Analyzing the Cenozoic Depositional History of Western Kansas: A New Approach Using Paleosol Zircon Geochronology

By

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Abstract

Correlation of terrestrial strata is challenging due to the lack of continuous outcrops, limited biostratigraphy, and poor preservation of useful marker beds such as tephra layers. This improved understanding of its internal architecture could lead to more effective management of groundwater, which is presently declining at an unsustainable rate. Chronostratigraphic correlation of paleosols in these formations is a promising new technique for continental deposits. Paleosols are time-rich sections in the terrestrial realm, and this study tests the hypothesis that they concentrate volcanogenic zircons from eruptions coincident with pedogenic processes. A section of stacked paleosols in the Ogallala Fm. from the Lake Scott area in Scott County, KS was sampled for zircon U-Pb by LA-ICP-MS. Paleosols yielded grains whose ages are consistent with local biostratigraphic data, and are stacked in normal superposed order, ranging from ca. 10.6 – 6.3 Ma. These dates are also consistent with ages from previously dated ashes from the Ogallala Fm. and allow detailed correlation among measured sections. Results from a sediment core from Harvey County, KS did not yield ages consistent with biostratigraphic suites, but the organization of the youngest zircon populations suggest that these units were deposited through unroofing of sediments in the source region. This study reveals the utility of paleosols as chronostratigraphic marker beds, units that can determine the depositional age of sediments, and as units that can provide information about the depositional nature of continental basins.

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Introduction

Correlation of geologic units is typically performed by relating stratigraphic similarities in lithology (e.g., Van Wagoner et al., 1990), fossils and biostratigraphic intervals (e.g., Sánchez-Pellicer et al., 2017), or by using laterally extensive marker beds such as tephra layers (e.g., Ladderud et al., 2015). Tephra layers can be particularly useful in this regard. In addition to being utilized as key marker horizons, they can be radio-isotopically dated (e.g., Perkins and Nash, 2006), which facilitates chronostratigraphic interpretations. Regional chronostratigraphic correlation of terrestrial strata in the High Plains of central North America is notoriously difficult because ash beds are often poorly preserved and biostratigraphic data is often sparse and imprecise (Ludvigson et al., 2009; Macfarlane, 2000). Lithostratigraphic correlation is similarly difficult in terrestrial settings due to limited outcrops, secondary alteration of sedimentary layers, and localized variation in lithology (Frye et al., 1956; Diffendal, 1982; Gutentag, 1988). Absolute ages are important for interpreting continental deposits in order to understand depositional rates, paleoenvironmental conditions, the lateral extent of lithostratigraphic units, as well as placing fossil assemblages in stratigraphic context (Bennett, 1984; Thomasson, 1985; Ludvigson et al., 2009; Smith et al., 2011).

Implementing a new method to determine chronostratigraphy from paleosols will help geologists to piece together the depositional history of continental basins. Improving regional scale correlation, in turn, will provide more information on basin architecture and lithostratigraphic heterogeneity. Tephra layers are commonly used as chronostratigraphic marker beds in many environments because they represent an instant of geologic time. Primary ash flow or fall deposits from volcanic eruptions that last hours to years and are considered synchronous

layers (Campbell, 1967). Due to erosion and alteration, tephra horizons are not commonly preserved as laterally extensive layers in continental settings (Boellstorff, 1976; Izett, 1981). Regional scale correlations are therefore difficult to determine among terrestrial stratigraphic units, such as the Ogallala Fm. (Fig. 1). Although many lenticular-shaped deposits of ash have been identified in the Ogallala Fm., their limited lateral extent restricts their potential as useful marker beds (Izett, 1981; Thomasson, 1979; Ludvigson et al., 2009).

Understanding the stratigraphic framework of the Ogallala Fm. is vital because it is the primary host unit of the High Plains Aquifer, the principle source of fresh water in western Kansas (Dugan and Sharpe, 1996; Guru and Horne, 2001). Groundwater is presently drawn from the aquifer at rates much higher than recharge, and proposed resulting shortages are predicted to have a devastating effect on the agricultural industry (McGuire et al., 1999; Steward et al., 2013). Accurate estimates of future groundwater production from the aquifer, improved hydrologic flow modeling of the aquifer's stratigraphy (Sophocleous, 2000; Dennehy et al., 2002), which requires detailed stratigraphic information for the aquifer, is necessary. Precise chronostratigraphic information from this project will thus contribute valuable insights to understanding the architecture and potential for long-term sustainable use of the High Plains Aquifer.

This study will test the hypothesis that paleosols may accumulate volcanogenic zircons from eruptions that coincide with soil development in higher concentrations than nearby fluvial channels (Ludvigson et al., 2009). Paleosols are subaerial condensed sections of the continental realm, hence there is a potential that they may trap airfall zircon grains that blanketed the paleolandscape through pedogenic processes such as burrowing, intubation of roots, and in desiccation features (Fig. 2, see also Smith et al. in revision). Although these are viable mechanisms to trap volcanogenic zircons in paleosols, there are some requirements in order for

such trapped zircon to be useful for chronostratigraphic purposes. There must be volcanic activity occurring with enough intensity to erupt material high into the atmosphere so it can travel long distances and cover large areas (Perkins and Nash, 2002). These eruptions must also occur frequently enough that many different marker beds from distinct eruptions can be identified, which is the case for the ash beds present in western Kansas. If there is an abundance of marker beds present, then the ability to distinguish each event from one another depends on the analytical precision of the dating method. Low frequency eruptions are not as useful, no matter the analytical method, because the chronostratigraphic resolution will be controlled by the lack of geologic time markers. The magma from the volcanic center must crystallize zircons that will be carried in an ash cloud, blanket a distal landscape (Perkins and Nash, 2002), and become trapped in paleosols. The paleosols of the Ogallala Fm. offer a unique opportunity to test this hypothesis due to the presence of known distal ash lenses originating from a prolific volcanic source, the many volcanic centers of the Yellowstone Hot Spot track (Perkins and Nash, 2002; Ludvigson et al., 2009). Volcanic centers of the Yellowstone Hot Spot track (YHST) had frequent large eruptions, approximately every 0.2-0.3 My (Nash et al., 2006), so that detailed temporal resolution in the Kansan stratigraphic record is potentially achievable.

We propose that if zircons from primary ashfalls are incorporated into paleosols, then paleosols can be used to improve chronostratigraphy, correlations, and overall basin analysis in continental basins, since they are more commonly preserved than ash beds themselves. By analyzing the geochronology of sedimentary deposits (paleosols, calcretes, and conglomerates), and interbedded ash lenses as markers, we can establish whether the youngest zircons found in the sediments are dating depositional ages or are merely detrital grains. Previous studies have successfully extracted zircon grains from distal ash deposits in Kansas and have tied those ash

beds to eruptive centers of the YHST using tephrochronology (Perkins et al., 1995; Perkins, 1998), fission track dating of volcanic glass (Potter, 1991), K-Ar geochronology (Thomasson, 1979), and U-Pb zircon geochronology (Hallman, 2016; Turner et al., 2017). Although research has been performed on ash lenses, more extensive studies to acquire depositional ages of laterally extensive paleosols or other sediments using absolute dating techniques had not been undertaken prior to this study (Ludvigson et al., 2009).

This study utilizes laser ablation inductively coupled plasma mass spectrometry (LA-ICP-MS) U-Pb geochronology to analyze zircon grains extracted from paleosols and other sediments of the Ogallala Fm. in central Kansas. This method will allow the stated hypothesis to be tested by analyzing many (n=300) grains for samples following the statistical evaluation of Pullen et al. (2014) that 300 analyses are necessary to ensure that, within 95% probability, all populations of grains that make up as little as 1% of all populations are represented. A detailed description of sample location and collected rock types follows below in the chapter "*Local Geology of Sampled Areas and Sample Descriptions*."

A variety of lithologies were sampled near Lake Scott State Park in Scott County (Fig. 3). A modified ash layer, the Landon Draw Ash (sample SC15-16) serves as a datum against which we will compare ages of surrounding sediments. Silty paleosols are the main target since they have undergone long periods of subaerial exposure and can accumulate volcanogenic zircons while the original coeval ash layers are not preserved. A conglomeratic unit, which was a useful lithostratigraphic marker bed in all three sections, was collected from a roadcut whose biostratigraphy was described by Thomasson (1979) (Fig. 4). Calcretes with massive, prismatic, and honeycomb textures were sampled to test their potential as geochronometers. Samples from the Equus Beds at the eastern extent of the High Plains Aquifer were collected from the H3N

core (Fig. 5). The core captured McPherson channel deposits, which are fluvial sands and their associated overbank deposits, from Harvey County (Fig. 1) whose depositional age is roughly constrained at ca. 2-4 Ma using biostratigraphic data (Fent, 1950), but for which the provenance is still uncertain. Grain size analysis and pedogenic features were used to determine which intervals were potential paleosols (Fig. 5). LA-ICPMS U-Pb detrital zircon analysis can refine depositional models for the Ogallala Formation, and may aid the chronostratigraphic evaluation of continental deposits and correlations across continental clastic basins elsewhere.

Geological Background

The Ogallala Fm. consists of sediments shed from the Rocky Mountains from the Miocene through the Pliocene (Buchanan et al., 2001). The Laramide Orogeny caused significant uplift across the Rocky Mountains from the Cretaceous through the Eocene (Heller et al., 1988). Subsequent eustatic sea level fall led to the retreat of the Western Interior Seaway that covered much of the modern Great Plains area (Heller et al., 1988; Leonard, 2002; Fielding et al., 2007). Erosion of the uplifted sedimentary and basement rocks caused deposition eastward of the orogenic front, including deposition of the Ogallala Fm. sediments (Steven et al., 1997). In the Miocene, regional tilting of basement rocks in Colorado, Nebraska, and Wyoming resulted in the incision of paleovalleys to the east, which were subsequently filled with Ogallala Fm. sediments from the Miocene through the Early Pliocene (Fig. 1) (Heller et al., 1988; Stevens et al., 1997). The sediments that filled these ancient valleys included discontinuous beds of gravel, sand, silt, and clay with diagenetic and phreatic calcretes (Fig. 6) (Waite et al., 1947; Frye, 1956; Seni, 1980; Thomasson, 1985; Gustavson and Winkler, 1988; Gutentag, 1988; Ludvigson et al., 2009; Smith et al., 2011).

Deposition of the Ogallala Fm. sediments occurred through high-energy braided stream deposition, punctuated with periods of landscape stability (Leonard, 2002; Fielding et al., 2007). Finer grained sediments within the Ogallala Fm. are interpreted as fluvial overbank sediments that were deposited during flooding events (Diffendal, 1982; Fielding et al., 2007; Smith et al., 2011). Within the silts and muds, pedogenic features such as nodules, rhizoliths, and trace fossils indicate that soil horizons formed during periods of landscape stability and subaerial exposure (Gutentag, 1988; Kraus, 1997; Smith et al., 2011). Ash layers are prolific throughout the Ogallala Fm. and range from ca. 2 m thick vitric ashes to much thinner, calcified ash beds and ponded lenses that have been redeposited with additional detrital minerals (Potter, 1991; Ludvigson et al., 2009; Hallman, 2016). Deposition of the Ogallala Fm. ceased due to uplift in the Great Plains in the Pliocene when erosional downcutting began in the Arkansas and Platte river valleys that continues today (Steven et al., 1997; Leonard, 2002). Outcrops of the Ogallala Fm. are sparse in Western Kansas, and are limited to roadcuts, river valleys, or cliff faces. Quaternary loess and alluvial deposits mantle exposures of the Ogallala Fm. (Fig. 3B) and create a near-flat surface known as the High Plains Surface (Smith, 1940; Gutentag, 1988; Smith et al., 2011; Harlow, 2013). Thickness of the Ogallala Fm. is highly variable due to inherited paleotopography, but its maximum thickness is several hundred meters (Leonard, 2002). Although beds within the formation may be relatively thick (meters to tens of meters), many are laterally discontinuous and may change thickness and lithology across short distances (Fig. 6) (Waite, 1947).

Local Geology of Sampled Areas and Sample Description

Ten samples were collected from three sections in Scott County (Fig. 4), with specific locations at Battle Canyon, Devil's Backbone, and the JRT Roadcut. The three outcrop sites in

Scott County, Kansas are all located within one mile of one another (Fig. 2B), which allowed us to sample correlative layers from multiple sections using a conglomeratic unit as a marker bed and previous correlations of stratigraphy by Smith et al. (2016) (Fig. 4). Sampling in this fashion, we were able to test the viability of local chronostratigraphic correlations from paleosols. Four samples collected from a core from Harvey County, Kansas (H3N) and stored at the Kansas Geological Survey (KGS) were interpreted as paleosols based on grain size and sedimentary features such as peds, rhizoliths, and burrows. In the following section, samples will be described from the base of each measured section or core.

Four samples were collected from Battle Canyon, the westernmost sampling location. The Battle Canyon site is a roughly 13-meter-high outcrop section located in a stream draw (Fig. 2) about 100 m west of the Battle Canyon Memorial. This section of the field area is dominated by alternating layers of massive to prismatic calcretes and pedogenically modified silts (Smith et al., 2011). Sample SC15-06 is a silty paleosol that was sampled near the base of this section at an elevation of approximately 877 meters above sea level. At roughly the same elevation, a sample from a reworked ash layer, SC15-16, was collected about 1.5 km south of this site in the Landon Draw (Fig. 7). This unit is not a clean ash, as it contains detrital minerals such as apatite and monazite in addition to zircon, and no volcanic glass was identified. Therefore, it cannot be classified and used as a true marker bed. This unit had been previously studied and yielded the first Miocene aged zircon (11.4 ± 0.4 Ma) from the Ogallala Fm. (Sitek et al., 2016), so it is still utilized as a horizon where previous geochronologic data has been extracted. Its stratigraphic position, just above the paleosol sample SC15-06 in Battle Canyon, was determined using aerial photographs (Fig. 7). About 12 meters up section, sample SC15-07 was collected from a silty paleosol just above the conglomeratic marker bed. The conglomeratic

unit is interpreted as a channel belt deposit that has been pedogenically altered (Smith et al., 2016), and is continuous through all three sections near Lake Scott. About 14 meters above the base of the section, sample SC15-08, a silty paleosol with prismatic calcretes nodules (Fig. 4), was collected. Some of the massive calcrete layers contain zones that are described as honeycomb calcretes, which are interpreted as zones where burrows have been highly altered (Netterburg, 1969; Netterburg and Caiger, 1983; Gutentag, 1988; Smith et al., 2011). Samples were collected from the massive and honeycomb calcretes layers, but did not yield any zircon after mineral separation procedures (see Methods).

The southernmost location, Devil's Backbone, is a 23-meter-high outcrop section along Highway 95 near Lake Scott, of which the lower 14 meters were measured (Fig. 3B) and two samples were collected. This sample site is located approximately 1.25 km east of the Battle Canyon section. The lithologic units of the Devil's Backbone site (Fig. 4) are red to buff silty paleosol layers alternating with blocky calcrete layers (Gutentag, 1988; Smith et al., 2011). The silty paleosol layers show extensive pedogenic modification through abundant rhizoliths, calcium carbonate nodules and *Daimoniobarax nephroides* trace fossils (Gutentag, 1988; Smith, et al., 2011). Sample SC15-01 was collected ca. 1.5 meters above the base of this section, which lies approximately 878 meters above sea level. Sample SC15-03 is another silty paleosol sampled from this section (Fig. 4) at about 3.5 m above the base. The alternation of silty and calcrete layers is interpreted as the development of phreatic zone calcretes (Gardner et al., 1992). This layering may suggest that the silty paleosols in these sections represent the upper horizons of soils, which are potential reservoirs for volcanogenic zircons as outlined above in the stated hypothesis. However, the calcrete horizons may also be interpreted as mature paleosols that had very long exposure times (Leonard, 2002). This hypothesis is not favored due to the lack of any

detrital grains obtained from these intervals. The preferred explanation for the layering is that the calcretes are zones where meteoric water exited the formation and deposited calcite as it flowed from the outcrop (Smith et al., 2016).

The uppermost section of the Ogallala Formation was sampled at the JRT roadcut (Fig. 3A), located approximately 1.7 km northeast of the Devil's Backbone section (Thomasson, 1979). Similar to the Devil's Backbone and Battle Canyon sites, the JRT roadcut is composed of alternating layers of phreatic zone calcretes and burrowed paleosols with abundant calcareous nodules (Fig. 4). Four samples were collected from the upper 6 m of this section. The pedogenically altered conglomerate marker bed was sampled as SC15-10 and used as a datum for lithostratigaphic correlations across the three sections sampled in Scott County. This sample was approximately 10 meters above the base of the section, which lies at 874 meters above sea level. Sample SC15-11 is a silty paleosol collected from this site ca. 12.5 meters above the base of the section. Samples SC15-13 and SC15-14 are paleosols with abundant prismatic calcrete nodules ca. 14 and 14.5 meters above the base of the section, respectively.

In addition to the samples collected from outcrops in Western Kansas, the H3N core from Harvey County, KS (Fig. 1). This 41 meter core was drilled as part of the Kansas Geological Society's coring program to 41 meters depth (Fig. 5). The Cenozoic sediments in Harvey County (Fig. 1) are primarily composed of sand and gravel deposited in a paleochannel fill known as the McPherson Channel (Frye et al., 1943). Intervals were sampled in 1-meter sections from 29-30m, 28-29m, 21-22m, and 17-18m depth (Fig. 5). These intervals were chosen using grain size analysis, targeting the clay-rich layers of the core. The results of the grain size analysis (courtesy of Jon Smith, pers. comm.) are presented in Fig. 5. These red to buff colored layers also contain evidence of pedogenic structures such as rhizoliths and calcareous nodules (Fig. 5).

Previous work on Volcanic Ash Beds and Paleosols of the Ogallala Formation

Extensive work has been done in the Ogallala Fm. to date its deposition. Biostratigraphic studies have used vertebrate fossils to define North American Land Mammal Ages, which provide a broad understanding of the age of the Ogallala Fm. (Zakrzewski, 1990). Fossil grass seeds have been used to determine that the Ogallala Fm. ranges from Miocene to Pliocene in age (Thomasson, 1985). In addition to biostratigraphic studies, efforts to date the Ogallala Fm. using fission tracks in volcanic glass shards (Potter, 1991) dated the Calvert Ash in Norton County at 11.5 +/- 0.5 Ma. Tephrochronologic analyses using chemical fingerprinting of ash beds in the Ogallala Fm. have linked those layers to eruptions from the Yellowstone/Snake River Plain volcanic centers that range in age from 12.7 – 0.64 Ma (Ward et al., 1993; Perkins et al., 1995; Perkins, 1998; Perkins and Nash, 2002; Ludvigson et al., 2009). More recent studies have better constrained the chronology of ash beds and some paleosol layers in the Cenozoic deposits of western Kansas using U-Pb zircon dating by LA-ICP-MS. These have produced ages of ca. 11 – 8 Ma for ash beds in Ellis and Norton counties (Hallman, 2016) and ages of ca. 32 – 28 Ma for paleosols from drill cores in Haskell County (Turner et al., 2015; Smith et al., in revision).

Methods

Methods for Mineral Separation

U-Pb analyses of zircon grains from fifteen samples were obtained by laser ablation inductively coupled mass spectrometry (LA-ICP-MS). Zircon grains were extracted from paleosols and ash samples using standard heavy-mineral separation techniques. These techniques included using a disc mill, dissolution of carbonate cement by hydrochloric acid baths, initial

hydrodynamic separation by a Gemeni water table, Frantz^{TM} isodynamic magnetic separator, and heavy liquids (methylene iodide: density = 3.3g/cm^3) for gravity separation, to separate zircons from the sediments. For calcrete samples, no material remained after the hydrochloric acid bath, and no calcrete samples were analyzed in this study. A Vibrasonic wand was used for clay-rich paleosol samples to deflocculate clay particles and remove clay coatings from the surfaces of mineral grains, following the methods of Hoke et al. (2014). Representative splits of zircon grains (n=300) were obtained using a microsplitter, then mounted in epoxy resin disks and polished to expose the grains for laser ablation analyses. Small grains (<25 μm wide) were mounted on double-sided tape because they would likely not have been preserved through the polishing of standard grain mount preparation.

Methods for U-Pb zircon analyses

All samples were analyzed at the Isotope Geochemistry Labs at The University of Kansas Department of Geology using a Thermo Scientific Element2 ICP-MS, coupled with a Photon Machines Analyte.G2 193 nm ArF excimer laser ablation system (Appendix A). Circular 20 μm spots were ablated with the laser at 2.0 J cm^2 fluence and 10 Hz repetition rate, and helium gas was used to carry ablated material to the ICP. Downhole isotopic and elemental fractionation and calibration drift during analyses were corrected by bracketing unknowns with the GJ-1 zircon reference material using a $^{206}Pb/^{238}U$ age of 600.4 ± 0.65 Ma (Jackson et al., 2004). Data reduction was performed using the VizualAge data reduction scheme (Petrus and Kamber, 2012) in the IOLITE software package (Paton et al., 2010; 2011). Single GJ-1 analyses typically produced $^{206}Pb/^{238}U$ ages with 2σ analytical uncertainties in the 1-2% range. Secondary age validation natural zircon reference materials were Plešovice (Sláma et al., 2008) and the Fish Canyon Tuff (e.g. Wotzlaw et al., 2013), which produced dates generally within 1-2%

uncertainty of chemical abrasion thermal ionization mass spectrometry (CA-TIMS) analyses (Appendix B). The 2% range for the zircon reference Plešovice in this study is extended beyond 343.9 Ma (based on the age of 337.13±0.37 Ma. published by Sláma et al., 2008), to 347.8 Ma. The worldwide average for Plešovice in LA-ICP-MS labs is 341 Ma (calculated from data in Horstwood et al., 2016), so our 2% range is based on this value rather than the value published in Sláma et al., (2008). Plešovice analyses older than 347.8 Ma are interpreted as spots placed over inherited cores. Experimental runs whose validation reference materials did not produce ages within a 2% range for either reference material do not fall in the normal range of precision for the lab. In this study, the analytical session for SC15-06 produced older ages for both reference materials (Appendix B), and is therefore considered to have an accuracy limit of 3% instead of the normal 1-2% range. However, the sample results are still considered for geological interpretations. Concordia plots and concordia ages were calculated using the ISOPLOT add-in for Excel (Ludwig, 2010) and kernel density estimation (KDE) plots were created using the DensityPlotter software (Vermeesch, 2012).

