18	11.9	2	1.73	0.57	19.1	5.6	31.8	7.9
LP110120-1L-127	SP2	232000	6800	1524	67	35.1	2.4	6740	400	669000	13000	3.11	0.31	0.037	0.024	3.44	0.27	0.69	0.13	14	2	33.4	4.1
LP110120-1L-33	SP2	226300	9900	229	17	19	3.4	653	29	624000	14000	4.44	0.44	0.172	0.079	18.96	0.97	0.11	0.068	1.54	0.65	2.94	0.85
LP110120-1s-39	SP2	240300	9000	451	28	5.6	1.8	3690	160	652000	16000	8.69	0.7	0.3	0.12	31.6	2.7	0.63	0.16	8.8	1.3	21.9	2.5
LP110120-1L-83	SP2	214700	6400	755	33	31.4	3.3	3020	130	632000	16000	2.45	0.4	0.127	0.048	2.25	0.28	0.446	0.099	9	1.3	17.5	1.4
LP110120-1s-63	SP2	213300	7900	177	12	7.2	1.6	598	15	577000	19000	8.4	1	0.017	0.019	22.3	0.79	0.041	0.031	0.51	0.22	1.42	0.38
LP110120-1L-109	SP2	221700	5800	118.9	8.3	24.3	2.2	686	23	645000	11000	40.7	2.5	0.171	0.066	14.47	0.96	1.12	0.19	16.1	1.4	16.7	1.4
LP110120-1L-30	SP2	227200	7100	108.4	8.7	8.3	1.5	395	23	622000	17000	2.55	0.19	0	1	8.98	0.78	0.023	0.016	0.45	0.18	1.89	0.46
LP110120-1s-31	SP2	216400	9200	136	10	6	1.6	1704	57	589000	18000	6.88	0.58	0.039	0.03	17.55	0.71	0.217	0.067	4.24	0.64	9.47	0.98
LP110120-1L-49	SP2	219600	6900	226	13	18.6	2.3	1665	61	627000	13000	5.35	0.4	0.32	0.088	10.03	0.42	0.293	0.074	4.89	0.62	10.2	1
LP110120-1L-67	SP2	223000	5600	65	4.8	8.2	1.6	71.5	2.1	639000	15000	2.26	0.27	0	1	2.08	0.19	0	1	0.14	0.1	0.11	0.13
LP110120-1L-19	SP2	225400	8600	164	11	6.4	1.3	785	36	639000	18000	3.85	0.35	0	1	12.41	0.59	0	1	0.5	0.19	1.69	0.44
LP110120-1s-44	SP2	223300	6200	213	12	12.5	2	2499	95	620000	17000	12.72	0.88	0.013	0.017	84.7	4.2	0.79	0.12	12.3	1.4	19.9	1.7
LP110120-1s-50	SP2	227000	7200	632	67	14.5	1.9	2160	230	603000	18000	6.13	0.53	0.122	0.064	37.7	2.9	0.71	0.16	8.6	1.7	14.6	2.6
LP110120-1s-56	SP2	242400	7800	230.6	9.8	25.3	2.7	926	24	668000	19000	5.16	0.51	0.123	0.067	17.19	0.88	0.237	0.074	3.08	0.56	6.17	0.8
LP110120-1L-48	SP2	221500	6700	220	11	11.6	2.7	737	30	628000	19000	6.07	0.52	0.202	0.069	54.9	2.5	0.696	0.093	8.76	0.87	10.41	0.92
LP110120-1L-60	SP2	218900	5600	216	11	16.3	1.3	669	20	620000	15000	3.52	0.32	0	1	10.15	0.67	0.098	0.042	1.54	0.4	3.66	0.45
LP110120-1s-9	SP2	218000	8800	382	52	5.9	1.3	872	76	612000	24000	5	0.42	0.98	0.25	13.2	1.1	0.57	0.13	4.63	0.73	6	1.1
LP110120-1s-19	SP2	245000	10000	169	12	20.2	2.6	1034	37	627000	20000	9.92	0.79	0.69	0.16	134	13	1.46	0.17	10.7	1.3	8.9	1
LP110120-1L-114	SP2	228900	7400	235	11	21.3	2.6	1670	65	655000	18000	6.56	0.6	0.099	0.047	12.13	0.77	0.802	0.09	12.4	1.2	17.4	1.9
LP110120-1L-18	SP2	227400	6200	325	11	21.2	1.9	1260	28	656000	15000	5.31	0.45	0.017	0.018	40.1	1.7	0.264	0.071	5.35	0.56	10.3	1
LP110120-1L-47	SP2	213200	4500	600	180	13.9	2.3	1486	42	626000	15000	5.15	0.49	0.46	0.21	16.7	1.2	1.03	0.37	7.6	2	10.2	2
LP110120-1L-65	SP2	228000	6500	164	9	12.6	1.7	597	19	631000	12000	2.8	0.4	0.017	0.019	12.32	0.51	0.011	0.013	0.62	0.17	2.01	0.52
LP110120-1s-36	SP2	217300	8400	229	21	10.8	1.7	1422	77	613000	21000	5.89	0.44	0.08	0.041	27.2	0.94	0.62	0.11	11.7	1.5	17.9	1.8
LP110120-1L-59	SP2	225300	5600	164.9	9	18.7	2	1104	28	635000	14000	1.73	0.28	0.012	0.016	16.34	0.63	0.213	0.049	4.36	0.55	10.9	1.1
LP110120-1L-54	SP2	224100	6100	305	16	15	1.8	1455	36	647000	15000	5.71	0.52	0.054	0.029	30.7	1.3	0.315	0.064	4.61	0.66	6.12	0.94
LP110120-1L-126	SP2	227600	5500	37.8	7.9	9.1	1.3	167.5	5.8	667000	18000	1.68	0.27	0	1	0.87	0.11	0.011	0.012	0.096	0.09	0.29	0.19
LP110120-1L-45	SP2	221400	6600	252	14	9.1	1.9	1393	40	622600	9700	7.57	0.54	0	1	21.65	0.86	0.087	0.038	2.3	0.56	6.7	1
LP110120-1L-46	SP2	210900	7300	395	17	23.1	1.8	2316	89	630000	15000	3.01	0.23	0	1	9.23	0.56	0.433	0.078	8.9	1.2	18.1	1.3
LP110120-1L-107	SP2	216400	6400	978	62	42.1	3.6	903	22	629000	19000	3.69	0.35	21.5	4.1	62	11	9.2	1.3	47.5	4.7	14.8	1.7
LP110120-1L-51	SP2	213600	7100	152	10	10.6	1.6	620	20	632000	16000	4.61	0.38	0	1	7.67	0.64	0.029	0.023	0.82	0.25	2.45	0.49
LP110120-1L-108	SP2	223400	7900	265	14	6.1	1.8	1220	28	649000	16000	5.43	0.49	0.11	0.045	27.6	1.1	0.257	0.07	4.8	0.72	7.5	0.75
LP110120-1L-5	SP2	225900	5000	132.9	7.6	7.3	2.1	773	21	655000	15000	14.33	0.65	0	1	9.43	0.5	0.023	0.017	1.02	0.28	2.31	0.47
LP110120-1L-104	SP2	223400	5800	289	19	40	3.1	1250	31	650000	16000	3.97	0.39	0.017	0.018	53.6	1.5	0.22	0.064	5.28	0.87	9.5	1.1
LP110120-1L-25	SP2	223100	5100	290	17	20.8	2.6	1501	36	643000	15000	5.99	0.53	0.012	0.016	20.48	0.85	0.116	0.037	2.04	0.44	6.82	0.8
LP110120-1s-47	SP2	223900	9300	180	11	4.3	2	1099	37	613000	18000	6.65	0.5	0	1	7.18	0.45	0.1	0.041	1.92	0.45	5.07	0.86
LP110120-1L-7	SP2	216200	6600	382	20	12.4	1.3	1696	52	662000	18000	6.75	0.57	0.35	0.28	12.5	1.1	0.26	0.16	3.5	1.4	5.36	0.85
LP110120-1s-62	SP2	221200	3900	576	30	4	1.5	2163	71	631000	15000	12.52	0.8	0	1	8.78	0.52	0.03	0.018	0.38	0.21	2.67	0.48
LP110120-1L-66	SP2	233100	8200	203	12	35.8	2.9	2567	56	634000	20000	5.58	0.5	0.067	0.043	9.62	0.77	0.86	0.11	13.9	1.6	23.9	1.9
LP110120-1L-99	SP2	228100	6800	127.6	9.1	12.3	2.1	861	28	641000	14000	14.56	0.74	0	1	11.07	0.53	0.074	0.031	1.32	0.45	3.57	0.6
LP110120-1L-110	SP2	216600	7700	217	10	22.2	2.8	2055	60	643000	15000	4.1	0.29	0	1	14.87	0.69	0.257	0.049	4.72	0.75	11.6	1
LP110120-1L-117	SP2	226200	5900	249	12	8.9	1.6	900	25	674000	12000	3.88	0.32	0	1	1.71	0.16	0	1	0.53	0.27	1.46	0.32
LP110120-1L-62	SP2	214100	4500	159	11	15.5	2.4	663	17	627000	18000	3.87	0.49	0	1	5.55	0.51	0.028	0.018	0.98	0.35	2.54	0.55
LP110120-1L-94	SP2	226000	7600	247	11	12.3	1.3	860	26	666000	20000	2.49	0.35	0	1	15.11	0.67	0.026	0.017	0.41	0.17	2.53	0.66
LP110120-1L-92	SP2	224100	5900	228	14	15.7	1.9	1183	29	638000	18000	4.89	0.34	0	1	8.76	0.4	0.032	0.019	0.93	0.23	2.48	0.5
LP110120-1L-81	SP2	216800	6000	190	11	25.7	1.8	789	24	641000	12000	6.32	0.59	0	1	10.64	0.58	0.084	0.039	1.9	0.47	4.48	0.84
LP110120-1L-41	SP2	219800	5800	262	18	9.8	1.6	1785	53	628000	16000	8.33	0.77	0	1	27.98	0.95	0.225	0.069	4.39	0.72	9.2	1.1
LP110120-1s-70	SP2	208900	6000	224	16	18.6	1.8	933	30	597000	20000	7.23	0.6	0.07	0.038	30.9	1.4	0.238	0.066	1.82	0.51	3.33	0.74
LP110120-1s-7	SP2	221800	8100	195.1	8.7	9.8	1.6	941	24	629000	15000	3.3	0.38	0	1	21.8	1.2	0.118	0.047	1.53	0.29	3.88	0.8
LP110120-1s-61	SP2	213500	8100	476	27	69	22	2974	92	606000	20000	4.1	0.42	0.049	0.029	9.51	0.49	0.85	0.12	15.8	1.3	31.3	2.6
LP110120-1L-111	SP2	226500	6600	476	22	8.4	1.9	2008	73	649000	20000	19.5	1.3	18.3	1.2	82	3	9.93	0.72	68.7	5	28.4	2.1
LP110120-1L-71	SP2	223000	6200	391	17	14.6	2.2	2349	64	642000	13000	3.74	0.46	0.055	0.042	40.3	4.1	1.35	0.46	14.2	4.2	18.7	2.6
LP110120-1L-29	SP2	227300	7200	234	14	9.2	1.2	1396	34	629000	15000	10.85	0.81	0	1	19.33	0.73	0.03	0.018	1.61	0.44	5.2	1.1
LP110120-1s-49	SP2	233700	9900	229	14	11.6	1.6	2855	91	651000	13000	60	2.5	0.017	0.026	30.3	1.6	0.34	0.11	6.18	0.92	13.9	1.1
LP110120-1s-5	SP2	212200	6200	474	31	17.2	2	692	28	594000	18000	8.52	0.53	22	1.1	63	3.3	7.32	0.59	38.1	2.5	12.5	1.3
LP110120-1L-58	SP2	216100	5700	235	14	45.8	3.3	1011	46	630000	14000	5.13	0.36	0	1	22.83	0.84	0.113	0.041	2.99	0.63	5.53	0.84
LP110120-1s-2	SP2	223900	6500	206	17	8.5	1.5	1073	44	610000	17000	16.4	1.1	0.18	0.3	20.1	1.2	0.151	0.072	2.21	0.63	5.37	0.51
LP110120-1s-15	SP2	217100	5200	271	52	9.7	1.9	1593	86	623000	14000	3.86	0.37	1.6	1.3	17.3	4	0.86	0.6	6.7	3.5	10.4	1.7
LP110120-1L-113	SP2	223400	7400	132.1	8.4	14.2	1.7	757	27	692000	22000	5.89	0.65	0	1	7.26	0.71	0.088	0.038	1.21	0.41	4.06	0.81
LP110120-1L-129	SP2	236600	6400	156	10	6.7	1.8	1112	42	673000	14000	2.38	0.28	0.016	0.018	20.94	0.76	0.206	0.062	4.19	0.91	6.89	0.93
LP110120-1L-84	SP2	226000	8900	5400	1000	29.3	4.8	883	37	610000	16000	8.2	0.62	80	14	292	44	47.8	8.9	303	54	83	13
LP110120-1L-22	SP2	217700	7000	182	13	32.3	3	2023	67	620000	20000	2.92	0.31	0.006	0.013	4.27	0.26	0.395	0.068	8.47	0.77	14.8	1.4
LP110120-1L-26	SP2	230900	6100	314	16	12.6	1.8	3325	90	641000	26000	8.89	0.44	0.028	0.023	38.8	1.6	0.463	0.078	9.8	1.1	20.5	1.3
LP110120-1L-97	SP2	215600	6800	1740	380	25.3	1.6	2195	85	655000	14000	3.47	0.38	11.1	5.8	44	12	6.1	1.8	48	18	19.9	4.5
LP110120-1s-6	SP2	218500	8100	218	12	17.2	2.3	1050	42	602000	20000	5.36	0.52	0	1	7.14	0.45	0.069	0.036	1.35	0.36	3.21	0.63
LP110120-1s-37	SP2	218200	8100	1820	750	15.1	3.3	1087	63	588000	21000	11.58	0.7	204	88	500	190	60	25	250	100	52	21
LP110120-1s-4	SP2	213500	8500	242	14	14.5	1.4	1053	29	629000	19000	7.59	0.56	0	1	74.6	2.7	0.044	0.024	2.08	0.44	5.64	0.73
LP110120-1s-33	SP2	226600	7700	330	31	16.1	2.3	1425	44	607000	17000	13.62	0.79	7	3.5	35.3	9	3.4	1.5	18.6	7.6	8.7	1.8
LP110120-1L-2	SP2	228500	8300	128.6	9.1	6.9	2.5	532	14	634000	18000	7.51	0.76	0	1	14.79	0.63	0.011	0.012	0.45	0.24	1.2	0.32
LP110120-1L-106	SP2	222100	7200	256	15	10.9	1.6	1315	38	651000	20000	4.49	0.38	0	1	54.3	2.1	0.176	0.053	3.38	0.64	6.4	1.1
LP110120-1s-26	SP2	218900	7700	342	21	13.4	2.1	1654	43	607000	21000	4.16	0.32	0.028	0.023	31.5	1.3	0.54	0.11	7.38	0.81	12.8	1.7
LP110120-1L-125	SP2	234100	7300	256.2	9.5	18	2.1	1360	32	652000	16000	5.41	0.67	0	1	51.5	2.2	0.162	0.057	3.05	0.68	5.63	0.97
LP110120-1L-87	SP2	233000	7900	287	13	19.3	4.1	1609	55	661000	17000	9.62	0.69	10.6	3.1	111.4	5.2	1.99	0.41	15.3	2.5	12.4	1.5

LP110120-1s-38	SP2	208200	7100	243	21	17.8	1.6	1026	40	601000	14000	5.22	0.48	6.4	1.6	23.1	2.3	2.12	0.37	12.8	1.7	7.8	1
LP110120-1L-119	SP2	219900	7600	247	13	11.3	1.5	1696	39	659000	14000	4.47	0.46	0.029	0.023	98.1	2.9	0.28	0.057	5.86	0.85	10.9	1.2
LP110120-1s-34	SP2	225900	7300	314	26	12.2	2.2	1578	52	612000	17000	5.86	0.46	0.251	0.084	7.36	0.52	0.58	0.13	5.44	0.93	7.47	0.92
LP110120-1L-112	SP2	219700	6200	198	14	24.8	2.5	1120	55	664000	23000	3.32	0.3	0	1	12.72	0.49	0.247	0.061	3.59	0.64	8.7	1.1
LP110120-1L-124	SP2	234000	5400	201	12	19.8	4.2	865	37	676000	16000	5.87	0.44	0.38	0.2	33.7	1.4	0.353	0.085	3.5	0.8	5.86	0.72
LP110120-1s-64	SP2	225500	5400	256	13	6.4	1.6	1748	57	618000	16000	5.01	0.46	0.018	0.02	54.8	1.8	0.506	0.094	8.3	1	17	1.6
LP110120-1L-50	SP2	228900	8000	341	23	10.4	1.8	2036	99	635000	19000	7.87	0.45	0	1	11.61	0.58	0.138	0.048	2.25	0.47	6.3	1.1
LP110120-1L-63	SP2	224000	6100	713	28	16.3	2.2	2183	50	633000	13000	2.8	0.33	0	1	1.21	0.17	0.062	0.031	1.59	0.43	5.97	0.76
LP110120-1L-53	SP2	223300	6100	286	14	43.6	2.4	1283	32	641000	15000	4.27	0.4	0.036	0.026	15.92	0.61	0.48	0.1	6.53	0.74	8.7	1.1
LP110120-1L-9	SP2	219000	6900	555	27	25.5	2.7	1847	39	621000	17000	3.24	0.42	0	1	5.18	0.37	0.022	0.016	1.64	0.44	4.58	0.59
LP110120-1s-45	SP2	226800	7600	237	11	10.7	1.6	901	37	612000	19000	3.75	0.32	0	1	14.58	0.75	0.063	0.028	1.37	0.42	3.89	0.61
LP110120-1s-48	SP2	222600	5000	159	12	8.7	1.6	515	17	605000	17000	2.11	0.29	0.017	0.019	29.4	1.1	0.138	0.042	2.62	0.44	4.72	0.81
LP110120-1L-120	SP2	228300	5600	166.2	8.1	10.1	1.7	907	23	681000	20000	3.29	0.34	0	1	17.38	0.78	0.131	0.048	2.01	0.5	4.87	0.6
LP110120-1s-53	SP2	219300	7600	200	21	6.1	1.7	1460	170	601000	28000	4.8	0.39	0	1	70.6	4	0.307	0.083	5.7	1.1	12.5	2.2
LP110120-1s-60	SP2	225300	5800	138	10	5.1	1.1	393	11	621000	17000	2.6	0.36	0.035	0.025	13.23	0.61	0.101	0.037	1.23	0.39	1.83	0.46
LP110120-1L-78	SP2	226200	8800	225	9.8	16.5	2.5	534	21	637000	15000	2.26	0.3	0	1	9.72	0.43	0.129	0.038	2.06	0.55	4.84	0.75
LP110120-1L-8	SP2	226600	6600	158	11	12	1.8	726	20	629000	20000	3.39	0.28	0	1	10.18	0.52	0.047	0.03	1.51	0.36	3.21	0.68
LP110120-1s-8	SP2	219500	6800	268	14	7	1.7	1200	42	602000	18000	4.48	0.49	0.017	0.018	33.3	1.1	0.048	0.03	1.88	0.33	4.82	0.74
Rejected Grains																							
LP110120-1L-39	SP2	207900	6300	1687	89	6.8	2	1230	39	601000	13000	9.7	0.77	31.7	2.4	114.7	5.5	8.8	0.76	41.3	4.2	10.9	1.3
LP110120-1L-57	SP2	220300	5600	331	64	10.4	1.5	1536	50	604000	17000	5.47	0.31	1.02	0.8	33.4	1.5	0.46	0.23	5.5	1.5	7.61	0.78
LP110120-1s-21	SP2	233900	7200	170	14	10.5	1.8	982	40	634000	14000	3.92	0.36	0.35	0.31	18.4	1	0.18	0.11	2.27	0.65	4.92	0.83
LP110120-1L-105	SP2	223200	4600	203	15	29.2	2.7	1269	45	635000	17000	2.8	0.27	0.03	0.024	24.6	1.1	0.389	0.082	6.81	0.84	10.2	1
LP110120-1L-118	SP2	184900	5200	199	15	255700	4200	1886	64	1796	51	5770	190	5510	160	15650	370	1913	48	7400	170	1168	44
LP110120-1s-52	SP2	227400	5500	154	16	112	25	1170	210	629000	17000	2.75	0.43	2.06	0.71	38.1	6	0.88	0.2	6.7	1.2	7.4	1.4
LP110120-1s-12	SP2	210900	9100	3150	490	7.3	2	1115	54	580000	19000	2.49	0.36	62	10	148	28	16.6	3.7	76	14	19.2	2.6
LP110120-1L-13	SP2	229300	8000	123.1	9.1	23.7	8.8	728	37	600000	21000	2.5	0.36	0.115	0.072	3.32	0.3	0.108	0.044	1.78	0.51	4.43	0.67
LP110120-1L-91	SP2	191800	5800	204	10	281500	6000	2079	68	311.8	9.6	559	20	674	24	2430	100	401	16	2214	70	651	18
LP110120-1L-42	SP2	226800	6500	845	46	99.7	4.1	3091	84	614000	18000	12.98	0.61	10.89	0.71	99	3.4	12.08	0.77	86.9	4.6	63.2	3.3
LP110120-1s-20	SP2	207500	6500	180	20	14	1.7	804	47	609000	20000	3.95	0.31	0.105	0.068	22.6	1.1	0.077	0.034	0.75	0.26	1.93	0.62
LP110120-1L-123	SP2	230800	5100	377	33	72.7	6.6	3990	230	683000	13000	10.43	0.84	11.9	1.8	1116	94	45.3	5.6	330	37	239	26
LP110120-1s-1	SP2	222400	6800	320	30	52	7.3	1218	48	629000	14000	3.29	0.28	1.23	0.24	19.1	1.4	1.87	0.29	15.3	2.3	25.4	2.8
LP110120-1L-75	SP2	242300	8600	257	15	38.4	3.7	1355	84	663000	20000	6.32	0.43	0.196	0.096	33.3	1.8	0.71	0.17	6.7	1.1	8.2	1.6
LP110120-1L-14	SP2	254700	6100	824	48	93.7	5.2	5650	280	672000	17000	46.3	1.5	1.08	0.14	184	11	7.16	0.52	69.1	5	104.6	6.7
LP110120-1s-25	SP2	221700	5700	179.2	5.8	30.9	4	1767	52	669000	13000	4.79	0.39	0.188	0.073	33	1.1	0.367	0.09	9.2	1.2	17.9	1.8
LP110120-1L-116	SP2	218400	7100	165	12	18.7	1.6	1024	36	651000	15000	4.41	0.37	0.04	0.026	12.89	0.59	0.287	0.064	6.45	0.76	10.99	0.95
LP110120-1s-51	SP2	227000	8000	101.5	7.2	6.4	1.7	353	13	586000	19000	2.23	0.2	0.006	0.011	12.05	0.66	0.007	0.01	0.19	0.11	1.57	0.4
LP110120-1L-31	SP2	212500	6600	185	15	15	1.6	2151	49	629000	15000	5.99	0.34	0.04	0.026	8.6	0.44	0.98	0.11	16.2	1.5	24.1	1.9
Sample X181218																							
Grain	Unit	Si (ppm)	error	P (ppm)	error	Ti (ppm)	error	Y (ppm)	error	Zr (ppm)	error	Nb (ppm)	error	La (ppm)	error	Ce (ppm)	error	Pr (ppm)	error	Nd (ppm)	error	Sm (ppm)	error
181218-1b-8	SP4	15600000	1300000	13320	460	217	42	179000	17000	70100000	6300000	1100	140	19	12	5070	530	14	11	34	16	102	32
181218-1b-13	SP4	15800000	1300000	16550	990	460	120	222000	21000	69500000	5800000	710	110	130	69	8060	810	52	24	109	34	183	49
181218-1b-7	SP4	15600000	1300000	19700	1600	550	170	230000	20000	72100000	9300000	810	120	570	180	4680	610	231	81	180	45	155	40
181218-1b-5	SP4	16000000	1700000	28600	2200	670	190	891000	97000	64800000	7700000	3230	360	850	140	12700	1300	980	120	1120	170	1120	180
181218-1b-24	SP4	15000000	1400000	16230	740	260	58	278000	27000	65800000	5900000	1650	190	3.1	4.3	8980	930	13.8	8.5	60	21	177	40
181218-1b-9	SP4	14800000	1200000	16910	730	238	41	236000	22000	68800000	5800000	695	99	6.2	9.8	2630	310	32	15	151	34	297	62
181218-1b-15	SP4	16800000	1600000	14400	530	345	54	147000	13000	64600000	6000000	542	92	28	18	1840	200	36	15	64	22	111	31
181218-1b-11	SP4	15300000	1400000	19300	1000	303	59	327000	30000	69000000	6600000	563	91	1.6	3.1	5260	510	38	16	78	29	213	55
181218-1b-12	SP4	14700000	1200000	16570	770	266	51	244000	21000	67900000	5900000	483	87	4.7	6.9	4100	410	28	17	48	17	114	38
181218-1b-17	SP4	15600000	1500000	14970	660	180	36	191000	18000	69000000	6800000	770	110	1.6	3.1	1270	170	12.5	9.1	70	21	120	30
181218-1b-2	SP4	16000000	1400000	13550	660	1200	1400	155000	15000	68000000	6000000	860	130	62	33	7510	710	56	31	96	46	108	51
181218-1b-26	SP4	15000000	1300000	19600	1000	730	210	290000	27000	67500000	6400000	1510	190	19	12	9900	1000	139	30	293	55	441	81
181218-1b-25	SP4	15200000	1400000	24700	2500	559	82	537000	73000	73200000	6800000	590	100	1900	1200	10600	3100	980	360	1610	460	1400	210
181218-1b-1	SP4	14400000	1400000	14320	440	343	56	81300	9100	67700000	7200000	462	71	80000	15000	4830	600	35	16	69	27	144	41
181218-1b-16	SP4	15500000	1300000	24200	1500	426	53	266000	28000	68100000	6200000	1510	170	25	16	1900	240	59	28	89	34	241	59
181218-1b-21	SP4	15500000	1300000	18350	920	381	57	546000	49000	68600000	6200000	1270	150	111	26	24500	2300	550	62	1190	150	1380	170
181218-1b-6	SP4	15700000	1400000	17600	730	345	52	503000	45000	71600000	6700000	1210	140	12	12	5840	640	174	39	615	83	930	130
181218-1b-19	SP4	14900000	1400000	42000	11000	332	47	472000	74000	67900000	6600000	1380	190	4800	2400	41000	10000	2700	1200	2800	1300	1200	410
181218-1b-10	SP4	15000000	1200000	14860	620	225	30	180000	19000	66700000	6100000	494	81	4.7	5.2	3430	360	110	38	271	49	403	62
Rejected Grains																							
181218-1b-4	SP4	15300000	1500000	13810	600	820	190	86100	8300	63800000	6300000	592	97	14	14	3830	390	22	13	43	17	55	23
181218-1b-3	SP4	15700000	1500000	14950	630	534	82	209000	22000	65400000	6000000	409	90	110	130	2100	240	45	28	108	30	206	60
181218-1b-14	SP4	15400000	1600000	29500	2500	760	110	472000	64000	67600000	7100000	1930	280	317	71	19500	2400	950	180	1550	260	1880	380

APPENDIX IIIb: Detrital zircon trace element data for samples of the Sierra Las Pintas Group. Trace elements: Eu, Gd, Tb, Dy, Ho, Er, Tm, Yb, Lu, Hf.