Results

U-Pb zircon data for four core samples from the Kansas Geological Survey core H3N and ten samples collected from Scott County, KS outcrop is presented below. Data is described in stratigraphic succession from the base to the top of each section (Fig. 4). Analyses younger than 1000 Ma are reported as $^{206}Pb/^{238}U$ dates while analyses older than 1000 Ma are reported as $^{207}Pb/^{206}Pb$ dates. Some analyses were excluded from age calculations based on either discordance or duration of analysis. Analyses were not used for age calculations or plots if they were > 5% discordant for grains older than 1000 Ma or had an uncertainty weighted age

difference > 2.0 for grains younger than 1000 Ma. Uncertainty weighted age difference is calculated using the formula ($^{207}Pb/^{235}U$ date – $^{206}Pb/^{238}U$ date)/(2σ $^{207}Pb/^{235}U$ uncertainty). Analyses that had to be edited to shorter than five of thirteen seconds or eight of twenty-two seconds full analysis time were not used in calculations or plots of data due to their higher uncertainties. Calculated concordia ages are validated by calculating the mean square of the weighted deviates (MSWD) of concordance and equivalence and the "probability of concordance and equivalence" (p), *sensu* Ludwig (2010). MSWD is a measure of the fit of the data, and the range of acceptable values depends on n, the number of measurements being averaged. Values << 1 indicate that uncertainties for the data have been overestimated or >>1 indicating that data are not equivalent. If the analyses being averaged are both concordant and equivalent, there is a <5% probability that the p-value will be <0.05.

LA-ICP-MS U-Pb data for zircons from samples collected in Scott County

SC15-06: paleosol, Battle Canyon Section (~0.5m above base of section)

This paleosol sample yielded 272 concordant zircon analyses. The youngest population from this sample is made up of four analyses with overlapping, concordant $^{206}Pb/^{238}U$ dates of 9.8 ± 0.6 Ma, 10.2 ± 0.8 Ma, 10.5 ± 0.8 Ma, and 11.0 ± 0.5 Ma. These four analyses yield a concordia age of 10.6 ± 0.5 Ma (MSWD = 1.2, p = 0.29) (Fig. 8B). Older dates passing the concordance tests described above range from 12 Ma to 2600 Ma (Fig. 9). Cenozoic grains make up 17% of analyses (n=46) with significant peaks at ca. 10 Ma, 25 Ma, and 30 Ma (Fig. 9). Mesozoic grains make up about 22% of the overall population of grains (n=60) and show a significant peaks ca. 65 Ma and a broader peak at 170 Ma (Fig. 9). Paleozoic grains are represented by 4% of the population (n=10) and show a small peak ca. 500 Ma (Fig. 9). Proterozoic grains make up 57% of the detrital population (n=156) and shows significant age

peaks at ca. 1100 Ma, 1400 Ma, and 1700 Ma (Fig. 9). One grain of Archean age is identified in this sample.

SC15-16: modified ash bed, Battle Canyon Section (~0.5m above base of section)

This modified ash deposit sample yielded 272 concordant zircon analyses, without Miocene age grains. The youngest analyses from this sample has a concordant $^{206}Pb/^{238}U$ age of 19.4 ± 0.9 Ma (Fig. 8C). Older dates passing the concordance tests described above range from 28 Ma to 2600 Ma (Fig. 9). Cenozoic grains made up 10% of analyses (n=27) with small peaks at ca. 25 Ma and 30 Ma (Fig. 9). Mesozoic grains make up about 52% of the overall population of grains (n=142) and show a significant peak at ca. 65 Ma and a smaller peak at ca. 170 Ma (Fig. 9). Paleozoic grains are represented by 7% of the population (n=20) and show a small peak at ca. 400 Ma (Fig. 9). Proterozoic grains make up 31% of the detrital population (n=83) and show broad peaks at ca. 1400 Ma, and 1700 Ma (Fig. 9). This sample contains two Archean aged grains.

SC15-07: paleosol Battle Canyon Section (~12m above base of section)

This paleosol sample yielded 264 concordant analyses, but no Miocene grains. The youngest single grain in this sample has a concordant $^{206}Pb/^{238}U$ date of 26.5 ± 1.7 Ma (Fig. 8F). Older dates passing the concordance tests described above range from 31 Ma to 1900 Ma (Fig. 9). Cenozoic grains made up 8% of analyses (n=20) with a significant peak at ca. 30 Ma (Fig. 9). Mesozoic grains make up about 63% of the overall population of grains (n=167) and show a significant peak at ca. 65 Ma and a smaller peak at ca. 170 Ma (Fig. 9). Paleozoic grains are represented by only 2% of the population (n=4) with no significant peaks (Fig. 9).

Proterozoic grains make up 27% of the detrital population (n=74) and shows small, broad peaks at ca. 1400 Ma, and 1700 Ma (Fig. 9).

SC15-08: paleosol with calcareous nodules, Battle Canyon Section (~13m above base of section)

This paleosol with calcareous nodules yielded 285 concordant analyses. The youngest analysis is a single grain with a concordant $^{206}Pb/^{238}U$ date of 6.7 ± 0.2 Ma (Fig. 8H). Older dates passing the concordance tests described above range from 28 Ma to 1900 Ma (Fig. 9). Cenozoic grains make up 9% of analyses (n=25) with a significant peak at ca. 30 Ma (Fig. 9). Mesozoic grains make up about 63% of the overall population of grains (n=179) and show a significant peak at ca. 65 Ma and small, broad peak at ca. 160 Ma (Fig. 9). Paleozoic grains are represented by only 1% of the population (n=3) with no significant peaks (Fig. 9). Proterozoic grains make up 27% of the detrital population (n=78) and show small broad peaks ranging from ca. 1400 Ma to 1700 Ma (Fig. 9).

SC15-01: paleosol, Devil's Backbone Section (~1.5m above base of section)

This paleosol sample (approx. 879m elevation above sea level) yielded 276 concordant zircon grains. The youngest age group from this sample is constrained by two grains with concordant $^{206}Pb/^{238}U$ ages of 9.6 ± 0.6 Ma and 10.5 ± 0.9 Ma (Fig. 8A). These two analyses yield a concordia age of 10.0 ± 0.5 Ma (MSWD = 1.7, p= 0.16). Older dates passing the concordance tests described above range from 26 Ma to 2700 Ma (Fig. 9). Cenozoic grains make up 20% of the analyses (n=52), with significant age peaks at ca. 10 Ma and 30 Ma (Fig. 9). Mesozoic grains make up about 38% of the overall population of grains (n=106) and show a significant peak at ca. 65 Ma and a smaller peak at ca. 170 Ma (Fig. 9). Paleozoic grains are represented by 4% of the population (n=12) and show a small peak at ca. 400 Ma (Fig. 9).

Proterozoic grains make up 38% of the detrital population (n=106) and show a smaller age peak at ca. 1100 Ma and more significant peaks at 1400 Ma, and 1700 Ma (Fig. 9). There are two Archean aged grains.

SC15-03: paleosol, Devil's Backbone Section (~3m above base of section)

This paleosol sample yielded 285 concordant analyses. The youngest population from this sample is made up of three analyses with overlapping, concordant $^{206}Pb/^{238}U$ dates of 8.2 ± 0.8 Ma, 8.9 ± 0.7 Ma, 9.5 ± 1.0 Ma, yielding a concordia age of 8.9 ± 0.5 Ma (MSWD = 1.16, p = 0.33) (Fig. 8D). Older dates passing the concordance tests described above range from 10 Ma to 1900 Ma (Fig. 9). Cenozoic grains comprise 25% (n=71) in this sample. Significant peaks for the Cenozoic population of grains occur at ca. 10 Ma and 30 Ma (Fig. 9). Mesozoic grains make up about 43% of the overall population of grains (n=122) and show a significant age peak at ca. 65 Ma (Fig. 9). Paleozoic grains are represented by 2% of the population (n=6) with no significant peaks (Fig. 9). Proterozoic grains make up 30% of the detrital population (n=86) and show a small peak at ca. 1100 Ma and significant peaks at ca. 1400 Ma and 1700 Ma (Fig. 9).

SC15-10: conglomerate, JRT Roadcut (~10m above base of section)

This conglomerate sample yielded 269 concordant zircon analyses. The youngest grain yields a concordant $^{206}Pb/^{238}U$ age of 27.7 ± 1.3 Ma (Fig. 8E). Older dates passing the concordance tests described above range from 33 Ma to 1800 Ma (Fig. 9). Cenozoic grains make up 6% of analyses (n=16) with a significant peak at ca. 30 Ma (Fig. 9). Mesozoic grains make up about 51% of the overall population of grains (n=136) and show a significant peak at ca. 65 Ma (Fig. 9). Paleozoic grains are represented by 2% of the population (n=5) and show no significant

peaks (Fig. 9). Proterozoic grains make up 41% of the detrital population (n=112) and shows significant peaks at ca. 1400 Ma and 1700 Ma (Fig. 9).

SC15-11: paleosol, JRT Roadcut (~12m above base of section)

This paleosol sample yielded 282 concordant analyses, but no Miocene grains. The youngest analysis is concordant with a $^{206}Pb/^{238}U$ date of 28.1 ± 1.0 Ma (Fig. 8G). Older dates passing the concordance tests described above range from 30 Ma to 2500 Ma (Fig. 9). Cenozoic grains made up 5% of analyses (n=14) with a significant peak at ca. 30 Ma (Fig. 9). Mesozoic grains make up about 59% of the overall population of grains (n=167) and show a significant peak at ca. 65 Ma and a smaller peak at ca. 170 Ma (Fig. 9). Paleozoic grains are represented by 4% of the population (n=10) with no significant peaks (Fig. 9). Proterozoic grains make up 32% of the detrital population (n=91) and shows significant age peaks at ca. 1400 Ma, and 1700 Ma (Fig. 9). This sample contains one Archean aged grain.

SC15-13: paleosol with calcareous nodules, JRT Roadcut (~14m above base of section)

This paleosol with calcareous nodules yielded 290 concordant analyses, but no Miocene grains. The youngest population from this sample is made up of three analyses with overlapping, concordant $^{206}Pb/^{238}U$ dates of 27.9 ± 0.9 Ma, 29.0 ± 0.9 Ma, and 29.5 ± 0.8 Ma. These three analyses yield a concordia age of 28.8 ± 0.9 Ma (MSWD 1.4, p = 0.26) (Fig. 8I). Older dates passing the concordance tests described above range from 30 Ma to 3000 Ma (Fig. 9). Cenozoic grains make up 12% of analyses (n=35) with a significant peak at ca. 30 Ma (Fig. 9). Mesozoic grains make up about 46% of the overall population of grains (n=132) and show a significant peak at ca. 65 Ma (Fig. 9). Paleozoic grains are represented by 2% of the population (n=5) with no significant peaks (Fig. 9). Proterozoic grains make up 40% of the detrital population (n=118)

and shows small peaks at ca. 1400 Ma and 1700 Ma (Fig. 9). This dataset contains one Archean aged grain.

SC15-14: paleosol with calcareous nodules, JRT Roadcut (~15m above base of section)

This paleosol with calcareous nodules sample yielded 286 concordant zircon grains. The youngest population from this sample is made up of two analyses with concordant $^{206}Pb/^{238}U$ dates of 5.8 ± 0.8 Ma, and 6.4 ± 0.3 Ma. These two analyses yield a concordia age of 6.3 ± 0.3 Ma (MSWD = 1.4, p = 0.26) (Fig. 8J). Older dates passing the concordance tests described above range from 19 Ma to 1800 Ma (Fig. 9). Cenozoic grains make up 9% of analyses (n=26) with significant peaks at ca. 6 Ma and 30 Ma (Fig. 9). Mesozoic grains make up about 47% of the overall population of grains (n=133) and show a significant peak at ca. 65 Ma and a smaller peak at ca. 170 Ma (Fig. 9). Paleozoic grains are represented by 5% of the population (n=12) and show a small peak at ca. 500 Ma (Fig. 9). Proterozoic grains make up 39% of the detrital population (n=115) and shows a small peak at ca. 1100 Ma and significant peaks at ca. 1400 Ma, and 1700 Ma (Fig. 9).

KDEs from the SC15 samples all exhibit similar patterns. Significant age peaks for all of the samples are at ca. 35, 70, 1100, 1700, and 1800 Ma. Differences in smaller peaks are present, but not very prominent. The major differences between KDEs are the youngest analyses in the different samples, ranging from ca. 5 – 10 Ma. Cross-correlation coefficients (R^2) were also calculated for these samples to determine similarity between samples (Saylor and Sundell, 2016). Minimum values the correlation of these layers is $R^2 = 0.46$ with an average of $R^2 = 0.77$ (Appendix C). Discussion of this data follows in the section "*Sedimentary Provenance for Scott County Samples*."

LA-ICP-MS U-Pb data for zircons in samples from Harvey County core H3N

Sample H3N: paleosol 29-30m

The sample H3N 29-30m yielded 284 concordant analyses. The youngest concordant analysis from this sample is a grain with a $^{206}Pb/^{238}U$ date of 7.0 ± 0.3 Ma (Fig. 10A). Older dates passing the concordance tests described above range from 23 Ma to 2800 Ma (Fig. 11). A sizeable population of Cenozoic grains (n=46, 15%) were analyzed in this sample. Significant age peaks for the Cenozoic population of grains occur ca. 35 Ma and 65 Ma (Fig. 11). Mesozoic grains make up about 16% of the overall population of grains (n=47) and show significant age peaks at ca. 75 Ma, 100 Ma, and a smaller peak at ca. 150 Ma (Fig. 11). Paleozoic grains are represented by 13% of the population (n=40) and show a broad peak from about 350 to 600 Ma (Fig. 11). Proterozoic grains make up 54% of the detrital population (n=159) and shows significant age peaks at ca. 1100 Ma, 1400 Ma, and 1800 Ma (Fig. 11). Four Archean zircon grains were identified in this sample.

Sample H3N: paleosol, 28-29m

The sample H3N 28-29m yielded 256 concordant analyses. The youngest concordant analysis obtained from a single grain with a $^{206}Pb/^{238}U$ date of 7.8 ± 1.2 Ma (Fig. 10B). Older dates passing the concordance tests described above range from 28 Ma to 2700 Ma (Fig. 11). Significant populations include Cenozoic analyses (n=39, 15%) peaks at ca. 35 Ma and a smaller peak at ca. 50 Ma (Fig. 11). Mesozoic grains make up about 36% of the overall population (n=92) and show significant age peaks at ca. 65 Ma and ca. 100 Ma, and a less prominent one at 180 Ma (Fig. 11). Paleozoic grains are represented by 12% of the population (n=30) and show a

significant peak at ca. 450 Ma (Fig. 11). Proterozoic grains make up 37% of the detrital population (n=95) with significant age peaks at ca.1100 Ma, 1400 Ma, and 1700 Ma (Fig. 11). There is one Archean grain analyzed in this sample.

Sample H3N: paleosol, 21-22m

Sample H3N 21-22m yielded 276 concordant zircon analyses. The youngest concordant analyses from this sample are from two grains yielding concordant $^{206}Pb/^{238}U$ dates of 26.7 ± 0.8 Ma and 28.9 ± 2.5 Ma (Fig. 10C). Combined, these analyses give a concordia age of 26.9 ± 0.7 Ma with a MSWD of concordance of 0.30 and a probability of concordance of 0.59. Older dates passing the concordance tests described above range from 34 Ma to 2800 Ma (Fig. 11). A population of Cenozoic grains (n=18, 7%) was analyzed in this sample. A small age peak for the Cenozoic population of grains occurs at ca. 35 Ma (Fig. 11). Mesozoic grains make up about 8% of the overall population of grains (n=23) and show small age peaks at ca. 75 Ma, 100 Ma, and 180 Ma (Fig. 11). Paleozoic grains are represented by 14% of the population (n=38) and show a broad peak from ca. 300-500 Ma (Fig. 11). Proterozoic grains make up 71% of the detrital population (n=197) and show a major age peak at ca. 1100 Ma, with minor peaks at 1400 Ma, and 1700 Ma (Fig. 11). Five Archean zircons were identified in this sample.

Sample H3N: paleosol, 17-18m

Sample H3N 17-18m yielded 276 concordant analyses. The youngest concordant analysis from this sample has a $^{206}Pb/^{238}U$ date of 10.5 ± 0.7 Ma (Fig. 10D). Older dates passing the concordance tests described above range from 26 Ma to 2600 Ma (Fig. 11). A population of Cenozoic grains (n=29, 10%) was analyzed in this sample. A significant age peak for the Cenozoic population of grains occurs at ca. 35 Ma (Fig. 11). Mesozoic grains make up about

14% of the overall population of grains (n=39) and show significant age peaks at ca. 75 Ma and 150 Ma (Fig. 11). Paleozoic grains are represented by 15% of the population (n=45) and show a broad peak at 400-550 Ma (Fig. 11). Proterozoic grains make up 61% of the detrital population (n=164) and show a major peak at ca. 1100 Ma, and smaller peaks at 1400 Ma and 1700 Ma, similar to the distribution in sample H3N 21-22m (Fig. 11). There is one Archean grain identified in this sample.

Generally, all of the KDEs of the H3N samples exhibit similar patterns. Significant peaks for all of the samples are at ca. 35, 70, 400, 1100, and 1700 Ma. Differences in smaller peaks are present, but not very prominent. The major differences observed are the youngest analyses in the different samples, ranging from ca. 7 – 10 Ma. Cross-correlation coefficients (R^2) were calculated for these samples to show the relative similarity between samples (Saylor and Sundell, 2016). Minimum values for these layers are $R^2 = 0.43$ with an average $R^2 = 0.63$ (Appendix C). Discussion of this data follows in the section "*Sedimentary Provenance for Harvey County Samples*."

Discussion

General Discussion

Interpretations of maximum depositional ages for samples in this study were made using the method of Dickinson and Gehrels (2009) by examining youngest single grains (YSG), youngest cluster of two overlapping analyses at 2σ uncertainty level (YGC2+), or the youngest cluster of three overlapping analyses at 2σ (YGC3+). Maximum depositional age interpretations were then compared to previous studies of biostratigraphy (Frye et al., 1956; Thomasson, 1979;

Smith et al., 2016) and previous U-Pb geochronological studies of ash deposits (Hallman, 2016; Sitek et al., 2016) to assess the ability of this approach to determine accurate depositional ages. The following discussions on provenance are based on the philosophies of provenance interpretations of multiple authors (i.e. de Haas et al., 1999; Košler et al., 2002; Fedo et al., 2002; Andersen, 2005; Vermeesch, 2004). Interpretations of provenance are based on the correlation of age abundance peaks in Kernel Density plots (Figs. 9, 11) to ages of magmatic activity in the probable source areas of the Ogallala Fm. (Whitmeyer and Karlstrom, 2007). The following interpretation of results will also discuss the utility of paleosols as geochronometers and their impact on the High Plains Aquifer.

Maximum depositional age interpretations for samples from Scott County

The results for Scott County will be discussed starting from the lowest stratigraphic positions upwards in the sections. Sample SC15-01, a silty paleosol from the Devil's Backbone section, yields a concordia age of 10.0 ± 0.5 Ma (Fig. 8A). Sample SC15-06, a silty paleosol from the Battle Canyon section, yields a concordia age of 10.6 ± 0.5 Ma (Fig. 8B). These samples are considered to be age equivalent since they are identical within analytical uncertainty. This is important because both paleosols are at the same approximate stratigraphic level, based on elevations and previous correlations (Smith et al., 2016) and using their position relative to the conglomerate marker bed from the section. At roughly the same stratigraphic position, the Landon Draw Ash (equivalent to sample SC15-16) was previously dated with a U-Pb zircon age of 11.4 ± 0.4 Ma (Sitek et al., 2016) by LA-ICP-MS (Appendix E). This age is within uncertainty of SC15-06 (10.6 ± 0.5 Ma) but not within uncertainty of SC15-01 (10.0 ± 0.5 Ma). The same lowermost paleosol layer is also present in the JRT Roadcut section, but was not sampled there.

The geochronological results are consistent with biostratigraphic data from the same locality. Fossils of *Calippus* sp., which have been assigned an age range of 15-7.5 Ma (MacFadden and Hulbert, 1988; Smith et al., 2016), have been recovered from sediments at Devil's Backbone. The likely source for zircons of this age is tephra from the Bruneau-Jarbidge volcanic center, which was active from ca. 12.7 to ca. 10.5 Ma (Perkins and Nash, 2002). A recent study by Hallman (2016) confirms that vitric ash from a Bruneau-Jarbidge eruption is present central Kansas. The findings of Hallman (2016) support the possibility that the zircons found in these paleosols may be from airfall tephra instead of being transported as fluvial detrital populations.

There is a massive calcrete above the previously described paleosols in each section, which is approximately 1-2 meters thick. The silty paleosol sample SC15-03 from the Devil's Backbone section, stratigraphically above the previously discussed units, is approximately 1-2 meters thick in all sections, but was only sampled at Devil's Backbone. This paleosol yields three analyses with overlapping uncertainties that produce a concordia age of 8.9 ± 0.4 Ma (Fig. 8D), which places this paleosol in normal superposed stratigraphic order. The age does not overlap within uncertainty limits with the ages obtained from the samples SC15-06 and SC15-01 from the lowest paleosol and these zircons are therefore interpreted to have originated from a different volcanic eruption. The source for these grains is likely the 10.5-8.5 Ma Twin Falls eruptive center of the YHST (Perkins and Nash, 2002).

The next unit up-section is a massive to honeycomb calcrete layer that is variable between 3-5 meters thick. The unit above this calcrete layer is the conglomeratic unit used as a key marker horizon for lithostratigraphic correlation (Fig. 12) before the collection of the

geochronological data. The conglomeratic layer is between 1-1.5 meters thick and is present in all sections, but was only sampled at the JRT roadcut.

Overlying this conglomerate is a silty paleosol 2-4 meters thick, which is distinct from the overlying paleosols because it does not contain any carbonate nodules. This helped in making lithostratigraphic correlations (Fig. 12) near the upper interval of the section prior to obtaining geochronological data. The uppermost paleosol samples also contain Miocene aged grains. Sample SC15-08, a silty paleosol with prismatic carbonate nodules from the Battle Canyon section yielded a YSG with a concordant age of 6.7 ± 0.2 Ma (Fig. 8H). Sample SC15-14, from the JRT Roadcut, is also a silty paleosol with prismatic carbonate nodules and yielded two overlapping analyses with a concordia age of 6.3 ± 0.3 Ma (Fig. 8J). The youngest ages from the Battle Canyon and JRT Roadcut overlap within their uncertainties and are therefore stratigraphically correlated. A potential source for these zircons is the Picabo Volcanic Center (Nash et al., 2006), which has an age range of approximately 8.5 – 6.7 Ma. These represent the youngest U-Pb zircon ages found within the Ogallala Fm. near Lake Scott, and maintain superposed stratigraphic progression of paleosols in the Scott County sections.