Sample 100120-1																					
Grain	Unit	Eu (ppm)	error	Gd (ppm)	error	Tb (ppm)	error	Dy (ppm)	error	Ho (ppm)	error	Er (ppm)	error	Tm (ppm)	error	Yb (ppm)	error	Lu (ppm)	error	Hf (ppm)	error
LP100120-1L-40	SP1	8.26	0.68	63	3.3	16.85	0.98	159.2	8.4	45.5	1.8	172.1	7.6	39.9	1.9	388	24	48.2	2.4	11360	510
LP100120-1s-44	SP1	1.45	0.23	15.3	2.8	4.82	0.66	57.5	5.1	20.3	2	86	7.3	23.3	2.4	266	21	34	3.3	11610	450
LP100120-1L-10	SP1	8.45	0.9	87	10	26.5	2.9	317	37	113	14	482	62	111	12	1060	110	154	16	9470	350
LP100120-1s-40	SP1	2.07	0.36	31.2	3.7	9.67	0.87	114.8	7.1	43.9	3.6	196	14	50	2.9	573	34	82.4	3.8	12870	480
LP100120-1s-91	SP1	4.7	1	106	8.3	32.2	2.2	386	25	125.3	6.6	500	34	117.7	7.5	1130	110	144	10	13170	440
LP100120-1L-54	SP1	5.18	0.54	32.3	2.7	8.38	0.77	103.2	8.5	37.3	3.1	170	14	45.2	2.7	542	38	77.4	6.1	12130	640
LP100120-1s-56	SP1	1.95	0.52	40	4	12.7	1	152	13	49.7	3.4	209	12	52.5	4.4	478	42	60.9	3.8	11890	650
LP100120-1s-70	SP1	0.86	0.21	18.8	2.3	5.77	0.65	79.2	8.7	26.8	2	127	12	32.2	3.1	351	32	46.4	3.9	11510	500
LP100120-1L-32	SP1	0.26	0.12	17.6	3.1	6.72	0.81	93	13	30.4	3.9	143	20	35.8	4.5	364	45	48.4	5.5	16530	590
LP100120-1s-49	SP1	0.55	0.11	11.9	1.3	3.9	0.32	53.8	4.2	21.09	0.99	104.8	6.7	28	1.9	326	15	50.2	2.7	11580	470
LP100120-1s-12	SP1	0.58	0.12	23	2.4	7.96	0.7	92.6	5.9	32.3	1.6	134.4	6.4	32.6	1.4	336	17	42.4	2.3	11070	520
LP100120-1s-59	SP1	3.64	0.39	241	10	71.1	3.5	840	34	269	17	1037	32	214.1	8.6	2060	130	256	8.6	10190	430
LP100120-1L-79	SP1	0.55	0.14	15.4	1.8	4.9	0.46	65.8	5.1	24.9	1.4	114.5	5.3	28.1	2.1	337	22	46.3	2.4	11720	540
LP100120-1L-83	SP1	0.38	0.15	17.8	2.6	6.09	0.73	78	10	26.6	3.7	118	15	27.4	2.5	285	26	37.1	3.5	12480	550
LP100120-1s-37	SP1	0.56	0.17	11.2	2	3.39	0.53	46.7	4.9	17.8	1.5	80.5	6.8	23.3	1.9	273	20	37.8	2.5	12610	550
LP100120-1s-66	SP1	0.5	0.13	12	1.3	3.99	0.36	49.6	3.6	20	1.2	92.9	4.6	25.1	1.6	292	13	43.7	2.6	12240	400
LP100120-1s-74	SP1	0.86	0.19	45.3	2.7	12.94	0.78	162.9	7.4	56	3.2	254	12	59.1	2.6	580	27	82.5	4.1	12300	440
LP100120-1s-46	SP1	1.57	0.27	80.4	6.1	23.3	1.4	303	14	102	5.6	409	25	92.4	4.9	904	48	118.2	8.3	10760	400
LP100120-1s-77	SP1	1.04	0.23	25	2.5	8.46	0.76	113.3	6.3	44.7	2.7	209	11	56.5	2.9	609	32	91.7	5.5	11490	460
LP100120-1L-73	SP1	0.9	0.17	32.5	2.6	9.8	0.55	125.6	5.5	43.9	1.8	190.6	8.7	45.9	2.5	481	25	63.9	3.6	9140	490
LP100120-1L-13	SP1	0.72	0.13	25.9	2.7	7.99	0.58	95	5.7	34.2	1.4	156	7.1	38.7	1.9	365	20	52.9	2.3	9700	450
LP100120-1L-69	SP1	0.45	0.12	8.9	1.4	3.24	0.32	38.3	2.9	13.55	0.72	69.4	4.3	18.4	1.2	219.4	9.4	31.1	2.3	12310	520
LP100120-1s-13	SP1	0.53	0.11	15.5	2.5	5.56	0.7	81.7	7.9	32.3	1.9	151.1	9.4	46.7	2.7	518	32	71.1	4.4	12110	530
LP100120-1L-45	SP1	0.85	0.23	15	2.3	6.26	0.35	93.9	6.2	38.9	1.7	212	11	63.5	2.8	828	33	135.3	3.9	12230	540
LP100120-1s-5	SP1	0.79	0.18	177	12	54.3	3.8	634	36	211	12	799	32	182.8	9.4	1743	95	217	13	10690	570
LP100120-1L-3	SP1	0.42	0.12	26.8	2.4	8.93	0.66	120.5	6.5	42	2.5	194	12	44.5	2.2	440	17	65.3	4	11030	540
LP100120-1L-56	SP1	0.79	0.21	23.8	3.3	7.39	0.73	93	10	28.9	2.9	124	10	28.8	2.1	300	27	39.9	3.2	9390	490
LP100120-1L-66	SP1	1.23	0.23	37.7	2.8	11.63	0.71	154.3	8.5	55.3	2.8	233	14	55.8	2.7	619	31	77.9	3.6	12520	670
LP100120-1L-21	SP1	0.281	0.082	16.4	1.5	5.97	0.37	81.7	5.1	29.8	1.3	140.5	6	36.4	1.6	374	17	52.6	2.9	12750	550
LP100120-1L-38	SP1	0.69	0.21	37.2	5.1	12.6	1.6	161	15	57.2	4.9	266	24	62.6	5.5	661	64	93.3	9.8	13270	600
LP100120-1s-14	SP1	0.503	0.099	17.6	1.4	6.37	0.5	89.2	5.9	31.6	1.2	148.2	7.3	37.9	1.6	403	21	51.7	2.7	10890	470
LP100120-1L-64	SP1	0.36	0.15	16.6	2	6.47	0.35	81.7	4.6	29	1.6	136.1	6.4	32.6	1.5	349	18	43.7	2.4	11520	560
LP100120-1L-34	SP1	0.38	0.12	22.4	3	7.59	0.42	102.4	6.2	38.6	1.8	177.4	9.7	41.1	2.5	419	19	56	2.4	12980	640
LP100120-1s-28	SP1	0.78	0.13	33.1	2.2	12.96	0.78	160.4	8.9	59.2	2.4	253.4	9.5	62.9	3.7	681	38	84.5	3.6	12140	450
LP100120-1L-89	SP1	2.22	0.48	46.5	5.2	17.3	1.7	214	19	70.5	6	352	32	83.8	7	917	73	121	11	11600	480
LP100120-1s-23	SP1	0.92	0.17	31.9	3.6	11.16	0.76	141.3	6.5	52.2	2.2	225.2	8.8	55	2.7	576	23	71.3	2.5	11860	510
LP100120-1L-59	SP1	0.53	0.16	20.5	1.7	7.55	0.58	111.7	6.9	39.4	2	188	10	43.3	2.6	494	21	62.6	3.1	12310	600
LP100120-1s-54	SP1	1.45	0.23	51.1	2.7	14.91	0.88	202.4	9.6	69	2.9	311	14	76.4	2.7	790	44	96	4	10650	410
LP100120-1L-18	SP1	2.74	0.42	51	3	18.7	1.3	247	10	97.5	3.5	454	21	118.7	5.5	1249	62	183.4	9.1	11390	480
LP100120-1s-27	SP1	1.2	0.26	39.1	9.5	14.6	3.4	214	48	87	19	428	84	126	22	1380	200	191	27	13020	510
LP100120-1s-106	SP1	1.95	0.33	44.4	5.4	14.5	1.4	193	18	71.2	6	345	28	89.5	7.8	949	71	140	13	12040	400
LP100120-1L-29	SP1	4	0.35	42.3	3.2	12.75	0.64	168.8	9.2	56.3	2.1	255.6	8.6	64.4	2.3	707	30	101.6	5.4	9030	340
LP100120-1s-55	SP1	0.56	0.12	8.2	1.5	2.87	0.32	46.9	2.6	19.2	1.1	95.5	5.3	28.8	1.7	326	16	53.3	2.4	9700	310
LP100120-1s-45	SP1	0.9	0.15	44.2	4.4	14.69	0.97	211	13	77.2	3.8	336	19	91.7	4.9	982	57	135.7	5	11090	470
LP100120-1s-51	SP1	0.44	0.11	9.1	1.3	3.12	0.3	44.4	4.1	18.81	0.81	97.9	5.2	29.9	2.1	378	25	56.7	3.4	11200	550
LP100120-1s-15	SP1	1.52	0.28	48.5	5.1	14.7	1.2	187	16	73.2	5.9	335	26	93.4	7.4	1021	87	142	9	11130	440
LP100120-1s-33	SP1	1.43	0.31	21	2.5	7.52	0.57	100.8	7.1	40.9	2	202	11	59.3	3.2	698	51	105.5	4.1	10630	550
LP100120-1s-58	SP1	0.63	0.2	10.4	1.7	3.8	0.33	52.1	3.3	22.03	0.99	111.1	7.1	34.2	2	419	25	67	3.1	12010	570
LP100120-1s-67	SP1	1.09	0.22	23.8	2.5	7.52	0.91	93.1	9.3	33.5	2.4	155.1	9.4	40.6	3.3	404	29	60.7	4.6	10940	470
LP100120-1L-77	SP1	6.64	0.77	87	6.5	28.2	2.6	359	34	122.6	9.4	568	41	141	11	1422	97	202	13	10610	400
LP100120-1L-84	SP1	0.33	0.11	18.4	1.7	6.93	0.57	102.2	5.3	37.2	1.9	187.9	8.9	49.1	2.8	560	34	74.1	3.2	11950	420
LP100120-1s-92	SP1	2.59	0.32	42.9	2.8	13.46	0.67	165	10	58.3	2.2	251.2	9.4	61.5	2.5	607	42	83.1	5.7	10220	420
LP100120-1s-21	SP1	1.98	0.28	48.8	3.6	16.7	1	223.4	9.9	87.2	3.9	388	18	98.2	3	1075	49	142.4	5.5	8710	320
LP100120-1s-90	SP1	1.25	0.23	24.4	3	7.71	0.63	113	9.5	43.1	2.3	217	14	58.5	5.2	589	45	93.6	4.7	10570	410
LP100120-1s-75	SP1	7.14	0.71	105.7	6	30.3	2.4	364	25	128.8	9.1	567	36	142.4	8.7	1371	89	196	13	8590	250
LP100120-1s-69	SP1	0.5	0.12	16.6	2.3	6.23	0.5	96.1	6.6	38.2	2.2	196	11	55.3	3.3	591	27	88.9	4.5	11360	430
LP100120-1L-19	SP1	1.11	0.17	27	2.8	9.22	0.81	117.6	7.2	48.1	2.6	240	15	65	3.7	727	41	113.1	5.6	11470	500
LP100120-1s-24	SP1	0.59	0.14	11.6	1.7	3.94	0.44	47.7	4.2	17.9	1.3	82.3	4.9	23.6	1.3	283	20	37.1	2.2	11780	520
LP100120-1s-104	SP1	0.67	0.21	11.8	2.2	3.77	0.64	55.2	7.2	22.8	2.8	111	12	32.8	3	381	42	57.1	4.1	11770	680
LP100120-1s-108	SP1	1.73	0.28	34.4	3.4	11.9	1	148	9.2	58.5	3.1	264	13	70.7	4.9	755	48	120.1	7.1	10500	580
LP100120-1L-63	SP1	2.62	0.31	34.9	2.5	11.6	1.1	152.2	8	58.8	3.7	279	13	73.5	4.5	890	62	118.8	6.6	10790	330
LP100120-1L-5	SP1	0.83	0.16	24.2	2.1	8.95	0.81	128.2	5.8	52.6	2.7	274	12	78.5	2.6	893	43	133.1	7.4	10660	320
LP100120-1L-71	SP1	0.96	0.19	12.3	1.7	5.03	0.37	67	5	26.3	1.5	139.7	6.3	37.5	1.7	479	27	72	3.5	12160	500
LP100120-1L-36	SP1	1.07	0.23	18.7	2	6.19	0.55	81.3	6.4	33	2	153.9	8.6	39.7	1.8	477	30	73	3.1	11260	390
LP100120-1s-84	SP1	0.71	0.16	13.3	2.5	4.85	0.77	66.1	9.5	24.9	3.4	113	12	33.3	3.5	370	44	56.1	4.4	10680	470
LP100120-1L-12	SP1	2.26	0.35	42.8	4.4	13.7	1.3	186	16	63.3	6.6	277	27	61.3	5.6	646	50	87.4	9.7	10310	390
LP100120-1s-22	SP1	1.14	0.21	19.1	2.1	5.73	0.63	82.4	5	34.9	2.5	165.9	8.9	50.5	3.1	608	41	84.9	4	9040	440
LP100120-1s-32	SP1	0.72	0.17	25.9	1.8	9.3	0.59	135.2	6.4	53.9	2.5	266	11	70.7	4	828	41	116.6	5.7	11300	440
LP100120-1s-34	SP1	0.81	0.16	11.1	1.5	4.63	0.5	61.3	4.5	25.6	1.3	136.8	7.8	39	2	455	20	65.3	1.6	10560	360
LP100120-1s-42	SP1	0.9	0.19	14.4	1.5	5.1	0.41	80.9	4.4	31.1	1.9	152.1	6.6	43	2.1	532	28	84.5	4.3	10460	370
LP100120-1s-41	SP1	4.21	0.43	60.9	8.4	19	2.6	225	29	83	10	370	43	93	11	1050	100	138	15	8450	370
LP100120-1s-7	SP1	2.03	0.35	37.6	3.7	12.17	0.79	168	10	62.3	3.8	283	12	80.7	4.4	898	52	120.6	7.1	9150	350
LP100120-1s-30	SP1	1.42	0.21	36.4	3	12.49	0.8	153.7	8.3	54.3	3.3	234.7	8.6	66.9	4.4	731	36	97.5	4.2	9930	370
LP100120-1s-20	SP1	3.3	0.38	95.9	6.4	31.2	1.9	380	17	128.7	6.1	554	35	132	10	1273	63	160	7.2	9860	550
LP100120-1s-86	SP1	6.12	0.35	100.8	5.8	27.7	1.6	316	14	98.9	3.7	391	16	95.9	4.3	959	57	125.4	5.3	9850	440
LP100120-1L-15	SP1	0.8	0.17	14.6	1.8	5.35	0.34	80.6	5.5	33.1	1.7	175.8	8.2	51	3.1	640	39	101.6	4.4	10670	500
LP100120-1s-1	SP1	5.03	0.43	90.6	5.5	30.3	2.2	355	23	124	7.3	498	31	129.6	7.2	1468	90	178	10	8960	410
LP100120-1L-51	SP1	1.59	0.22	26.6	2	9.84	0.65	136.5	5.4	54.5	2.2	276	11	76.5	3.6	857	41	129.1	5.2	9490	430
LP100120-1L-43	SP1	0.64	0.15	21.5	2.1	6.74	0.53	98.1	5.7	36.1	1.8	180.3	7.2	46.3	2.5	509	24	77.2	3.6	11520	560
LP100120-1L-23	SP1	0.5	0.13	14.3	1.7	6.04	0.53	80.3	4.1	31.8	1.3	159.3	8.5	44.7	2.1	504	25	75.7	3.8	10820	360
LP100120-1L-74	SP1	0.75	0.18	12.1	1.4	4.9	0.43	70.4	5.1	28.8	1.8	161.3	8.9	43.8	1.9	592	28	94.1	5.3	12140	520
LP100120-1L-85	SP1	1.41	0.26	36.6	2.8	13.53	0.86	198.2	8.3	74	3.5	339	13	80.4	4	921	38	119.6	6.2	9670	430
LP100120-1L-1	SP1	1.57	0.27	32.5	3.1	10.41	0.81	143	11	50.8	3.4	234	13	57.9	3.2	579	36	83.1	5.4	10750	440
LP100120-1s-61	SP1	1.08	0.29	20.5	3.2	6.31	0.93	89	13	35.1	4.5	164	21	43.4	5.3	489	63	74.9	7.8	10440	540
LP100120-1L-76	SP1	0.9	0.17	18.6	1.7	6.64	0.38	90.4	4	32.9	1.3	166.8	7.8	45.2	2.3	517	30	78	3.4	11750	620
LP100120-1L-35	SP1	0.6	0.15	14.8	1.7	5.93	0.41	82	4.9	36.1	1.9	187.9	9.7	56.5	2.3	635	28	101.5	5	11030	590
LP100120-1s-31	SP1	1.81	0.3	33.6	3.5	10.5	1.1	129	11	44.9	4.1	202	19	52.9	4.9	580	44	74.5	5.8	9880	450
LP100120-1L-31	SP1	2.31	0.38	42.6	6	13.7	1.9	176	22	65.4	8.3	312	35	78	8.5	894	88	127	14	11510	470
LP100120-1s-87	SP1	1.16	0.25	27.5	3.6	8.57	0.87	119	10	42.9	3.7	204	15	53.6	3.5	576	37	84.6	5.7	10590	490
LP100120-1L-20	SP1	0.71	0.18	11.6	1.3	4.46	0.35	64.7	3.7	26	1.7	136.8	7.8	41.4	2.2	498	20	87.4	4.4	12240	480
LP100120-1s-83	SP1	7.46	0.73	186	20	55.3	5.2	693	61	233	20	986	97	214	19	2000	170	279	25	9700	430
LP100120-1L-48	SP1	0.96	0.32	13.7	2.1	4.46	0.48	61.4	3.4	23.5	1.5	117.2	4.8	33.5	2.1	421	24	63.6	3.7	10560	430
LP100120-1s-42	SP1	0.99	0.16	14.5	2.1	4.7	0.57	64.2	6.9	24.7	2.3	115	12	32.6	2.2	394	27	58.2	5.5	9400	440
LP100120-1s-57	SP1	1.25	0.29	27.6	4.8	9	1.4	116	16	41.6	5.7	188	26	48.7	6.1	535	68	73.7	9	11160	410
LP100120-1s-85	SP1	1.38	0.46	17.2	3.6	5.11	0.56	64.5	8.7	25.4	3	125	16	34.3	3.4	375	38	61.6	6.5	10830	330
LP100120-1s-105	SP1	3.01	0.46	60	6.6	18.6	2	238	28	87	10	370	43	90	10	868	95	128	15	10060	420
LP100120-1s-102	SP1	3.05	0.87	84	22	24.8	6.8	304	78	106	25	470	110	117	26	1090	230	159	33	9780	310
LP100120-1s-9	SP1	2.85	0.39	47.3	3.3	14.7	1.1	175.3	8.6	65.9	3.4	269	11	67.2	3.4	715	60	94.1	3.8	9790	540
LP100120-1L-87	SP1	1.45	0.23	194	12	63.7	3.2	687	38	214	12	846	42	179	10	1692	86	198.2	9.7	10380	390
LP100120-1s-11	SP1	6.6	0.48	105.4	6.7	32.3	1.4	400	23	136	6.9	558	29	130.4	5.6	1232	59	153.7	6.1	12280	320
LP100120-1L-60	SP1	1.15	0.25	15.9	1.8	5.56	0.46	62.5	3.8	22.3	1.3	102.5	4.6	28.3	1.4	329	17	44.8	2.3	10610	540
LP100120-1s-95	SP1	1.74	0.29	29.9	3.2	8.51	0.59	108.2	9.5	33.8	2.4	143.2	8.3	38	2.6	362	36	50.6	2.2	11790	570
LP100120-1s-29	SP1	1.42	0.23	20.8	2.3	7.27	0.48	88	6.3	32.7	1.9	150.2	9.5	38.2	2.4	424	22	54.4	1.8	9220	420
LP100120-1s-35	SP1	2.23	0.36	36.6	2.3	12.43	0.9	157.9	8.7	58.9	3	264	12	65.3	2.8	716	39	84.6	3.4	9480	430