The U-Pb zircon ages obtained from this study are consistent with previous studies on zircon from volcanic ash beds (Hallman, 2016; Sitek et al., 2016), tephrochronological studies (Ludvigson et al., 2009) and biostratigraphic studies (Thomasson, 1979; Zakrzewski, 1990) in the Ogallala Formation. Also, the reworked ash bed from the Battle Canyon section that produced an age of 11.4 ± 0.4 Ma (Sitek et al., 2016), is generally consistent with ages obtained from the oldest paleosols dated from Scott County in this study. The stratigraphic position of this lens is approximately equal to the basal paleosols measured in this study (Figs. 4, 12), which have concordia ages of ca. 10.0 ± 0.5 and 10.6 ± 0.5 Ma (Figs. 8A, 8B). The discrepancy in ages

between the previously dated ash and the basal paleosol at Devil's Backbone may affect which paleosol horizon sample SC15-01 correlates with in the Battle Canyon section. Since the age of SC15-01 at 10.0 ± 0.5 is slightly younger than the ash bed, this paleosol may be equivalent to a thin paleosol layer above the basal paleosol (SC15-06) in the Battle Canyon section (Fig. 12). However, because the ponded ash layer only yielded a single Miocene analysis (Sitek et al., 2016) the true depositional age may be over- or underestimated (Dickinson and Gehrels, 2009). Comparing the detrital KDEs from the ash to the paleosols, yields R^2 values are 0.73 and 0.54 for SC15-01 and SC15-06 respectively. There is therefore no indication that the source for the modified ash layer is distinctly different from either paleosol, with an $R^2 > 0.5$ (Saylor and Sundell, 2016). The modified ash is dominated by detrital minerals and not a true, primary volcanic ash deposit. In summary, although there are multiple possibilities for correlation of these units, the favored interpretation is indicated in Fig. 12.

Other silty paleosol, conglomerate, and calcrete samples analyzed in this study (Fig. 12) did not yield grains related to the YSHT (Appendix D), but rather have maximum depositional ages ranging from 23-35 Ma (Appendix D), which is a detrital population present throughout all of the paleosols in Scott County. The lack of grains sourced from Miocene YHST tephra can be explained in a number of ways. If no volcanic eruptions took place during the deposition of these paleosols, then there would clearly be no grains preserved. However, according the Nash et al. (2006) there were at least four eruptions from the YHST between 8.9 Ma and 6.7 Ma so this scenario is not favored. Alternatively, there could have been eruptions taking place, but the zircons in the air column were not carried over Kansas and would have not been deposited in the Ogallala Fm. This scenario is also improbable because previous studies of spatial trends of tephra from the YHST show that tephra can be deposited up to 1600 km from the eruption center

(Perkins and Nash, 2002) and datable zircons have been extracted from distal ash layers in Kansas with ages in the 8.9-6.7 Ma range (e.g. Turner et al., 2015; Hallman, 2016). Another possibility is that the grains were originally deposited, but subsequent erosion and deposition of new sedimentary layers decapitated the upper soil horizons (Retallack, 1988). All of the sampled intervals are heavily burrowed, but the layers (e.g. SC15-07, SC15-11) that did not yield any Miocene aged grains do not have rhizoliths. The lack of rhizoliths suggests that the upper horizons of these intervals are not preserved or that soil genesis was of very short duration. It is within these upper horizons that the zircons are most likely contained, and if erosion occurred, the grains could have been remobilized and transported from the study area. This interpretation is also viable because paleosol deposition in the Ogallala Fm. near Lake Scott, KS is related to fluvial channel belts and their associated overbank deposits. Since erosion occurs during fluvial and alluvial aggradation, it is possible that the upper horizons of soil are not always preserved. However, the explanation preferred here is that airfall zircons were deposited in soil horizons, but exist at such a low percentage of total zircons that they were not identified in a 300 grain analysis. This is supported by the results in which small numbers (n=1-5) of Miocene aged grains were found in the samples.

Although the data collected from these paleosols does not yield depositional ages, it provides insight into the provenance of the Ogallala Formation in the Lake Scott area. This study shows that paleosols are the most prolific reservoirs for volcanogenic zircons representing the depositional age of sediments in the continental realm. In the Scott County section, paleosols are in fact the only sediments that yield Miocene zircons interpreted to date deposition. In this study, other lithologies either did not yield Miocene aged grains (conglomerate) or did not yield any zircons at all (calcretes). That is not to say that these types of deposits do not contain

appropriately aged zircons, but that they may occur in such low abundance that n=300 grains is not a large enough sample size to identify these rare grains.

Sedimentary Provenance for Scott County Samples

The source area for the paleosols from the Lake Scott field area is presently interpreted to be the Rocky Mountains (Frye et al., 1956). The detrital KDE spectra (Fig. 9) from the paleosols from these localities have major peaks that are similar to one another, ranging from Paleoproterozoic to Middle Miocene (1800-20 Ma). Major peaks correspond to magmatic provinces such as the Mazatzal (ca. 1700 Ma) and Yavapai (ca. 1800 Ma) provinces, and the Pike's Peak Granite (ca. 1000 Ma) (Whitmeyer and Karlstrom, 2007) for the older peaks and Sevier (140-50 Ma) and Laramide (70-35) structures from the younger peaks. The youngest age peaks around 26-30 Ma are likely sourced from the Ignimbrite Flare-Up of the San Juan Volcanic Field dated at 28-33 Ma (e.g., Bachman et al., 2002).

By analysis of the cross-correlation coefficient (R^2) (Saylor and Sundell, 2016) of all SC15 samples, it is determined that these sediments have the same source (Appendix C). The cross-correlation coefficient is a measure of the similarity in the shape and magnitude of age peaks in KDE plots and calculates a value between 1 and 0 based on these comparisons. This metric is able to consistently distinguish populations that derived from similar sources from those derived from different sources. Samples with the same source have R^2 values >0.5 while those with different sources have an R^2 of <0.2 (Saylor and Sundell, 2016). The R^2 values of the samples analyzed here range from 0.96 to 0.47, which does not indicate any significant differences in provenance (R^2<0.2). The major differences observed were between samples SC15-01 and SC15-06 with the rest of the samples, because they contain a much larger number of ca. 1000 Ma aged grains. This finding also strengthens the evidence that these two samples

represent the same paleosol horizon in two different sections. Aside from this, the only notable difference between the remaining samples is the presence or absence of Miocene grains (Appendix D).

Maximum depositional age interpretations for Harvey County core samples

The silty paleosol sample from the basal interval (H3N 29-30 m) yields a YSG with a $^{206}Pb/^{238}U$ age of 7.0 ± 0.3 Ma, which is Miocene in age (Fig. 10A). A likely source for this zircon is the Picabo volcanic field (8.5-6.7 Ma) of the YHST (Perkins and Nash, 2002). The youngest zircon from the next higher sampled interval (H3N 28-29m) has a $^{206}Pb/^{238}U$ age of 7.8 ± 1.2 Ma (Fig. 10B), which is, within uncertainty, identical in age to the youngest grain in the underlying unit. These two intervals are interpreted to represent a single paleosol that is >1m thick and the two Miocene zircon grains each constrain the maximum depositional age. These youngest zircon grains from the two samples are interpreted to be sourced from the Picabo volcanic field of the YHST (Perkins and Nash, 2002; Nash et al., 2006), which was active between 8.5 and 6.7 Ma. The youngest zircon from the uppermost interval of the core sampled for this study (H3N 17-18m) has a $^{206}Pb/^{238}U$ age of 10.5 ± 0.8 Ma (Fig. 10D). Because of its age, the source for this zircon is interpreted to be an eruption in the Bruneau-Jarbidge volcanic field of the YHST (Perkins and Nash, 2002; Nash et al., 2006) active from 12.7 to 10.5 Ma.

The ages of the youngest identified grains do not agree with either the mollusk assemblages or vertebrate fossils that have been identified in the McPherson Channel deposits (Frye et al., 1943), which range from 2-4 Ma according to their correlations with other well-known Pliocene and Pleistocene fauna. So, while it does not provide reliable ages for the depositional age of the sediments, the inverted zircon age pattern does reveal new insights on the depositional nature of the Ogallala Fm. in this area (Fent, 1950; Colombo, 1994). Inverted

stratigraphy is found in few distinct geological environments, notably in mélange-type deformed rocks (e.g., Festa et al., 2010) and in areas where plutons or older strata are being unroofed (e.g. Colombo, 1994). Mélange-type deformation in the Ogallala Fm. can be excluded because this is closely linked to active subduction zones (Raymond, 1984), so unroofing of source sediments is the likely scenario, linked to the Late Cenozoic Uplift of the Rocky Mountains (Heller et al., 1988; Kelley and Chapin, 1995). There are no plutons with ages between 2-11 Ma (Whitmeyer and Karlstrom, 2007) exposed in the Rocky Mountains, which is interpreted as the provenance for these deposits based on drainage patterns and detrital zircon evidence discussed later in this section. Since there are no plutons of appropriate age, we argue that older sedimentary rocks eroded during Late Cenozoic uplift (Heller et al., 1988; Leonard, 2002) and were redeposited to the east by the Arkansas River in the McPherson Channel (Frye et al., 1943). If those eroded sediments contained zircons sourced from the Bruneau-Jarbidge (12.7 – 10.5 Ma) and Picabo volcanic fields (8.5 – 6.7 Ma) then the youngest sediments would have eroded first and the young grains contained within these sediments would undergo transport and deposition first. The oldest sedimentary units eroded during Late Cenozoic uplift contribute their older zircons last and are deposited atop the weathered sediments of the younger units, ultimately resulting in the inverse pattern of zircon ages seen in the stratigraphic section analyzed from Harvey County (i.e., younging downwards). Thus, the youngest grains from these paleosols are in fact detrital and do not reliably date the age of deposition. The initial posed hypothesis of volcanic zircon trapped by paleosols did therefore not hold true in this instance, likely because there was a lack of high intensity volcanic events from the YHST (Nash et al., 2006) during the deposition of these beds (ca. 4 – 2 Ma). Although unroofing is the favored explanation here, other potential

explanations are discussed below in the chapter "*Implications of U-Pb Zircon Ages from Paleosols."*

Sedimentary Provenance for Harvey County Samples

Sedimentary provenance for the deposits in the McPherson Channel has been a subject of discussion, but without the benefit of geochronological data. The commonly accepted source area is the Rocky Mountains to the west, but whether there was sedimentary input from other sources, such as outwash from the Laurentide Ice Sheet, has remained uncertain (Fent, 1950). Grains younger than 40 Ma are interpreted to originate from reworked sediments containing zircons from the 6.7-12.7 Ma volcanic ash beds from the Ogallala Formation (Potter, 1991; Ludvigson et al., 2009; Hallman, 2016), 27-29 Ma Fish Canyon Tuff (e.g. Wotzlaw et al., 2013), and 29-34 Ma San Juan Volcanic Field (Bachman et al., 2002). The zircon U-Pb data generated in this study (Fig. 9, 11) also shows an abundance of Sevier (140-50 Ma) and Laramide (70-35 Ma) aged grains (Dickinson and Snyder, 1978; Heller et al., 1986; English and Johnston, 2004; Whitmeyer and Karlstrom, 2007; Appendix D). Presence of these populations supports the interpretation that the origin of these Cenozoic sediments is from the Rocky Mountains (Whitmeyer and Karlstrom, 2007). Additionally there are significant populations from other basement complexes in the Rocky Mountains such as the Mazatzal (ca. 1700 Ma) and Yavapai (ca. 1800 Ma) provinces (Shaw and Karlstrom, 1999; Whitmeyer and Karlstrom, 2007). Although there is an abundance of those grains, there is a scarcity (<1%) of Archean (2500-2700 Ma) age populations, potentially from the Wind River Range in Wyoming (Fig. 11) (Whitmeyer and Karlstrom, 2007). Further evidence for the interpretation of a main Rocky Mountains origin is a lack of populations ranging from 1800-2000 Ma from Trans Hudson Terranes located in the Lake Superior area, which would be expected if there was input from the Laurentide Ice Sheet

outwash from the north (Whitmeyer and Karlstrom, 2007). Additionally, since there are only small differences between the Harvey County samples, as indicated by cross-correlation coefficients (Saylor and Sundell, 2016) greater than 0.4, it is interpreted that all samples originated from the same sources.

Deposition of Airfall Zircons in Paleosols

The ability to use paleosols for zircon chronostratigraphy in continental clastic settings depends on the ability to identify small populations (~1% of all populations) through large 'n' studies (Fedo et al., 2003). It is also important that these populations can be correlated to distinct volcanic events rather than detrital populations, so that the youngest grains represent discrete events rather than grains that are transported and redeposited. If these small populations are detrital, the samples with the youngest grains would also be expected to contain all older Miocene populations because they would have a similar chance of being transported in during deposition of the paleosol sediments. Instead, we find these discrete populations in distinct paleosol layers, and we interpret that they are incorporated into the soil horizons during pedogenesis (Fig. 2). The data show distinct gaps between the youngest population and the next older populations (Fig. 9). Because they have different ages, the Miocene aged zircons found in the paleosols appear to be from distinct sources (Figs. 8A, 8B, 8D, 8H, 8J) and are unlikely to represent fluvial detrital populations.

In addition to the preservation of datable volcanic grains in the soil horizons, there must be certain conditions in order for these analyses to be utilized for geochronologic research. The eruptions must produce zircons large enough (>20 μm) to date that grew just prior to eruption, so that the eruptive event is dated rather than xenocrystic zircons. If the eruptive center is producing very small zircons, or its magma is not producing any zircons, then the eruption's ash will not be

useful for dating depositional age of paleosols. The eruptions must also be high volume and with stratosphere conditions favorable in order to distribute zircons over large distances (ca. 2000 km). The eruptions must also occur at a high enough frequency that a number of events can be identified in the field of interest, although a rate greater than analytical precision is not advantageous. This is the case for the present study area where the average time between eruptions from the YHST during the deposition of the Ogallala Formation was approximately 0.2-0.3 Ma (Nash et al., 2006). It is likely that not every eruption of the YHST had material transported over long distances. This has resulted in deposition of volcanic ash material in the study area at a lower frequency than the uncertainty ranges obtained by LA-ICP-MS in this study, which are between 0.2 and 0.5 Myr. However, this has to be more firmly established by further studies that sample a larger area and the most complete sections.

Using paleosols instead of discreet ash layers can make determining depositional ages challenging because the paleosols do not represent a distinct instant in time (Kraus, 1999). Instead, paleosols record a longer period of subaerial exposure and possible incorporation of zircon grains into the soil profile (Fig. 2). But, because paleosols are developed in subaerial conditions and they undergo intense chemical and physical weathering, other datable minerals originating from volcanic ash, such as feldspars (K-Ar or Ar-Ar dating), could be weathered (Nesbitt et al., 1996). In contrast, crystalline zircon is a highly stable mineral resistant to chemical and physical alterations (e.g. Malusa et al., 2013). During the period of exposure and soil development, there must be coeval volcanic eruptions that deliver material to be incorporated into a soil horizon in order for the paleosol to produce useful zircon dates. Large geochronologic data sets (at least n=300) must be generated to increase the likelihood that very small populations (ca. 1%) are identified (Pullen et al., 2014). Smaller numbers of analyses

(n=100) may miss populations that represent less than 5% of all populations (Vermeesch, 2012). In paleosols where tephra may have been present as thin (<1m) distal layers (Perkins and Nash, 2002) it is expected that its zircons would not present 5% of the all populations. However, the present study illustrates the potential for paleosol chronostratigraphy with a time resolution of half a million years or less for Miocene strata, a significant improvement over biostratigraphic correlations.

Implications of U-Pb Zircon Ages from Paleosols

The results from the samples from Scott County in this study show that generating detrital zircon datasets from paleosols with large n (n=300) opens the possibility of paleosols being used for chronostratigraphy in terrestrial basins through the identification of young populations of grains directly related to atmospheric deposition of sediments. Although the results contain a larger percentage of detrital grains (>99%) than originally hypothesized with only a small population (one to five grains) representing the depositional age, the demonstrated presence of these distinct populations indicate that through pedogenic processes, zircon from tephra may be worked into the sedimentary units exposed at the surface (Fig. 2). Paleosols are thus a viable stand-in for ash deposits where the ash is either not preserved or not extensive, such as in the continental deposits of the Ogallala Fm. (e.g. Ludvigson et al. 2009; Smith et al., submitted). This study shows that local correlations (Fig. 12) can be made using geochronological data from paleosols, and that distinct populations of grains can be identified at the same stratigraphic level when comparing different localities. This might indicate that paleosol zircon geochronometry can be utilized on a regional or basin-wide scale to make higher-order correlations. By improving correlations across large continental basins, temporal depositional patterns may be interpreted with greater confidence. Examining these refined spatial

and temporal changes could highlight previously unidentified internal heterogeneities within the stratigraphic architecture of the basins.

Combining the chronostratigraphic correlations with data from previous studies that show coalescence of distributary lobes of fluvial systems (Weismann et al., 2010; Harlow, 2013) provides a comprehensive look at how the deposits of the Ogallala Fm. evolved spatially and temporally. Temporal information can be extracted from a measured section, and minimum sedimentation rates can be calculated with this data. In the Lake Scott Section of this study, the inferred minimum average sedimentation rate of the paleosols is approximately 3.5 meters/million years (i.e. 15 meters vertical change/4.3 million years). This calculation is based on the age differences in samples SC15-06 (10.6 ± 0.5 Ma) from the Battle Canyon section and SC15-14 (6.3 ± 0.3 Ma) from the JRT Roadcut, which represents the greatest age difference in this study. The calculated average sedimentation rate is a minimum value for the Scott County samples because the sections may not be complete and some of the paleosols may have had part of their upper horizons decapitated by erosion.

Chronostratigraphic information from paleosols can also be used in previously studied localities and new areas of interest to calibrate other geological data sets. For paleoclimatology studies using stable carbon and oxygen isotope chemostratigraphy (Smith et al., 2008; Harlow, 2013) absolute time control has been distinctly lacking thus far (e.g. from the High Plains: Ludvigson, 2007). With the implementation of a more precise chronology, interpretations of paleoenvironmental conditions can be strengthened, such as in the study of Field et al. (2015) on the High Plains deposits of Nebraska. Additionally, biostratigraphic methods used in the High Plains, such as North America Land Mammal Ages (e.g. Alroy, 2000), have imprecise age control (ca. 3-6 m.y. uncertainties) and incorporating new and cost-effective methods of absolute

radiometric dating can decrease uncertainties in paleontological or biostratigraphic studies (Martz, 2008).

The dates extracted from zircons in paleosols are especially useful if there is other data (e.g. biostratigraphy) available from areas of interest, as in Scott County (Thomasson, 1979; Smith et al., 2016). However, since interpretations are based on maximum depositional ages, caution must be exercised when determining whether these ages represent the true depositional age or not. As previously mentioned, ages obtained from the Harvey County H3N core do not represent the depositional age according to previous biostratigraphic studies (Frye et al., 1956). The lack of near-depositional aged grains may be due to a couple of different factors, including time of exposure or amount of volcanic activity during exposure. If the paleosol horizons did not develop over a long enough duration (less than ca. 0.2-0.3 m.y. for the YHST) to accumulate any zircons from coeval eruptions, there is no possibility to date grains of depositional age. Alternatively, there may not have been any eruptions that took place during the time of deposition. This interpretation is favored because, following Nash et al. (2006), there is a lack of eruptive activity from the Yellowstone Hot Spot between 4.45 ± 0.05 Ma and 2.06 ± 0.03 Ma. Since the estimated age range of the McPherson Channel deposits are ca. 2-4 Ma, based on various biostratigraphic suites (Frye et al., 1956), there was not a volcanic source to supply depositional-aged zircons to these sediments.

We recommend that geological interpretations should be made only after scrutinizing the data to ensure that unrealistic interpretations are avoided. Measures such as 1) collecting suites of samples in stratigraphic order from multiple continuous outcrops to ensure that units of interest are thoroughly sampled and temporal resolution is achievable, 2) ensuring the presence of paleosol features (e.g. rhizoliths, peds, burrows) are identified to accurately interpret

depositional environments, 3) sampling all available stratigraphic units (especially ash beds or lenses) to compare all inherited populations and distinguish young, potentially depositional events from one another, and 4) carefully examine any other external controls such as body or trace fossils that might provide important information on the chronology of the study area, should be taken to ensure that interpretations based on absolute geochronological data is sound. While the Scott County geochronological analyses provided results for depositional age of sediments independently, the H3N core results show that these data are not always efficacious in determining depositional ages. Following the guidelines outlined above, the use of all available data to constrain the chronology of an area of interest to support interpretations of depositional history based on U-Pb zircon geochronology is a must.

Implications for the High Plains Aquifer

Recent geochronological studies on paleosols of the High Plains Aquifer show where aggradation occurred and how it is distributed temporally across the High Plains (Field et al., 2015; Hallman, 2016; Smith et al., submitted). Different sediment lobes have been identified through ash bed U-Pb zircon geochronology (Hallman, 2016) and show that the High Plains Succession did not develop though regionally continuous aggradation, but rather by diachronous buildup of discrete lobes of fluvial and alluvial sediments along drainage systems. The lobes (Fig. 13) are the Norton Lobe (ca. 12 Ma) in north-central Kansas and the Ellis Lobe (ca. 8 Ma) in central Kansas (Hallman, 2016). The location of the lobes along fluvial channels likely indicates that there are zones of high hydraulic connectivity, corresponding to fluvial channel type sands (Weismann et al., 2010), along with zones of low hydraulic connectivity, relating to silty to clay rich overbank and paleosol deposits. Identifying new intervals that may impede flow of water in the aquifer (e.g. fine-grained overbank deposits) and accounting for these layers

could improve how existing water resources are managed by updating current groundwater flow models (Anderson and Woessner, 1992). Correlation of these layers through paleosol zircon geochronology provides an avenue for determining the lateral extent of flow barriers where lithostratigraphic correlation is not practical, such as in the High Plains.

Understanding the diachronous deposition of lobes in the High Plains Succession can lead to an improved understanding of the aquifer's connectivity. The diachronous lobe depositional model is much more complex than a single aggradational sheet of sediment advancing from the Rocky Mountains to the east. Since the deposition of the Norton Lobe (Fig. 13) occurred ca. 3 million years prior to deposition of the Ellis Lobe (Hallman, 2016), there are likely different degrees of permeability because the older lobe has had a longer period of exposure to water and diagenetic fluids that could result in localized increases of dissolution or cementation (Taylor et al., 2000). Zones that have undergone extensive cementation (e.g. calcrete horizons), along with fine grained sedimentary layers, are potential flow barriers that might not be extensively traced in subsurface models for fluid flow.

The identification of an unroofing sequence in the Harvey County H3N core sediments indicates that there is more to be discovered about the erosion and deposition processes of the High Plains Succession. The downward younging unroofing sequence provides further evidence that the erosion of source material is related to flexural rebound in the Rocky Mountains, interpreted to be due to Late Cenozoic uplift (Heller et al., 1988). An inverted stratigraphic age succession is a typical detrital signature in unroofing of plutons (Lawton et al., 2010), so what this study may have observed is the erosion and redeposition of younger sedimentary layers. Further study of the chronostratigraphic history of the High Plains Succession may yield more insights on the depositional nature of the Aquifer's sediments and ultimately provide a better

understanding of internal heterogeneities, which could ultimately lead to more effective water management strategies.

Conclusions

1) Zircon grains of Miocene age are present in paleosols from the Ogallala Formation sampled in several localities in Scott County, western Kansas. The youngest zircon populations from these samples date the depositional ages of the sediments. The zircons are interpreted to be volcanogenic, incorporated into the soil horizons through pedogenic processes such as burrowing, intubation of roots, or through desiccation cracks. The depositional ages of individual paleosols layers are consistent with previous studies of fossil floral assemblages (Thomasson, 1979), mammal body fossils from the study area (Zakrzewski, 1990; Smith et al., 2016), and previous studies on ash layers (Turner et al., 2015; Hallman, 2016). Although important young grains were found in many paleosol samples, not every paleosol contains depositional age grains. Therefore, this approach works best if a large enough number of samples is collected and there is some prior stratigraphic control (e.g. lithostratigraphic markers). Interpretations of depositional ages from sedimentary layers is also strengthened if there is external control (e.g. biostratigraphic age ranges, nearby ash layers) available for the section of interest.
2) The samples dated from the Harvey County H3N core did not yield zircon grains consistent with previously published biostratigraphy (Frye et al., 1943), only older zircon populations that are interpreted to be inherited. We conclude from the inverse age pattern that deposition of the sediments occurred as the result of an unroofing sequence in the hinterland.

3) Sedimentary provenance for the McPherson Channel deposits studied in the H3N core from Harvey County is from the Rocky Mountains with no input from glacial outwash from the north (i.e. Laurentide Ice Sheet). The abundance of Cretaceous and Proterozoic zircons from igneous provinces in the Rocky Mountain source area, and the scarcity of Archean and Paleoproterozoic ages (Fig. 11) from Lake Superior regions (less than 1%) provides evidence for this (Whitmeyer and Karlstrom, 2007).
4) U-Pb Zircon dating is a useful chronostratigraphic tool in continental clastic basins. Identifying superposed ages and stratigraphic layers of the same age from different correlated horizons, and obtaining ages that are in agreement with local biostratigraphy (Thomasson, 1979; Smith et al., 2016) indicate that this approach has great potential. Further study of more regional, basinwide correlations based on drill core or outcrop studies may reveal spatial trends in deposition and could shed light on depositional rates and paleoenvironmental conditions.
5) Based on the youngest zircon dates identified in this study the source of these volcanic zircons are the eruptive centers of the Yellowstone Hot Spot track (Perkins and Nash, 2002). The youngest significant ages from the paleosols studied here are similar to volcanic ashes previously identified in lenticular deposits in the Ogallala formation through tephrochronologic analyses (Potter, 1991; Ludvigson et al., 2009) and more recently by U-Pb zircon geochronology (Hallman, 2016).
6) Further study and correlation using paleosols as a geochronometer may unravel the complex depositional history and shed light into previously problematic internal heterogeneities of the High Plains Succession. The data presented in this study and previous studies suggest that the High Plains Succession was deposited in distinct lobes (Fig. 13) that followed drainage

patterns active at different times (Hallman, 2016) rather than continuous regional aggradation as an alluvial megafan (Seni, 1980). Better understanding of these regional variabilities should eventually lead to better quantitative predictions of long-term sustainability of the agriculturally important High Plains Aquifer.

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Figures

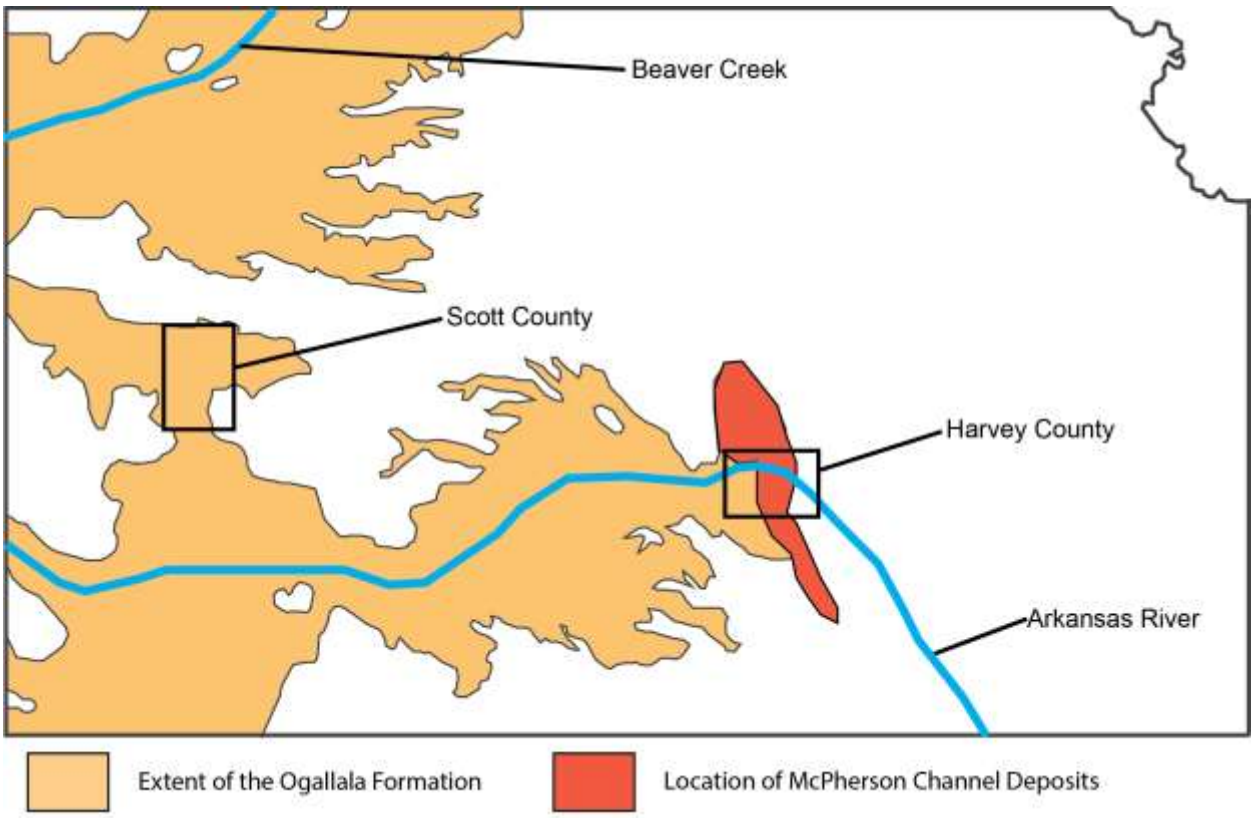
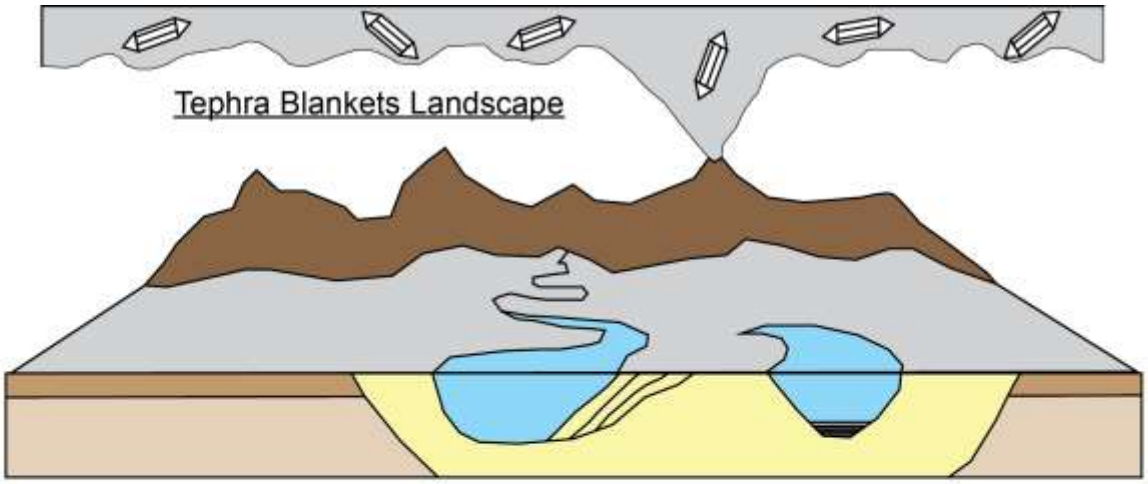
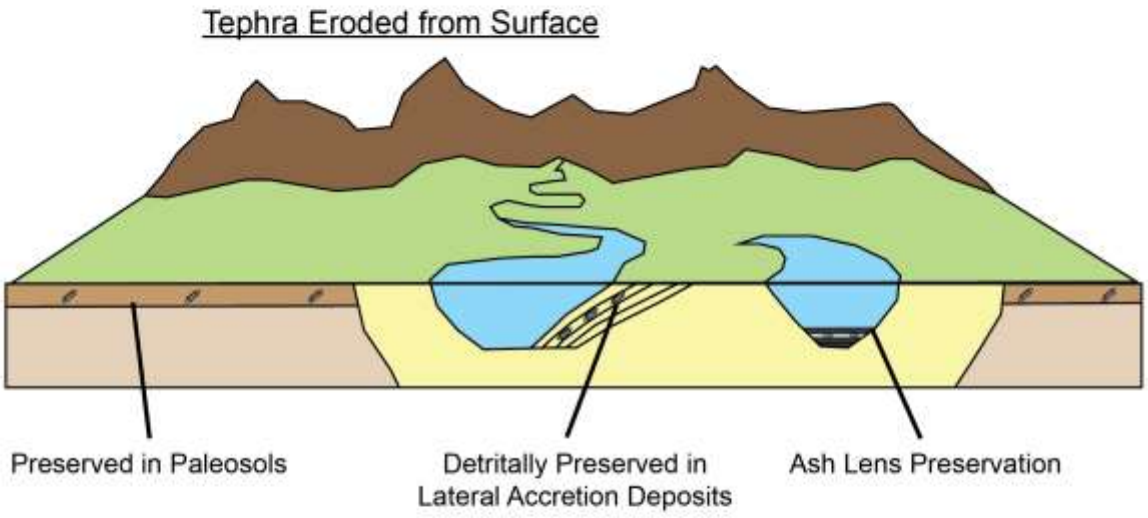


Figure 1: Subcrop map of the Ogallala Formation in Kansas showing the extent of the Ogallala Formation (modified from Harlow, 2013). Black outline is the state outline of Kansas. Note that the dendritic pattern reflects the fluvial nature of deposition as paleochannels that were filled over time. The area where the Ogallala Formation is deposited reflects the drainage patterns of the modern Arkansas River and Beaver Creek. The absence of Ogallala Formation in the area just north of Scott County is the result of a paleotopographic high. Locations of McPherson Channel deposits of the eastern section of the Ogallala Formation are shown in red (Fent, 1950).





Mechanisms for Zircon Entrapment in Paleosols

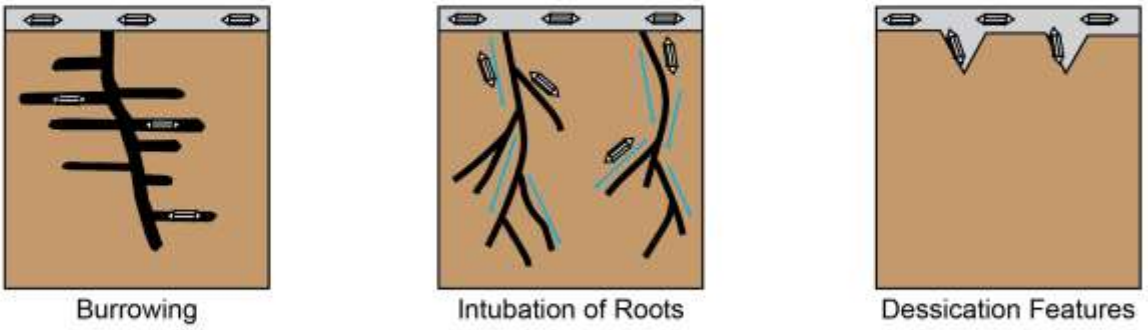


Figure 2: Schematic illustration of how airfall zircons could be incorporated into soil horizons (modified from Smith et al., in revision). When tephra from volcanic eruptions blankets the landscape, it is not likely to be preserved as a laterally extensive layer. However, ash grains may be preserved through pedogenic processes like burrowing, root development, and desiccation cracks. Similarly, lenticular deposits of ash beds may be preserved as ponded deposits. Because paleosols are laterally extensive, chronostratigraphic correlations could be possible in continental basins.

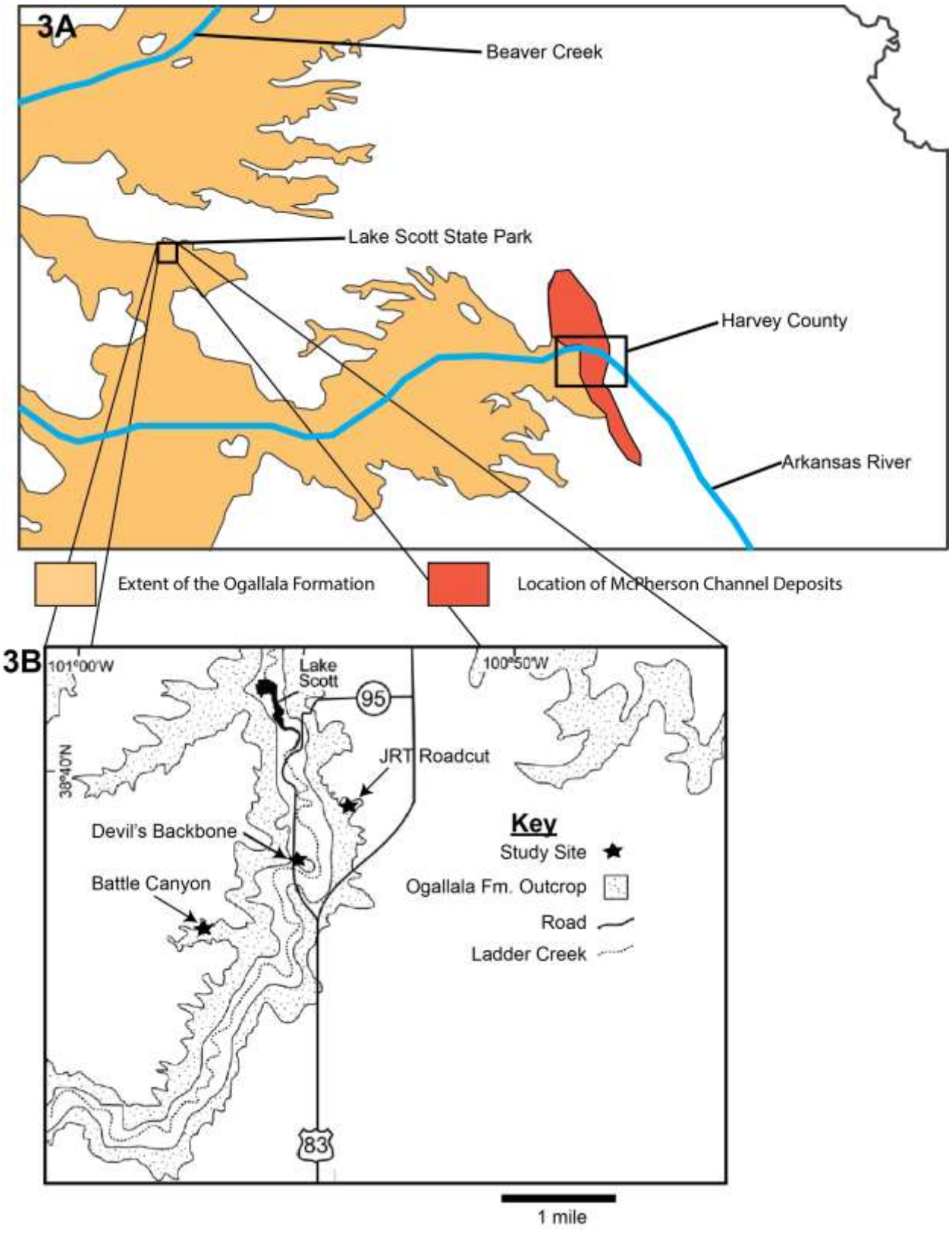

3A
Beaver Creek
Lake Scott State Park
Harvey County
Arkansas River
Extent of the Ogallala Formation
Location of McPherson Channel Deposits
3B
101°00'W
100°50'W
Lake Scott
95
38°40'N
JRT Roadcut
Devil's Backbone
Battle Canyon
Key
Study Site
Ogallala Fm. Outcrop
Road
Ladder Creek
83
1 mile

Figure 3: (3A) Map of Kansas displaying the counties of Kansas (after Kansas Geological Survey Physiographic Map of Kansas). Outlined in black is the location of Lake Scott State Park. (3B) Map showing lithologies of field area and location of sampled outcrops in Scott County. Schematic geologic map is of the Lake Scott State Park Area (Modified from Smith et al., 2011). Locations of sampled outcrops are indicated by stars. These outcrops are typically located along roadcuts or in stream draws with ca. 10 meters of relief. These locations were ideal for sampling along a vertical profile of the Ogallala Formation to investigate potential geochronologic resolution. Since these outcrop sections are all within approximately 1 mile of one another, correlation of stratigraphic layers based on acquired geochronologic information is possible.

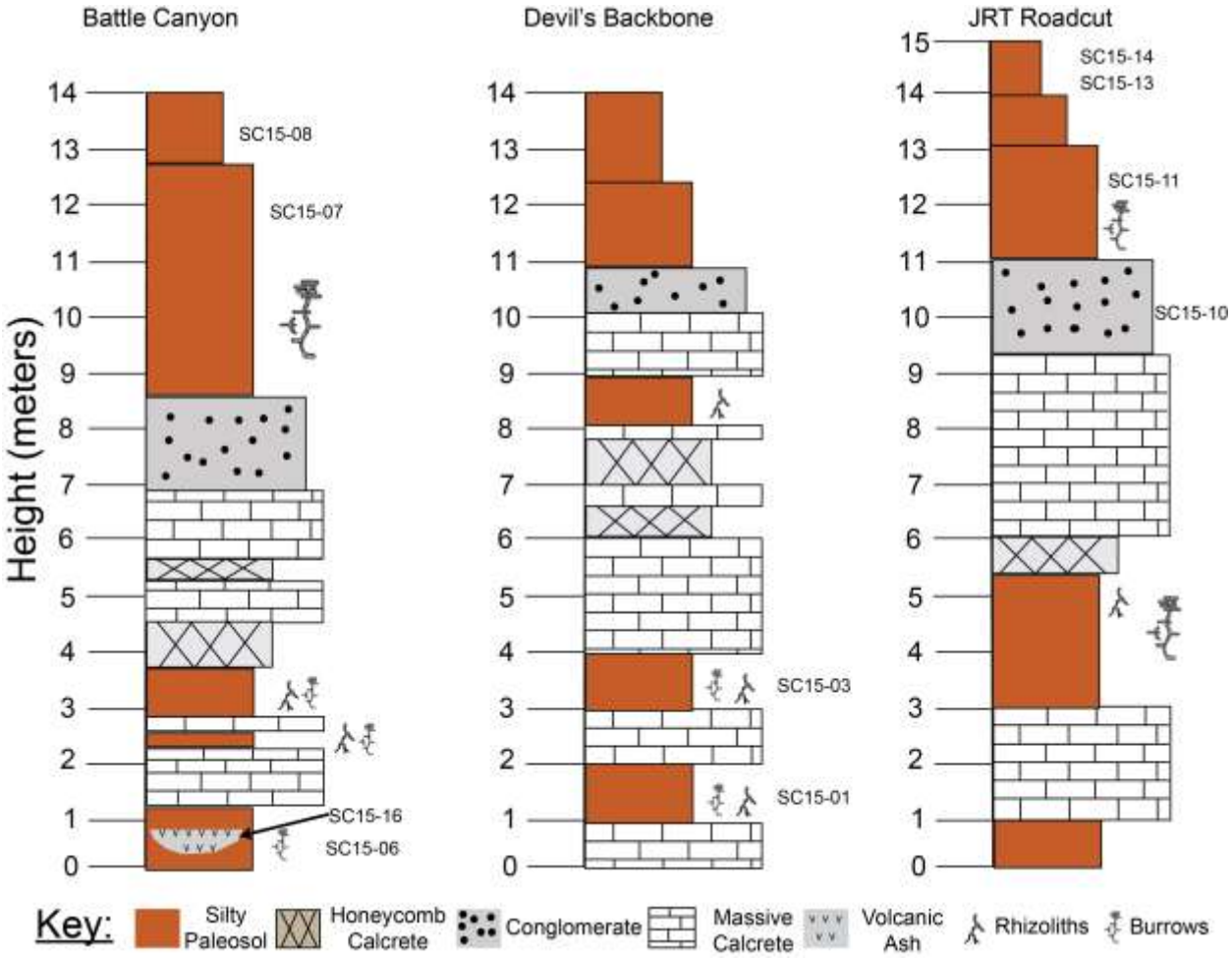


Figure 4: Schematic diagram displaying weathering profiles and lithologies of measured stratigraphic sections in Scott County. Intervals sampled for geochronologic analysis are indicated to the right of each measured sections (based on measured sections from J. Smith, Kansas Geological Survey, personal communication). Ash interval in the Battle Canyon section is projected into the stratigraphic profile based on correlation of layers through aerial photographs.