LP100120-1L-28	SP1	0.45	0.14	26.5	3.3	7.16	0.55	73.4	4.1	19.3	1.5	63.9	2.9	12.7	1.4	106.2	3.9	12.35	0.66	12990	520
LP100120-1L-88	SP1	2.24	0.3	72.1	3.8	19.2	1.2	209	11	64.6	4.1	265	12	56	2.7	545	25	64.7	2.4	11720	370
LP100120-1s-52	SP1	0.47	0.098	25.6	3.2	8.16	0.74	111.3	9.5	36.7	3.8	157	11	41.1	2.5	421	23	53.2	3.1	11960	560
LP100120-1L-82	SP1	0.64	0.15	17.9	2.8	6.76	0.65	93.9	4.4	37	2.4	183	12	47.4	3	564	25	75.2	4.9	9790	360
LP100120-1L-53	SP1	1.69	0.32	54.9	8.1	16.2	1.7	193	19	59.2	4.3	251	20	57.6	3.7	581	28	72.6	4.1	12310	390
LP100120-1L-4	SP1	1.83	0.26	30.3	2.4	9.8	0.72	122.7	5.4	40.8	1.6	172.4	9.3	38.6	2	348	17	46	1.6	7900	300
LP100120-1s-89	SP1	5.18	0.83	91	13	23.7	3.1	262	33	82.5	9.6	299	35	71	11	618	78	72.5	6.2	10200	520
LP100120-1s-73	SP1	2.4	0.3	59	4	17.4	1.1	194	11	63.1	3.5	244.2	9.4	56.2	2.2	523	21	69.1	2.1	10640	350
LP100120-1L-80	SP1	0.111	0.068	28	2.3	11.57	0.56	154.9	7.9	52.7	2.2	255	12	57.9	2.5	625	33	78.6	3.5	14950	530
LP100120-1L-24	SP1	2.3	0.29	56.1	3.8	16.2	1.1	224.5	9.7	81.6	4.6	350	15	85.8	5.1	871	47	115.7	5.7	9650	290
LP100120-1s-101	SP1	0.62	0.19	30.9	5.5	11.9	2	162	23	59.5	7.5	257	31	58.4	7.3	580	59	74.9	9.6	12560	610
LP100120-1s-99	SP1	8.6	3.8	47	16	12.1	3	139	24	46.9	6	198	15	54.8	4.9	557	64	82.7	6.7	13300	460
LP100120-1L-30	SP1	0.95	0.24	25.4	2	8.14	0.54	100.3	4.9	33.9	1.6	142	7.2	34.4	1.6	341	17	42.9	2	9790	320
LP100120-1s-110	SP1	0.37	0.12	30.9	2.9	10.17	0.61	118.4	6.1	43.1	1.9	186.3	8.6	44.1	2.4	414	18	57.8	2.5	11220	500
LP100120-1s-16	SP1	0.131	0.069	20.9	2	7.78	0.59	99.4	5.3	38.8	2.2	167.5	6.6	42.8	1.9	461	27	54.6	2	13330	600
LP100120-1s-2	SP1	1.36	0.18	29.2	2.1	9.36	0.68	126.6	7.8	48.3	3.6	207.6	9.7	56.9	3.2	624	37	80.8	3.5	10690	560
LP100120-1L-25	SP1	0.31	0.11	25.9	2.5	7.58	0.6	102.6	5.2	34.8	1.6	168.9	7.1	38.3	1.5	397	15	52.9	2	13130	450
LP100120-1L-55	SP1	0.42	0.13	13.1	1.5	4.5	0.31	64	4.8	24.3	1.4	111.6	5.7	29.8	1.7	325	13	42.8	2.5	12270	550
LP100120-1L-86	SP1	0.33	0.1	10.9	1.4	3.35	0.32	43.6	2.7	15.59	0.85	72.2	3.6	18	1.1	193	11	27.4	1.5	13400	580
LP100120-1L-70	SP1	1.32	0.23	62.6	3.4	18.9	1	203	11	59.6	2.9	265	11	58.6	3.2	595	20	75.2	4.2	12810	460
LP100120-1s-6	SP1	1.71	0.26	47.8	3.8	15.04	0.87	191.1	8.1	71.5	3	299	13	76.5	3.2	774	30	101.5	5.7	11040	590
LP100120-1L-26	SP1	1.43	0.25	33.6	3	11.23	0.91	141.6	9	51.3	2.9	236	17	58.2	2.8	614	39	82.4	4.8	9570	390
LP100120-1L-16	SP1	2.2	0.32	33.7	2.7	9.84	0.51	120.2	7.1	42.1	1.6	180	8.2	44.5	2.2	442	21	62.3	3.8	11070	420
LP100120-1s-64	SP1	1.27	0.3	18.8	1.6	6.5	0.45	82.7	4.5	32.6	1.9	160.1	9.3	43.8	2.7	491	30	71.5	2.9	12730	520
LP100120-1s-98	SP1	1.39	0.24	32	2.1	10.12	0.79	135	6.8	48.8	2.4	212	12	50.4	2.4	490	21	64.3	3.3	10440	450
LP100120-1s-25	SP1	0.84	0.15	26.1	2.9	9.52	0.51	133.2	6	52.9	2.4	237	12	62.2	3	691	25	87.7	3.9	12290	430
LP100120-1s-63	SP1	1.74	0.24	53.2	2.6	18.6	1.2	267	15	100.5	3.2	434	22	109.6	5.5	1080	52	142.4	6.2	8600	420
LP100120-1s-88	SP1	0.36	0.14	8.1	1.4	2.81	0.29	40	2.1	15.72	0.98	81.3	5	23.19	0.99	261	18	42.8	1.6	12010	350
LP100120-1s-94	SP1	0.64	0.12	51.4	3.7	17	1.1	219	10	82.6	4.3	342	14	79.7	3.8	787	41	95.4	4.5	11350	510
LP100120-1s-18	SP1	2.1	0.27	38.6	3.9	11.89	0.89	141.6	7.4	48.7	2.2	195.8	8.4	47	1.6	494	35	60.3	2.2	9560	430
LP100120-1L-8	SP1	2.54	0.55	21.9	2.4	6.98	0.49	75.9	3.2	23.5	1.1	102	4.7	23.1	1.3	247.3	8.1	36	2	9940	480
LP100120-1L-9	SP1	4.11	0.66	69.6	8.9	19.5	2.1	223	23	71	7.5	296	30	64.5	6.7	607	48	84.9	7.1	10040	380
LP100120-1L-68	SP1	0.6	0.18	60.2	4.4	17.2	1	208.2	9.1	63.3	3	261	13	57	2.6	596	34	78.3	4	9520	360
LP100120-1s-38	SP1	0.48	0.14	25.6	2.5	8.58	0.62	120.6	9.8	43.5	2.9	194	13	45	3	492	25	62.1	2.8	11590	470
LP100120-1L-67	SP1	0.233	0.087	38.1	3.3	12.88	0.94	174.9	9.2	56.7	2.2	252	11	59.6	1.8	601	26	74.7	3.1	12400	500
LP100120-1s-53	SP1	4.36	0.43	64.9	4.5	17.6	1	213	10	73.9	3.2	325	12	80.7	3.7	792	35	100.9	4.3	9490	350
LP100120-1s-68	SP1	0.144	0.059	20.4	1.5	6.38	0.47	85.4	6.1	31.4	1.7	144.8	8.5	36.2	2	344	19	48	2.5	11390	420
LP100120-1s-71	SP1	1.86	0.28	36.8	3.7	12.4	1	149	12	57.7	4.4	248	18	62.9	4.6	620	49	85.9	4.4	11560	580
LP100120-1s-109	SP1	0.059	0.05	10.9	1.3	5.21	0.48	75.9	4.5	32.5	1.8	160.9	9.4	44.8	2.2	497	26	72.5	3.3	15790	740
LP100120-1L-61	SP1	0.34	0.1	12.5	1.8	4.91	0.69	72.7	7.1	27.9	2	138	11	37.5	2.7	428	28	60.2	3.5	11920	560
LP100120-1s-107	SP1	0.45	0.19	42	11	14.8	3.2	184	42	68	16	293	59	67	13	620	110	90	15	11470	540
LP100120-1L-78	SP1	0.39	0.13	15.5	1.5	5.8	0.47	80.1	3.9	28.6	1.5	138.6	6.5	31.9	1.5	345	12	44.6	2.3	12190	510
LP100120-1s-96	SP1	3.97	0.56	103	11	32	3.4	374	41	134	13	558	51	135	11	1207	99	164	14	9290	390
LP100120-1L-37	SP1	1.92	0.4	22.9	2.4	7.7	0.68	97.3	8	36	2.4	165	11	39.1	2.6	426	25	66.2	3.6	9190	380
LP100120-1L-7	SP1	0.61	0.12	13.3	1.8	5.62	0.5	73.6	4.4	29.7	1.8	138.8	6.1	36.3	1.8	406	13	61.2	2.7	14080	590
LP100120-1s-60	SP1	5.91	0.44	75.3	4.2	22.1	1.4	278	12	91	4.7	382	18	87.8	4.4	870	56	111.5	5.1	9580	430
LP100120-1s-82	SP1	5.16	0.4	76.6	5.3	23	1.4	302	14	102.3	5.4	454	18	107.6	6.6	1058	43	138.8	7.9	8640	300
LP100120-1s-50	SP1	0.245	0.075	19	1.7	6.13	0.56	81.2	4.8	29.1	1.5	129.3	7	33.4	2.5	328	24	43.5	2.8	13040	490
LP100120-1s-8	SP1	0.79	0.2	28	3.8	11.1	1.1	151.4	9.1	60.6	4.3	289	17	79.2	4.3	845	36	111.7	6.2	12170	410
LP100120-1s-17	SP1	0.77	0.16	47.9	3.1	17.56	0.9	262	11	102.7	3.7	460	18	120.8	5.8	1299	48	163.6	6.6	11150	420
LP100120-1s-39	SP1	0.2	0.1	1.41	0.54	0.56	0.2	7.6	1	3.77	0.48	21.6	2.1	7.33	0.7	99	6.7	19.5	1.1	10870	470
LP100120-1L-65	SP1	0.334	0.089	34	2	14.85	0.76	214	12	84.7	5.2	421	25	106.1	5.1	1187	73	152.2	8.5	13850	430
LP100120-1L-14	SP1	0.44	0.14	29	4.2	9.4	1.3	124	17	44.7	6.8	196	28	48.8	8.7	461	81	60	9.2	12450	490
LP100120-1L-41	SP1	0.94	0.17	20.5	1.7	7.24	0.65	94.5	6	34.1	1.6	159.4	7.7	40.1	1.9	436	22	60.3	3.1	11090	400
LP100120-1s-100	SP1	5.41	0.57	42.1	3.7	11.67	0.93	130.9	7	47.2	3	179.2	8.2	46	1.9	432	26	61.8	2.3	9270	360
LP100120-1s-43	SP1	1.89	0.22	55.4	4.9	18.5	1.5	222	17	77.8	5.1	337	26	80.6	5.3	843	52	104.4	9.4	12150	380
LP100120-1L-75	SP1	0.48	0.14	30.7	2.4	9.95	0.85	116.2	6.5	37	1.8	159	8.5	34.2	1.5	346	15	40.7	1.9	12780	540
LP100120-1s-3	SP1	0.98	0.23	21.2	2	5.66	0.4	65	3.6	21.6	1.4	91.4	4.6	22.7	1.7	216	13	28.1	1.9	9450	410
LP100120-1L-81	SP1	1.3	0.23	26.4	2.2	7.44	0.57	95	4.9	35.1	1.9	160.4	5.9	41.2	1.5	469	22	62.8	2.9	10370	430
LP100120-1s-65	SP1	0.79	0.14	7.5	1	2.22	0.31	28.5	2.2	11.2	0.86	53	2.9	15.6	1.2	187.8	9.9	30.5	1.6	13570	640
LP100120-1s-4	SP1	2.38	0.42	44	3.3	13.83	0.9	147.6	6.9	49	1.8	201.9	7.8	50.7	2.6	514	23	61.5	2	8690	440
LP100120-1s-78	SP1	1.27	0.36	35.2	6.6	9.7	1.4	130	18	44.6	5.7	202	23	46.3	4.5	431	28	59.8	4.7	12110	390
LP100120-1s-48	SP1	4.16	0.43	53.8	3.4	17.1	1.2	200	11	69.2	3.5	291	14	71.7	4.5	758	48	101.4	4.2	9850	390
LP100120-1L-72	SP1	0.54	0.12	14.7	1.1	3.94	0.43	42.5	2.9	13.56	0.9	65.8	4.5	15.32	0.97	154.6	6.8	21.4	1.2	10870	530
LP100120-1s-79	SP1	3.13	0.29	27.6	2.6	7.22	0.58	88.3	5.2	29.9	1.6	136.4	6.9	36.2	1.8	385	20	58.3	2.5	9880	370
LP100120-1L-17	SP1	4.2	0.59	32.4	3.8	7.01	0.69	68.6	5.2	19.9	1.3	77.4	3.5	19.1	1.3	178	12	27.4	1.5	11380	450
LP100120-1s-72	SP1	0.99	0.2	8.8	1.4	2.73	0.34	35.5	3.2	12.4	1	56	4.4	16.4	1.2	168	11	26.6	1.7	10450	450
LP100120-1s-93	SP1	0.86	0.19	29.4	3	9.03	0.81	109.3	5.4	41.3	2.3	188.5	6.6	47	3.2	480	33	66.4	3.9	11670	530
LP100120-1L-27	SP1	2.5	0.32	26.1	2.3	5.72	0.37	56.5	3.7	16.28	0.9	64.1	2.9	15.5	0.78	153.9	9.1	21	1	8980	450
LP100120-1s-103	SP1	0.55	0.15	20	1.9	6.9	0.49	89.4	5	33.6	1.4	158.8	7.3	40.2	1.9	395	16	56.4	3.6	10710	380
Rejected Grains																					
LP100120-1L-11	SP1	0.5	0.17	24.2	3.1	8.48	0.71	118.6	7.2	45.6	2.3	235.4	9.9	61.3	3	642	29	90.9	5.1	13810	590
LP100120-1s-47	SP1	1.76	0.22	22.6	2.7	6.45	0.41	91	6.9	33.4	2.4	163.1	9.3	43.8	2.6	489	32	75.9	4.7	10560	350
LP100120-1s-62	SP1	1.22	0.21	13.5	1.7	4.36	0.44	55.8	4.2	22.1	1.4	109.6	5.1	32.3	2.4	397	26	60.8	2.9	10520	510
LP100120-1L-58	SP1	1.31	0.23	17.1	1.7	5.41	0.4	72.4	4.6	27.6	1.8	131.4	7	35.4	2	429	22	64	2.9	11380	490
LP100120-1s-97	SP1	1.83	0.3	16	2.1	6.2	0.59	80.9	4.8	29.5	2.2	150.2	9.6	39.3	2.1	446	29	71.1	3.8	10910	450
LP100120-1s-80	SP1	1.13	0.25	12.1	1.6	3.81	0.35	51.8	3.7	18.2	1.1	83	6	21.4	1	241	14	38.1	2.1	10170	510
LP100120-1L-52	SP1	1.16	0.21	16.7	1.8	5.59	0.45	76.1	4.4	29.3	1.6	147.9	7.5	39.7	2.1	479	23	71.2	3.3	11430	500
LP100120-1L-50	SP1	1.41	0.2	20.4	2	7.31	0.74	97.5	6.5	36.1	2.4	181	12	50.1	2.9	582	34	86.5	4.7	12310	400
LP100120-1s-36	SP1	2.7	1.6	23.4	5.5	5.31	0.52	59.6	5.3	19.7	1.3	90.1	7.3	23	1.8	265	27	35.4	2	11590	420
LP100120-1L-46	SP1	1.77	0.27	80.2	5.1	23.7	1	269	12	93	4.7	387	11	85.6	2.9	858	43	112.3	4.8	10970	400
LP100120-1s-76	SP1	0.288	0.098	12.6	1.8	4.27	0.36	58	3.6	22	1.1	104.5	5.6	24.7	1	255	12	36.1	1.8	10900	330
LP100120-1L-22	SP1	142.8	6.9	692	36	115.3	5.7	773	33	143.6	7.6	424	22	65.3	3.2	411	22	55.7	2.5	24.2	1.6
LP100120-1L-62	SP1	60.5	3.1	118.9	6.2	20.6	1.1	146.5	8.1	29.6	1.7	90.5	5.5	14.79	0.76	120	4.6	16.5	1.3	15.3	1.1
LP100120-1L-44	SP1	53.2	5.4	122	15	18.6	2.5	123	16	24.5	3.3	73.9	8.5	11.8	1.3	94	12	12	1	6.17	0.77
LP100120-1L-39	SP1	89.9	4.8	309	17	51.5	4.3	362	20	70.5	3.8	210	11	32.4	2.1	221	13	31.1	1.4	22.4	1.8
LP100120-1L-47	SP1	56.6	6.5	121	16	20.1	2.6	142	20	29.2	3.9	89	11	14.9	1.5	113	11	17.2	1.6	15.2	1.5
LP100120-1L-2	SP1	0.45	0.11	12.3	1.7	4.51	0.51	55.5	5.4	21.8	1.2	111.3	8.4	29.6	2.3	325	31	52.6	4.1	9800	370
LP100120-1L-6	SP1	2.11	0.41	24.8	2.4	7.9	0.64	107.7	5.4	37.5	1.7	166.5	9.1	38.3	1.6	377	17	48.3	2.3	11280	370
LP100120-1L-49	SP1	0.75	0.16	17.3	1.6	5.14	0.46	64.6	3.2	21	1.1	90	4.9	20.3	1	222	11	28.8	1.5	11930	450
LP100120-1s-81	SP1	2.71	0.36	34.3	4.1	11.8	0.91	159	10	56.8	2.8	253	11	64.6	3.1	657	38	86.2	3.4	10850	530
LP100120-1s-26	SP1	7.24	0.87	57.1	3.5	18.3	1.4	237	15	78.3	7.1	342	25	83.6	5.9	821	65	93.2	4.1	12620	530
LP100120-1s-19	SP1	2.14	0.44	14.5	1.8	4.13	0.36	47.9	2.2	16.82	0.98	74	3	18.3	1.1	210	11	28.3	1.4	10590	450
LP100120-1s-10	SP1	0.53	0.11	12.5	1.5	3.39	0.34	50.3	3.2	19	1.3	83.5	5.6	22.6	1.1	251	15	35	1.3	11210	430

Sample 110120-1

Grain	Unit	Eu (ppm)	error	Gd (ppm)	error	Tb (ppm)	error	Dy (ppm)	error	Ho (ppm)	error	Er (ppm)	error	Tm (ppm)	error	Yb (ppm)	error	Lu (ppm)	error	Hf (ppm)	error
LP110120-1L-4	SP2	1.59	0.25	19.6	1.7	6.01	0.43	71	4	25	1.2	120.5	3.2	29.3	1.3	344	12	46.9	1.9	12140	230
LP110120-1L-11	SP2	0.61	0.14	25.5	2	9.07	0.52	108	3.9	39.6	1.9	191.5	5.6	50.2	1.8	561	15	76.7	2.6	13160	350
LP110120-1L-55	SP2	0.166	0.071	5.2	0.92	1.57	0.14	23.7	1.3	9.95	0.55	55.5	2.7	15.81	0.82	192.5	4.9	31	1.2	14490	500
LP110120-1s-10	SP2	0.79	0.17	31.8	3.3	10.38	0.68	135.6	9.9	44.3	2.5	201.3	8.5	46.3	1.9	485	24	63.7	3.2	9600	280
LP110120-1L-122	SP2	0.276	0.091	11.7	1.5	3.89	0.29	53.7	2.2	19.91	0.67	93.1	4	22.6	1.1	253.5	9.8	35.9	1.5	10330	420
LP110120-1L-100	SP2	0.43	0.12	18.9	3	6.4	1	79	13	26.6	4	117	14	29.1	3.3	281	36	39.4	3.9	10930	290
LP110120-1s-46	SP2	2.31	0.25	32.8	3.6	10.4	1.1	114.5	8.6	44.7	3.6	208	18	54.3	3.4	648	40	95.8	8.2	9730	350
LP110120-1L-73	SP2	0.65	0.14	15.2	1.5	5.09	0.45	67.1	3.4	23.6	1.2	111.3	6.3	28.6	1.6	309	13	47	1.7	12380	250
LP110120-1L-36	SP2	1.2	0.28	53.3	7.1	15.1	1.4	181	19	58.4	5	246	15	58.2	4	547	32	74.4	4.7	10680	330
LP110120-1L-21	SP2	0.95	0.1	29.5	2.2	9.05	0.58	108.6	6.4	37	1.8	187.2	6.5	44.8	2.5	487	17	66.2	2.3	11390	310