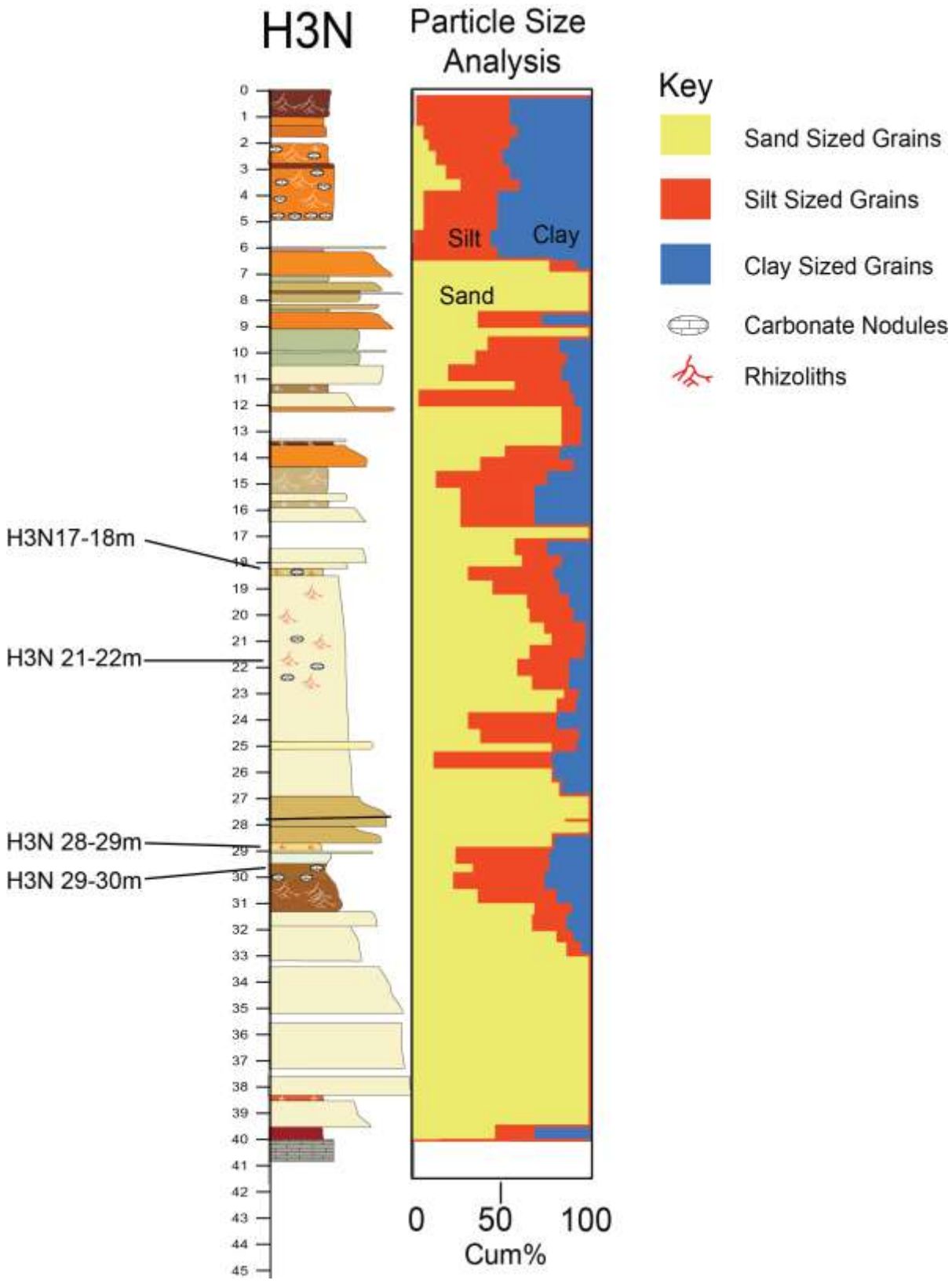


Figure 5: Lithological log of H3N core collected from Harvey County (Figure 1) with the y-axis

showing meters depth below surface. Colors of lithology are based on Munsell Color Chart descriptions (Munsell, 1919) Results of grain size analysis are presented on the right (J. Smith, Kansas Geological Survey, personal communication), which are shown as relative percent compositions. Sampled intervals are indicated to the left of the log. Note that sampled intervals show pedogenic features. Circular features represent calcareous nodules and the red/black branching features are rhizoliths.

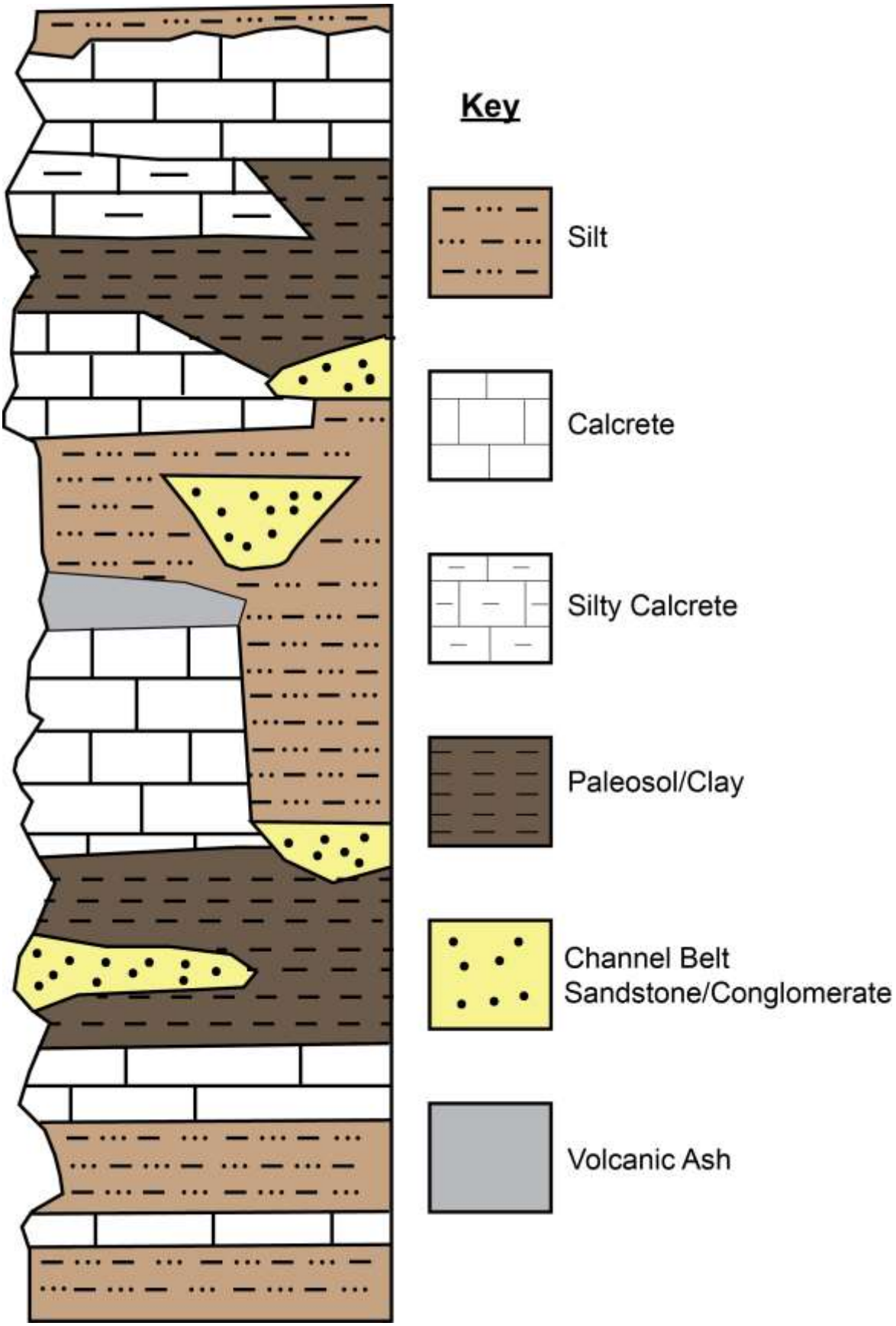

Key
Silt
Calcrete
Silty Calcrete
Paleosol/Clay
Channel Belt
Sandstone/Conglomerate
Volcanic Ash

Figure 6: Schematic Lithology of the Ogallala Formation. Diagrammatic Stratigraphic section through the Ogallala Formation showing distinct spatial and temporal trends. Layers can vary from channel belt sands and conglomerates, their associate overbank silts and clays (some being modified to paleosols) over short lateral distances. This poses a challenge for those working on lithostratigraphic correlations in western Kansas. Discrete ash layers, mostly deposited as lenses, are present throughout the formation. These are beneficial as time markers. Calcrete layers are interpreted as pedogenically modified layers or phreatic zone calcretes. (Modified from Waite et al., 1947)

Figure 7: Aerial photograph showing the approximate stratigraphic location of the Landon Draw Ash layer in the Battle Canyon section. The Battle Canyon Memorial is indicated in the upper

part of the photograph, the sampled section is directly across the stream draw. The dashed red line is the approximate geologic top of the lowermost prominent calcrete (a distinct ledge forming unit) bed in Figure 3, and the Landon Draw Ash is located below this unit. Image was generated using Google Earth.

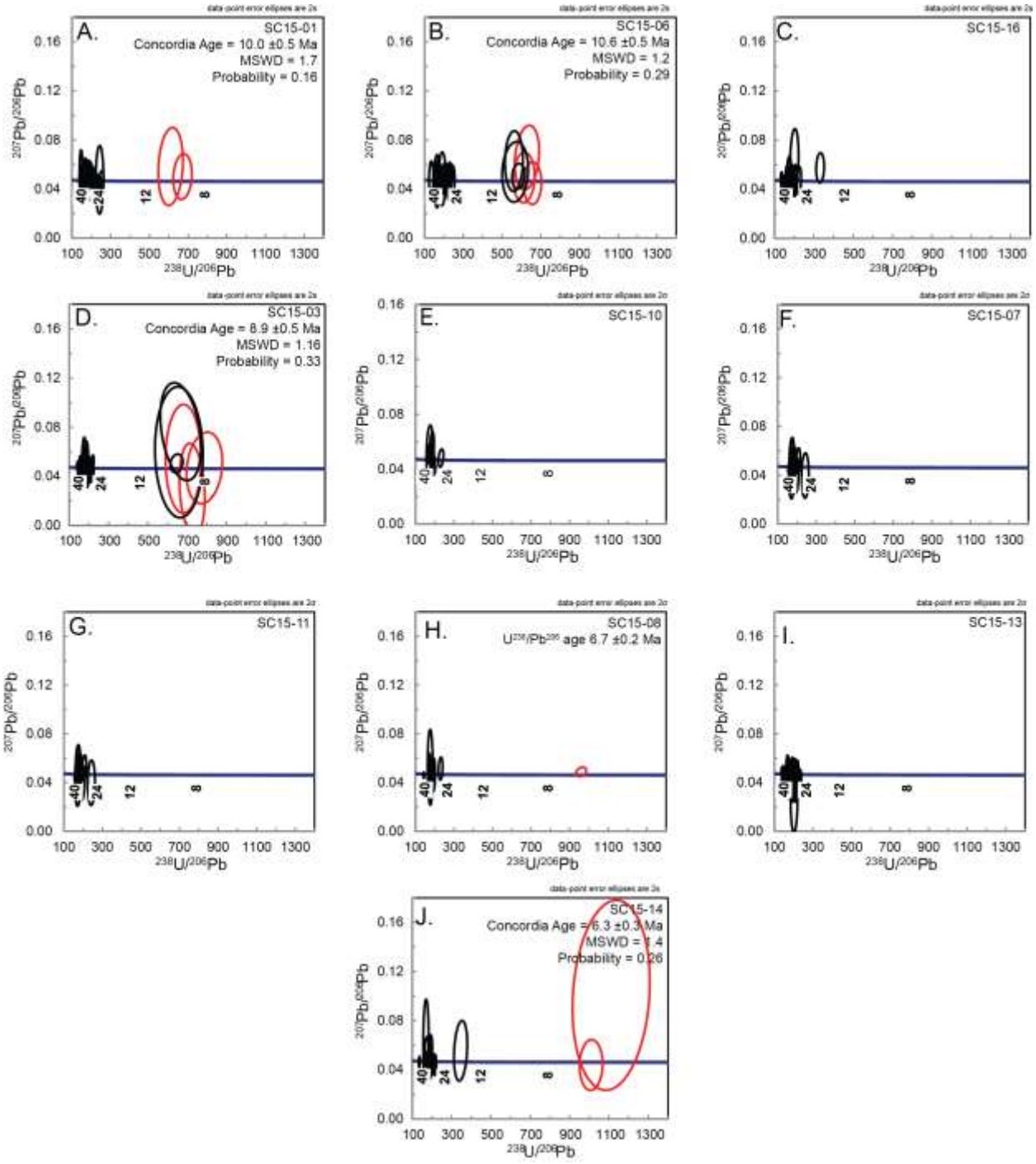


Figure 8: Tera-Wasserburg concordia plots of samples from Scott County (SC15-XX). Error ellipses represent 2σ uncertainties. Shown are all grains younger than 50 Ma. Plots are presented in stratigraphic order. 8A) Concordia plot of sample SC15-01 from the Devil's Backbone Section. Concordia age of the youngest two grains is 10.0 ± 0.5 Ma. 8B) Concordia plot of

sample SC15-06 from the Battle Canyon Section. Concordia age of the youngest three grains is 10.6 ± 0.5 Ma. 8C) Concordia plot of sample SC15-16 from the Battle Canyon Section. No Miocene grains were found in this sample, the youngest grain from this sample is ca. 19 Ma old. 8D) Concordia plot of sample SC15-03 from the Devil's Backbone Roadcut. Concordia age of the youngest three grains is 8.9 ± 0.5 Ma. 8E) Concordia plot of sample SC15-10 from the JRT Roadcut. No Miocene grains were identified in this sample. The youngest grain in this sample is ca. 27 Ma old. 8F) Concordia plot of sample SC15-07 from the Battle Canyon Section. No Miocene grains were analyzed in this sample. The youngest grain from this sample is ca. 27 Ma old. 8G) Concordia plot of sample SC15-11 from the JRT Roadcut. No Miocene grains were analyzed in this sample. The youngest grain in this sample is ca. 28 Ma old. 8H) Concordia plot of sample SC15-08 from the Battle Canyon Section. YSG is 6.7 ± 0.2 Ma. 8I) Concordia plot of sample SC15-13 from the JRT Roadcut. No Miocene grains were found in this sample, the youngest population has a concordia age of ca. 28 Ma. 8J) Concordia plot of sample SC15-14 from the JRT Roadcut. The youngest population of two grains yields a concordia age of 6.3 ± 0.3 Ma.

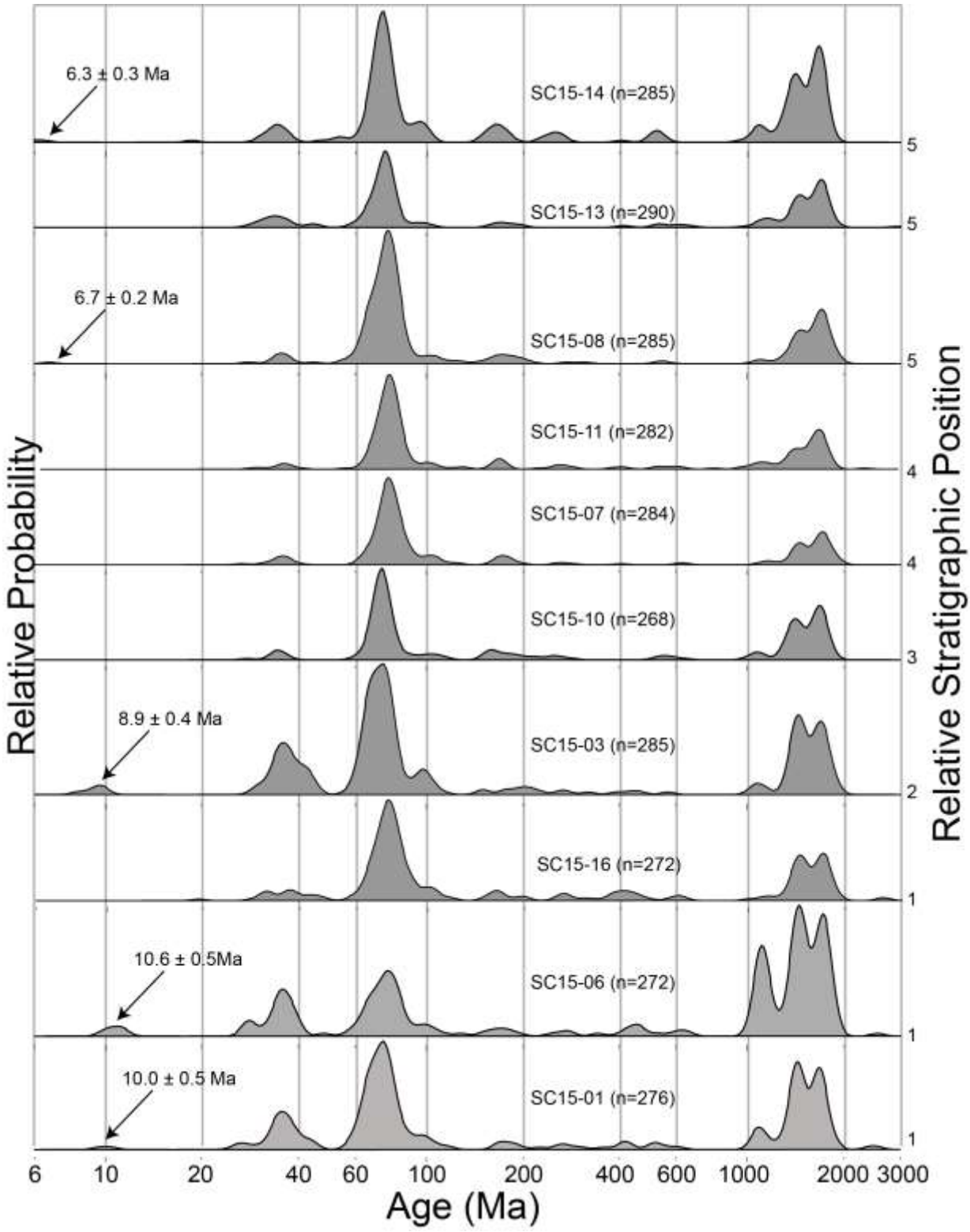


Figure 9: KDE plots for samples from Scott County, KS shown in stratigraphic order. The x-axis of this plot is logarithmic. Note that the youngest populations in five of the nine samples are

superposed in stratigraphic order. The y-axis on the right side shows the relative stratigraphic position of the layers where 1 is the lowest stratigraphic position and 5 is the highest stratigraphic position, as shown in Figure 12.

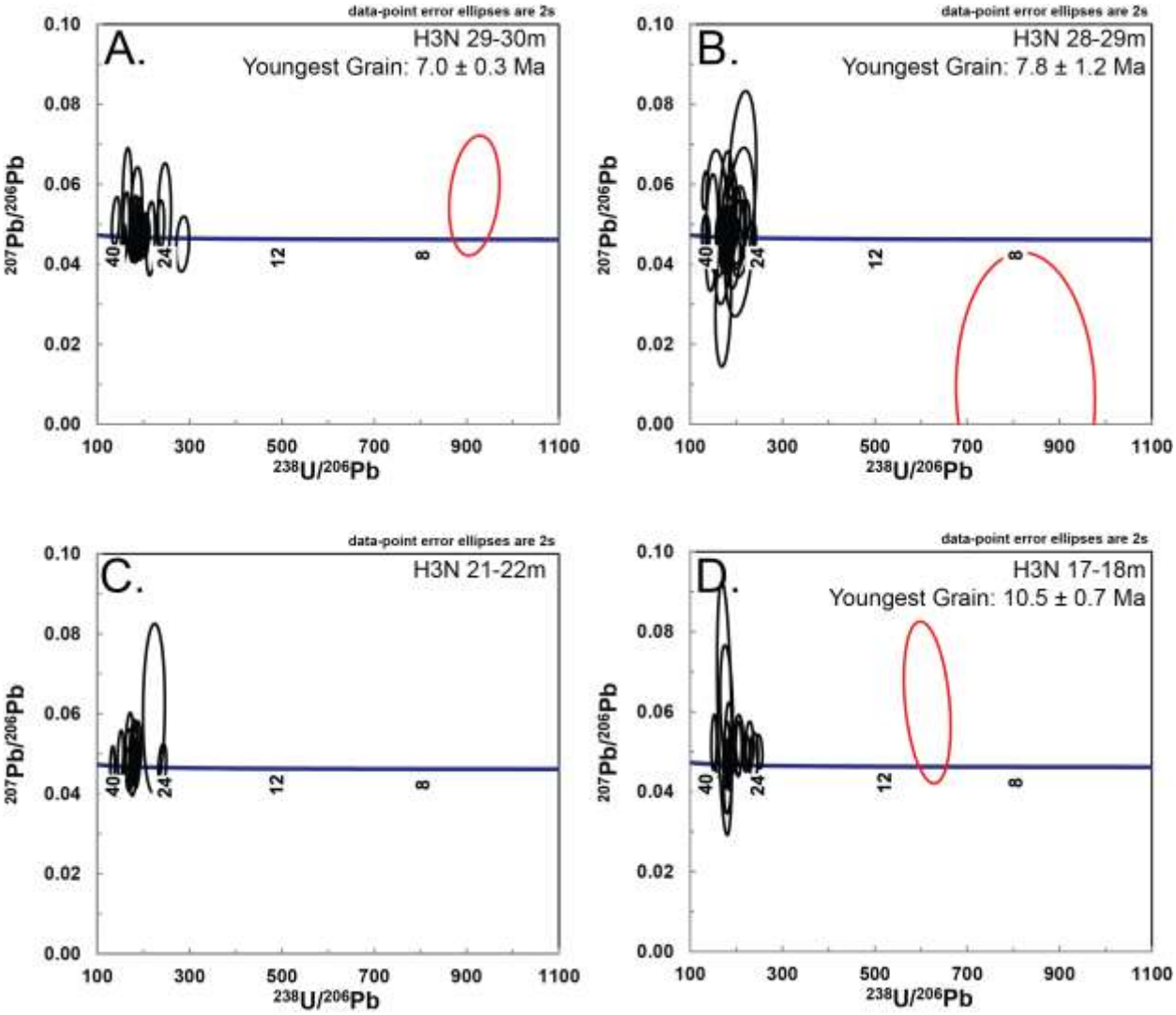


Figure 10: Tera-Wasserburg concordia plots of the youngest grains from H3N core, Harvey County, KS. Error ellipses represent 2σ uncertainties. Analyses shown are all grains younger than 50 Ma. Youngest population of grains in most samples is defined by a Miocene-age youngest single grain (YSG). 10A) Tera-Wasserburg concordia plot of the sample H3N 29-30 meters. The YSG is 7.0 ± 0.3 Ma. 10B) Tera-Wasserburg concordia plot of the sample H3N 28-29 meters. The YSG is 7.8 ± 1.2 Ma. 10C) Tera-Wasserburg concordia plot of the sample H3N 21-22 meters. No Miocene grains were found in this sample and the youngest population of

grains has an age of ca. 27 Ma. 10D) Tera-Wasserburg concordia plot of the sample H3N 17-18 meters. The YSG has an age of 10.5 ± 0.7 Ma.