LP110120-1s-27	SP2	0.95	0.14	40.1	3	15.4	0.92	206	14	79.7	3.4	374	14	92	3.2	1021	35	136.2	7.3	12820	470
LP110120-1L-64	SP2	0.173	0.065	14.2	1.7	4.78	0.37	73.2	3.5	29.1	1.4	139.1	6.4	35.8	1.5	405	12	54.6	2	15290	360
LP110120-1s-13	SP2	1.01	0.17	92.5	7.3	31.3	2.6	411	24	146.3	8.3	669	41	155.7	7.8	1509	86	192.4	8.3	12080	330
LP110120-1L-44	SP2	0.48	0.16	43.5	2.7	13.41	0.76	179	6.1	65.6	2.1	307	11	69.2	2.9	672	24	85.5	2.8	14620	450
LP110120-1s-57	SP2	0.47	0.12	42.3	3.1	13.78	0.75	166.4	7.4	63.9	2.8	283	10	66	2	677	29	87.6	2.7	14350	400
LP110120-1L-61	SP2	0.097	0.053	9.2	1	3.38	0.31	45.2	2.7	18.19	0.84	92.3	3.3	23.04	0.81	258	11	34.5	1.3	15380	560
LP110120-1s-18	SP2	1.45	0.2	23.8	1.7	8.39	0.71	109.3	5.6	41.5	2.9	199	13	51.8	2.2	596	26	79.8	4.1	12000	400
LP110120-1s-40	SP2	4.66	0.55	131.1	6	39.9	1.9	450	16	162.5	6.6	717	20	161.9	6.2	1517	58	194.5	7.2	10830	350
LP110120-1L-93	SP2	1.98	0.27	28.4	3.5	8.81	0.58	112.6	5	45	1.9	226.8	6.8	60.7	2.2	699	26	107.7	2.7	11280	340
LP110120-1L-98	SP2	1.51	0.24	16.9	1.6	6.2	0.48	80	3.1	31.5	1.2	155.1	4.4	44.2	1.2	512	22	77.7	2.5	11940	400
LP110120-1s-54	SP2	2.4	0.28	19.9	2.3	7.29	0.69	92.6	4.8	36.4	1.7	186.2	6.5	52.3	2	607	16	100.6	2.8	13800	460
LP110120-1s-66	SP2	5.72	0.84	94	13	30	3.7	348	39	136	16	612	83	165	23	1810	230	247	25	9710	240
LP110120-1L-15	SP2	0.469	0.093	8.17	0.94	2.79	0.25	38.9	2.1	16.21	0.79	87.1	4	26.3	1.2	325	14	52.8	2.2	12670	320
LP110120-1L-77	SP2	2.31	0.43	29.8	2.5	8.99	0.53	117.8	6.2	44.4	2.7	240	18	66.7	6.3	791	75	114.8	8.5	11990	320
LP110120-1L-43	SP2	1.26	0.17	24.6	1.3	7.85	0.51	106.7	5.3	41.8	1.6	211.7	6.2	51.4	1.5	615	33	86.1	3.1	11460	390
LP110120-1L-17	SP2	7.08	0.51	110.3	5.1	34	1.3	448	16	158.4	7.2	795	19	197.1	8.5	2093	71	277.6	8.1	11610	320
LP110120-1L-34	SP2	1.07	0.16	22.1	2.2	6.98	0.38	100.6	3.4	40.8	2.2	218.5	5.5	60.5	2.4	751	23	113.6	4.1	13080	290
LP110120-1L-40	SP2	1.36	0.3	27.4	2.5	9.14	0.68	139	6.3	54.3	1.6	272	7.8	71.6	1.7	887	34	127	5.9	11730	380
LP110120-1L-85	SP2	3.08	0.36	47.7	3.2	12.75	0.32	160.8	6.4	57.4	2.1	269.5	9.9	67.2	3	686	22	97.4	3.9	10770	170
LP110120-1L-3	SP2	0.72	0.12	18.4	1.4	6.05	0.32	86.9	4.2	33.1	1.7	172.7	6.4	47.8	1.9	570	23	84	2.8	13810	350
LP110120-1L-28	SP2	0.54	0.13	10.8	1.2	3.43	0.25	50.9	2.3	19.95	0.83	110.9	3.8	30.4	1.1	357	13	53.6	1.9	12230	240
LP110120-1L-82	SP2	1.37	0.17	19.1	1.6	6.95	0.41	100.5	5.5	41.6	1.9	218.2	8.6	63.1	2.7	762	35	128.9	3.4	10570	250
LP110120-1L-27	SP2	0.86	0.16	14.6	1.6	5.55	0.44	76.2	3.8	31.2	1.3	179.6	5.5	53	2.2	706	22	111.7	2.3	12930	330
LP110120-1L-86	SP2	1.04	0.17	25	2.6	7.99	0.44	105.1	5.2	44.5	2.3	223.4	9	60.5	2.3	720	35	105.9	4.9	12240	240
LP110120-1L-95	SP2	2.92	0.29	94.3	4.8	28.9	1.2	380	10	142.5	4.2	673	28	165.2	6.6	1793	61	264	7.3	13670	390
LP110120-1s-17	SP2	2.31	0.25	42.4	2.8	13.29	0.73	161.5	8.2	60.7	2.5	279	11	68.4	2.6	753	30	100.8	3.8	10320	320
LP110120-1s-35	SP2	1.03	0.18	17.5	1.1	5.63	0.38	76.9	4.1	32.4	1.3	182.1	7.6	51.7	2.6	630	29	99.8	3.8	11040	220
LP110120-1L-32	SP2	0.88	0.2	23.4	1.7	7.79	0.41	108.9	4.2	44.1	1.4	213.6	7	57	2	694	18	103.9	4.3	11660	280
LP110120-1L-76	SP2	1.54	0.2	55.9	2.9	19.59	0.6	267.4	7.7	101.2	2.9	496	18	132.1	4.9	1522	38	210.4	8.4	14200	410
LP110120-1L-16	SP2	0.62	0.12	15.9	1.3	5.51	0.32	72.3	3.8	27.26	0.99	147.9	5.1	41.3	1.7	484	16	70.2	2.6	13110	460
LP110120-1L-128	SP2	5.61	0.43	96.3	4.3	29.5	1.4	375	15	140.8	5.8	647	26	160.2	6.8	1712	64	238	10	11350	250
LP110120-1s-69	SP2	0.87	0.21	14.1	2	4.75	0.5	63	4.6	24.6	1.3	128.1	8	35	1.9	436	29	66.1	3.1	12130	360
LP110120-1L-90	SP2	1.32	0.19	18.2	2	5.44	0.28	77	4.1	29	1.5	137.3	4.1	40.1	1.5	471	17	70	2.1	11850	310
LP110120-1L-102	SP2	0.267	0.078	19.6	1.8	7.1	0.46	97.9	4.5	38.5	1.5	192	4.2	48.1	1.8	541	23	81.2	2.9	11640	360
LP110120-1s-14	SP2	1.28	0.23	27.6	2.7	9.78	0.59	116.1	6.8	43.7	2	205	10	52.6	3.2	572	32	80.5	4.1	10660	210
LP110120-1s-59	SP2	2.27	0.29	42	2.4	14.78	0.95	182	14	70.6	3.3	336	14	91	5	1023	62	151.9	5	9550	240
LP110120-1L-10	SP2	0.82	0.17	17.3	1.4	6.28	0.44	81.7	3.2	32.5	1.3	175.1	7	46.6	2	577	25	85.7	2.1	12150	420
LP110120-1L-130	SP2	0.76	0.14	13	1.3	4.42	0.35	60	2.9	23.7	1.1	118.5	6.4	30.2	1.5	338	16	47	1.8	11330	380
LP110120-1L-23	SP2	0.65	0.12	16	1.2	5.38	0.37	70.5	2.6	25.9	1.1	140	6	36.3	1.4	440	16	66.7	2.7	11760	410
LP110120-1L-6	SP2	0.57	0.13	15.3	1.7	5.3	0.38	69.2	3.9	26.48	0.93	143.8	4.8	37.5	1.5	452	16	65.8	2	12220	270
LP110120-1L-56	SP2	0.99	0.16	17.9	2.1	5.96	0.46	83.4	5.4	34.9	1.8	194.5	7.1	51.1	1.7	615	26	95.3	4.1	11420	250
LP110120-1L-101	SP2	0.83	0.17	14.4	1.6	4.74	0.31	70.5	3.1	27.3	1.2	143.9	6.3	38.9	2.2	467	22	67.7	2.9	10790	340
LP110120-1s-67	SP2	0.82	0.19	9.1	1.3	3.59	0.3	44.4	3.2	18.42	0.76	93.2	4	27.2	1.4	345	13	52.7	2.5	13690	400
LP110120-1s-42	SP2	1.29	0.21	19.1	2.1	6.12	0.65	84.3	4.6	32.5	2.3	166.6	9.2	50.2	2.6	608	33	93.6	4.7	12350	430
LP110120-1s-32	SP2	1.78	0.25	45.1	2.8	14.54	0.68	172.2	6.1	66.3	2.5	298	12	73.8	1.7	813	30	108.7	4.6	9740	360
LP110120-1L-12	SP2	1.17	0.24	25.3	3	8.06	0.5	105.6	4.3	43.8	1.2	235.9	9.1	60.5	2.4	719	24	107	3.3	12980	390
LP110120-1L-115	SP2	0.49	0.12	11.2	1.3	3.55	0.34	51.1	2.6	21.63	0.85	113.4	3.8	32.5	1.2	407	14	62	1.9	11670	300
LP110120-1L-74	SP2	0.65	0.13	10.5	1	3.41	0.37	50.9	2.7	20.18	0.65	107.2	5.7	29.1	1	359	13	53.8	2.6	11620	250
LP110120-1L-72	SP2	0.51	0.14	14.5	1.6	4.74	0.42	69.1	2.9	27.4	1.1	138.5	5.6	35.8	1.4	402	16	62.6	2.4	11980	250
LP110120-1s-30	SP2	3.34	0.32	114.9	6	34.3	2	401	15	138.2	7.2	564	24	128.2	7.2	1318	96	164.5	6.5	8890	340
LP110120-1s-24	SP2	8.76	0.57	147.6	8.9	44.2	1.8	509	20	181.7	5.7	790	30	191.3	6.6	2095	81	289	13	10270	360
LP110120-1s-43	SP2	1.61	0.25	61.4	3.1	19.9	1.2	229.2	8.4	85.4	3.4	357	14	83.6	3.2	845	26	109.9	3.9	10120	340
LP110120-1L-69	SP2	0.59	0.12	15.2	1.6	4.64	0.35	58.1	3.3	23.7	1.1	124.8	4.6	34.2	1.6	412	15	66.2	3.1	12860	350
LP110120-1L-89	SP2	1.52	0.27	30.6	2.7	9.29	0.73	122.2	6.2	43.9	2	227.8	8.6	59.9	2.8	708	30	106.8	4	11710	330
LP110120-1s-58	SP2	0.487	0.098	13.6	1.5	4	0.33	57.5	2.6	23.7	1.4	111.7	4.6	31	1.4	373	13	58.6	2.3	11740	360
LP110120-1L-88	SP2	1.17	0.16	21	1.6	7.02	0.61	98.6	6	37	2.5	185.9	9.6	49	2.9	586	31	87.8	3.7	11700	280
LP110120-1L-1	SP2	1.41	0.24	24.9	1.8	8.19	0.41	106.2	3.5	43.9	1.5	228.1	8.9	57.4	2.2	706	25	104.4	3.6	10990	350
LP110120-1s-11	SP2	0.53	0.12	7.8	1	2.59	0.23	35.6	1.5	15.14	0.79	78	2.5	23.9	1.3	323	15	52.9	2.2	11190	410
LP110120-1s-16	SP2	1.17	0.18	18.7	1.6	6.57	0.51	80.7	4.2	29.83	0.94	142.2	6.1	36.8	1.5	399	18	60.3	2.5	9630	260
LP110120-1s-55	SP2	0.89	0.21	25.7	1.8	8.79	0.58	110.9	6.5	48.5	1.8	235	12	61.3	3	686	30	101.7	3.1	11360	370
LP110120-1L-121	SP2	3.84	0.34	54.5	3	15.8	1.1	190	12	69.5	3.8	330	20	85.8	4.4	974	47	137.1	5.8	9850	280
LP110120-1s-29	SP2	3.47	0.45	79.2	5.5	27.1	1.7	347	20	135.3	6.7	652	42	161.1	8.8	1776	75	247	15	13850	380
LP110120-1L-68	SP2	1.13	0.17	22.2	2.2	7.67	0.42	93.4	2.9	38.1	1.9	192.3	6.5	51.9	2.4	617	22	93.8	2.3	11880	290
LP110120-1s-68	SP2	0.51	0.14	9.7	1.2	3.68	0.3	51.1	2.1	22	1.4	116	6.3	33.2	1	409	17	64.2	1.7	11240	320
LP110120-1L-70	SP2	1.03	0.17	24.8	2.7	8.42	0.49	121.6	5.3	52	2.6	265.8	9.7	68.2	3	726	29	104.4	4.5	9180	250
LP110120-1s-65	SP2	11.19	0.95	136.9	8.3	36.8	2.7	386	23	121.4	7.1	484	28	107.1	5.1	984	45	127.7	6.3	12640	220
LP110120-1s-22	SP2	8.3	2.5	113	14	35.6	3.3	430	21	146.5	6.1	625	16	151	6.4	1462	40	204.7	5.7	13900	370
LP110120-1L-127	SP2	0.49	0.12	199	15	62.9	5.4	753	55	254	16	1068	64	228	14	2020	120	251	12	13140	330
LP110120-1L-33	SP2	1.26	0.52	14.1	1.9	4.64	0.3	66.6	3.5	23.7	1.2	110.9	4.4	27.3	1	287	11	39.7	1.2	14130	330
LP110120-1s-39	SP2	2.13	0.28	106.7	6.5	32.8	1.8	399	17	140.1	8	625	26	145.2	5.7	1475	63	182.1	7.5	13430	520
LP110120-1L-83	SP2	0.64	0.16	94.8	6.4	30.1	2.1	340	15	115.6	6	491	23	107	3.8	1015	28	133	5.6	12370	300
LP110120-1s-63	SP2	0.102	0.072	9.7	1.3	4.18	0.4	53.6	2	21.2	0.88	101.2	4.4	26.3	1.2	301	12	39.7	2.3	13710	380
LP110120-1L-109	SP2	9.43	0.59	50.5	2.7	11.96	0.69	113.8	5.6	30.5	1.6	108.5	5.7	20.6	1.1	181	11	19.73	0.74	9400	200
LP110120-1L-30	SP2	0.66	0.18	7.9	1.3	2.44	0.33	31.4	2.2	12.7	1.1	65	4.5	18.55	0.99	242	15	38.9	1.6	12820	240
LP110120-1s-31	SP2	1.29	0.18	39.5	2.8	13.36	0.61	164.6	7	60.4	1.9	276.5	9.4	70.1	3.5	744	27	105.4	3.6	13060	350
LP110120-1L-49	SP2	3.23	0.28	49.6	2.7	14.51	0.92	172.1	6.2	61.9	2.8	274.8	9.4	63	2.9	647	16	86.5	2.1	10530	340
LP110120-1L-67	SP2	0.33	0.11	1.99	0.51	0.482	0.091	5.88	0.73	1.8	0.18	9.4	0.83	2.15	0.15	22.8	1.8	3.19	0.22	11820	270
LP110120-1L-19	SP2	0.43	0.1	11.8	1.6	4.15	0.37	63	3.5	25.4	1.5	141.4	6.3	37.7	2.3	437	16	64.4	2.2	13690	470
LP110120-1s-44	SP2	2.01	0.26	91.4	3.7	24.9	1.5	283	13	97.2	5.1	390	14	89.5	2.7	893	38	112.8	4	7780	200
LP110120-1s-50	SP2	5.1	1	52.9	8.1	18.5	2.6	227	28	78.8	9.1	338	33	83.5	5.5	868	47	109.4	6.3	13750	490
LP110120-1s-56	SP2	0.78	0.16	25.9	2.4	8.05	0.43	98.7	4.8	33.7	1.7	143.6	4.5	34.7	1.2	356	11	44.1	1.8	13460	440
LP110120-1L-48	SP2	4.37	0.47	37.8	3	8.6	0.66	85.4	6.4	25.9	1.2	108.8	5.8	25.1	1.4	256	13	34.2	1.6	10160	270
LP110120-1L-60	SP2	0.319	0.084	17.8	1.8	5.33	0.35	71.7	4	24.7	1.2	116.9	4	28.8	1.2	297.8	6.8	41.2	1.9	11060	370
LP110120-1s-9	SP2	0.89	0.16	23.7	4	7.1	0.76	86.2	9.6	32.3	2.5	145	14	38.1	2.8	406	28	52	3.3	10340	370
LP110120-1s-19	SP2	3.47	0.53	28.4	2.6	9.97	0.92	116.8	5.1	40.1	2	164.2	8.6	42.6	1.7	442	18	55.2	2.7	13400	390
LP110120-1L-114	SP2	2.95	0.2	69.9	4	18.38	0.9	204.6	6.9	63.4	2.6	265	11	55.4	2	555	16	67.4	2.4	10490	230
LP110120-1L-18	SP2	2.8	0.33	44.4	2.8	12.12	0.49	146.1	5.1	44.7	2.1	190.4	4.5	43.8	1.6	460	23	57.5	2.2	11970	330
LP110120-1L-47	SP2	1.45	0.32	30.4	2.7	10.02	0.56	137	5.7	51.8	1.9	261.7	8.4	65.6	2.2	734	31	93.8	2.8	13600	380
LP110120-1L-65	SP2	0.198	0.071	10.7	1.6	3.7	0.21	53.2	2	20.66	0.84	105.8	3.2	27.01	0.98	283	12	39.9	1.3	13740	420
LP110120-1s-36	SP2	2.7	0.3	57.8	3.7	17.3	1.2	170.5	9.7	53.5	3.2	206	12	45.8	2.3	458	18	57.3	2.5	9990	280
LP110120-1L-59	SP2	5.55	0.55	39.5	3.4	10.64	0.7	116.3	4.7	38.4	1.5	165.5	5.4	41.3	1.5	440	17	56.6	1.9	8460	230
LP110120-1L-54	SP2	0.64	0.12	30.7	2.5	10.8	0.51	143.1	7.2	52	1.9	244	11	55.8	2.4	582	22	73.5	1.9	12610	290
LP110120-1L-126	SP2	0.129	0.06	2.49	0.53	1.13	0.16	17.1	1.1	7.06	0.35	41.1	1.8	12.11	0.59	147.9	6.8	21	1	11860	250
LP110120-1L-45	SP2	0.241	0.082	35.4	2.2	11.56	0.45	142.9	5.7	51.6	1.9	231.5	7.6	57.1	1.9	557	19	71.6	2.5	13090	280
LP110120-1L-46	SP2	0.94	0.14	78.7	4.5	22.5	1.1	259.5	8	86.3	3.3	362	11	82.7	2.8	789	24	101.5	2.8	12040	330
LP110120-1L-107	SP2	0.64	0.14	28.1	2.5	8.03	0.46	91.3	5	33	1.1	144.8	4.7	34.7	1.2	360	14	46.4	1.7	11970	400
LP110120-1L-51	SP2	0.192	0.065	13.9	1.1	4.29	0.33	60.8	3.3	21.5	1.1	104.5	5.4	24.6	1.3	255.8	8.3	33.7	1.3	11940	310
LP110120-1L-108	SP2	1.09	0.18	37.9	2.2	10.3	0.66	134.1	5.1	45.1	1.6	203	7	47.9	1.6	463	17	62.6	2.7	10310	280
LP110120-1L-5	SP2	0.11	0.061	15.2	1.1	5.67	0.31	77.3	3.1	28.5	1.1	133.6	5.1	31.3	1	335	13	43.4	1.5	16230	420
LP110120-1L-104	SP2	2.66	0.25	40.7	3.2	11.14	0.49	133.3	3.9	45.6	1.3	197.5	6.7	48.2	1.8	499	16	65.4	2.8	10210	380
LP110120-1L-25	SP2	0.31	0.11	32.5	1.7	11.33	0.59	151.2	7.4	50.8	1.8	243.2	8.6	60.8	1.9	666	24	79	3.3	13800	390
LP110120-1s-47	SP2	0.55	0.13	28.8	2.4	9.38	0.56	111.4	5.4	41.8	1.8	170.2	7.5	41.9	2	436	17	52.1	1.9	11430	460
LP110120-1L-7	SP2	0.58	0.34	35.1	3.3	12.47	0.8	160.4	6.7	59.1	1.8	277	11	63.9	2	667	19	84.3	2.8	13570	420
LP110120-1s-62	SP2	0.094	0.047	20.4	2.3	10.05	0.79	154.7	5.9	72.5	2.8	385	10	110.6	4.1	1276	39	176.6	6	18100	550
LP110120-1L-66	SP2	3.11	0.34	103.3	4.1	26.9	1.7	306	13	100.8	3.5	399	13	83.4	1.8	836	30	101.6	3.4	10670	380
LP110120-1L-99	SP2	0.101	0.051	18.3	1.8	7.15	0.6	86.3	4.5	32.9	1.4	150.4	4.8	36.9	1.7	374	12	48.3	1.5	15630	390

LP110120-1L-110	SP2	0.86	0.16	58	2.4	17.56	0.9	213.7	6.4	78.9	3.1	339	14	75.3	2.7	760	27	96.5	3.3	11780	310
LP110120-1L-117	SP2	0.31	0.12	12.5	1.5	5.56	0.33	81.2	3.7	31.8	1.8	136.9	5.3	35	1.3	327	12	44.5	1.5	14610	430
LP110120-1L-62	SP2	0.206	0.072	17	1.6	5.01	0.35	64.5	3.4	24.8	1.1	113.9	5.6	28.03	0.89	289	9.4	36.7	1.1	11820	330
LP110120-1L-94	SP2	1.07	0.19	15.3	1.6	5.24	0.39	76.7	3.2	30.6	1.4	151.6	4.6	40	1.5	457	15	69.6	3.1	12230	230
LP110120-1L-92	SP2	0.42	0.12	19.2	1.7	7.24	0.53	101.8	4	42.3	1.3	210.2	7.7	52.1	2.1	577	17	77.8	2.7	12480	330
LP110120-1L-81	SP2	0.522	0.085	24.2	2.3	6.77	0.33	83.6	3.8	29.87	0.99	132.3	6.1	30.4	1.1	304	11	41.9	1.4	10990	340
LP110120-1L-41	SP2	0.86	0.18	49	3.3	14.76	0.74	194.2	7	67.9	2.5	314	16	69.8	2.2	727	25	88.6	3.1	8960	270
LP110120-1s-70	SP2	1.24	0.28	15.3	1.8	6.34	0.44	80.9	4.4	31.4	1.4	157.1	7.7	43	1.8	476	17	65.7	2.4	13030	500
LP110120-1s-7	SP2	0.46	0.12	20	2	6.65	0.26	86.9	4	32.3	1.4	150.5	4.6	38	1.6	406	18	53	2.3	12520	270
LP110120-1s-61	SP2	1.74	0.19	121	4.5	34	1.3	353	14	114.6	4.4	461	16	101.6	3.7	1023	44	127.8	4.6	11950	340
LP110120-1L-111	SP2	1.79	0.26	64.2	3.4	17.7	0.71	210.4	7.8	74.2	3.1	324	12	79.4	3.3	743	28	97.6	4.3	11940	300
LP110120-1L-71	SP2	8.47	0.8	67	5.5	20.8	1.3	238	12	80.8	3	371	16	92.3	4.4	1072	37	153.1	4.4	9850	240
LP110120-1L-29	SP2	0.223	0.095	31	2	9.41	0.47	131.8	4.5	49.9	1.9	228.7	7	58.7	2.4	605	15	79.7	2.9	14710	460
LP110120-1s-49	SP2	0.599	0.096	63.1	3.8	22.76	0.83	270.6	8.2	106.8	4.4	496	16	119.5	5.3	1210	46	146.3	5.3	15170	530
LP110120-1s-5	SP2	0.53	0.14	22.7	1.7	6.36	0.48	77	3.5	26.05	0.87	116.7	6.1	26.6	1.3	275.4	9	36.4	1.8	10680	370
LP110120-1L-58	SP2	1.01	0.22	26.7	2.5	8.06	0.54	105.9	5.8	36.6	1.8	171.2	8.5	38.3	2.1	409	18	53.7	2.2	12530	300
LP110120-1s-2	SP2	0.135	0.074	23.6	2.1	8.33	0.46	104.9	5.3	38.7	1.8	183.8	5.8	47	1.4	475	10	60.1	2.3	12900	390
LP110120-1s-15	SP2	0.79	0.13	37.1	3.4	13.11	0.85	153.1	8.7	58.1	2.6	264	11	60.3	3.3	600	23	77.3	3.5	10620	320
LP110120-1L-113	SP2	0.267	0.086	16.2	1.7	6.13	0.38	73.8	2.7	28.3	1.3	125.5	5.5	29.9	1.3	324	16	42	1.4	11830	300
LP110120-1L-129	SP2	1.66	0.29	25.6	2.5	8.81	0.49	104.9	4.1	39.1	1.6	191.8	7	47.5	1.7	527	15	76.9	2.8	13810	430
LP110120-1L-84	SP2	5.7	1.1	85	12	14.7	1.6	111.5	5.6	33.4	1.5	125	5.6	26.9	1.1	251.8	8.9	32.26	0.96	12930	360
LP110120-1L-22	SP2	2.36	0.25	70	4.4	20	1.2	239.4	9.1	77.1	3.2	333	11	71.6	3.1	676	24	87	2.6	9940	310
LP110120-1L-26	SP2	0.47	0.13	85.6	4.7	27.1	1.1	325	14	119.3	3.9	550	19	124.3	4.2	1334	35	164.2	4.3	13610	310
LP110120-1L-97	SP2	1.04	0.26	56.4	5.2	17.5	1.2	223	11	84.1	2.2	368	16	92.5	3	966	32	131.5	4.2	12830	400
LP110120-1s-6	SP2	0.061	0.033	23.2	1.6	7.12	0.41	100.4	5.1	38.1	1.8	170.1	7.6	42	2	454	15	58.7	1.6	12430	440
LP110120-1s-37	SP2	1.7	0.65	53	14	10.5	1.8	109	11	38	2.6	190	7.8	49	2	535	19	76.8	3	14510	550
LP110120-1s-4	SP2	1.19	0.2	24.7	2.6	8.01	0.54	100.3	3.3	39.1	1.4	182.7	9	42.5	1.7	487	16	65.3	1.9	11670	370
LP110120-1s-33	SP2	0.39	0.1	32.9	2.8	10.22	0.58	136.6	7.9	51.2	1.9	244.3	9	57.3	2	567	26	79.1	3.7	12500	380
LP110120-1L-2	SP2	0.13	0.053	8.63	0.92	3.21	0.24	47	2.4	16.93	0.85	93.7	3.4	22.93	0.94	254	10	34.5	1.5	12740	450
LP110120-1L-106	SP2	1.46	0.22	31.4	1.9	9.73	0.52	133.5	5.7	48.8	1.6	226.5	4.3	59.7	2.9	644	26	91.6	2.6	11530	270
LP110120-1s-26	SP2	4.52	0.51	49.8	4.1	14.3	1	158.5	6.6	57.5	2.5	274	13	69.9	2.1	730	31	105.4	3.6	9790	400
LP110120-1L-125	SP2	1.23	0.24	32.9	2.6	9.84	0.57	131.8	6	50.5	2	233.9	8.9	61.9	3.3	663	28	91.3	3.2	11750	270
LP110120-1L-87	SP2	3	0.38	47.1	3.8	13.54	0.67	158	6.4	56.5	2.5	259	10	61.3	2.4	635	28	85.7	3.4	12380	240
LP110120-1s-38	SP2	1.19	0.21	30.2	2.3	8.98	0.79	109.2	5	37.8	1.5	161.9	8.2	39.5	1.2	390	15	50.7	2.1	10680	380
LP110120-1L-119	SP2	3.78	0.34	48.2	2.9	13.39	0.78	169.9	6.9	61.8	1.9	278.5	8.3	67.1	2	709	24	96.1	2.5	8960	270
LP110120-1s-34	SP2	2.07	0.38	36	2.7	13.44	0.68	152.8	6.3	58.6	2.2	273	11	65.4	2.6	725	31	90.9	3	12370	390
LP110120-1L-112	SP2	0.93	0.19	31.2	2.5	9.33	0.65	115.3	6.7	40.6	2.3	176.8	8	43	2.6	458	26	62.7	2.1	10070	250
LP110120-1L-124	SP2	1.66	0.21	20.8	2	6.63	0.57	88.1	4.2	32.7	1.3	150.1	6.6	36	2	369	20	51.1	2.1	15000	400
LP110120-1s-64	SP2	2.93	0.27	61.3	5.3	16.7	1.1	189.8	9.9	66.8	2.5	269	10	70.4	3.2	657	25	86.2	2.9	11480	400
LP110120-1L-50	SP2	0.41	0.13	43.4	3.6	15.15	0.91	205.2	9.8	76	3.4	343	15	80.2	4.3	809	29	103.9	3.5	13160	370
LP110120-1L-63	SP2	0.173	0.073	38.9	3.1	14.18	0.76	202.5	8.6	78.7	3	382	12	88.5	2.6	910	30	118.5	3.4	14730	620
LP110120-1L-53	SP2	1.4	0.2	38.9	2.8	11.28	0.65	137.7	5.6	48	1.7	208.9	6.7	47.5	2	463	18	60.8	2	11270	360
LP110120-1L-9	SP2	0.156	0.074	31.8	2.5	11.43	0.62	170.9	9.2	62.4	2.5	313.8	9.2	74.3	2.8	794	26	106	2.7	14360	480
LP110120-1s-45	SP2	0.035	0.028	24.4	1.4	7.64	0.57	95.4	4.5	33.1	1.3	150.5	6.1	34.6	1.5	364	16	47.8	1.5	13480	420
LP110120-1s-48	SP2	1.94	0.24	19.3	1.2	5.35	0.43	55.3	2.6	18.09	0.62	76.6	2.8	17.87	0.62	207.2	9.3	27.6	1.1	10580	370
LP110120-1L-120	SP2	2.44	0.21	27.4	2.4	7.49	0.47	89.9	5	31.9	1.6	136	5.7	31.5	1.6	334	16	45	1.4	12480	280
LP110120-1s-53	SP2	2.86	0.45	44.6	5.8	13	1.7	141	19	48.8	6	215	28	51.4	6	537	57	67.8	6.6	11680	410
LP110120-1s-60	SP2	0.41	0.13	9.2	1.1	3.05	0.21	38.6	2.4	14.6	0.63	61.8	3.4	16.11	0.76	168.9	4.7	23.4	1.2	14200	450
LP110120-1L-78	SP2	0.27	0.089	19.6	2	5.37	0.49	60	3.5	19.6	0.95	84.9	3.1	20.72	0.98	215.7	9.5	29.4	1.1	13050	280
LP110120-1L-8	SP2	0.94	0.15	16.9	1.6	5.14	0.28	69.5	3.3	23.51	0.94	117.1	4.2	29.9	1.2	317	12	45.7	1.5	10470	300
LP110120-1s-8	SP2	0.83	0.13	23.7	1.8	8.81	0.55	113.5	4.5	41.6	2	205.6	9.3	50.5	1.8	542	28	75.1	3.6	11310	360
Rejected Grains																					
LP110120-1L-39	SP2	0.63	0.16	24.5	1.6	7.82	0.36	109.5	4.3	39.7	1.8	213.4	5.3	54.7	2.3	583	23	83	2.8	14230	430
LP110120-1L-57	SP2	3.85	0.39	38.8	2.1	11.48	0.71	144.6	4.9	51.7	1.3	249.8	8.6	64	2.2	708	26	111.3	4.2	11720	400
LP110120-1s-21	SP2	1.57	0.23	25.8	2.4	7.22	0.39	89.8	4.1	34.1	1.5	155.3	5.1	40.9	1.7	475	17	66.2	3	12650	310
LP110120-1L-105	SP2	3.96	0.33	43.9	2.4	12.27	0.74	138.2	4.8	46.4	1.4	205.2	7.1	47.2	1.6	474	12	66.5	1.9	9350	290
LP110120-1L-118	SP2	250	9.3	707	33	79.7	2.7	402	14	72.1	3.3	190.2	4.6	27	1.3	179.4	6.7	18.74	0.81	72.1	2.6
LP110120-1s-52	SP2	3.44	0.71	38.7	8.4	9.8	2.1	117	24	43.5	8.2	194	34	45.3	7.3	496	67	72.5	8.8	12090	300
LP110120-1s-12	SP2	1.07	0.26	37.6	4.1	9.28	0.74	113.2	4.9	39.4	2.5	172.2	7.7	44	1.9	433	29	61.7	2.9	11960	330
LP110120-1L-13	SP2	0.66	0.13	22.1	1.8	5.77	0.57	77.2	4.1	26.2	1.4	124	6.5	29.3	1.6	293	18	40.5	2.6	10060	330
LP110120-1L-91	SP2	102.4	3.4	625	19	86.6	2.8	512	17	88.8	2.7	209.1	9.4	27.38	0.87	163.6	6.2	18.9	1	30	1.9
LP110120-1L-42	SP2	24.11	0.98	119	6	34.8	1.7	382	18	104.8	3.5	455	12	107.4	3.7	1068	43	133.9	4.7	15630	390
LP110120-1s-20	SP2	0.65	0.11	13.6	1.7	5.16	0.36	64.9	3.1	28.4	1.6	135.4	5.4	35.9	2.3	394	16	59	2.8	10750	390
LP110120-1L-123	SP2	75.6	6.1	313	23	76.5	6.4	609	40	145.9	9	512	27	109.7	5.2	1097	58	139	5	13470	470
LP110120-1s-1	SP2	10.1	1.1	68.2	7.1	18.4	1.9	168	15	47.3	2.6	179.2	8.3	43.5	1.7	436	16	62.7	2.3	9880	290
LP110120-1L-75	SP2	1.84	0.29	34.7	3	10.9	1	133	11	45.9	2.3	211	10	53.8	2.8	564	29	73.8	4.5	12480	440
LP110120-1L-14	SP2	53.6	3.7	248	20	75.7	4.9	798	40	204	11	833	38	172.3	7.5	1602	74	184.1	6.5	15710	440
LP110120-1s-25	SP2	8.11	0.45	80.8	3.2	21.1	1.1	201	9.1	65.1	2.3	248.3	7.7	54.5	1.6	510	19	62.7	2.7	11790	320
LP110120-1L-116	SP2	1.9	0.28	50.3	3.6	11.94	0.72	128.1	6.2	39.6	1.8	152.5	5.6	32.9	1.2	306	15	39.2	1.5	10640	230
LP110120-1s-51	SP2	0.55	0.15	8.15	0.98	2.2	0.24	29	2	11.82	0.81	57.3	1.9	15.52	0.96	179.7	5.8	25.9	1.4	10230	280
LP110120-1L-31	SP2	2.66	0.41	90.5	4.3	23.72	0.82	274	10	84.7	2.9	339	11	73.9	2.8	728	25	88.6	3.4	10280	330

Sample X181218

Grain	Unit	Eu (ppm)	error	Gd (ppm)	error	Tb (ppm)	error	Dy (ppm)	error	Ho (ppm)	error	Er (ppm)	error	Tm (ppm)	error	Yb (ppm)	error	Lu (ppm)	error	Hf (ppm)	error
181218-1b-8	SP4	120	39	433	68	1160	150	3930	400	6040	560	11800	1100	9660	830	28700	2400	20100	1700	1150000	89000
181218-1b-13	SP4	241	52	820	100	1900	190	6060	570	9050	890	14900	1300	12400	1100	32700	2600	21000	1800	1057000	93000
181218-1b-7	SP4	133	35	720	110	1940	210	6100	550	9270	870	16100	1600	13400	1200	35100	3200	22300	2000	1021000	90000
181218-1b-5	SP4	494	89	4190	520	9600	1100	28300	2900	38500	3900	57200	5900	44100	4900	100000	10000	60100	6400	1100000	120000
181218-1b-24	SP4	283	49	850	120	1970	230	6970	690	11100	1100	19200	1700	16200	1500	46300	4300	30300	2500	984000	87000
181218-1b-9	SP4	108	37	1390	180	2840	330	8030	730	10760	950	16800	1600	11700	1100	28600	2600	17400	1500	895000	72000
181218-1b-15	SP4	98	26	481	72	1180	160	3830	420	6050	580	11000	1000	8570	830	24000	2100	16400	1400	991000	89000
181218-1b-11	SP4	80	29	1110	150	2740	290	9410	890	14000	1300	22900	2200	16300	1600	38500	3600	23500	2100	1098000	96000
181218-1b-12	SP4	111	22	678	90	1870	200	6190	590	9820	950	16900	1500	13300	1300	35400	3200	23600	2200	1090000	93000
181218-1b-17	SP4	186	40	830	120	1640	210	5260	500	7560	660	12100	1200	10470	930	28300	2600	19500	1900	857000	79000
181218-1b-2	SP4	260	100	403	84	1170	210	4000	810	6140	730	11000	1200	10000	1100	33800	3300	26500	2300	984000	85000
181218-1b-26	SP4	281	42	1460	190	3110	340	9180	830	13200	1400	20400	2100	15200	1300	36200	3400	21200	1900	893000	74000
181218-1b-25	SP4	2020	620	4200	700	8900	2100	21100	3600	24700	3900	30600	4200	20300	2600	43400	4800	22500	2300	872000	73000
181218-1b-1	SP4	71	26	371	72	890	140	2330	300	3320	390	5290	590	3990	470	10500	1100	6280	740	990000	110000
181218-1b-16	SP4	81	30	700	130	2040	290	7360	760	11500	1200	21300	2200	20900	2000	63700	5800	43700	4100	1380000	120000
181218-1b-21	SP4	1570	170	3920	340	7290	670	20300	1800	25100	2100	36600	3100	23100	2200	57500	4900	33900	3000	887000	77000
181218-1b-6	SP4	216	46	3200	340	6790	720	19100	1800	24700	2300	36400	3200	24800	2300	55600	4700	33100	2800	831000	70000
181218-1b-19	SP4	800	210	3180	750	6300	1200	17400	3200	23600	4200	34200	5200	22400	3400	52400	7500	29700	4000	906000	84000
181218-1b-10	SP4	223	63	1370	170	2600	270	7010	650	8340	880	11300	1100	7620	840	16800	1600	9700	1100	877000	79000
Rejected Grains																					
181218-1b-4	SP4	103	31	248	57	750	100	2170	230	3440	400	6040	550	5350	540	14400	1500	9220	880	1140000	110000
181218-1b-3	SP4	139	43	880	100	1980	220	6030	560	8350	890	13400	1400	10900	1200	28400	2800	17900	1800	997200	89000
181218-1b-14	SP4	3520	570	4250	650	8500	1300	18200	2200	21500	2500	28000	3300	20200	2300	49100	5600	28800	3200	1050000	120000

APPENDIX IV: Detrital zircon trace element data for samples from the Minas de Barita Area. Trace elements: P, Sc, Ti, Y, Nb, La, Ce, Pr, Nd, Sm, Eu, Gd, Tb, Dy, Ho, Er, Yb, Lu, Hf, Pb, Th, U.

Sample 13-11-SR2

Grain	Unit	P (ppm)	Sc (ppm)	Ti (ppm)	Y (ppm)	Nb (ppm)	La (ppm)	Ce (ppm)	Pr (ppm)	Nd (ppm)	Sm (ppm)	Eu (ppm)	Gd (ppm)	Tb (ppm)	Dy (ppm)	Ho (ppm)	Er (ppm)	Yb (ppm)	Lu (ppm)	Hf (ppm)	Pb (ppm)	Th (ppm)	U (ppm)
1311-SR2_Zrn-09	RN	240	106.3	10.5	4130	5.69	0.11	27.3	0.93	9.3	23.5	7.1	108.2	36.9	415	148	609	1035	199	8720	19.6	327.7	302.2
1311-SR2_Zrn-89	RN	500	455	20.7	1310	2.15	0.087	2.28	0.157	1.85	3.18	0.81	17.6	8.8	106	38.4	177	449	109	12430	46.8	34.7	480
1311-SR2_Zrn-64	RN	290	109.6	7.4	578	0.86	0.017	6.9	0.087	1.09	2.76	0.83	13.1	4.27	49.6	18.8	84.7	182	40.2	9470	17.0	134.8	316
1311-SR2_Zrn-03	RN	784	196	5.6	2960	1.35	0	1.15	0.033	1.11	4.35	0.113	38	17.54	237	105.2	490	952	185.4	11720	15.1	55.8	251
1311-SR2_Zrn-81	RN	1050	105.5	2.8	1970	4.72	1.54	34.1	1.3	10.4	12.3	2.42	50.7	16.3	175	64.4	283	534	108	8600	43.4	449	724
1311-SR2_Zrn-45	RN	450	168	7.7	1990	1.85	0.05	3.72	0.222	5.5	10.9	1.32	54.7	17	193	69.9	299	521	102.2	9430	28.9	119.3	387.5
1311-SR2_Zrn-17	RN	0	213	7.9	1729	4.58	0.0034	50.7	0.292	4.47	7.68	2.73	42.3	13.71	160.6	61.8	274	557	115.7	11770	43.8	446	618
1311-SR2_Zrn-50	RN	710	132.5	3.5	1990	2.15	0	5.01	0.034	1.18	5.31	0.119	33.7	13.7	176	68.4	314	576	113.3	11310	34.1	148.2	644
1311-SR2_Zrn-83	RN	520	267	11.1	1410	1.54	0	3.68	0.083	1.67	4.87	0.388	29.4	9.97	120.3	47.2	217.5	408	84.2	9970	27.1	133	402
1311-SR2_Zrn-22	RN	410	129.8	6.9	1527	1.49	0.012	26.9	0.33	6.66	9.4	3.57	44.4	14.18	152.3	54.5	234	402	81.8	8090	13.1	192.9	218
1311-SR2_Zrn-26	RN	362	140.4	12.4	1188	1.3	0.0037	6.37	0.217	3.46	6.63	1.38	33.2	10.25	116.8	42.6	183.6	314	62.6	8490	10.1	81.9	150.5
1311-SR2_Zrn-59	RN	460	340	7.5	2410	4.62	0	52.2	0.106	2.92	8.2	3.06	53.2	18	221	88.1	395	705	144	9150	18.9	320	265
1311-SR2_Zrn-58	RN	280	96	9.9	1190	0.94	0.18	10.5	0.4	3.77	4.58	0.91	30.7	9.3	112	38.4	161	276	53.6	9210	35.8	198	312
1311-SR2_Zrn-76	RN	1650	517	5.4	2950	0.65	0.08	0.83	0.18	0.33	4.7	0.3	32.9	15.8	234	97	472	940	192	13200	35.0	23.92	398.2
1311-SR2_Zrn-90	RN	520	290	4	3120	6	0.2	24.5	1.93	25.4	25.5	1.12	82.5	27	294	112.5	452	775	154	10230	40.0	273.8	493
1311-SR2_Zrn-04	RN	-80	85.8	27.7	361	0.95	0.3	12.2	0.108	1.14	1.36	0.43	6.33	2.02	28	11	55.3	132	30.7	10130	13.9	82.5	185
1311-SR2_Zrn-10	RN	70	216	2.2	1770	2.07	0	31.7	0.097	1.28	3.43	2.37	35	11.6	140	53.7	249	593	128	10640	22.3	150	256
1311-SR2_Zrn-61	RN	200	101	7	980	1.5	0	7.1	0.08	1.24	2.32	0.52	18.5	7.41	97	35	147	261	50.2	10100	12.4	37	81.1
1311-SR2_Zrn-48	RN	840	326	4.6	1830	1.09	0.01	0.74	0.085	1.12	5.56	0.166	34.6	15.1	181	60.2	234	389	67.5	12370	80.3	174	1290
1311-SR2_Zrn-41	RN	440	221	-0.00103	720	1.29	0.048	0.25	0.16	0.23	0	0.14	6.8	4.87	63.3	23.8	102.6	214	44.4	10700	31.5	10.2	244
1311-SR2_Zrn-49	RN	-50	87.8	7.2	305	0.78	0	4.59	0.073	1.92	3.29	0.38	12.4	3.38	34.7	10.5	39.1	57.2	10.2	8440	17.7	47.4	162.8
1311-SR2_Zrn-12	RN	-80	119.3	7.1	1136	1.33	0	12.15	0.056	1.28	3.49	1.15	18	6.42	81.6	35.9	184.7	463	108.9	10830	14.8	98.3	142.7
1311-SR2_Zrn-54	RN	160	106.5	380	546	0.88	1	14.8	0.37	2.9	2.33	0.76	12.38	4.06	46.7	17.77	80.5	176.5	39.1	9390	6.0	46.39	64.4
1311-SR2_Zrn-05	RN	20	134	6	1290	1.71	0.2	122	1.45	27	31.7	10.8	88	20.2	170	48.3	169	246	44.8	9480	27.8	484	299
1311-SR2_Zrn-32	RN	580	105.2	7.4	1370	1.81	0.41	45.7	0.521	5.95	10.1	3.79	41.3	12.7	135	46.7	202	378	75.1	8580	23.1	288	246.8
1311-SR2_Zrn-06	RN	298	274	11.6	1980	5.93	0	22.9	0.132	2.29	5.94	2.16	38	13.62	169.6	68.5	315	611	124.9	8560	26.8	157	252
1311-SR2_Zrn-62	RN	210	142.7	1.7	1452	6.27	0	53.9	0.069	1.38	3.93	1.16	26	9.49	119.4	48.2	230.2	489	104.1	10490	40.4	320	395
1311-SR2_Zrn-25	RN	620	110.1	18.5	756	1.24	0.031	15.8	0.198	2.58	5	0.81	21.9	6.44	68.3	26.3	108.6	206	42.3	8590	13.4	112.1	124.8
1311-SR2_Zrn-11	RN	-74	94.2	9.5	697	1.49	0.087	17.19	0.167	2.23	4.18	0.761	18.6	5.86	64.1	23.4	106	203	41.8	11660	36.8	177.7	319
1311-SR2_Zrn-30	RN	378	70.7	6.4	1247	4.81	0.076	18.13	0.223	4.04	6.74	0.315	32.2	10.73	123.2	45	191.7	322	61.6	8060	30.8	162.1	312
1311-SR2_Zrn-23	RN	730	164	6.6	1001	1.35	0	3.37	0.073	1.64	3.04	0.47	21.8	7.27	87.1	34	157	294	61.2	8390	12.6	45.5	115.1
1311-SR2_Zrn-77	RN	-60	111.5	3.7	806	1.74	0.039	22.1	0.086	1.17	2.15	0.54	11.3	4.27	55.9	24.5	122.7	314	74.8	12070	51.3	183	407
1311-SR2_Zrn-13	RN	30	158	31	1220	3.92	0.17	41.4	0.149	1.81	4	1.4	22.4	8.6	116	43	201	407	82.3	12200	15.9	108.6	121.4
1311-SR2_Zrn-55	RN	440	81.8	6.5	551	4.01	0.065	24.8	0.054	1	1.71	0.61	10.1	3.49	40.8	16.6	89.9	211	46.1	8440	53.3	201	424
1311-SR2_Zrn-71	RN	1210	85	9.9	800	2.1	0.255	17.8	0.301	3.14	3.33	0.5	16.9	5.98	71	27.4	126.6	244	51.7	11120	31.8	105.4	212.8
1311-SR2_Zrn-53	RN	100	89.9	5.4	954	2.3	0.085	34.3	0.34	6.7	8.3	1.59	26.4	8	83.5	30.6	132	266	51.5	8280	17.2	75	84.5
1311-SR2_Zrn-65	RN	560	287	20.3	1570	5.9	1.58	19.1	3.19	20	15.6	5.1	27.1	9.1	112	42.4	223	720	167	12500	172.3	53	832
1311-SR2_Zrn-18	RN	-120	87.3	13.8	890	4.82	0	58.3	0.062	1.45	3.9	0.81	17.9	6.18	76.9	29.7	144	332	65.5	10430	33.6	113.2	204.3
1311-SR2_Zrn-33	RN	380	70.8	12.6	1300	2.44	0.044	9.87	0.216	4.55	8.6	0.42	41.4	11.9	132	45.2	181	285	50.8	8540	24.3	62.9	141.6
1311-SR2_Zrn-87	RN	880	91	10.9	1350	9.5	0.038	73.6	0.154	2.73	7.1	1.38	34.7	11.9	130	48.3	196	327	63.2	10880	15.4	56.01	89.51
1311-SR2_Zrn-78	RN	640	235	15.6	1450	1.38	0.41	5.7	0.29	3.9	5.8	0.42	37.2	13.5	154	49.8	194	304	57.2	11730	42.8	123.2	267.3
1311-SR2_Zrn-57	RN	50	54.4	85	113	3.85	0	5	0.012	0.11	0.23	0.058	1.18	0.559	6.36	3.38	18.3	61.7	17.8	7540	28.2	4.79	188
1311-SR2_Zrn-02	RN	30	107.6	14.1	996	1.13	0.62	6.88	0.81	10.6	13.1	1.33	48.2	12.83	117.1	37.4	136.7	198	38.4	8510	9.4	31.6	50.4
1311-SR2_Zrn-43	RN	220	105	25.3	674	1.56	0.083	13.9	0.136	2.3	5.3	1.6	22.6	6.76	70.3	24.3	94.2	165	33.8	8180	4.6	24.69	34.8
1311-SR2_Zrn-01	RN	380	93.6	21.7	791	3.25	0	26	0.151	2.49	4.82	0.78	23.2	7.4	78.6	27.6	117.3	213	42.9	9640	8.5	59.3	48.1
1311-SR2_Zrn-34	RN	420	85.6	14.1	755	6.6	0	34.5	0.071	1.12	3.27	0.41	16.9	6.19	74.7	26.8	118.9	222	43.3	10050	23.2	67.1	129
1311-SR2_Zrn-08	RN	0	93.8	19.1	646	2.13	0.93	12.3	0.44	3.86	4.91	0.7	19.8	6.37	66.4	22.7	95.2	167.2	32.7	9250	20.9	45.4	113.4
1311-SR2_Zrn-69	RN	280	112.3	11.7	896	3.26	0	17.42	0.161	2.58	5.64	1.37	28.1	8.75	92.6	31.9	132	233	45.7	10140	18.2	63.3	97
1311-SR2_Zrn-72	RN	180	87	15	850	1.91	2.3	11.1	1.02	7.1	4.14	0.53	21.7	5.55	65.3	27.6	140	324	79.1	9220	68.8	87.3	346.6
1311-SR2_Zrn-42	RN	210	79.5	18.8	1132	1.66	0.026	9.35	0.428	5.64	8.28	0.61	35.9	11.09	115.6	40.4	170.3	302	58.1	8160	17.6	52.2	85.3
1311-SR2_Zrn-14	RN	40	83.7	4.2	808	1.41	0.045	22	0.11	1.9	3.74	0.9	16.2	5.49	68.4	26.9	126	283	59.9	11550	64.8	112.6	285
1311-SR2_Zrn-07	RN	420	79.5	10.6	618	3.16	0.008	12.4	0.033	0.69	2.25	0.165	12.4	4.43	54.5	22.2	99.7	197.9	42.7	9860	14.0	31.7	58
1311-SR2_Zrn-31	RN	340	82	4	219	2.41	0	9.6	0	0	0.3	0.134	2.82	1.03	14.6	6.28	36.1	98	20.6	9890	51.8	34.7	205.8
1311-SR2_Zrn-38	RN	170	73.6	5	1670	4.19	0.021	11.4	0.11	2.5	6.2	0.88	37.2	13.4	157	64	267	467	96	8630	73.3	111.3	275.6
1311-SR2_Zrn-75	RN	210	72	14.4	633	2.76	0	5.8	0.02	0.88	1.82	0.069	12	4.64	56.6	21.31	95.4	182	36.3	10060	13.3	18.58	50.6
1311-SR2_Zrn-67	RN	380	60.2	4.8	1054	11.7	0	15.2	0.077	0.88	2.42	0.099	18.3	7.34	91.4	36.7	172	323	63.5	11430	128.5	188.8	534
1311-SR2_Zrn-47	RN	140	74	11.3	512	1.51	0	4.34	0.033	0.52	1.38	0.078	8.88	3.35	42.5	17.4	81.2	158.8	30.8	9710	23.7	35.1	112.8
1311-SR2_Zrn-82	RN	640	216	14.9	1860	5.65	0.02	14.5	0.073	0.96	2.72	0.21	24.2	10.6	143	61.8	302	685	145	13420	111.0	88.1	445
1311-SR2_Zrn-27	RN	395	94.6	8.8	960	2.09	0	33.5	0.073	1.4	3.18	0.52	18.3	6.03	77.1	30.1	150	359	77.1	10800	40.3	132	147
1311-SR2_Zrn-56	RN	80	90	10.3	540	1.91	0	15.27	0.023	0.64	1.38	0.215	8.12	3.38	44.6	17.93	90.3	194.1	41	10540	31.3	47.5	100.8
1311-SR2_Zrn-37	RN	160	114.5	10.8	816	2.05	0	31.7	0.042	1.54	3.12	0.63	14.8	5.69	70.5	27.1	131	287	60	10590	54.8	177	238
1311-SR2_Zrn-29	RN	400	107.2	8.6	1422	1.03	0	13.71	0.143	4.47	8.88	1.38	42.2	13.24	139	50.6	206	361	70.2	8990	65.3	117.9	187.2
1311-SR2_Zrn-39	RN	260	108.9	11.5	823	1.46	0	9.27	0.012	0.75	2.5	0.126	15.9	5.01	69.9	27.8	132	258	54.3	10330	83.0	83.2	263.5
1311-SR2_Zrn-20	RN	20	150.2	27.4	2020	1.21	0.098	40.8	0.78	11.7	19.4	3.66	76.2	21.6	227	77.7	304	504	99.6	8670	20.0	83.3	70
1311-SR2_Zrn-63	RN	260	86	1.9	485	9.91	0	10.43	0.009	0.54	1.29	0.059	8.22	2.99	39.4	16.6	83	200	43.4	12460	118.8	68.8	438
1311-SR2_Zrn-35	RN	290	106.2	10.1	306	0.93	0	3.27	0.037	0.76	1.66	0.016	9.06	2.84	30.7	10.33	42.4	64.4	12.3	9470	25.4	63.4	75.8
1311-SR2_Zrn-60	RN	100	88	1.8	755	1	0.0049	3.85	0.169	2.62	4.83	0.43	24.2	7.3	77	26.5	112	169	34	7940	111.5	135	339
1311-SR2_Zrn-74	RN	20	109.4	9.8	664	4.32	0	18.9	0.052	1.03	1.44	0.59	11.5	4.05	49.3	21.4	103	272	66.1	11110	113.3	43.13	420
1311-SR2_Zrn-15	RN	-120	68.4	9	929	7.2	0	11.94	0.106	1.31	4.08	0.314	22.2	7.73	85.4	35.8	148	258	50.1	11260	14.2	27.56	42.4
1311-SR2_Zrn-21	RN	407	119.3	4.7	1260	1.01	0.012	7.71	0.234	3.82	7.05	1.15	33.3	10.66	120.8	44.3	194.7	349	69.3	7360	59.5	82.5	185.7
1311-SR2_Zrn-28	RN	310	123.8	6.3	1023	1.19	0.042	19.5	0.332	4.53	5.8	1.58	29	8.7	95.6	34.7	151.7	291	60	9180	57.3	110	147
1311-SR2_Zrn-40	RN	270	84.2	9.2	510	2.6	0	41.9	0.096	1.36	2.14	0.47	12	4.1	46.6	17.4	80.4	164.5	33.8	8930	7.5	23.21	14.64
1311-SR2_Zrn-73	RN	470	187	7.2	540	0.78	0	8.61	0.015	0.3	0.83	0.23	6.9	2.97	46	18.2	87	196	43	10480	35.1	37	65.8
Rejected Grains																							
1311-SR2_Zrn-24	RN	420	118	5.7	1890	7.8	0.026	14	0.287	4.74	11.8	0.59	56	17.9	197	68.9	279	461	88.6	8290	31.8	298.9	631.4
1311-SR2_Zrn-16	RN	90	152	17.7	1570	7.96	1.09	28.2	1.99	16.1	11.6	4.55	36.8	13	143	51.4	223	378	74.9	11880	71.3	244	1143
1311-SR2_Zrn-68	RN	160	86.1	8.7	177	1.1	0.034	16.3	0.06	0.95	1.78	0.33	6.9	1.82	17.6	5.65	24.1	43.3	8.71	9740	15.1	23.77	58.9
1311-SR2_Zrn-52	RN	250	146	7.8	986	2.92	0.021	25.7	0.009	1.62	3.75	0.58	20	6.68	87.9	33.3	159	330	76.4	10240	82.0	79.1	514
1311-SR2_Zrn-44	RN	1560	649	119	5150	5.1	7.7	98	20.7	131	77	38.2	138	45.7	483	142	577	1100	200	10400	45.0	95	1050
1311-SR2_Zrn-46	RN	310	116.3	18.3	565	1.25	0.06	13.8	0.331	2.43	2.68	1.3	12.2	3.73	45	17.5	86.9	190	42	8500	18.9	67	211.9
1311-SR2_Zrn-66	RN	1430	226	-0.00249	3700	2.58	0.058	8.5	0.31	5.9	12.2	1.1	86	30.2	330	141	530	930	181	10200	27.5	63.4	156.8
1311-SR2_Zrn-19	RN	-310	165	3.2	974	3.51	0	7.62	0.006	0.54	2.67	0.151	15.4	5.55	70.9	30.9	172	583	149	12880	122.0	78.6	434.6
1311-SR2_Zrn-70	RN	0	185	12.4	1057	3.32	0.08	31	0.249	2.96	4.07	1.68	20.5	7.19	81.7	32.6	152.1	344	76	9810	58.5	111.7	261.9
1311-SR2_Zrn-85	RN	460	216	13.1	456	0.52	0	3.62	0.014	1.03	1.65	0.6	9.9	3.33	37.5	14.6	64.9	132	30.9	7820	15.3	30.3	200.2
1311-SR2_Zrn-51	RN	230	129.9	6.3	942	2.98	0.027	31.4	0.09	1.54	3.04	0.71	17.1	6.16	81	32.2	148.3	304	64.5	9860	54.8	104.7	218
1311-SR2_Zrn-84	RN	820	157	8	1140	3.02	0.018	24.7	0.06	1.36	3.1	0.96	21.7	8.23	95	37.4	178	369	81.2	12600	20.5	63.8	119.7
1311-SR2_Zrn-88	RN	960	112.9	17.6	786	1.84	27	81	8.1	26	11	1.92	21.9	6.58	72	26.9	115.6	222	46.6	9620	28.1	69.9	137.2
1311-SR2_Zrn-36	RN	270	71.6	5.3	1820	2.84	0.016	11.54	0.084	1.42	6.02	0.55	41.7	14.31	179	67.6	282	482	90.9	11180	69.8	150.7	339
1311-SR2_Zrn-80	RN	640	108	9.5	3010	7.2	0.122	18.2	0.31	7.1	10.9	1.46	65.5	22.9	276	104.2	446	740	139	12330	106.3	147.2	464