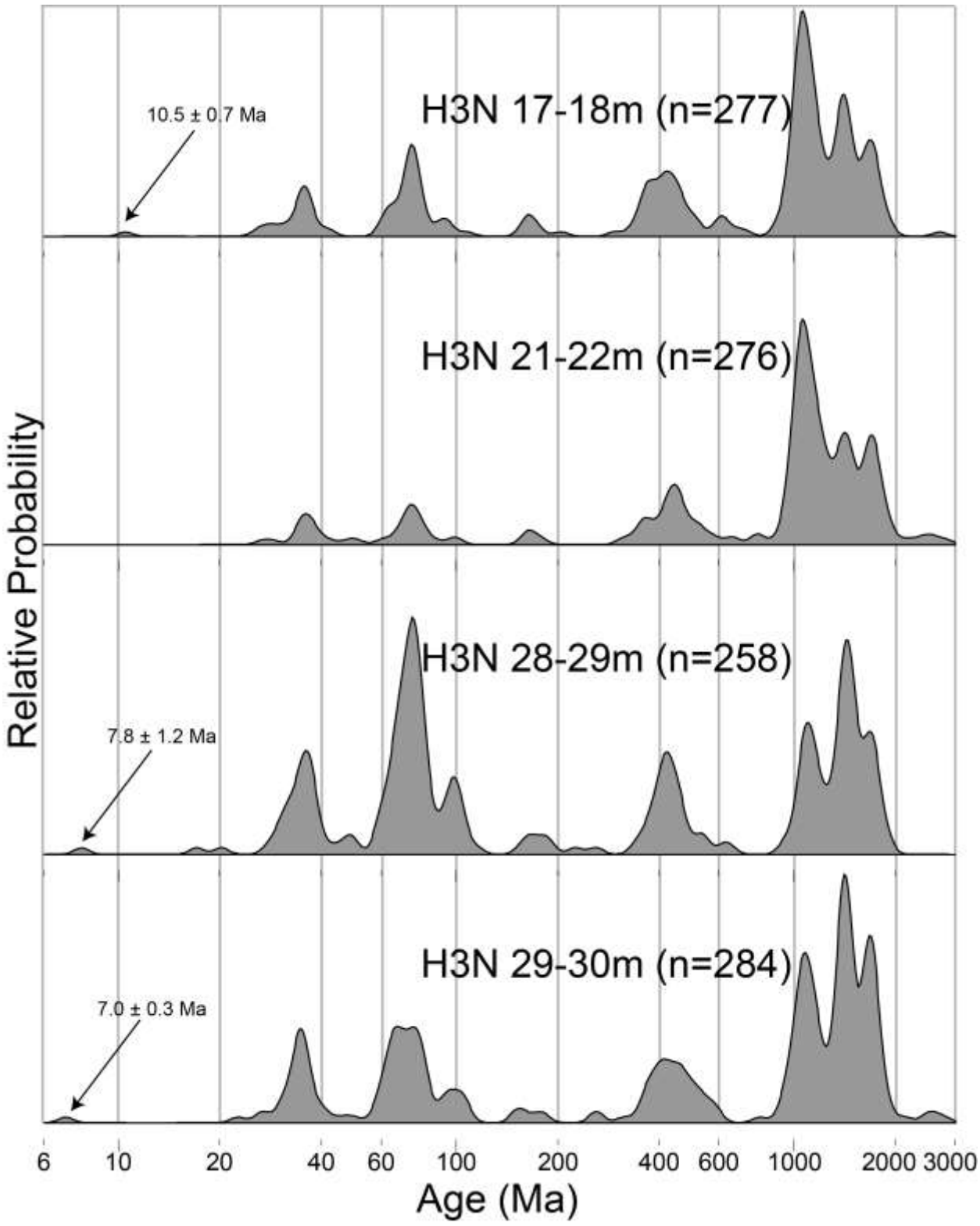

H3N 17-18m (n=277)
10.5 ± 0.7 Ma
H3N 21-22m (n=276)
H3N 28-29m (n=258)
7.8 ± 1.2 Ma
H3N 29-30m (n=284)
7.0 ± 0.3 Ma
Relative Probability
6
10
20
40
60
100
200
400
600
1000
2000
3000
Age (Ma)

Figure 11: KDE plots for samples from the Harvey County core H3N shown in stratigraphic order. The x-axis for this plot is logarithmic. Note that the youngest populations in three of the four samples are younging downwards in the core, and are thus inverse to the stratigraphic order.

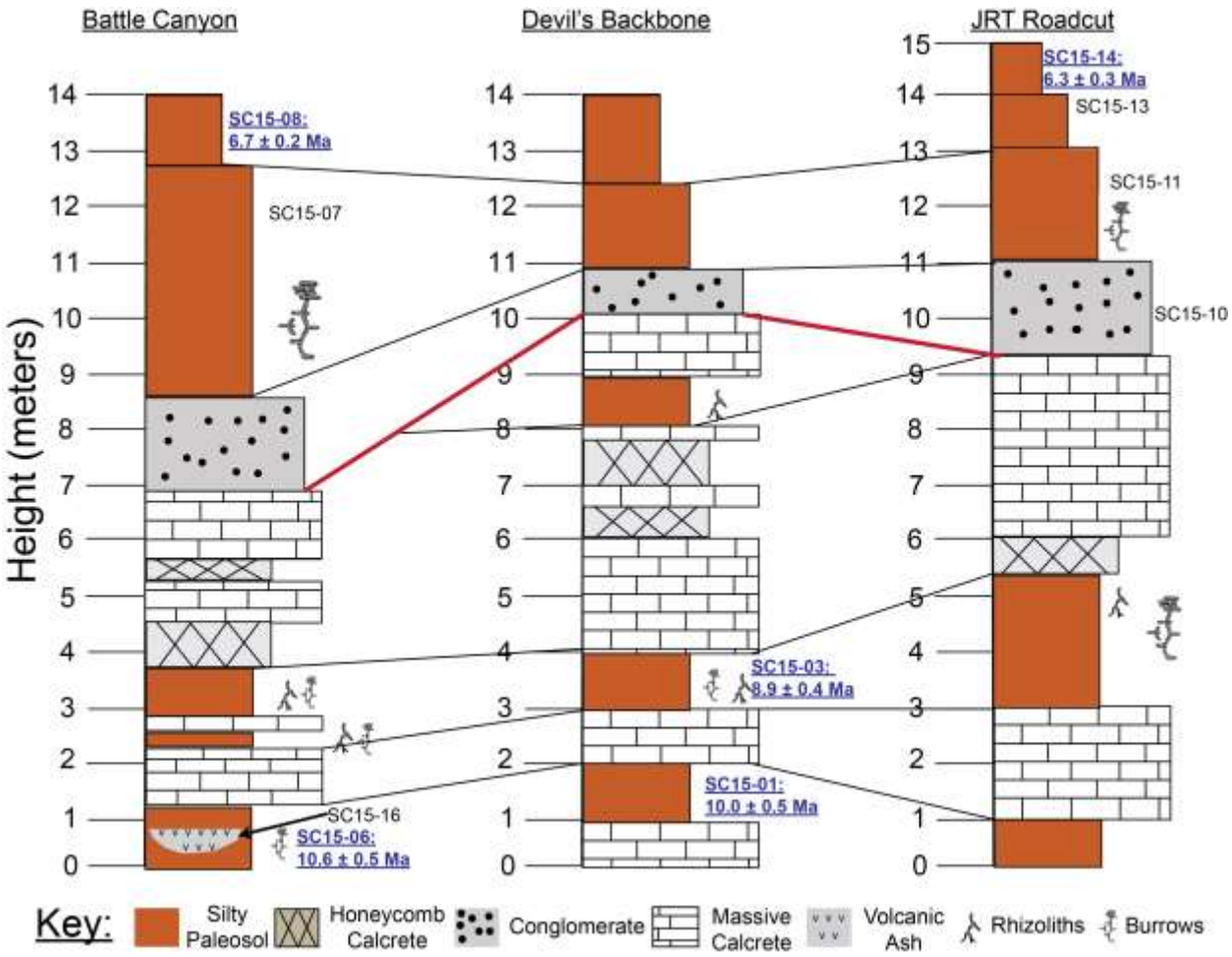


Figure 12: Schematic diagram of measured stratigraphic sections in Scott County with lines indicating stratigraphic correlations based on U-Pb zircon ages. Intervals where depositional ages of sedimentary layers were interpolated are shown in blue. Note that the ages are in superposed stratigraphic order. Red lines indicate a potential erosive surface underlying the conglomeratic channel fill. Samples with numbers shown in black did not yield Miocene grains. Lithostratigraphic correlations are indicated by black lines. Correlations are based on ages and lithology.

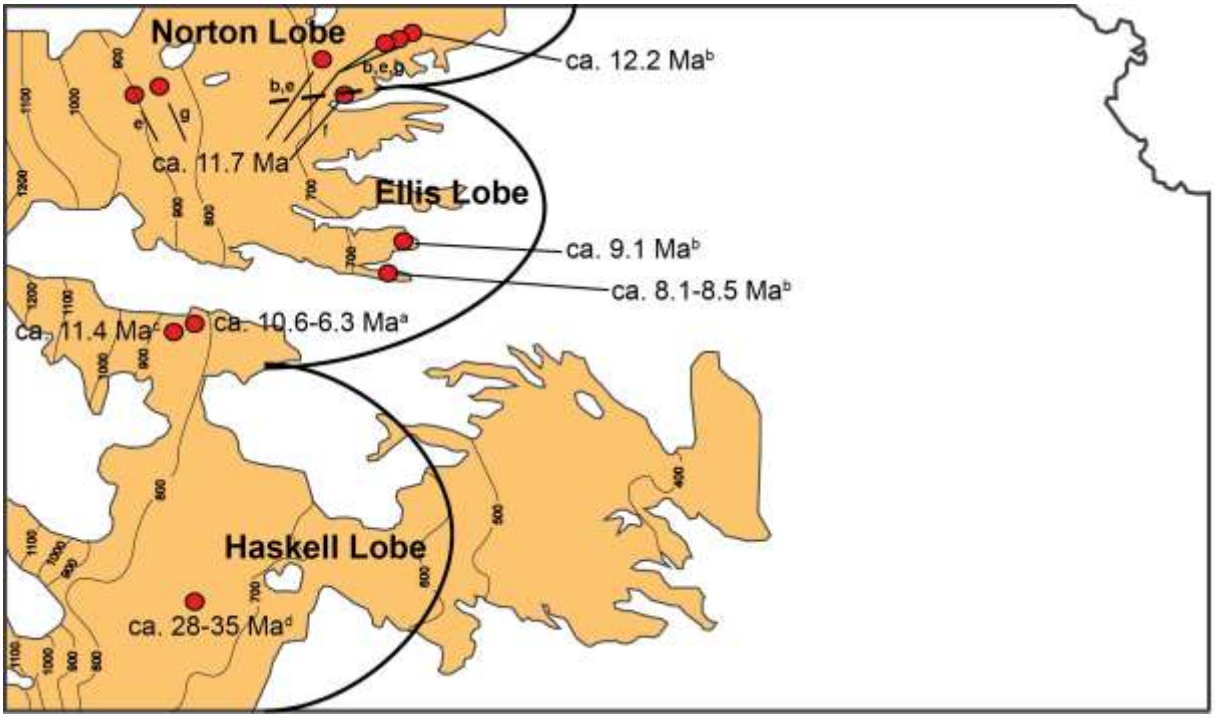


Figure 13: Spatial extent and temporal architecture of the Ogallala Formation in Kansas. Inferred depositional ages are marked in red. These ages are consistent with the interpretation that the Ogallala Fm. was deposited through the migration of fluvial lobes in a diachronous manner, rather than an aggrading megafan (Hallman, 2016). The Norton Lobe aggraded in the northern part of Kansas, north of a bedrock high, ca. 11-13 Ma. The Ellis lobe was then deposited on the north side of the same bedrock high in Kansas with initial depositional dates ranging from ca. 8-10 Ma (Hallman, 2016; Smith et al., 2016), but this has been amended to ~6.3-11.4 Ma based on the results of this study. The inferred Haskell lobe is primarily deposited to the South of this bedrock high and is of Eocene-Oligocene age (Smith et al., 2014; Turner et al., 2015; Hallman, 2016; Smith et al., 2016). Contours are of bedrock elevation (in meters above sea level) and are modified from structure contours from Cederstand and Becker (1998). Geometry of the interpreted lobes is modified from Hallman, 2016.

Plotted ages are from: a, this study; b, Hallman, 2016 (zircon LA-ICP-MS); c, Sitek et al.,

2016 (zircon LA-ICP-MS); d, Turner et al., 2015; Smith et al., 2015; Smith et al., 2016 (zircon LA-ICP-MS); e, Potter, 1991 (glass fission-track); f, Carey et al., 1952 (correlation to dated beds using ash petrography); g, Swineford et al., 1955 (correlation to dated beds using ash petrography).

Appendices

Appendix 1: Analytical Parameters

Laboratory & Sample Preparation	
Laboratory name	KU Geology Isotope Geochemistry Laboratories
Sample type/mineral	Zircon
Sample preparation	Standard mineral separation, epoxy grain mount, tape mount for grains <25 μm wide
Laser Ablation System	
Make, Model & type	ArF excimer 193 nm, Photon Machines Analyte G2, ATLEX 300
Ablation cell & volume	Helex 2, two-volume cell
Laser wavelength (nm)	193
Pulse width	5 ns
Fluence	2 J/cm^2
Repetition rate	10 Hz
Spot diameter (nominal/actual)	20/20 μm
Sampling mode/pattern	Single spot
Carrier gas (l/min)	He, 1.01 (cell); Ar, 1.1
Ablation duration (secs)	15 (short method); 26 (long method)
ICP-MS Instrument	
Make, Model & type	Thermo Element2 magnetic sector field ICP-MS
Sample introduction	Ablation aerosol
RF power	1100 W
Make-up gas flow	Ar, 1.1 l/min
Sampling depth	20 μm
Detection system	Single detector, counting & analog
Masses measured	^{206}Pb, ^{207}Pb, ^{208}Pb, ^{232}Th, ^{238}U
Integration time per peak (ms)	1-6 (short); 1-5 (long)
Total integration time per reading (secs)	13 (short); 23 (long)
Total method time	23 (short); 42 (long)
Sensitivity/Efficiency	~0.1% U, GJ-1
IC Dead time (ns)	2

UO+/U+ (%)	< 0.01
$^{238}U+/^{232}Th+$	> 0.6
Data Processing	
Gas blank (s)	9 (short); 21 (long)
Calibration strategy	Sample / standard bracketing. GJ-1 used as primary calibration standard. Plešovice and Fish Canyon Tuff used as secondary standard.
Reference Material info	GJ-1 (Jackson et al., 2004) Plešovice (Sláma et al., 2008) Fish Canyon Tuff (Wotzlaw et al., 2013)
Data processing package used	IGOR PRO, Iolite 2.5.
Mass discrimination	Downhole
Common-Pb correction, composition and uncertainty	No common-Pb correction applied to the data.
Uncertainty level & propagation	Age uncertainties are reported at ±2σ absolute, propagation is by quadratic addition, following Paton et al. (2010)
Reproducibility	See Appendix 2
Quality control/Validation	Plešovice, and Fish Canyon Tuff zircon as secondary reference materials.

Appendix 2: Standard Values

Sample	Secondary Standard	
	Plešovice	**Fish Canyon Tuff**
H3N 17-18m	341.4 ± 1.0 Ma (MSWD=1.4)	28.0 ± 0.3 Ma (MSWD=1.9)
H3N 21-22m	338.8 ± 1.2 Ma (MSWD=1.4)	28.7 ± 0.3 Ma (MSWD=1.4)
H3N 28-29m	348.2 ± 2.5 Ma (MSWD=0.5)	28.9 ± 0.4 Ma (MSWD=0.9)
H3N 29-30m	344.2 ± 2.2 Ma (MSWD=0.6)	28.2 ± 0.3 Ma (MSWD=0.9)
SC15-01	339.2 ±1.4 Ma (MSWD=1.4)	29.1 ± 0.3 Ma (MSWD=1.6)
SC15-03	341.0 ± 1.6 Ma (MSWD=0.9)	28.7 ± 0.2 Ma (MSWD=1.5)
SC15-06	347.4 ± 1.2 Ma (MSWD=1.3)	29.3 ± 0.3 Ma (MSWD=1.8)
SC15-07	355.2 ± 2.3 Ma (MSWD=1.9)	28.3 ± 0.4 Ma (MSWD=1.8)
SC15-08	341.8 ± 1.2 Ma (MSWD=0.9)	28.5 ± 0.2 Ma (MSWD=1.2)
SC15-10	345.6 ± 2.6 Ma (MSWD=0.5)	28.2 ± 0.4 Ma (MSWD=1.8)
SC15-11	340.7 ± 1.3 Ma (MSWD=1.7)	28.4 ± 0.2 Ma (MSWD=1.4)
SC15-13	340.7 ± 1.0 Ma (MSWD=0.8)	28.8 ± 0.3 Ma (MSWD=1.9)
SC15-14	340.9 ± 1.1 Ma (MSWD=0.7)	28.4 ± 0.2 Ma (MSWD=1.8)
SC15-16	340.7 ± 1.2 Ma (MSWD=0.7)	28.8 ± 0.2 Ma (MSWD=1.3)
Reference age by CA-TIMS	**337.2 ± 0.13 Ma (Sláma et al., 2008)**	**28.642 ± 0.025 Ma (Wotzlaw et al., 2013)**

Appendix 3: Cross Correlation Coefficients

Cross Correlation Coefficient (Harvey County)

Sample Name	H3N 17-18m	H3N 21-22m	H3N 28-29m	H3N 29-30m
H3N 17-18m	1.000	0.735	0.653	0.676
H3N 21-22m	0.735	1.000	0.432	0.516
H3N 28-29m	0.653	0.432	1.000	0.775
H3N 29-30m	0.676	0.516	0.775	1.000

Calculated using DZStats program (Saylor and Sundell, 2016)

Cross Correlation Coefficient (Scott County)

Sample Name	SC15-01	SC15-03	SC15-06	SC15-07	SC15-08	SC15-10	SC15-11	SC15-13	SC15-14	SC15-16
SC15-01	1.000	0.953	0.771	0.711	0.784	0.797	0.732	0.802	0.798	0.807
SC15-03	0.953	1.000	0.721	0.617	0.711	0.737	0.655	0.739	0.733	0.732
SC15-06	0.771	0.721	1.000	0.513	0.512	0.494	0.470	0.562	0.511	0.548
SC15-07	0.711	0.617	0.513	1.000	0.944	0.783	0.956	0.866	0.781	0.942
SC15-08	0.784	0.711	0.512	0.944	1.000	0.839	0.965	0.888	0.811	0.949
SC15-10	0.797	0.737	0.494	0.783	0.839	1.000	0.864	0.870	0.970	0.853
SC15-11	0.732	0.655	0.470	0.956	0.965	0.864	1.000	0.916	0.853	0.941
SC15-13	0.802	0.739	0.562	0.866	0.888	0.870	0.916	1.000	0.890	0.878
SC15-14	0.798	0.733	0.511	0.781	0.811	0.970	0.853	0.890	1.000	0.842
SC15-16	0.807	0.732	0.548	0.942	0.949	0.853	0.941	0.878	0.842	1.000

Calculated using DZStats program (Saylor and Sundell, 2016)

Appendix 4: LA-ICP-MS Zircon Data Tables

Table 1: LA-ICP-MS Zircon Isotopic and Age Data Table: H3N 29-30m: Harvey County, KS Core Sample