Sample 12-11-SR2

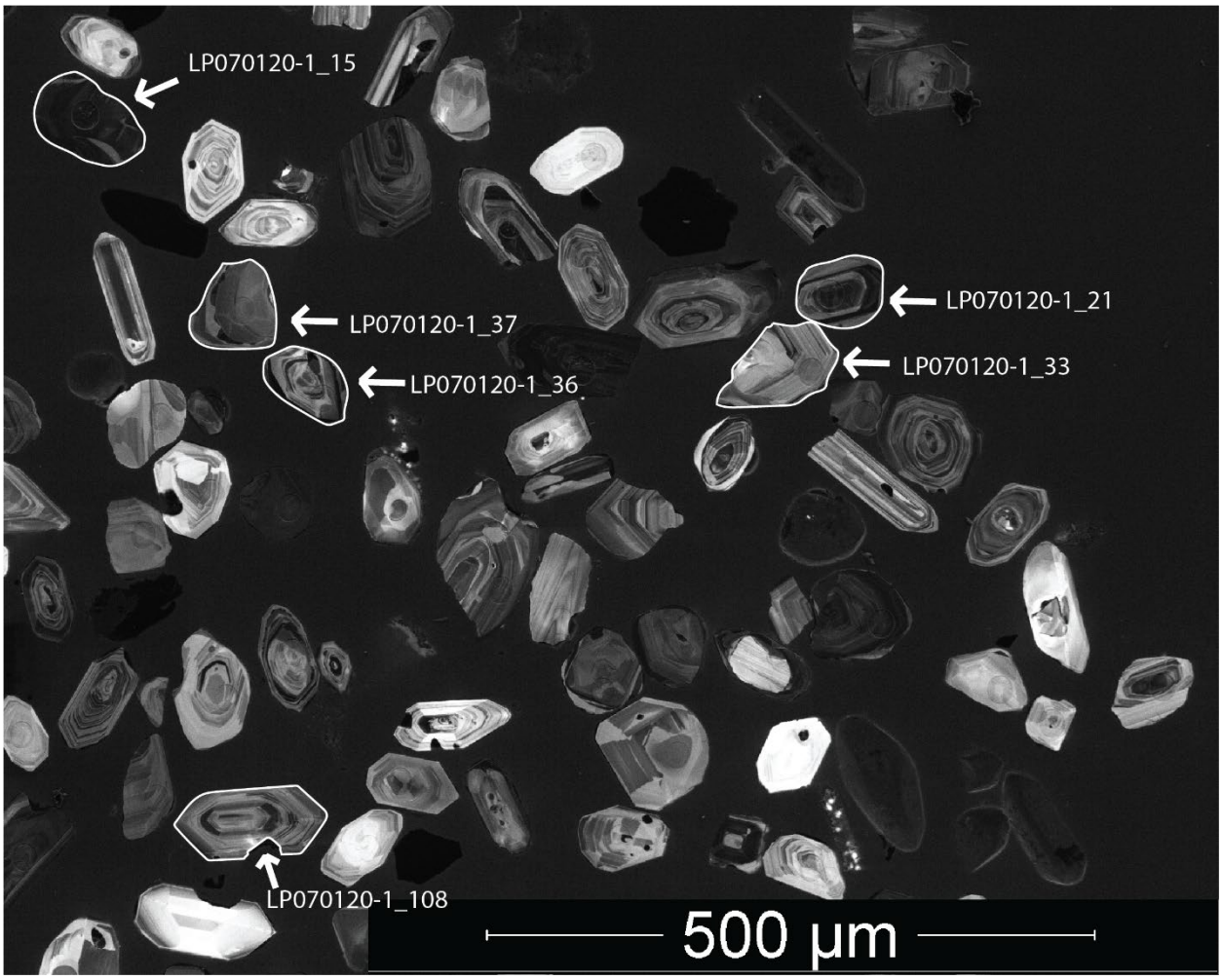
Grain	Unit	P (ppm)	Sc (ppm)	Ti (ppm)	Y (ppm)	Nb (ppm)	La (ppm)	Ce (ppm)	Pr (ppm)	Nd (ppm)	Sm (ppm)	Eu (ppm)	Gd (ppm)	Tb (ppm)	Dy (ppm)	Ho (ppm)	Er (ppm)	Yb (ppm)	Lu (ppm)	Hf (ppm)	Pb (ppm)	Th (ppm)	U (ppm)
1211-SR2a_Zrn-01	MM	380	73.9	9.7	785	4.35	0	9.14	0.098	1.93	4.9	0.3	21.7	7.35	79.1	27.7	115.6	202	39.6	9750	27.6	65.9	214
1211-SR2a_Zrn-02	MM	440	98.8	2.8	1590	2.31	0.167	13.7	0.36	4.18	7.9	0.56	40	13.07	147.1	54.7	234	403	79.3	10910	50.5	238.2	353
1211-SR2a_Zrn-03	MM	480	90.9	14.6	1084	3.51	2.2	64.4	1.18	8.4	7.5	1.57	33	9.76	105.3	37.3	163	313	59.7	10570	36.2	493.1	331
1211-SR2a_Zrn-04	MM	330	90.8	10	515	5.85	0	46	0.034	1.32	2.32	0.459	11.8	3.98	44.7	17.37	81.2	183.9	40.8	10980	26.8	129.1	167.5
1211-SR2a_Zrn-05	MM	530	117.9	7.7	2910	2.75	0.137	12.42	0.665	9.46	20.6	1.36	97.5	29.5	312	102.6	393	601	108.4	9130	93.0	663	1055
1211-SR2a_Zrn-06	MM	560	346	3.8	942	1.13	0	1.85	0	0.21	0.57	0.05	6.62	3.93	69.5	29.8	146	348	72.8	14070	164.5	24.1	722
1211-SR2a_Zrn-07	MM	630	132.8	13.2	1701	2.78	0.006	25.4	0.115	2.06	4.1	1.61	24.6	9.52	122.6	52	258	573	124.7	7880	47.0	204.8	219.7
1211-SR2a_Zrn-08	MM	370	140	2.8	505	0.56	0.016	0.72	0.009	0.97	2.52	0.112	20.9	6.8	64.3	16.1	52.9	68.2	11.94	12580	92.8	44.7	459
1211-SR2a_Zrn-09	MM	70	122.8	5.6	815	2.59	0	23.5	0.0046	0.95	2.39	0.48	16.7	5.69	66.7	27	121.9	265	55.3	12390	32.1	282	507
1211-SR2a_Zrn-10	MM	370	155	14	723	1.15	0.05	51.3	0.343	3.75	5.5	0.71	21	5.79	62.8	23.4	106.7	223	50.3	9050	56.5	105.7	140.6
1211-SR2a_Zrn-11	MM	120	169	10.5	931	4.73	0	40.6	0.088	1.01	2.73	1.19	20.4	6.8	82.8	31.2	143	290	61.3	11260	24.1	101.2	134.3
1211-SR2a_Zrn-12	MM	230	164	14.4	1071	1.49	0	31.7	0.169	3.33	6.3	2.06	31.9	9.5	102.2	37.6	163	295	58.8	9310	21.8	73.5	101.4
1211-SR2a_Zrn-13	MM	290	103.5	3.3	766	0.46	0.031	6.61	0.143	1.99	4.67	0.95	20.4	6.05	69.3	24.4	107.4	213	44.7	9710	59.8	49.7	101.1
1211-SR2a_Zrn-14	MM	640	271	9.8	1448	2.45	0	32	0.046	2.05	4.29	2.16	27.6	10.43	123.5	48.1	218	415	85.9	9190	27.9	260.7	347.7
1211-SR2a_Zrn-15	MM	40	141	4.1	1700	7.22	0.03	76.9	0.128	1.81	4.1	1.22	27.5	9.2	119	52.2	254	598	140	12000	50.0	364	420
1211-SR2a_Zrn-16	MM	550	193	18.5	1244	1.97	0	24.3	0.078	1.3	2.3	0.37	22.7	7.72	102.5	40.6	200	397	83.7	11380	30.1	69.7	104.5
1211-SR2a_Zrn-17	MM	170	108.2	24.2	690	2.94	0	48.9	0.174	2.29	4.86	1.37	20.2	6.76	69.9	23.7	94.5	178	35.6	9260	6.1	39.58	33.3
1211-SR2a_Zrn-18	MM	550	168	13.9	2700	2.47	0.037	17.9	0.461	8.19	13.2	2.69	66.3	21.5	258	95.3	401	673	134	8960	29.9	389	429
1211-SR2a_Zrn-19	MM	310	80.7	9.4	384	2.04	0	13.02	0.012	0.47	0.89	0.167	5.78	2.15	29.6	12.91	64.5	168.3	38.2	11540	39.9	97.4	241.4
1211-SR2a_Zrn-20	MM	160	110.6	9	1058	2.35	0	22.7	0.115	1.72	4.41	0.77	22.3	7.77	91.6	36.1	161.1	323	66.1	10480	37.0	82.5	142.9
1211-SR2a_Zrn-21	MM	90	161	6.1	1170	1.3	0.015	6.82	0.07	1.94	5	0.96	26.7	9.6	108	41.9	180	315	66.2	10460	10.9	72	86.3
1211-SR2a_Zrn-22	MM	1380	342	31	2880	0.85	0.137	2.02	0.379	6.39	13.2	0.41	71.1	23.8	279	104.4	426	734	147	10230	11.0	114.9	210
1211-SR2a_Zrn-23	MM	400	117.4	15.9	2510	3.23	0.046	27	0.71	12.2	15.5	1.7	74	21.8	234	83.4	353	639	127.3	9100	133.3	434	477
1211-SR2a_Zrn-24	MM	920	240	17.8	2110	0.66	0.015	2.36	0.218	3.88	9	0.33	49.9	17.8	196	73.5	307	529	104.7	10950	15.3	90	194