								Corrected Isotopic Ratios[3]							Ages (Ma)[7]							
Grain #	Signal Duration (s)	U (ppm)[1]	2σ	Th (ppm)[1]	2σ	eU (ppm)[2]	Th/U	$^{207}Pb/^{235}U$	2σ[4]	$^{206}Pb/^{238}U$	2σ[4]	Rho[5]	$^{207}Pb/^{206}Pb$[6]	2σ	$^{207}Pb/^{235}U$	2σ	$^{206}Pb/^{238}U$	2σ	$^{207}Pb/^{206}Pb$	2σ	% Disc.[8]	Uncert. Wtd. Disc.[9]
45	21.108	281.4	9.9	174.3	9.1	322	0.62	0.0086	0.0018	0.00109	0.00005	0.0108	0.0600	0.0130	8.7	1.8	7.0	0.3	180	360	19.2	0.9
48	17.493	247.0	19.0	246.0	20.0	305	1.00	0.0218	0.0027	0.00351	0.00014	0.1269	0.0448	0.0055	21.8	2.7	22.6	0.9	-50	200	-3.7	-0.3
107	19.592	95.6	3.7	91.2	4.0	117	0.95	0.0296	0.0058	0.00407	0.00019	0.1600	0.0550	0.0110	29.3	5.7	26.2	1.2	150	330	10.6	0.5
110	21.341	303.0	14.0	142.1	4.7	336	0.47	0.0290	0.0029	0.00421	0.00011	0.1600	0.0493	0.0049	28.9	2.8	27.1	0.7	180	190	6.2	0.6
269	16.326	149.0	9.2	83.6	4.6	169	0.56	0.0297	0.0047	0.00464	0.00017	0.0032	0.0447	0.0073	29.5	4.6	29.8	1.1	80	270	-1.0	-0.1
184	21.924	452.0	72.0	108.0	14.0	477	0.24	0.0317	0.0021	0.00485	0.00014	0.2336	0.0476	0.0031	31.7	2.1	31.2	0.9	90	120	1.7	0.3
177	21.808	455.0	23.0	249.6	5.9	514	0.55	0.0317	0.0021	0.00486	0.00012	0.1437	0.0481	0.0034	31.6	2.1	31.2	0.8	130	130	1.1	0.2
136	20.875	247.4	4.4	96.2	2.8	270	0.39	0.0318	0.0030	0.00488	0.00013	0.0700	0.0472	0.0045	31.7	3.0	31.4	0.9	90	170	1.0	0.1
89	22.507	277.0	13.0	246.9	7.8	335	0.89	0.0324	0.0026	0.00513	0.00014	0.0531	0.0470	0.0040	32.3	2.6	33.0	0.9	60	150	-2.0	-0.3
220	21.808	237.0	14.0	80.0	4.8	256	0.34	0.0350	0.0032	0.00519	0.00016	0.1028	0.0485	0.0045	34.9	3.2	33.4	1.0	110	160	4.4	0.5
286	21.808	475.0	34.0	501.0	43.0	593	1.05	0.0333	0.0023	0.00521	0.00014	0.0882	0.0453	0.0031	33.2	2.3	33.5	0.9	10	120	-1.0	-0.1
204	11.429	402.0	41.0	307.0	34.0	474	0.76	0.0352	0.0030	0.00529	0.00015	0.2184	0.0490	0.0042	35.1	2.9	34.0	1.0	130	160	3.1	0.4
244	20.641	125.2	4.3	154.0	12.0	161	1.23	0.0357	0.0047	0.00530	0.00020	0.1600	0.0467	0.0066	36.0	4.5	34.1	1.3	140	250	5.3	0.4
292	21.808	619.0	68.0	311.0	39.0	692	0.50	0.0333	0.0021	0.00532	0.00013	0.0149	0.0453	0.0029	33.2	2.1	34.2	0.8	10	110	-3.0	-0.5
168	21.108	228.0	23.0	154.0	14.0	264	0.68	0.0354	0.0036	0.00533	0.00016	0.0186	0.0473	0.0051	35.2	3.5	34.3	1.1	90	190	2.6	0.3
300	6.6472	220.1	8.7	168.3	9.8	260	0.76	0.0400	0.0064	0.00540	0.00029	0.1554	0.0526	0.0085	39.7	6.3	34.7	1.9	440	320	12.6	0.8
287	21.808	233.0	13.0	174.0	11.0	274	0.75	0.0345	0.0030	0.00542	0.00017	0.1600	0.0452	0.0046	34.3	3.0	34.8	1.1	110	180	-1.5	-0.2
101	15.627	248.0	13.0	143.1	5.0	282	0.58	0.0344	0.0033	0.00543	0.00019	0.1012	0.0464	0.0046	34.2	3.3	34.9	1.2	70	180	-2.0	-0.2
245	21.924	240.0	10.0	144.4	5.0	274	0.60	0.0350	0.0026	0.00545	0.00014	0.0584	0.0474	0.0037	34.9	2.6	35.0	0.9	90	140	-0.3	0.0
273	21.808	777.0	97.0	315.0	45.0	851	0.41	0.0348	0.0023	0.00544	0.00013	0.0468	0.0460	0.0031	34.7	2.3	35.0	0.8	30	110	-0.9	-0.1
56	21.808	257.0	15.0	147.8	6.8	292	0.58	0.0344	0.0028	0.00547	0.00014	0.0837	0.0457	0.0037	34.3	2.8	35.1	0.9	50	150	-2.4	-0.3
22	20.175	197.0	13.0	73.3	6.6	214	0.37	0.0385	0.0039	0.00550	0.00018	0.1243	0.0519	0.0052	38.2	3.8	35.4	1.1	200	190	7.3	0.7
90	17.376	359.0	22.0	396.0	27.0	452	1.10	0.0344	0.0031	0.00551	0.00016	0.3064	0.0469	0.0038	34.3	3.0	35.4	1.0	50	150	-3.3	-0.4
213	21.808	274.0	15.0	216.0	10.0	325	0.79	0.0364	0.0028	0.00555	0.00015	0.1065	0.0483	0.0038	36.6	2.8	35.7	1.0	110	140	2.6	0.3
130	19.825	835.0	34.0	413.0	30.0	932	0.49	0.0352	0.0019	0.00560	0.00014	0.2333	0.0453	0.0025	35.1	1.9	36.0	0.9	-3	100	-2.5	-0.5
128	18.076	294.0	13.0	207.0	12.0	343	0.70	0.0370	0.0034	0.00565	0.00015	0.0793	0.0479	0.0044	36.8	3.3	36.3	0.9	70	170	1.3	0.1
86	19.125	327.4	5.8	201.8	3.1	375	0.62	0.0350	0.0027	0.00566	0.00016	0.1922	0.0447	0.0034	35.2	2.5	36.4	1.0	70	140	-3.4	-0.5
31	13.528	82.6	7.2	66.6	3.8	98	0.81	0.0476	0.0083	0.00606	0.00030	0.1600	0.0590	0.0120	46.9	8.0	38.9	1.9	440	360	17.1	1.0
94	19.942	112.4	6.4	162.0	19.0	150	1.44	0.0425	0.0054	0.00617	0.00023	0.0196	0.0514	0.0069	42.0	5.2	39.7	1.5	170	220	5.5	0.4
53	21.341	287.0	18.0	58.7	3.1	301	0.20	0.0397	0.0034	0.00638	0.00016	0.0470	0.0454	0.0037	39.4	3.3	41.0	1.0	-10	140	-4.0	-0.5
12	17.493	79.8	2.1	100.3	2.2	103	1.26	0.1860	0.0230	0.00660	0.00034	0.4657	0.2040	0.0230	170.0	20.0	42.4	2.2	2770	190	75.1	6.4
19	6.9971	367.0	21.0	480.0	28.0	480	1.31	0.0500	0.0046	0.00714	0.00035	0.1600	0.0511	0.0061	49.5	4.4	45.8	2.2	210	230	7.5	0.8
15	14.577	343.0	16.0	103.7	5.8	367	0.30	0.0531	0.0036	0.00780	0.00025	0.1914	0.0490	0.0032	52.5	3.5	50.1	1.6	200	130	4.6	0.7
206	17.726	211.4	8.8	90.1	2.6	233	0.43	0.0602	0.0046	0.00909	0.00024	0.0498	0.0485	0.0036	59.8	4.4	58.3	1.5	140	140	2.5	0.3
178	21.458	15.6	1.1	8.7	0.5	18	0.56	0.0820	0.0270	0.00926	0.00069	0.1600	0.0720	0.0250	76.0	26.0	59.4	4.3	330	580	21.8	0.6
66	22.507	1105.0	55.0	172.0	11.0	1145	0.16	0.0595	0.0022	0.00929	0.00016	0.3301	0.0466	0.0015	58.7	2.1	59.6	1.0	49	65	-1.6	-0.4
26	11.662	105.0	12.0	58.7	5.6	119	0.56	0.0710	0.0110	0.00948	0.00053	0.2454	0.0585	0.0091	71.0	11.0	60.8	3.4	350	290	14.4	0.9
195	21.808	128.6	9.2	87.6	7.0	149	0.68	0.0680	0.0054	0.00985	0.00028	0.1088	0.0496	0.0039	66.5	5.1	63.2	1.8	180	150	5.0	0.6
291	21.808	620.0	45.0	349.0	24.0	702	0.56	0.0659	0.0034	0.00986	0.00019	0.3068	0.0476	0.0023	65.5	3.1	63.3	1.2	100	94	3.4	0.7
285	15.977	37.3	1.7	24.2	0.7	43	0.65	0.0680	0.0160	0.00997	0.00052	0.1600	0.0540	0.0130	67.0	15.0	63.9	3.3	140	400	4.6	0.2
180	21.808	130.6	2.1	90.9	5.2	152	0.70	0.0647	0.0056	0.00998	0.00025	0.1087	0.0489	0.0045	63.4	5.3	64.0	1.6	200	170	-0.9	-0.1

Table 1: LA-ICP-MS Zircon Isotopic and Age Data Table: H3N 29-30m: Harvey County, KS Core Sample

								Corrected Isotopic Ratios[3]							Ages (Ma)[7]							
Grain #	Signal Duration (s)	U (ppm)[1]	2σ	Th (ppm)[2]	2σ	eU (ppm)[2]	Th/U	$^{207}Pb/^{235}U$	2σ[4]	$^{206}Pb/^{238}U$	2σ[4]	Rho[4]	$^{207}Pb/^{206}Pb$[6]	2σ	$^{207}Pb/^{235}U$	2σ	$^{206}Pb/^{238}U$	2σ	$^{207}Pb/^{206}Pb$	2σ	% Disc.[5]	Uncert. Wtd. Disc.[8]
105	19.242	210.4	7.6	138.9	3.7	243	0.66	0.0687	0.0051	0.01000	0.00027	0.0461	0.0490	0.0037	67.3	4.9	64.1	1.7	170	150	4.8	0.7
137	20.525	87.4	5.8	46.7	1.7	98	0.53	0.0622	0.0069	0.01001	0.00030	0.1600	0.0452	0.0053	60.9	6.6	64.2	1.9	0	200	-5.4	-0.5
186	20.058	158.5	3.6	36.4	0.9	167	0.23	0.0695	0.0055	0.01006	0.00024	0.1213	0.0488	0.0038	68.6	5.1	64.5	1.5	180	150	6.0	0.8
149	20.408	45.8	1.9	25.6	0.8	52	0.56	0.0760	0.0120	0.01013	0.00046	0.1600	0.0557	0.0095	75.0	11.0	65.3	2.9	370	280	12.9	0.9
116	16.793	144.0	6.9	71.0	3.1	161	0.49	0.0670	0.0055	0.01027	0.00033	0.0995	0.0477	0.0042	65.6	5.2	65.8	2.1	70	160	-0.3	0.0
267	8.9796	58.0	3.5	37.5	1.6	67	0.65	0.0690	0.0130	0.01027	0.00065	0.1600	0.0490	0.0100	67.0	13.0	65.9	4.2	50	350	1.6	0.1
217	21.808	45.2	4.7	24.5	2.2	51	0.54	0.0680	0.0120	0.01035	0.00044	0.3241	0.0492	0.0085	67.0	12.0	66.4	2.8	120	280	0.9	0.0
209	19.825	411.0	10.0	89.5	6.5	432	0.22	0.0709	0.0031	0.01045	0.00021	0.0975	0.0489	0.0022	69.5	2.9	67.2	1.3	142	91	3.3	0.8
122	17.259	166.4	3.7	75.0	3.1	184	0.45	0.0639	0.0052	0.01049	0.00030	0.0531	0.0456	0.0040	62.7	4.9	67.3	1.9	10	160	-7.3	-0.9
143	15.277	152.6	6.1	32.6	1.3	160	0.21	0.0677	0.0061	0.01051	0.00026	0.0134	0.0450	0.0040	66.3	5.8	67.4	1.7	50	170	-1.7	-0.2
55	21.808	85.6	6.0	29.2	2.2	92	0.34	0.0665	0.0086	0.01062	0.00035	0.0448	0.0464	0.0061	65.8	8.4	68.1	2.2	40	220	-3.5	-0.3
118	18.426	144.7	4.3	35.8	1.8	153	0.25	0.0708	0.0062	0.01068	0.00029	0.0632	0.0484	0.0044	69.1	5.9	68.5	1.8	120	170	0.9	0.1
214	3.8484	617.0	28.0	11.0	0.4	620	0.02	0.0775	0.0069	0.01075	0.00073	0.4010	0.0518	0.0042	75.7	6.5	68.9	4.6	260	180	9.0	1.0
196	19.942	59.0	2.7	25.1	1.2	65	0.43	0.0780	0.0100	0.01094	0.00036	0.1748	0.0514	0.0067	75.9	9.5	70.1	2.3	220	240	7.6	0.6
174	17.026	141.0	8.7	44.3	3.7	151	0.31	0.0742	0.0059	0.01109	0.00041	0.0500	0.0496	0.0044	72.5	5.6	71.1	2.6	160	160	1.9	0.3
4	15.977	179.3	9.0	204.4	8.3	227	1.14	0.0747	0.0063	0.01110	0.00035	0.2482	0.0471	0.0036	72.9	5.9	71.2	2.2	80	140	2.3	0.3
102	21.224	92.3	5.2	71.8	3.9	109	0.78	0.0714	0.0064	0.01127	0.00041	0.2225	0.0450	0.0039	69.7	6.0	72.2	2.6	50	160	-3.6	-0.4
72	12.245	298.0	10.0	167.4	4.1	337	0.56	0.0738	0.0047	0.01130	0.00030	0.2436	0.0483	0.0030	72.2	4.4	72.4	1.9	110	120	-0.3	0.0
215	21.808	123.9	8.6	63.8	6.2	139	0.51	0.0740	0.0071	0.01130	0.00030	0.2257	0.0470	0.0043	72.1	6.7	72.4	1.9	80	170	-0.4	0.0
17	15.743	46.1	1.9	24.0	1.0	52	0.52	0.0750	0.0150	0.01137	0.00048	0.1171	0.0463	0.0092	72.0	14.0	72.8	3.1	-40	310	-1.1	-0.1
113	21.808	210.0	15.0	26.7	2.4	216	0.13	0.0794	0.0049	0.01159	0.00026	0.1152	0.0498	0.0032	78.0	4.6	74.3	1.6	190	120	4.7	0.8
234	21.808	191.7	5.9	73.7	1.5	209	0.38	0.0802	0.0045	0.01165	0.00026	0.2056	0.0496	0.0026	78.2	4.2	74.7	1.7	190	110	4.5	0.8
183	21.808	31.5	2.1	16.9	1.3	35	0.54	0.0940	0.0150	0.01168	0.00059	0.1600	0.0590	0.0100	89.0	14.0	74.8	3.8	350	320	16.0	1.0
275	20.991	222.2	7.5	161.9	5.3	260	0.73	0.0787	0.0045	0.01168	0.00028	0.1545	0.0487	0.0029	76.7	4.3	74.9	1.8	140	120	2.3	0.4
152	16.21	250.0	38.0	122.0	19.0	279	0.49	0.0825	0.0073	0.01182	0.00033	0.0127	0.0502	0.0043	81.3	7.1	75.8	2.1	250	160	6.8	0.8
281	20.291	184.3	5.5	162.3	6.7	222	0.88	0.0811	0.0047	0.01201	0.00032	0.0317	0.0498	0.0030	79.0	4.4	77.0	2.0	190	120	2.5	0.5
28	21.808	940.0	110.0	289.0	28.0	1008	0.31	0.0783	0.0028	0.01211	0.00028	0.4301	0.0466	0.0013	76.5	2.6	77.6	1.8	45	56	-1.4	-0.4
52	21.808	424.0	78.0	146.0	22.0	458	0.34	0.0800	0.0051	0.01218	0.00029	0.0202	0.0484	0.0032	78.0	4.7	78.0	1.8	120	110	0.0	0.0
163	20.408	81.2	3.4	18.6	0.7	86	0.23	0.0759	0.0077	0.01217	0.00038	0.0715	0.0449	0.0047	74.8	7.4	78.0	2.4	40	180	-4.3	-0.4
164	20.291	280.0	23.0	214.0	14.0	330	0.76	0.0786	0.0044	0.01224	0.00033	0.1311	0.0470	0.0027	76.7	4.1	78.4	2.1	100	110	-2.2	-0.4
167	21.808	63.4	1.7	65.3	2.9	79	1.03	0.0768	0.0078	0.01226	0.00045	0.0240	0.0473	0.0051	75.6	7.2	78.6	2.9	140	190	-4.0	-0.4
243	9.3294	39.6	3.2	20.2	1.3	44	0.51	0.0840	0.0200	0.01238	0.00081	0.1600	0.0510	0.0140	85.0	19.0	79.3	5.2	230	430	6.7	0.3
68	16.443	391.0	38.0	253.0	32.0	450	0.65	0.0811	0.0045	0.01240	0.00028	0.0231	0.0475	0.0027	79.1	4.2	79.5	1.8	80	110	-0.5	-0.1
7	6.7638	119.6	4.8	57.2	3.8	133	0.48	0.1110	0.0190	0.01245	0.00068	0.2947	0.0581	0.0082	106.0	17.0	79.7	4.3	580	290	24.8	1.5
208	21.808	387.0	36.0	193.0	23.0	432	0.50	0.0827	0.0040	0.01248	0.00032	0.2542	0.0474	0.0020	80.6	3.7	80.0	2.0	88	85	0.7	0.2
121	17.143	225.0	16.0	127.3	9.3	255	0.57	0.0878	0.0064	0.01269	0.00042	0.1604	0.0498	0.0035	85.2	6.0	81.3	2.7	190	140	4.6	0.7
29	19.592	194.0	14.0	58.8	6.3	208	0.30	0.1203	0.0071	0.01297	0.00032	0.1302	0.0660	0.0040	115.0	6.4	83.1	2.0	790	110	27.7	5.0
16	21.108	129.6	7.2	108.3	9.4	155	0.84	0.0933	0.0083	0.01347	0.00036	0.3124	0.0495	0.0042	90.0	7.7	86.5	2.3	200	160	3.9	0.5
240	21.844	208.0	15.0	99.2	5.7	231	0.48	0.0947	0.0058	0.01453	0.00032	0.1450	0.0472	0.0028	91.6	5.4	93.0	2.0	80	110	-1.5	-0.3
5	21.844	113.4	9.2	28.9	3.1	120	0.25	0.1058	0.0084	0.01457	0.00044	0.1018	0.0528	0.0043	101.5	7.8	93.2	2.8	280	160	8.2	1.1
238	21.844	519.0	49.0	137.0	13.0	551	0.26	0.0964	0.0033	0.01458	0.00029	0.1285	0.0482	0.0018	93.4	3.1	93.3	1.8	111	75	0.1	0.0

Table 1: LA-ICP-MS Zircon Isotopic and Age Data Table: H3N 29-30m: Harvey County, KS Core Sample

								Corrected Isotopic Ratios[3]							Ages (Ma)[7]							
Grain #	Signal Duration (s)	U (ppm)[1]	2σ	Th (ppm)[2]	2σ	eU (ppm)[2]	Th/U	$^{207}Pb/^{235}U$	2σ[4]	$^{206}Pb/^{238}U$	2σ[4]	Rho[5]	$^{207}Pb/^{206}Pb$[6]	2σ	$^{207}Pb/^{235}U$	2σ	$^{206}Pb/^{238}U$	2σ	$^{207}Pb/^{206}Pb$	2σ	% Disc.[8]	Uncert. Wtd. Disc.[9]
247	21.844	85.8	4.3	26.8	1.2	92	0.31	0.1003	0.0078	0.01504	0.00040	0.0693	0.0500	0.0039	97.5	7.1	96.2	2.5	200	150	1.3	0.2
61	21.845	549.0	25.0	227.3	6.7	602	0.41	0.1015	0.0048	0.01506	0.00027	0.2709	0.0496	0.0021	97.9	4.4	96.4	1.7	178	88	1.5	0.3
210	21.844	196.4	9.1	98.0	3.8	219	0.50	0.1116	0.0056	0.01598	0.00033	0.1600	0.0510	0.0028	107.8	5.0	102.2	2.1	240	110	5.2	1.1
211	21.844	420.0	27.0	103.0	6.8	444	0.25	0.1090	0.0045	0.01610	0.00034	0.1124	0.0486	0.0021	105.4	4.2	102.9	2.1	132	87	2.4	0.6
154	21.844	447.0	17.0	130.2	3.2	478	0.29	0.1067	0.0045	0.01618	0.00034	0.2379	0.0474	0.0019	102.8	4.1	103.4	2.2	80	78	-0.6	-0.1
74	20.291	456.7	7.6	149.3	3.6	492	0.33	0.1102	0.0042	0.01669	0.00036	0.2289	0.0488	0.0018	106.0	3.8	106.7	2.3	137	77	-0.7	-0.2
33	21.844	378.0	10.0	127.6	5.0	408	0.34	0.1138	0.0049	0.01670	0.00034	0.2603	0.0496	0.0021	109.3	4.5	106.8	2.1	179	87	2.3	0.6
30	21.844	276.0	27.0	202.0	21.0	323	0.73	0.1642	0.0088	0.02170	0.00058	0.1920	0.0549	0.0029	153.8	7.6	138.4	3.7	370	110	10.0	2.0
13	21.844	109.7	6.0	55.3	1.9	123	0.50	0.1720	0.0097	0.02371	0.00067	0.1217	0.0525	0.0031	160.5	8.4	151.0	4.2	310	120	5.9	1.1
199	21.808	32.4	1.3	35.7	0.8	41	1.10	0.1700	0.0200	0.02384	0.00074	0.1600	0.0556	0.0068	157.0	17.0	151.9	4.7	290	220	3.2	0.3
241	21.924	211.5	8.8	215.0	12.0	262	1.02	0.1701	0.0061	0.02528	0.00052	0.1390	0.0494	0.0016	159.2	5.3	160.9	3.2	175	69	-1.1	-0.3
109	21.224	454.0	15.0	178.0	13.0	496	0.39	0.1887	0.0064	0.02762	0.00054	0.4069	0.0507	0.0015	175.9	5.6	175.6	3.4	217	64	0.2	0.1
67	21.341	534.0	39.0	715.0	48.0	702	1.34	0.1889	0.0059	0.02872	0.00053	0.4507	0.0483	0.0012	175.5	5.0	182.5	3.3	120	52	-4.0	-1.4
169	16.21	626.0	57.0	210.0	11.0	675	0.34	0.2987	0.0100	0.04084	0.00090	0.5029	0.0529	0.0013	265.0	8.2	258.8	5.6	314	57	2.3	0.8
246	21.808	92.9	7.7	77.0	4.7	111	0.83	0.3000	0.0160	0.04141	0.00093	0.2843	0.0513	0.0025	265.0	12.0	261.5	5.8	260	100	1.3	0.3
35	21.341	740.0	110.0	100.5	5.9	764	0.14	0.3980	0.0160	0.04450	0.00150	0.7903	0.0649	0.0015	339.0	11.0	280.8	9.5	771	52	17.2	5.3
36	21.808	166.7	8.3	144.0	12.0	201	0.86	0.3670	0.0140	0.04983	0.00100	0.3414	0.0542	0.0019	316.5	10.0	313.4	6.2	365	72	1.0	0.3
274	21.808	405.0	30.0	32.1	3.3	413	0.08	0.4237	0.0120	0.05676	0.00098	0.1662	0.0535	0.0015	358.2	8.5	355.9	6.0	341	63	0.6	0.3
115	21.808	211.4	4.9	43.6	1.5	222	0.21	0.4330	0.0140	0.05730	0.00130	0.5031	0.0550	0.0014	364.6	9.6	359.3	8.2	410	59	1.5	0.6
43	14.461	457.0	57.0	39.0	3.4	466	0.09	0.4310	0.0130	0.05840	0.00120	0.4790	0.0529	0.0012	363.4	9.2	365.6	7.3	325	51	-0.6	-0.2
40	19.708	654.0	13.0	149.4	3.8	689	0.23	0.4354	0.0100	0.05960	0.00099	0.4036	0.0534	0.0011	366.8	7.2	373.1	5.9	344	45	-1.7	-0.9
20	12.245	193.0	14.0	125.0	11.0	222	0.65	0.4630	0.0210	0.05990	0.00190	0.3842	0.0565	0.0021	389.0	15.0	375.0	12.0	484	84	3.6	0.9
129	14.344	228.7	8.6	72.8	7.2	246	0.32	0.4620	0.0190	0.06080	0.00130	0.2131	0.0549	0.0021	385.0	13.0	380.6	8.1	387	86	1.1	0.3
127	11.778	403.0	17.0	61.2	2.7	417	0.15	0.6850	0.0320	0.06100	0.00200	0.6848	0.0816	0.0026	534.0	19.0	381.0	12.0	1223	63	28.7	8.1
155	21.808	219.0	12.0	168.6	5.8	259	0.77	0.4540	0.0140	0.06120	0.00130	0.2809	0.0537	0.0017	379.1	9.9	383.0	7.9	354	68	-1.0	-0.4
173	21.808	220.0	13.0	242.0	10.0	277	1.10	0.4660	0.0170	0.06310	0.00150	0.4881	0.0540	0.0015	387.0	11.0	394.4	8.8	359	64	-1.9	-0.7
119	16.793	202.0	19.0	83.6	6.5	222	0.41	0.5330	0.0190	0.06390	0.00150	0.1089	0.0602	0.0021	433.0	13.0	399.4	9.4	608	80	7.8	2.6
153	21.808	330.0	19.0	185.9	6.4	374	0.56	0.4818	0.0120	0.06394	0.00110	0.1863	0.0547	0.0014	398.9	8.5	399.5	6.7	384	56	-0.2	-0.1
47	21.924	399.0	12.0	92.5	2.3	421	0.23	0.4805	0.0130	0.06411	0.00096	0.3578	0.0551	0.0012	397.9	8.8	400.6	5.8	410	50	-0.7	-0.3
252	21.808	357.0	15.0	64.8	3.3	372	0.18	0.5005	0.0130	0.06540	0.00110	0.3612	0.0559	0.0013	412.4	8.7	408.4	6.8	442	49	1.0	0.5
165	20.875	60.4	4.5	18.9	1.4	65	0.31	0.4820	0.0280	0.06546	0.00120	0.1600	0.0521	0.0032	396.0	19.0	408.7	7.1	280	130	-3.2	-0.7
219	21.808	170.7	8.8	49.6	1.5	182	0.29	0.5040	0.0170	0.06590	0.00120	0.2863	0.0546	0.0018	415.7	11.0	411.3	7.4	380	75	1.1	0.4
10	19.242	298.0	37.0	44.2	2.6	308	0.15	0.4930	0.0160	0.06610	0.00130	0.1651	0.0542	0.0018	406.3	11.0	412.8	8.0	368	73	-1.6	-0.6
141	21.341	127.4	9.5	34.6	1.9	136	0.27	0.5020	0.0170	0.06700	0.00120	0.1405	0.0545	0.0019	412.0	12.0	418.9	7.3	379	71	-1.7	-0.6
79	19.475	256.3	7.2	120.9	6.9	285	0.47	0.5120	0.0150	0.06720	0.00130	0.3922	0.0545	0.0015	418.9	10.0	419.2	8.0	406	63	-0.1	0.0
96	21.808	191.3	8.7	122.4	3.3	220	0.64	0.5320	0.0160	0.06930	0.00140	0.4235	0.0555	0.0015	433.4	11.0	431.6	8.4	433	60	0.4	0.2
295	21.808	440.0	25.0	187.0	11.0	484	0.43	0.5438	0.0140	0.07000	0.00130	0.4280	0.0569	0.0013	441.4	9.2	436.3	7.9	486	50	1.2	0.6
227	18.892	178.5	6.2	55.0	1.3	191	0.31	0.5620	0.0180	0.07100	0.00130	0.2504	0.0575	0.0017	453.0	12.0	442.8	7.8	500	66	2.3	0.8
23	16.443	164.1	7.4	63.0	11.0	179	0.38	0.5540	0.0180	0.07170	0.00130	0.1480	0.0564	0.0018	448.0	12.0	446.5	8.1	474	74	0.3	0.1
278	21.808	247.0	21.0	60.7	4.8	261	0.25	0.5640	0.0170	0.07230	0.00120	0.4293	0.0559	0.0014	453.2	11.0	450.1	7.5	457	58	0.7	0.3
27	20.875	403.0	63.0	93.8	9.4	425	0.23	0.7330	0.0390	0.07290	0.00240	0.5744	0.0747	0.0031	564.0	23.0	453.0	14.0	1040	82	19.7	4.8