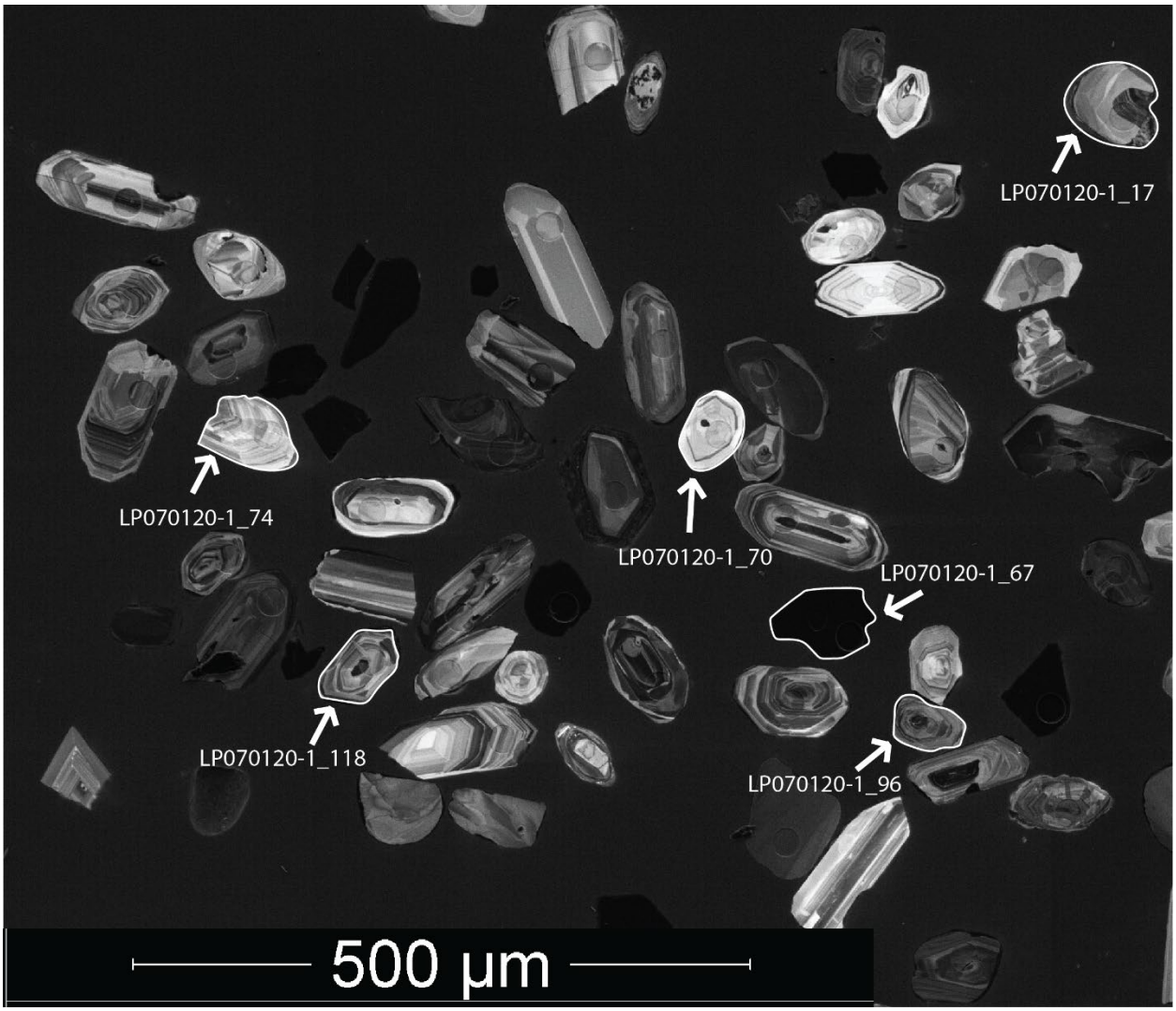
1211-SR2a_Zrn-25	MM	310	153.6	8.7	1527	1.81	0.007	7.7	0.279	3.26	8.6	1.16	37.8	12.85	149.5	52.9	224	387	81.1	9270	116.8	139.6	395
1211-SR2a_Zrn-26	MM	160	219	3.9	1470	8.7	0.121	51.6	0.111	1.82	4.95	1.36	23.4	8.8	107	44.8	221	548	132.1	12340	57.8	333.2	515
1211-SR2a_Zrn-27	MM	80	80.6	3.1	387	1.62	0	20.7	0.044	0.95	1.7	0.462	8.23	2.77	32	12.32	56.3	135.3	31.4	10870	34.2	135.6	298
1211-SR2a_Zrn-28	MM	20	168	28	1200	2.08	0.09	11.1	0.35	5.81	7.3	1.86	35	11.1	118	41.3	170	295	59.8	10750	17.1	266	438
1211-SR2a_Zrn-29	MM	100	93.6	4.3	2130	3.58	0	72	0.277	5.45	10.9	1.03	47.9	16.7	198	74.9	317	538	108.5	9060	39.0	106.8	118.3
1211-SR2a_Zrn-30	MM	250	160	7.5	1530	1.82	0.067	29.5	0.58	10.5	14.8	5.2	53.7	16	155	52.3	209	377	80.3	9350	46.8	509	708
1211-SR2a_Zrn-31	MM	270	82	6.8	931	5.11	0	9.25	0.065	1.22	3.45	0.221	19.3	7.49	86.8	32.2	141.4	254	51.4	9210	7.8	64.3	118.6
1211-SR2a_Zrn-32	MM	320	218	20.4	1604	1.53	0.048	15.3	0.56	8.8	16.4	2.97	63.2	17	179	57.1	224	348	67.7	8920	46.3	204	199.8
1211-SR2a_Zrn-33	MM	1630	60.3	16.3	1060	1.76	56	130	15.7	72	17.5	0.92	34.2	9.09	96.7	34.8	155	277	53	9150	28.2	72.4	135.2
1211-SR2a_Zrn-34	MM	-160	183	4.2	1173	2.2	0.018	54.5	0.17	2.22	5.6	1.71	26.4	7.77	101.1	40.7	191	371	77.6	10090	38.3	168	149.1
1211-SR2a_Zrn-35	MM	180	116.8	11.2	634	1.06	0	15.5	0.02	0.52	1.37	0.3	10.7	4.01	49.2	20.2	97.2	208	44.4	10940	12.0	104.9	196.9
1211-SR2a_Zrn-36	MM	10	81.7	5.1	325	0.26	0	2.82	0.012	0.54	0.85	0.44	5.48	2	23.3	10.33	50.3	136	32.9	8310	4.9	44.3	49.8
1211-SR2a_Zrn-37	MM	130	101.4	13.1	1191	2.68	0.42	10.67	0.235	3.18	4.83	0.63	25.6	9.09	106.9	41.7	177.7	332	67.2	10720	50.5	79.4	228
1211-SR2a_Zrn-38	MM	-40	123.4	5.3	992	3.61	0	9.2	0.054	0.92	2.41	0.394	17	5.6	77.1	31.7	161	374	95.2	10650	61.3	72.4	723
1211-SR2a_Zrn-39	MM	420	201	4.5	861	0.91	0	3.31	0	0.26	1.05	0.302	10.6	4.57	64.1	28.2	149.5	356	76.9	12430	35.0	29.7	241.4
1211-SR2a_Zrn-40	MM	1140	117	8.3	923	1.58	6.6	27.8	1.63	7.6	2.91	0.58	12.3	5.02	65.9	29.3	152.5	363	84	11450	17.0	68.3	119.3
1211-SR2a_Zrn-41	MM	260	161	8.2	1520	4.09	0.29	40	0.67	6.7	11.4	6.5	57	15.8	168	48.2	183	374	89.3	12600	50.0	433	695
1211-SR2a_Zrn-42	MM	-50	88.2	4.3	366	0.48	0	3.14	0.018	0.163	0.6	0.262	5.02	1.87	26	11.59	56.6	128.7	29.3	12710	27.1	41.6	140.9
1211-SR2a_Zrn-43	MM	470	106	27	690	1.2	0.055	11.9	0.13	2.31	3.6	0.44	14.9	4.8	57.2	21.2	90	162	32.2	10800	18.8	54.7	130
1211-SR2a_Zrn-44	MM	280	96.4	9.5	561	3.1	0.024	16.2	0.032	0.96	1.72	0.61	8.4	3.35	43.8	18.2	85	184	41.8	11390	28.8	69.3	132.3
1211-SR2a_Zrn-45	MM	400	155.2	23	807	2.33	0	29.7	0.101	1.33	2.99	1.02	16.8	5.56	68.8	28	126.4	245	53.6	10030	53.0	124.5	156.5
1211-SR2a_Zrn-46	MM	210	104.2	3.5	1184	3.12	0.014	27.9	0.099	1.72	3.4	0.51	20.5	7.39	93.4	37.8	178	350	69.9	10380	123.8	304	467
1211-SR2a_Zrn-47	MM	20	94.6	3.5	432	2.32	0	13.7	0.014	0.68	0.94	0.132	6.38	2.26	29	12.5	63.6	149.3	33.6	12610	25.5	47.4	160.8
1211-SR2a_Zrn-48	MM	-100	100.7	14.6	488	0.58	0	25	0.069	1.38	2.67	0.98	13.3	4.12	46.7	16.4	71.8	132.8	27.9	9230	9.5	63.6	81.3
1211-SR2a_Zrn-49	MM	10	133	12.4	672	2.42	0	15.5	0.025	0.57	1.69	0.23	10.7	4.22	51.3	21.3	107.6	235	53.2	11350	72.5	44.4	167.3
1211-SR2a_Zrn-50	MM	230	106.8	14.4	1800	2.87	0.006	4.65	0.235	4.01	7.28	0.88	42.2	15.1	167	63.1	260	460	93.5	9520	39.3	56.4	116
1211-SR2a_Zrn-51	MM	480	167	10.6	1030	1.68	0.16	30.1	0.58	10	11.2	4.33	42.9	11.01	111.3	35.9	141	229	47.3	9180	27.8	117.1	162.5
1211-SR2a_Zrn-52	MM	90	70.9	13	2570	9.6	0.061	17	0.34	6.2	11.7	0.42	68.2	21.8	247	91.5	396	584	112.2	12170	8.8	80.7	155
1211-SR2a_Zrn-53	MM	6000	72.2	9.7	532	3.03	480	900	82	288	43	5.2	40	7.14	59.8	16.42	65.8	109.9	21.6	8780	71.8	224	161
1211-SR2a_Zrn-54	MM	160	125	21.6	2070	2.12	0.051	22.3	0.101	2.8	6.2	3.05	39.1	13.6	172	65.3	305	620	136.2	7130	10.9	169	208.8
1211-SR2a_Zrn-55	MM	120	93.7	9.5	638	3.32	0.0031	20.9	0.075	1.27	2.61	0.199	13.2	4.72	57.1	22.1	98.9	189.6	39.6	10760	38.3	74.6	139.5
1211-SR2a_Zrn-56	MM	180	68.6	34.2	1910	2.46	0	6.33	0.083	2.27	5.29	1.2	30.1	12.14	159	63.7	314	671	141.1	8860	41.5	524	194.7
1211-SR2a_Zrn-57	MM	1180	200.2	7.4	2610	0.75	0	2.28	0.099	2.56	7.2	0.162	49.7	18.4	233	87.2	375	630	123.5	12330	24.8	115	224.8
1211-SR2a_Zrn-58	MM	320	148.7	6.6	886	1.21	0.011	28.7	0.086	2.33	3.71	1.25	19.9	6.58	78	30.3	140.9	271	59.5	9030	15.0	48.35	49.8
1211-SR2a_Zrn-59	MM	350	173.5	4.9	1081	1.53	0	18.18	0.072	1.12	2.73	1.08	16.9	5.81	75.8	31.8	165.7	427	109.2	9700	32.0	147.5	367
1211-SR2a_Zrn-60	MM	710	356	4.8	1504	1.79	0	1.73	0.023	0.78	2.49	0.242	19.8	9.32	129.6	51.1	225	441	88.8	11530	27.1	40.5	380
1211-SR2a_Zrn-61	MM	3010	1280	4.8	3750	2.39	0	3.12	0.033	0.57	3.12	1.29	27.7	16.5	269	121.5	660	1650	353	12500	32.0	17.1	324
1211-SR2a_Zrn-62	MM	-50	136.3	4.5	152	0.25	0	0.227	0	0	0.09	0.307	3.97	1.63	15	4.97	19.6	35.5	6.86	13140	32.8	7.59	482.8
1211-SR2a_Zrn-63	MM	-50	97	8.2	665	1.86	0.16	22.4	0.115	0.98	3.4	0.78	12.2	4.63	56.5	22.1	102	212	45.4	10900	15.4	72.5	103.7
1211-SR2a_Zrn-64	MM	40	79.5	10.4	394	2.7	0	31	0.055	0.63	1.67	0.386	8.41	2.79	33.3	12.76	58.9	127.2	28.3	10420	12.2	56.4	66.5
1211-SR2a_Zrn-65	MM	350	95.8	10.5	479	0.9	0	1.95	0.033	1.6	3.73	0.074	22.5	5.73	52.3	16.1	56.8	75.3	14.8	11790	76.5	115.8	177.9
1211-SR2a_Zrn-66	MM	440	148	16.2	986	1.86	0	30.6	0.037	1.57	4.44	1.4	24.4	7.45	86.4	34.2	152	280	57.6	9420	5.0	52.3	46.9
1211-SR2a_Zrn-67	MM	700	160	6.2	1360	1.46	0	2.44	0.092	1.9	3.17	0.15	27.1	10	111.6	47.4	203	382	78.9	11880	68.3	99	278
1211-SR2a_Zrn-68	MM	300	105.6	7.4	436	1.47	0	8.15	0	0.43	0.91	0.045	6.46	2.57	35.7	14.62	71.3	153.8	33.4	11930	87.8	55.1	323
1211-SR2a_Zrn-69	MM	1010	233	8.4	1690	0.43	0	0.75	0.063	1.36	4.02	0.32	28.6	10.27	133.6	60.4	306	604	125.5	11110	8.6	44.48	139.1
1211-SR2a_Zrn-70	MM	-10	113.2	5.6	531	0.88	0	16	0.021	1.06	1.43	0.7	10.6	3.41	41.5	16.5	80.1	184	43.4	10920	23.7	126.1	245
1211-SR2a_Zrn-71	MM	620	68.5	25.8	3260	4.64	0.022	7.94	0.233	4.28	9.58	1.54	69	24.1	286	110.3	484	806	157.2	9370	53.3	287.2	312
1211-SR2a_Zrn-72	MM	250	118	5.6	1082	3.69	0.055	95.6	0.269	4.17	7.6	2.02	29.5	8.52	97	36.3	157	308	63.9	9200	88.5	325	404
1211-SR2a_Zrn-73	MM	210	167	10.1	1731	1.72	0.176	5.69	0.47	6.15	14.5	5.37	67.1	19.4	186.6	54.8	205	340	68.6	10650	122.3	68.5	440
1211-SR2a_Zrn-74	MM	570	95.5	5.7	1940	4.63	0.51	42.2	0.335	6.6	8.5	1.81	44.8	14.9	167	62.5	296	566	111.6	9030	70.8	755	428
1211-SR2a_Zrn-75	MM	110	70	5.5	225	0.525	0.213	7.01	0.045	0.44	0.49	0.218	4.06	1.49	18.6	7.36	35.4	85.3	18.3	10910	60.0	99.9	299
1211-SR2a_Zrn-76	MM	1170	173	9	2570	1.8	0	2.33	0.082	1.27	6.1	1.36	36.3	15.6	219	83.7	395	751	151	13080	153.8	102.2	511
1211-SR2a_Zrn-77	MM	930	245	13.9	2490	0.59	0.095	2.05	0.51	7.9	15.4	0.48	77.9	23.6	241	84.9	353	680	131	11170	15.0	61.3	195.3
1211-SR2a_Zrn-78	MM	470	84.6	12.7	890	3.46	0.222	12.6	0.184	1.99	2.46	1.04	16	5.72	72.3	27.1	122	260	56.5	10780	40.8	346	260.8
1211-SR2a_Zrn-79	MM	830	111	19	3200	4.91	0.55	68.6	0.6	8	26.6	13.6	150	43	400	107	372	532	100.4	9880	44.0	658	643
1211-SR2a_Zrn-80	MM	650	138	17	1470	4.7	0.4	31.8	1.82	13.8	13.3	6.2	25.5	8.7	116	44.8	235	690	160	12310	185.8	64	1060
1211-SR2a_Zrn-81	MM	710	86.9	15.2	1066	3.7	1.59	55.1	0.93	8.06	11.1	1.8	39.5	10.76	102.3	35.3	146.9	274	54.9	10460	65.8	1091	759
1211-SR2a_Zrn-82	MM	830	76	35	5240	27.6	0.43	56.9	1.59	16.5	19.6	3.27	106	39.8	455	188	813	1350	265	10310	315.0	341	918
1211-SR2a_Zrn-83	MM	440	112.1	3.4	1226	0.92	0	8.01	0.207	3.47	6.64	1.25	30	9.81	115.8	41.8	177	319	64.3	9030	21.5	52.5	90.5
1211-SR2a_Zrn-84	MM	250	124.9	10.3	676	1.27	0	41.9	0.146	2.98	4.97	1.78	20	5.96	63	22.1	95.2	200	41.1	9030	18.6	352	275.1
1211-SR2a_Zrn-85	MM	500	190	15.9	1900	1.86	0	5.96	0.209	3.57	8.6	0.249	43.9	16.2	179	66.1	283	457	87.6	11220	38.8	244	471
1211-SR2a_Zrn-86	MM	660	204	7.3	1008	4.88	0.034	56.4	0.21	3.32	5	1.25	20.3	6.7	76.9	31	150.7	333	73	9720	121.0	516	647
1211-SR2a_Zrn-87	MM	290	165	11	581	0.87	0.007	2.35	0.065	2.36	6	0.34	28.3	7.95	70.6	20.4	72.4	100	18.5	10970	36.3	52.2	339
1211-SR2a_Zrn-88	MM	140	63.2	3.9	96.4	0.82	0	0.475	0	0	0.18	0.222	1.87	0.61	7.73	2.98	11.9	18	3.39	10100	25.3	10.8	83.6
1211-SR2a_Zrn-89	MM	360	124	5.5	585	0.85	0.078	0.94	0.065	0.75	1.67	0.32	7.25	3.39	45	18.9	83.4	171	36.8	13410	23.9	22	183.3
1211-SR2a_Zrn-90	MM	510	151	7.2	1422	2.64	0	24.1	0.179	1.88	5.02	1.23	25.7	9.45	113.1	46.8	222	473	101.5	8330	33.3	358.5	375
1211-SR2a_Zrn-91	MM	360	80	3.1	2680	3	0.054	10.5	0.4	7.5	15.3	2.66	79.4	24.8	271	95.8	402	655	128.2	7370	31.3	160	177.8
1211-SR2a_Zrn-92	MM	80	80	4.3	282	2.08	0.033	4.22	0.034	0.13	0.49	0.313	2.28	1.19	16.67	7.92	49.5	206	57.5	13240	264.3	93.9	865.6
1211-SR2a_Zrn-93	MM	170	54.8	4.7	611	10.94	0	32.1	0.078	2.33	4.28	0.244	17.9	5.37	60.2	20.9	91.9	160.3	32.4	8300	16.3	73	107.6
1211-SR2a_Zrn-94	MM	1310	201	18.5	1310	1.22	5.5	25	4.09	27.7	22.5	0.91	65.8	16.6	146	45.5	177	316	63.2	11630	40.3	260	876
1211-SR2a_Zrn-95	MM	910	101.7	3.8	1240	1.14	4.3	38.5	1.53	10.1	8.4	2.45	30.1	9.4	102	38.2	187	412	90	9480	23.3	348	249
1211-SR2a_Zrn-96	MM	2090	106.1	15.4	1265	1.41	16.1	98	7.2	48	28.7	7.84	73.9	17.6	154	44.5	165	238	44.7	8560	24.9	408	277.2
1211-SR2a_Zrn-97	MM	417	155	9.4	1245	1.97	0.075	3.96	0.236	3.15	5.7	0.32	32.2	9.8	115.5	43.1	192.8	355	73.3	11040	78.0	152.4	318.3
1211-SR2a_Zrn-98	MM	300	69.5	18.9	608	0.58	0.04	17.95	0.362	5.19	4.76	1.11	17.7	4.84	52.5	19.7	89	193	41.9	7650	35.3	146	168
1211-SR2a_Zrn-99	MM	250	87.1	20	574	1.08	0	2.46	0.093	1.18	2.66	0.33	13.7	4.4	53.8	19.7	84.4	152	30.9	9710	10.4	23.6	61.9
1211-SR2a_Zrn-100	MM	810	173	22	1940	4.87	0.1	12.4	0.24	0.53	5.9	0.88	27.9	13.3	165	67	311	650	124	12500	74.3	312.3	1074
Sample 13-11-SR3																							
Grain	Unit	P (ppm)	Sc (ppm)	Ti (ppm)	Y (ppm)	Nb (ppm)	La (ppm)	Ce (ppm)	Pr (ppm)	Nd (ppm)	Sm (ppm)	Eu (ppm)	Gd (ppm)	Tb (ppm)	Dy (ppm)	Ho (ppm)	Er (ppm)	Yb (ppm)	Lu (ppm)	Hf (ppm)	Pb (ppm)	Th (ppm)	U (ppm)
1311-SR3a_b_Zrn-01	MM	830	171	8.5	2660	4.57	15.8	115	5.9	36	19.3	3.78	82.7	24	265	95.5	397	699	133	10240	28.4	852	502
1311-SR3a_b_Zrn-02	MM	170	217	11.1	1370	4.96	0.16	35.7	0.26	2.98	4.5	2.15	25.7	9.4	118	43.7	212	500	110	9910	49.5	476	928
1311-SR3a_b_Zrn-03	MM	110	85.4	11.5	714	2.1	0	6.07	0.019	0.59	2.28	0.103	11.9	4.65	63	24.8	111.8	222.8	45.3	10000	33.1	83.3	268.9
1311-SR3a_b_Zrn-04	MM	290	102.6	16.3	1587	0.58	0.047	8.34	0.316	3	6.81	0.71	34	12.3	140.3	54.1	237	415	81.8	9040	28.6	128.7	229.1
1311-SR3a_b_Zrn-05	MM	2170	109.5	10.4	671	0.87	44	132	14.2	63	15.5	1.86	28.7	6.66	64.4	23.4	96.1	174	35.6	8710	38.7	205.7	187.6
1311-SR3a_b_Zrn-06	MM	232	92.2	13.8	420	4.19	0.174	8.8	0.258	1.91	2.12	0.59	8.7	2.76	30.3	12.1	57.9	139	29.1	9960	42.8	188	804
1311-SR3a_b_Zrn-07	MM	420	187	6.6	1273	1.07	0	7.87	0.04	1.45	3.63	0.85	21	8.37	108.1	43.4	207.6	498	109.5	10040	81.0	53.5	544
1311-SR3a_b_Zrn-08	MM	200	106.5	15.9	610	1.44	0.051	9.2	0.119	2.46	3.74	2	19.4	6	64.9	20.8	89	154	30.9	8730	12.9	89	195
1311-SR3a_b_Zrn-09	MM	500	244	8	1868	3.14	0	27.5	0.052	1.38	3.91	0.458	28.7	11.41	151.6	62.4	311	659	136.3	11240	67.5	158.6	289.1
1311-SR3a_b_Zrn-10	MM	100	105.9	4.4	196	0.62	0	0.221	0.012	0.14	0.4	0.27	4.11	1.73	17.5	6.11	24.8	36.7	5.97	14230	23.3	9.6	480
1311-SR3a_b_Zrn-11	MM	200	139.6	10.5	1601	2.19	0.37	38.8	0.56	7.15	10.5	3.01	46.8	13.8	152.1	54.8	228	416	82.1	8560	25.6	358	214
1311-SR3a_b_Zrn-12	MM	280	266	20.9	1600	2.27	0.17	7.95	0.25	1.91	4.3	0.88	30.6	11.48	138	52.7	239	459	91.9	9930	34.3	71.2	237
1311-SR3a_b_Zrn-13	MM	152	107.5	6.3	903	2.27	0.042	37.4	0.176	2.71	4.8	1.75	22.3	7.2	77	28.3	136	297	65.3	10740	21.0	205	157
1311-SR3a_b_Zrn-14	MM	230	72.7	5.9	789	1.5	0	5.8	0.022	0.95	2.63	0.244	17.1	5.65	70.7	28.6	123.5	234	48.9	9210	27.4	30.5	83
1311-SR3a_b_Zrn-15	MM	200	136	14.4	2220	2.52	0.15	11.45	0.37	4.52	8.5	1.52	52	16.9	209	79.1	344	626	122	8400	51.5	159.4	187.2
1311-SR3a_b_Zrn-16	MM	210	319	13.3	520	1.06	0	3.7	0.01	0.5	2.2	0.123	17.9	6.25	61.7	16.2	61.4	121	25.6	13500	84.0	34.9	528
1311-SR3a_b_Zrn-17	MM	580	413	18	2980	0.92	0	2.7	0.45	4.6	15	2.19	95	27.7	288	105	424	732	137.1	11670	122.8	83.7	272
1311-SR3a_b_Zrn-18	MM	160	183	19	1190	2.85	0.296	20.1	0.33	4.5	7.2	0.96	24.2	9.6	102	39.9	187	436	82	11750	52.0	227.6	633.8
1311-SR3a_b_Zrn-19	MM	300	110.8	23.5	1576	2.49	0.133	17.9	0.196	3.96	6.66	1.94	33.9	12.23	148	56.2	245	472	94.5	7370	14.8	62.1	147.2
1311-SR3a_b_Zrn-20	MM	180	124.7	8.6	1414	4.02	0	11.08	0.049	1.15	2.99	0.57	21.4	7.91	113.8	46.8	226	488	104.8	10110	26.9	157	235
1311-SR3a_b_Zrn-21	MM	120	137.9	5.6	1004	1.37	0.022	3.73	0.157	2.03	4.74	0.69	24.5	7.83	89.7	35.4	159.5	308	63.1	10640	17.9	61.6	223.1
1311-SR3a_b_Zrn-22	MM	500	211	15	2150	0.8	0	0.91	0.067	1.59	5.35	0.081	41	18	219	73.1	275	412	70.5	11670	19.1	48.2	307
1311-SR3a_b_Zrn-23	MM	360	194	12.9	1920	1.88	0.139	11.2	0.232	3.55	7.1	1.61	44.9	16	185	65.9	285	507	97.4	10070	23.2	163	301
1311-SR3a_b_Zrn-24	MM	390	136.5	14.5	761	2.74	3.3	35.7	1.09	6.5	6.1	0.76	21.6	6.75	72.9	26.2	116.3	209	41.3	9990	37.5	180	171
1311-SR3a_b_Zrn-25	MM	270	265	3.9	2130	2.62	0.0047	8.1	0.168	3.36	6.76	1.22	46.6	16	201	75	323	611	116.9	11150	55.3	228	537
1311-SR3a_b_Zrn-26	MM	328	178	9.4	2030	7.69	5.2	35.3	2.04	12.4	9.4	1.47	42.4	14.9	177	71	327	662	133	10700	56.3	345	594
1311-SR3a_b_Zrn-27	MM	220	76.3	5.5	1017	8.46	0.012	18.57	0.042	1.16	2.97	0.303	18.5	6.96	87	34.6	158.8	319	62.6	11930	41.8	105.8	267.6
1311-SR3a_b_Zrn-28	MM	120	119.2	13	495	0.79	0.34	9.4	0.097	1.33	2.06	0.49	7.8	3.09	38.7	16.3	75.2	181	40.6	9110	84.8	75.1	192
1311-SR3a_b_Zrn-29	MM	1170	1351	4.6	2152	2.02	0.04	3.18	0.047	0.58	1.76	0.65	16.1	9.26	154.6	72.7	405	1246	267	11950	28.0	6.69	306
1311-SR3a_b_Zrn-30	MM	118	60	3.8	1058	4.67	0.019	9.04	0.146	1.7	5.09	0.97	26	8.66	101.2	38.1	161	283	54.4	8990	18.5	42.2	89
1311-SR3a_b_Zrn-31	MM	590	307	17	2230	0.97	0.63	3.88	0.55	6.9	14.1	2.52	63	20.7	208	72	270	398	65	11600	23.0	93	300
1311-SR3a_b_Zrn-32	MM	180	79.4	6.4	317	1.16	0	18.2	0.024	0.3	1.21	0.38	6.52	2.13	25.3	9.45	48.6	104.1	22.2	9930	44.5	77.9	100.8
1311-SR3a_b_Zrn-33	MM	1010	278	13.3	5230	5.07	0.34	14	0.99	11.9	19.6	3.82	107.6	38.8	469	175	784	1458	275	13530	81.8	1014	1420
1311-SR3a_b_Zrn-34	MM	230	103.4	15.4	2220	11.1	2.05	33.8	1.41	10.7	11.1	9.32	41.1	15.2	182	70.8	355	852	180	13450	199.8	669	1656
1311-SR3a_b_Zrn-35	MM	200	149	1	2420	4.2	0.047	44.3	0.61	12.6	19.6	3.4	88	26.6	262	87.1	341	545	102	9470	50.3	673	475
1311-SR3a_b_Zrn-36	MM	20	52.1	16.5	981	45	0	4.83	0	0.17	0.64	0.078	4.72	2.61	50.2	26.3	166	559	130.5	16300	465.0	97.9	924
1311-SR3a_b_Zrn-37	MM	-21	53.1	3.3	144.1	0.353	0	2.02	0	0.24	0.2	0.062	1.85	0.64	9.22	3.87	20.74	49.2	10.31	8110	76.8	42	367
1311-SR3a_b_Zrn-38	MM	180	172.7	5.4	1322	2.64	0	15.5	0.096	2.42	5.81	1.08	32.2	10.67	119.9	47.1	206	378	76.8	10700	30.7	281	517
1311-SR3a_b_Zrn-39	MM	130	93.5	5.8	516	3.3	0	26.4	0.032	0.62	1.47	0.41	9.8	3.56	44.5	16.6	74.1	147	30.9	11630	20.4	157	295

1311-SR3a_b_Zrn-40	MM	240	263	4.2	1490	9.4	0.083	68	0.231	3.39	6.1	1.82	28.5	8.69	120	48.5	230	569	124	11210	81.0	799	958
1311-SR3a_b_Zrn-41	MM	360	250	5.6	852	3.95	0	7.76	0	0.33	1.31	0.26	11.6	5.33	64	26.7	137	314	67.9	12260	69.8	116.7	568
1311-SR3a_b_Zrn-42	MM	120	139	10.5	458	1.12	1.72	14.7	0.86	6.1	6.9	0.92	21.2	5.7	49	15.6	58.8	104.5	18.9	12300	34.8	126	434
1311-SR3a_b_Zrn-43	MM	350	89.4	7.9	1190	5.15	0.022	39.4	0.142	2.16	4.8	0.3	25.2	8.68	106.8	39.4	184	332	67.4	9620	34.0	669	465.5
1311-SR3a_b_Zrn-44	MM	0	114.5	4.2	636	2.32	0	16.2	0.016	0.45	1.05	0.3	8.1	3.13	41.9	19	103.3	304	73.2	10820	33.1	242.8	420
1311-SR3a_b_Zrn-45	MM	380	279	12.6	1740	3.21	0.121	11.5	0.206	3.7	7.1	2	37	13.3	157	60.1	270	579	121.2	10810	182.8	185.8	647
1311-SR3a_b_Zrn-46	MM	590	461	11.6	2360	2.22	0.085	19.4	0.84	10.7	22	10.9	93	28.5	276	83.2	341	625	125.1	12050	109.3	163.7	348
1311-SR3a_b_Zrn-47	MM	180	173	17.6	2110	1.7	0.64	44.1	0.64	9.4	13.8	6.76	62.7	19	208	75.6	320	574	118.3	6920	7.4	116.9	96.7
1311-SR3a_b_Zrn-48	MM	810	338	8.2	2270	0.82	0.057	0.86	0.114	2.67	7.2	0.4	54.1	20.3	232	75.8	288	434	76.6	11430	24.0	79.3	387
1311-SR3a_b_Zrn-49	MM	170	235	6.3	1160	1.2	0.065	8.57	0.109	2.9	3.9	2.65	17.2	6.62	88	34.2	173	461	117	10750	29.3	48.5	378
1311-SR3a_b_Zrn-50	MM	1070	488	18.5	3450	1.14	0.0045	1.1	0.236	3.98	10.61	0.207	62.8	24	301	118	536	1009	205.8	10410	37.4	80.7	490
1311-SR3a_b_Zrn-51	MM	250	287	4.1	1165	3.53	5.4	9.2	0.97	8.2	2.6	0.36	12.4	6.82	98.5	36.4	149.9	287	60.3	12650	74.0	33.4	910
1311-SR3a_b_Zrn-52	MM	380	120.4	14.3	2020	7.17	0.2	98.9	0.51	7.46	12.1	2.49	51.3	15.6	173	63.1	290	572	118	10020	162.0	864	631
1311-SR3a_b_Zrn-53	MM	190	63.8	4.8	1577	14.1	0.022	21.7	0.193	2.22	5.43	0.66	33.2	11.96	146.2	56.4	244	420	79.3	9830	67.5	168	408
1311-SR3a_b_Zrn-54	MM	990	526	5.3	2820	2.84	0.231	5.39	0.51	7.9	24.2	11.1	92	26.1	265	93	426	1080	225	12140	137.0	70.9	789
1311-SR3a_b_Zrn-55	MM	80	109	1.4	771	0.79	0.082	6.49	0.27	2.8	3.99	0.99	20.5	5.65	61.6	23.9	113	253	54.9	10600	99.0	107.8	250.3
1311-SR3a_b_Zrn-56	MM	550	175	7.9	2020	2.14	0.01	3.95	0.161	2.36	7.6	0.33	41	15.2	172	66.9	300	564	111.4	11090	29.5	143.8	464
1311-SR3a_b_Zrn-57	MM	220	132	36	670	4.6	0.21	11.8	0.174	1.41	2.57	1.06	18.6	5.9	67.7	23.5	100.6	184	35.5	9840	11.7	26.4	63.8
1311-SR3a_b_Zrn-58	MM	430	242	40	2590	4.37	2.8	22.5	2.54	19.3	28.2	10.1	90	28	275	88.8	367	677	131.8	10690	79.5	306.4	685
1311-SR3a_b_Zrn-59	MM	700	167.8	7.4	4130	5.41	0.136	7.3	0.49	7.5	16.3	2	89	32.2	391	143.2	613	1063	192	10090	31.1	229	337
1311-SR3a_b_Zrn-61	MM	-210	131	21	2450	4.7	0.59	14.7	1.72	24.1	29.7	9.1	106	31.7	297	88	298	429	76	8900	24.3	80.6	97.4
1311-SR3a_b_Zrn-62	MM	310	87.7	46	3500	34.6	0.31	35.7	0.7	14.2	19.1	3.9	90	33.5	369	130	472	698	117	8490	14.9	161.3	183
1311-SR3a_b_Zrn-63	MM	442	270	10	2332	6.65	0	88.8	0.134	1.99	7.12	2.84	43.5	15.24	186.6	73	339	733	155	9700	81.5	1260	889
1311-SR3a_b_Zrn-64	MM	810	331	12.2	3380	1.36	0.165	1.47	0.275	3.54	9.2	1.12	57.1	22.7	290	115.7	508	913	172	12140	28.4	85	473.8
1311-SR3a_b_Zrn-65	MM	170	99	15.5	1310	2.62	0.158	32.7	0.52	5.31	6.65	2.08	30.6	9.9	114	40.9	195	394	85.2	10380	27.8	116.6	208
1311-SR3a_b_Zrn-66	MM	165	163.8	6.1	2520	3.63	0.249	14.5	0.94	14.7	24.2	2.44	95.5	26.9	267	88.6	339	543	99.9	7290	101.8	368	851
1311-SR3a_b_Zrn-67	MM	30	57	1.8	300	1.01	0	3.78	0	0.24	0.52	0.062	2.9	1.22	17.2	9.1	50.7	136	33.1	12300	19.3	34.5	154.3
1311-SR3a_b_Zrn-68	MM	940	256	4.4	3880	0.72	0	0.86	0.079	2.1	7.7	0.207	55.9	24	333	133.5	600	1011	184	11560	14.8	54.1	224
1311-SR3a_b_Zrn-69	MM	540	97.5	12.2	1321	1.1	2.47	10.2	1.36	10.2	8.7	1.68	39.1	11.8	130.2	47.9	191	325	63.1	7950	11.9	33.5	65.4
1311-SR3a_b_Zrn-70	MM	290	102.5	7.1	672	3.76	0	10.9	0.032	0.8	1.46	0.38	8.9	4.1	52.5	22.5	112.8	281	61.6	11250	109.0	84.7	506
1311-SR3a_b_Zrn-71	MM	860	454	4.7	2230	2.67	0.186	1.82	0.43	5	8.1	2.8	33.1	13.3	179	70.1	330	771	164	12940	92.8	43.9	1512
1311-SR3a_b_Zrn-72	MM	560	186.2	11.9	1743	0.72	0	1.28	0.124	3.02	8.45	0.188	53.7	18.3	190	58.8	201	245	42.1	10100	13.4	54.8	142
1311-SR3a_b_Zrn-73	MM	670	329	12.7	1907	1.17	0	9.54	0.126	2.74	5.65	1.25	37.2	13.91	170.5	66.3	301	569	114.8	10310	43.4	70.4	136.8
1311-SR3a_b_Zrn-74	MM	490	105.7	6.6	2920	9.08	0.135	23.9	0.445	7.73	13.63	1.05	73.9	24.9	282	104.7	428	692	135	8570	42.8	311	376
1311-SR3a_b_Zrn-75	MM	290	148	14.3	991	1.64	0	21.9	0.102	1.86	4.36	0.92	21.3	7.07	84.2	32.9	152.7	308	68	8780	41.0	83.1	123
1311-SR3a_b_Zrn-76	MM	120	154	12.2	1545	4.82	0.239	43.8	0.351	2.78	6.5	1.77	30	9.64	124.8	49.4	237	503	110.9	9500	12.9	143	133.9
1311-SR3a_b_Zrn-77	MM	340	448	6.7	511	0.78	0.088	0.52	0.063	0.71	0.99	0.67	3.5	2.2	35.4	16.9	85	319	73.5	12600	103.3	14	642
1311-SR3a_b_Zrn-78	MM	420	99.2	3.9	792	1.69	3	16.4	1.68	10	6.2	2.99	20.1	5.05	56.4	22.3	109.4	260	65.4	11720	24.1	105.6	282
1311-SR3a_b_Zrn-79	MM	30	119.3	2.9	650	2.65	0	31.7	0.032	0.64	1.42	0.338	8.9	2.79	40.2	17.6	97	293	76.6	11360	51.8	373	505
1311-SR3a_b_Zrn-80	MM	170	133.1	5.7	498	1.93	0.112	10.08	0.208	2.83	7.8	1.51	27.8	6.54	63.4	16	57.2	92	17.3	12030	88.8	63.2	457.4
1311-SR3a_b_Zrn-81	MM	220	171	6.4	1430	3.62	0.291	45.4	0.99	13	20.4	6.52	72.2	17.3	153	45.2	170	289	55.9	11310	39.5	459	620
1311-SR3a_b_Zrn-82	MM	310	78.8	9.5	1314	2.11	0.039	14.2	0.356	4.25	7.27	0.75	35.7	10.42	126.1	45.1	196	348	68.1	9930	48.8	181	343
1311-SR3a_b_Zrn-83	MM	300	106.8	11.6	1379	4.56	0.035	21	0.165	2.29	5.19	0.41	28.1	9.71	114.8	44.8	212	408	88.4	10030	83.5	141.6	264
1311-SR3a_b_Zrn-84	MM	120	105.8	2.8	788	2.02	0	8.74	0.173	1.85	3.28	2	20.4	6.39	71.7	25.4	111.6	233	53.5	10610	44.8	23.7	129.7
1311-SR3a_b_Zrn-85	MM	220	124	14.4	773	1.24	0.064	12	0.119	2.07	3.7	1.12	15.8	5.52	58.1	23.8	107	226	46.6	9410	10.9	53.5	102.8
1311-SR3a_b_Zrn-86	MM	500	161	11.2	2050	1.4	1.23	34.3	1.59	14.5	19.9	8.19	67.7	20.1	199	57.7	222	407	79.9	9620	14.2	171	155
1311-SR3a_b_Zrn-87	MM	140	137	6.5	169	0.8	0	0.34	0.024	0.86	0.14	0.08	1.6	0.76	11.4	4.64	24.6	38.2	9.4	11370	8.8	3.89	65.2
1311-SR3a_b_Zrn-88	MM	290	134	8.7	1290	2.84	0.032	34.6	0.116	2.77	6	1.24	27.6	9.32	114.9	42.3	200	392	81.3	9620	71.3	176.7	222.6
1311-SR3a_b_Zrn-89	MM	580	391	14.1	1271	0.95	0.022	2.32	0.114	4.17	7.5	0.68	34.8	11.43	124	41.8	178	319	64.8	9810	21.3	119.6	370
1311-SR3a_b_Zrn-90	MM	240	138	8.7	588	0.8	0.049	12.14	0.168	2.43	2.9	1.46	14	5.06	55.4	18.6	80.2	173	40.3	10610	25.0	42.7	197.7
1311-SR3a_b_Zrn-91	MM	117	115.4	5.4	442	2.29	0.007	2.54	0	0.135	1.09	0.047	7.73	3.3	42	14.48	58.1	86.1	18	11660	55.7	73.2	736
1311-SR3a_b_Zrn-92	MM	390	156	70	2700	5.28	1.82	68.2	1.71	16.7	20.7	8.7	96	28.9	281	88.6	357	616	120	9020	54.5	404	470
1311-SR3a_b_Zrn-93	MM	230	108	8.8	668	1.06	0	14.7	0.05	1	3.1	1.03	18.5	5.47	59.5	22.3	95.7	178	35.8	9600	12.9	103.8	146.9
1311-SR3a_b_Zrn-94	MM	770	198	6	2020	1.26	0	2.1	0.141	2.82	7.38	0.366	43.7	16.74	189	67.9	280	489	94.1	9990	31.0	107	361
1311-SR3a_b_Zrn-95	MM	110	69	1.2	332	1.08	0.005	2.42	0.029	0.84	1.16	0.292	6.04	2.29	28.7	11.19	53.8	128	28	8710	6.0	8.88	63
1311-SR3a_b_Zrn-96	MM	250	92.7	3.4	578	1.45	0.105	34.8	0.104	1.4	2.5	0.92	10.2	3.52	41.5	17.9	82.4	197.9	46.6	9620	33.0	652.4	831
1311-SR3a_b_Zrn-97	MM	224	119.4	9.3	915	1.56	0	22.76	0.11	2.65	4.23	1.32	21.9	7.82	85.7	30.8	137.8	268	55.1	7900	5.3	73.5	58.3
1311-SR3a_b_Zrn-98	MM	300	274	11.2	1355	1.97	0.039	4.13	0.29	4.08	8.4	0.66	35.5	11.5	131	44.5	195	333	67.7	9150	24.8	211.4	591.9
1311-SR3a_b_Zrn-99	MM	370	127.5	7.4	1700	1.88	0.074	33.6	0.144	3.25	5.9	2	34.7	12.2	150	57.1	255	500	102.6	10150	10.0	193	135
1311-SR3a_b_Zrn-100	MM	41	84.5	8.6	609	2.09	0	8.25	0.058	0.52	1.97	0.07	12.2	4.34	53.4	20.8	90.9	168.9	34.4	10110	124.5	98.2	443

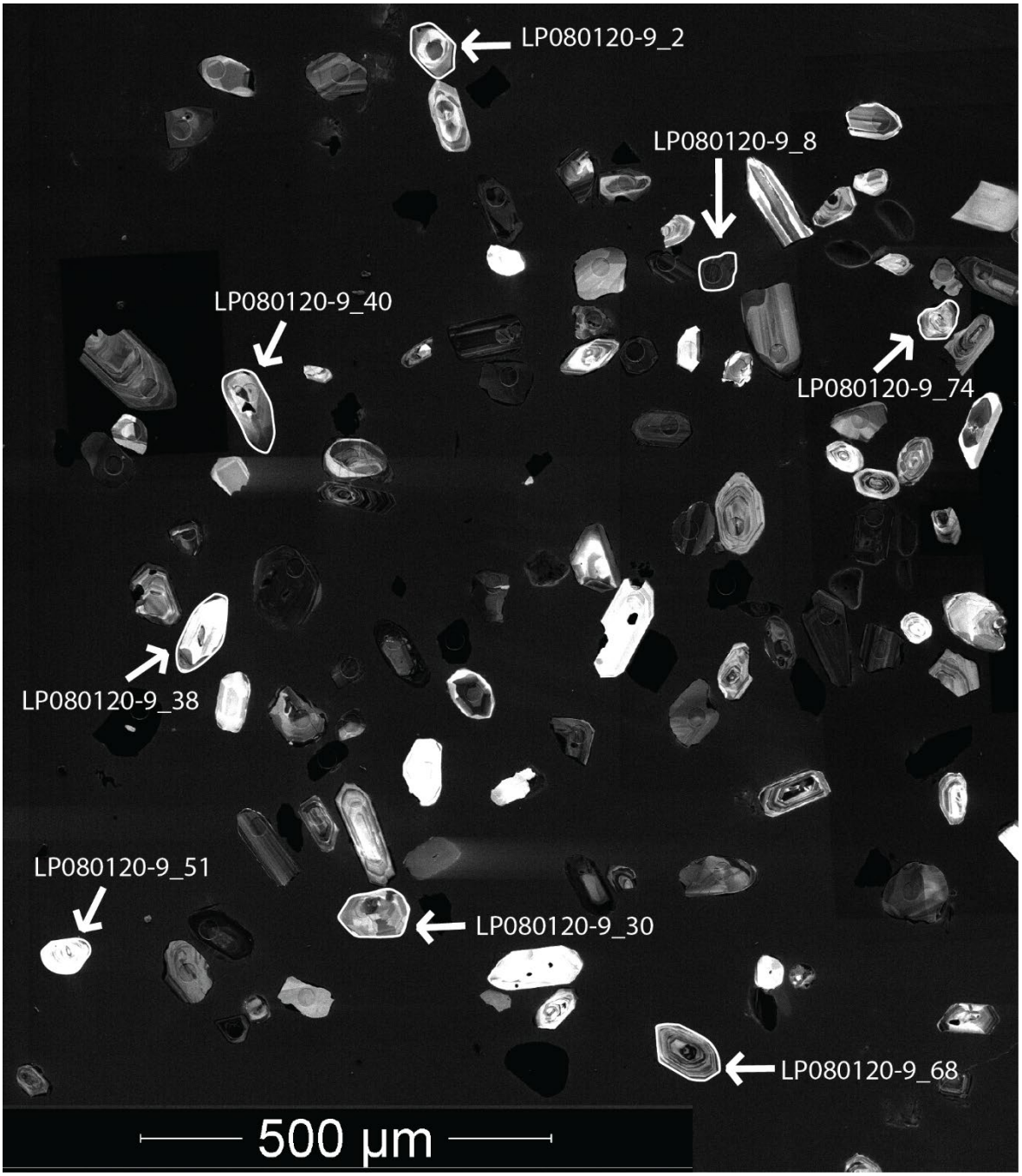
APPENDIX V: Cathodoluminescence images of reanalyzed Cretaceous zircon grains from samples LP070120-1, LP080120-9, LP100120-1, and LP110120-1. Cretaceous zircon grains from each sample are outlined in white and labelled.

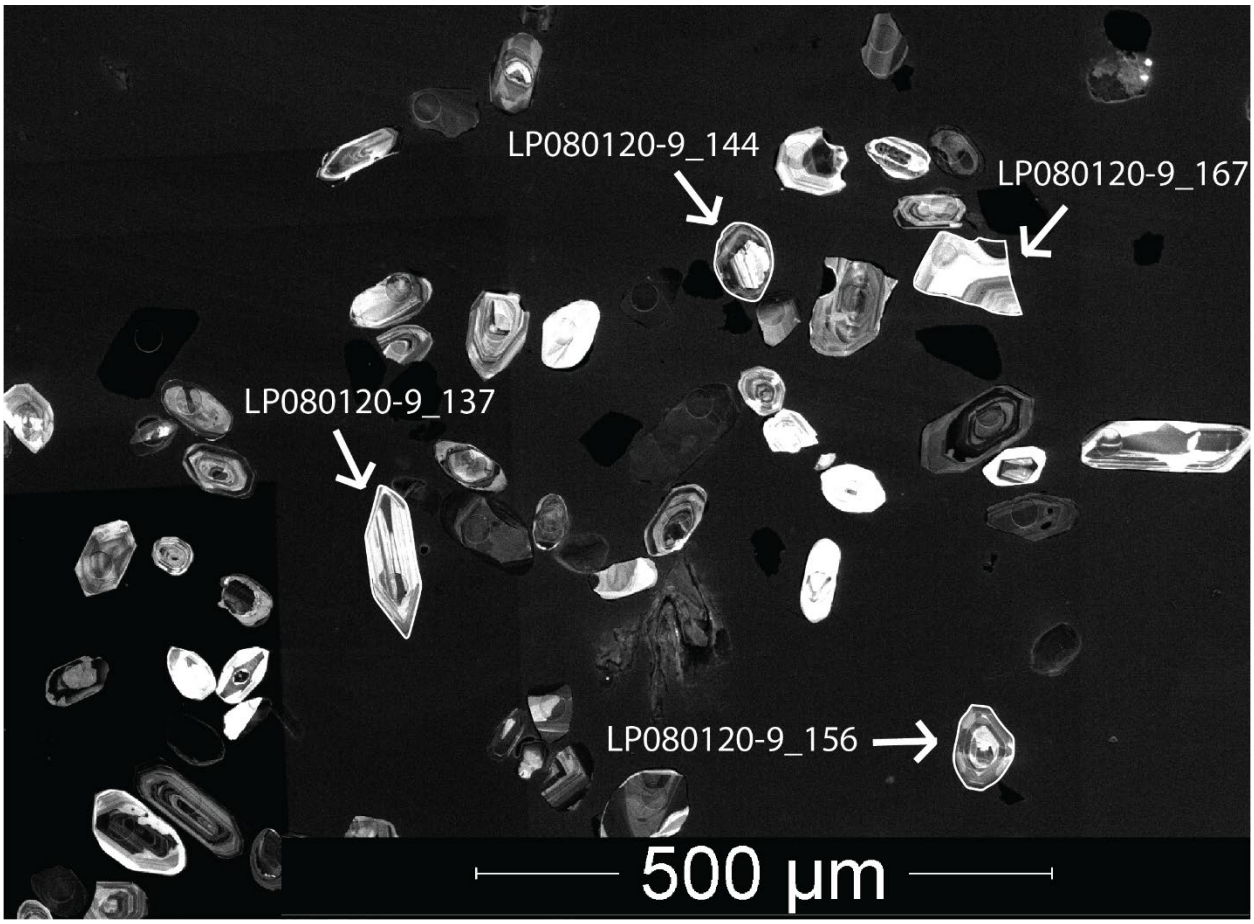
Sample LP070120-1



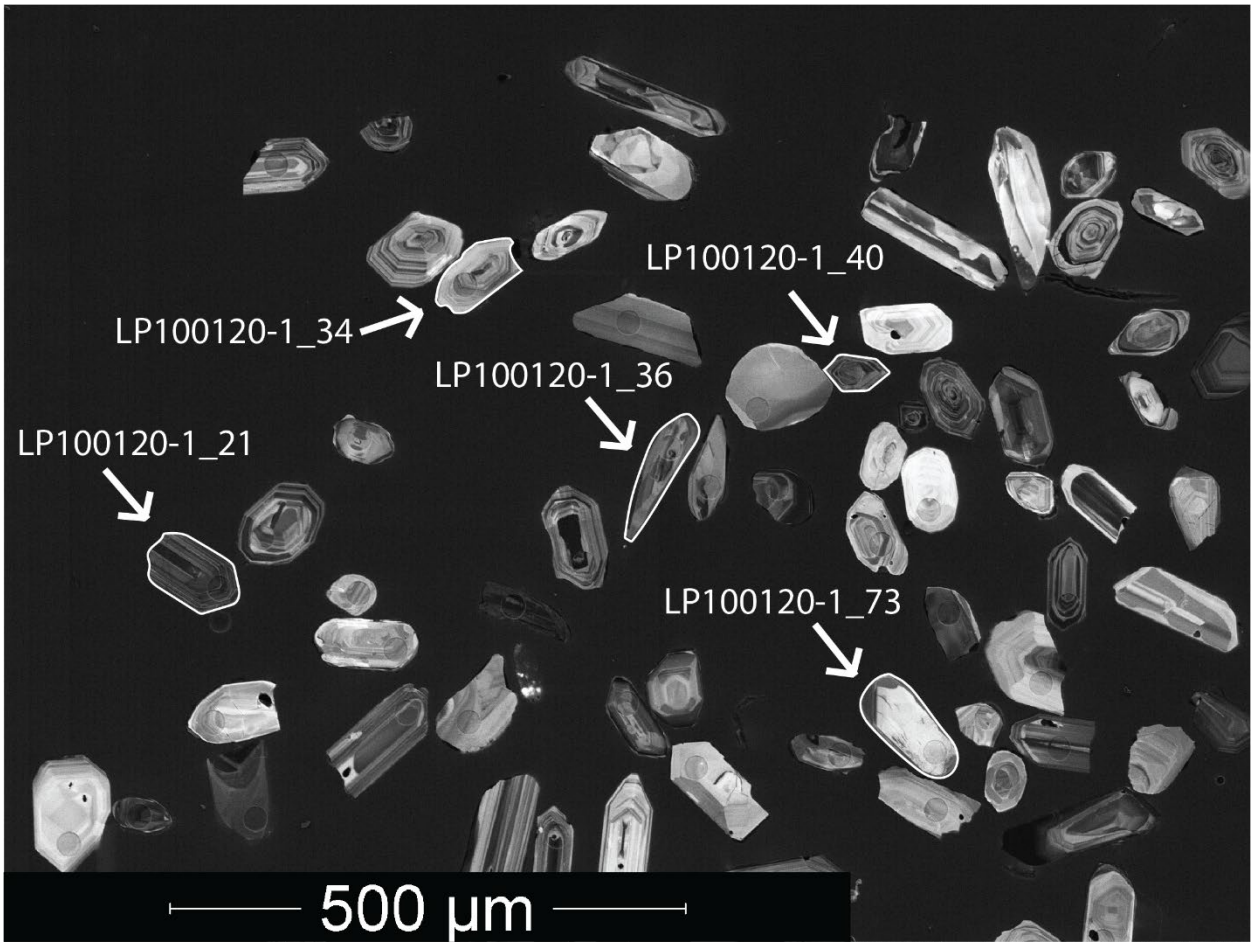

LP070120-1_17
LP070120-1_74
LP070120-1_70
LP070120-1_67
LP070120-1_118
LP070120-1_96
500 µm

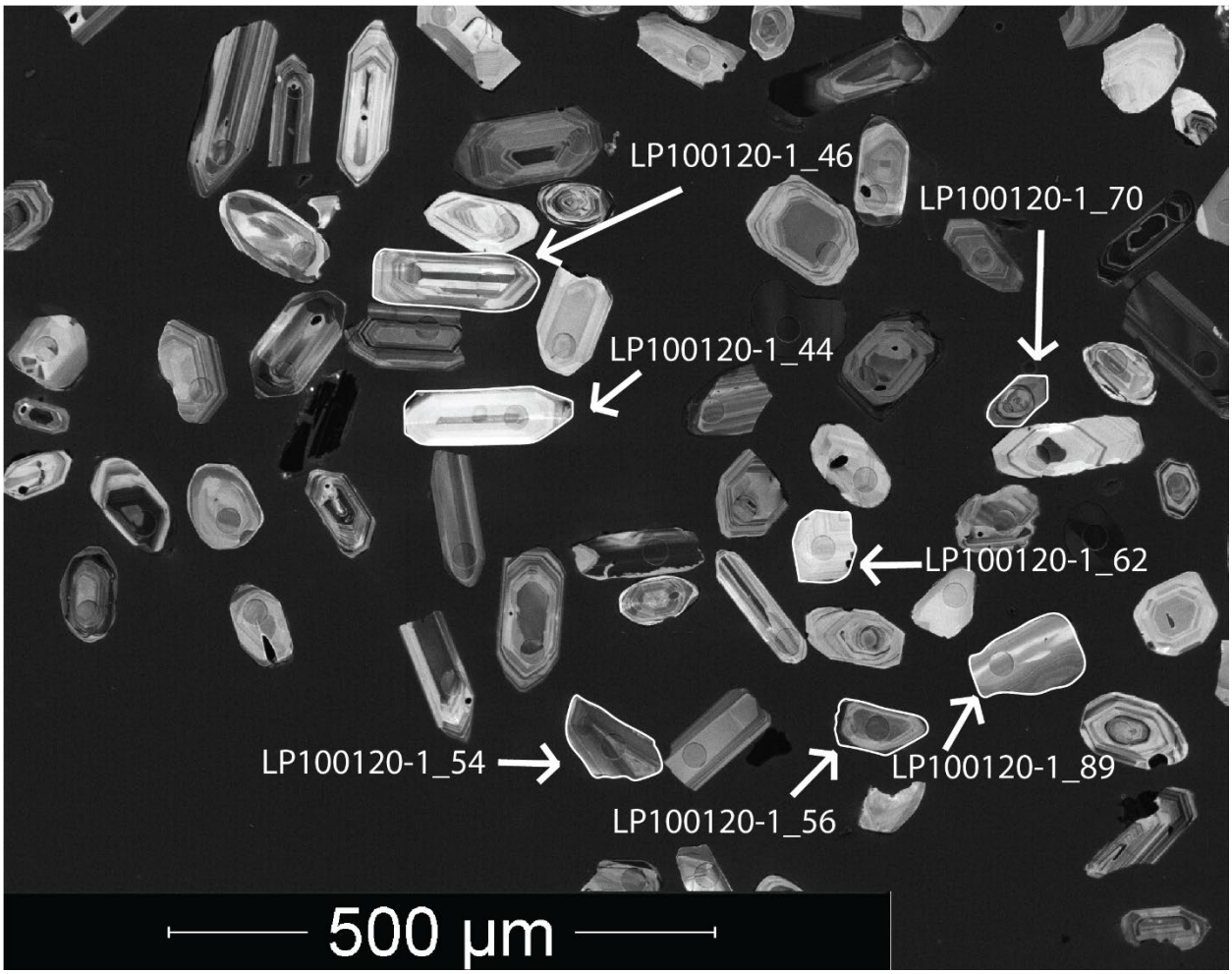
Sample LP080120-9




LP080120-9_144
LP080120-9_167
LP080120-9_137
LP080120-9_156
500 µm

Sample LP100120-1




LP100120-1_46
LP100120-1_70
LP100120-1_44
LP100120-1_62
LP100120-1_54
LP100120-1_89
LP100120-1_56
500 µm

Sample LP110120-1