Table 1: LA-ICP-MS Zircon Isotopic and Age Data Table: H3N 29-30m: Harvey County, KS Core Sample

								Corrected Isotopic Ratios[3]							Ages (Ma)[7]							
Grain #	Signal Duration (s)	U (ppm)[1]	2σ	Th (ppm)[2]	2σ	eU (ppm)[2]	Th/U	$^{207}Pb/^{235}U$	2σ[4]	$^{206}Pb/^{238}U$	2σ[4]	Rho[4]	$^{207}Pb/^{206}Pb$[6]	2σ	$^{207}Pb/^{235}U$	2σ	$^{206}Pb/^{238}U$	2σ	$^{207}Pb/^{206}Pb$	2σ	% Disc.[5]	Uncert. Wtd. Disc.[8]
256	16.676	240.0	16.0	178.0	13.0	282	0.74	0.5860	0.0190	0.07350	0.00150	0.2867	0.0576	0.0018	468.0	12.0	456.9	9.3	497	67	2.4	0.9
175	14.577	80.6	8.6	50.3	4.4	92	0.62	0.5770	0.0280	0.07390	0.00180	0.1189	0.0556	0.0027	460.0	18.0	459.4	11.0	419	100	0.1	0.0
85	15.977	173.0	13.0	47.6	3.6	184	0.28	0.5800	0.0210	0.07480	0.00140	0.2347	0.0571	0.0019	463.0	13.0	465.0	8.9	514	68	-0.4	-0.2
289	21.924	151.5	8.9	67.6	3.9	167	0.45	0.6610	0.0210	0.07540	0.00130	0.2457	0.0632	0.0019	515.0	13.0	468.5	7.7	711	66	9.0	3.6
77	21.808	262.0	12.0	131.0	4.9	293	0.50	0.5770	0.0160	0.07560	0.00140	0.4059	0.0556	0.0013	463.8	11.0	469.9	8.2	423	53	-1.3	-0.6
95	21.924	245.5	7.0	104.8	2.0	270	0.43	0.5930	0.0180	0.07640	0.00150	0.5547	0.0553	0.0013	473.1	12.0	474.3	9.5	422	54	-0.3	-0.1
21	20.758	177.0	15.0	12.3	1.2	180	0.07	0.5830	0.0180	0.07750	0.00160	0.6365	0.0556	0.0014	467.0	12.0	481.1	9.6	436	54	-3.0	-1.2
87	15.86	389.0	29.0	30.8	2.2	396	0.08	0.5900	0.0170	0.07810	0.00160	0.3795	0.0554	0.0015	470.5	11.0	484.7	9.8	421	63	-3.0	-1.3
54	21.924	313.2	8.1	86.3	1.8	333	0.28	0.6350	0.0160	0.08025	0.00130	0.4271	0.0581	0.0012	498.8	9.9	497.6	7.6	525	47	0.2	0.1
265	21.808	356.0	14.0	81.0	2.3	375	0.23	0.6590	0.0160	0.08280	0.00130	0.4661	0.0572	0.0011	513.3	9.6	512.8	7.8	494	44	0.1	0.1
9	18.892	109.9	5.2	70.7	4.3	127	0.64	0.6560	0.0220	0.08340	0.00150	0.1480	0.0578	0.0018	512.0	13.0	516.1	9.1	512	68	-0.8	-0.3
258	21.808	166.2	5.9	27.4	0.7	173	0.16	0.6650	0.0190	0.08350	0.00180	0.2528	0.0584	0.0016	516.8	12.0	516.7	10.0	532	62	0.0	0.0
251	20.291	28.8	2.7	24.2	2.2	34	0.84	0.7280	0.0420	0.08630	0.00230	0.2213	0.0610	0.0035	550.0	25.0	534.0	14.0	570	120	2.9	0.6
182	15.16	125.0	4.1	21.4	1.4	130	0.17	0.7180	0.0220	0.08880	0.00190	0.2198	0.0582	0.0019	549.0	13.0	548.0	12.0	536	70	0.2	0.1
34	13.644	335.0	25.0	16.1	3.3	339	0.05	0.7410	0.0250	0.09140	0.00190	0.3858	0.0601	0.0018	564.0	14.0	563.9	11.0	592	63	0.0	0.0
290	21.924	147.5	6.3	85.0	2.7	167	0.58	0.7590	0.0210	0.09500	0.00160	0.2780	0.0576	0.0014	573.6	12.0	585.6	9.5	517	58	-2.1	-1.0
288	20.991	41.1	1.9	34.5	1.1	49	0.84	0.8220	0.0380	0.09610	0.00180	0.0074	0.0622	0.0030	608.0	22.0	591.2	10.0	650	100	2.8	0.8
197	22.041	155.9	6.6	24.4	1.0	162	0.16	1.2500	0.0350	0.13110	0.00260	0.5875	0.0693	0.0015	823.0	16.0	794.0	15.0	903	46	3.5	1.8
132	19.009	261.0	20.0	113.0	8.2	288	0.43	1.4130	0.0510	0.13270	0.00430	0.8113	0.0787	0.0018	894.0	21.0	803.0	24.0	1156	45	10.2	4.3
212	21.924	59.2	2.3	16.5	0.4	63	0.28	1.5070	0.0530	0.15590	0.00300	0.2791	0.0701	0.0021	930.0	21.0	934.0	17.0	916	63	-0.4	-0.2
223	21.924	78.4	2.9	11.6	0.3	81	0.15	1.5200	0.0450	0.15640	0.00280	0.2970	0.0712	0.0020	936.0	18.0	936.0	16.0	952	57	0.0	0.0
120	15.044	100.0	12.0	58.2	9.0	114	0.58	1.5390	0.0450	0.15650	0.00350	0.4914	0.0716	0.0019	945.0	18.0	937.0	19.0	965	52	0.8	0.4
201	18.542	166.6	5.5	60.7	1.3	181	0.36	1.6130	0.0400	0.15850	0.00250	0.3398	0.0733	0.0015	974.0	16.0	949.0	14.0	1021	44	2.6	1.6
192	21.808	134.3	6.6	39.8	2.1	144	0.30	1.6540	0.0420	0.16470	0.00290	0.5494	0.0723	0.0015	991.0	16.0	982.0	16.0	997	43	0.9	0.6
239	16.326	385.0	56.0	40.6	2.4	395	0.11	1.7350	0.0440	0.16850	0.00330	0.5326	0.0743	0.0017	1023.0	16.0	1003.0	18.0	1043	47	2.0	1.3
62	21.808	73.8	2.5	13.0	0.3	77	0.18	1.7270	0.0470	0.16910	0.00270	0.3291	0.0754	0.0018	1019.0	18.0	1007.0	15.0	1075	47	1.2	0.7
106	21.924	66.4	2.7	11.9	0.3	69	0.18	1.6640	0.0520	0.16920	0.00290	0.3167	0.0721	0.0020	992.0	20.0	1008.0	16.0	996	56	-1.6	-0.8
235	21.808	71.9	3.0	22.2	0.7	77	0.31	1.7300	0.0520	0.17020	0.00310	0.2978	0.0735	0.0021	1017.0	19.0	1013.0	17.0	1028	57	0.4	0.2
280	18.309	70.1	3.1	60.1	2.6	84	0.86	1.7570	0.0540	0.17160	0.00330	0.3340	0.0745	0.0020	1027.0	20.0	1021.0	18.0	1054	56	0.6	0.3
276	21.808	20.8	0.4	7.6	0.3	23	0.37	1.7550	0.0840	0.17190	0.00380	0.3596	0.0724	0.0029	1024.0	30.0	1024.0	21.0	1018	85	0.0	0.0
114	14.927	555.0	17.0	39.8	1.0	564	0.07	1.8000	0.0470	0.17320	0.00400	0.5726	0.0751	0.0018	1045.0	17.0	1029.0	22.0	1075	48	1.5	0.9
200	21.224	32.5	1.0	26.2	1.0	39	0.81	1.7850	0.0660	0.17440	0.00360	0.5055	0.0734	0.0023	1041.0	24.0	1036.0	20.0	1025	63	0.5	0.2
71	13.528	100.7	2.5	50.6	3.0	113	0.50	1.7700	0.0450	0.17480	0.00310	0.4109	0.0736	0.0017	1036.0	16.0	1039.0	17.0	1029	46	-0.3	-0.2
268	21.924	115.4	5.7	63.8	2.4	130	0.55	1.7990	0.0490	0.17540	0.00320	0.4301	0.0740	0.0018	1045.0	18.0	1041.0	18.0	1045	48	0.4	0.2
259	21.808	142.1	8.6	66.6	3.8	158	0.47	1.8000	0.0480	0.17580	0.00310	0.4001	0.0737	0.0018	1045.0	18.0	1044.0	17.0	1033	47	0.1	0.1
78	15.743	379.0	16.0	111.5	3.6	405	0.29	1.7810	0.0460	0.17610	0.00350	0.7267	0.0736	0.0013	1037.0	17.0	1045.0	19.0	1035	37	-0.8	-0.5
140	14.81	153.0	6.9	45.4	1.8	164	0.30	1.8170	0.0470	0.17760	0.00310	0.4567	0.0738	0.0016	1052.0	17.0	1054.0	17.0	1048	42	-0.2	-0.1
144	15.627	38.1	2.6	28.2	1.4	45	0.74	1.8610	0.0670	0.17770	0.00360	0.1920	0.0760	0.0026	1071.0	22.0	1054.0	20.0	1108	65	1.6	0.8
92	15.394	146.7	3.7	103.4	2.1	171	0.70	1.8300	0.0470	0.17820	0.00350	0.4734	0.0748	0.0016	1055.0	17.0	1057.0	19.0	1057	44	-0.2	-0.1
131	9.5627	57.2	2.7	65.7	3.1	73	1.15	1.8780	0.0750	0.17840	0.00370	0.2708	0.0755	0.0030	1071.0	27.0	1058.0	20.0	1077	82	1.2	0.5
260	21.808	119.8	6.9	52.1	1.6	132	0.43	1.8840	0.0530	0.17980	0.00380	0.3761	0.0754	0.0019	1073.0	18.0	1065.0	21.0	1082	52	0.7	0.4

Table 1: LA-ICP-MS Zircon Isotopic and Age Data Table: H3N 29-30m: Harvey County, KS Core Sample

								Corrected Isotopic Ratios[3]							Ages (Ma)[7]							
Grain #	Signal Duration (s)	U (ppm)[1]	2σ	Th (ppm)[2]	2σ	eU (ppm)[2]	Th/U	$^{207}Pb/^{235}U$	2σ[4]	$^{206}Pb/^{238}U$	2σ[4]	Rho[5]	$^{207}Pb/^{206}Pb$[6]	2σ	$^{207}Pb/^{235}U$	2σ	$^{206}Pb/^{238}U$	2σ	$^{207}Pb/^{206}Pb$	2σ	% Disc.[8]	Uncert. Wtd. Disc.[9]
296	21.808	50.5	2.0	24.8	0.5	56	0.49	1.8860	0.0620	0.18130	0.00360	0.2229	0.0751	0.0022	1080.0	21.0	1074.0	19.0	1071	63	0.6	0.3
225	16.443	57.3	4.7	28.9	2.1	64	0.50	1.9220	0.0690	0.18180	0.00380	0.3281	0.0767	0.0026	1085.0	24.0	1076.0	21.0	1092	68	0.8	0.4
147	15.977	79.2	4.7	40.6	2.3	89	0.51	1.9510	0.0640	0.18200	0.00390	0.4986	0.0767	0.0020	1099.0	23.0	1080.0	21.0	1109	55	1.7	0.8
166	21.808	102.6	6.9	41.1	2.1	112	0.40	1.9320	0.0550	0.18300	0.00410	0.5156	0.0749	0.0018	1092.0	19.0	1083.0	22.0	1072	47	0.8	0.5
248	21.808	157.8	7.8	90.5	3.5	179	0.57	1.9060	0.0530	0.18320	0.00350	0.5517	0.0753	0.0016	1081.0	19.0	1084.0	19.0	1071	44	-0.3	-0.2
293	21.808	163.4	9.8	112.9	3.9	190	0.69	1.9090	0.0450	0.18320	0.00340	0.5535	0.0758	0.0015	1087.0	17.0	1086.0	18.0	1086	39	0.1	0.1
88	13.644	51.6	2.6	23.4	1.5	57	0.45	1.9540	0.0930	0.18430	0.00610	0.2598	0.0791	0.0038	1121.0	36.0	1089.0	33.0	1170	95	2.9	0.9
11	7.4635	53.0	3.1	22.2	1.6	58	0.42	1.9200	0.1100	0.18450	0.00690	0.3052	0.0733	0.0038	1085.0	38.0	1091.0	38.0	1020	120	-0.6	-0.2
93	21.808	55.7	3.4	27.1	1.1	62	0.49	1.9230	0.0600	0.18530	0.00350	0.1633	0.0760	0.0022	1088.0	21.0	1096.0	19.0	1089	62	-0.7	-0.4
41	21.224	110.4	5.3	61.7	2.6	125	0.56	1.9170	0.0480	0.18580	0.00270	0.3586	0.0754	0.0016	1087.0	17.0	1098.0	15.0	1075	43	-1.0	-0.6
81	18.659	196.0	16.0	89.3	7.2	217	0.46	1.9320	0.0490	0.18580	0.00400	0.5449	0.0766	0.0017	1093.0	17.0	1098.0	22.0	1119	47	-0.5	-0.3
283	19.359	141.8	8.7	29.5	1.5	149	0.21	1.9360	0.0490	0.18670	0.00310	0.4864	0.0750	0.0015	1094.0	17.0	1103.0	17.0	1072	39	-0.8	-0.5
46	12.828	184.6	9.7	135.3	5.5	216	0.73	1.9330	0.0440	0.18680	0.00320	0.4162	0.0758	0.0016	1092.0	15.0	1104.0	17.0	1085	42	-1.1	-0.8
51	13.644	154.0	10.0	29.0	2.0	161	0.19	2.6820	0.0710	0.18800	0.00470	0.6314	0.1039	0.0026	1325.0	18.0	1110.0	26.0	1695	45	16.2	11.9
103	21.924	155.0	13.0	63.5	4.8	170	0.41	1.9810	0.0610	0.18850	0.00470	0.6289	0.0774	0.0019	1108.0	21.0	1112.0	25.0	1123	50	-0.4	-0.2
187	20.525	70.3	3.3	27.9	1.1	77	0.40	2.1240	0.0610	0.18890	0.00410	0.4849	0.0816	0.0021	1154.0	20.0	1115.0	22.0	1229	51	3.4	2.0
38	21.924	167.8	8.1	102.1	4.1	192	0.61	1.9800	0.0470	0.18970	0.00300	0.5759	0.0759	0.0014	1109.0	16.0	1119.0	16.0	1091	37	-0.9	-0.6
91	15.743	216.0	12.0	80.6	3.2	235	0.37	1.9910	0.0500	0.19050	0.00350	0.3618	0.0764	0.0018	1111.0	17.0	1124.0	19.0	1103	46	-1.2	-0.8
14	20.758	225.5	6.6	85.9	6.9	246	0.38	2.0260	0.0540	0.19140	0.00350	0.5998	0.0773	0.0015	1126.0	18.0	1129.0	19.0	1123	38	-0.3	-0.2
222	21.924	310.0	32.0	94.0	8.9	332	0.30	2.7900	0.1200	0.19250	0.00780	0.9444	0.1039	0.0019	1346.0	33.0	1132.0	42.0	1690	34	15.9	6.5
237	21.924	82.9	3.2	32.2	0.7	90	0.39	2.1680	0.0550	0.19600	0.00350	0.4076	0.0805	0.0019	1171.0	18.0	1154.0	19.0	1207	46	1.5	0.9
189	19.592	127.0	10.0	35.1	2.1	135	0.28	2.7900	0.1200	0.19770	0.00770	0.8734	0.1006	0.0021	1351.0	33.0	1160.0	41.0	1639	40	14.1	5.8
32	14.694	428.0	79.0	123.1	8.0	457	0.29	2.4250	0.0780	0.19830	0.00570	0.7666	0.0886	0.0019	1253.0	21.0	1165.0	31.0	1401	42	7.0	4.2
193	20.291	151.4	9.2	45.3	2.2	162	0.30	2.2470	0.0590	0.19870	0.00390	0.5715	0.0809	0.0017	1194.0	19.0	1168.0	21.0	1216	40	2.2	1.4
181	21.808	100.4	1.6	18.7	0.4	105	0.19	2.1490	0.0570	0.19890	0.00350	0.3215	0.0783	0.0019	1165.0	18.0	1169.0	19.0	1142	49	-0.3	-0.2
3	15.277	117.9	6.3	39.1	0.8	127	0.33	2.2160	0.0590	0.19920	0.00350	0.5117	0.0798	0.0017	1185.0	19.0	1171.0	19.0	1203	44	1.2	0.7
159	17.259	72.4	2.4	50.7	2.7	84	0.70	2.1590	0.0680	0.20050	0.00390	0.3877	0.0782	0.0022	1170.0	22.0	1178.0	21.0	1152	53	-0.7	-0.4
75	21.341	235.0	10.0	59.7	1.7	249	0.25	2.1650	0.0510	0.20070	0.00350	0.5243	0.0784	0.0014	1169.0	16.0	1179.0	19.0	1155	36	-0.9	-0.6
157	18.659	28.9	1.5	14.3	0.6	32	0.49	2.2230	0.0730	0.20080	0.00470	0.2158	0.0795	0.0028	1188.0	24.0	1179.0	25.0	1186	69	0.8	0.4
44	19.592	173.0	11.0	103.5	7.4	197	0.60	2.1740	0.0520	0.20150	0.00370	0.5999	0.0784	0.0015	1173.0	17.0	1183.0	20.0	1155	39	-0.9	-0.6
191	21.808	79.6	3.2	18.1	0.5	84	0.23	2.2800	0.0600	0.20160	0.00380	0.3805	0.0813	0.0018	1206.0	18.0	1184.0	20.0	1223	46	1.8	1.2
162	21.808	304.0	13.0	70.5	1.5	321	0.23	2.2810	0.0570	0.20560	0.00430	0.6566	0.0807	0.0017	1205.0	18.0	1205.0	23.0	1206	42	0.0	0.0
255	19.942	23.3	0.7	9.9	0.3	26	0.42	2.2890	0.0860	0.20640	0.00560	0.2651	0.0790	0.0029	1204.0	27.0	1208.0	30.0	1180	70	-0.3	-0.1
221	21.924	75.1	4.1	24.8	0.8	81	0.33	2.3140	0.0640	0.20670	0.00350	0.5272	0.0812	0.0018	1214.0	20.0	1211.0	19.0	1216	44	0.2	0.2
135	20.875	243.0	10.0	55.2	1.5	256	0.23	2.4490	0.0610	0.21830	0.00400	0.5869	0.0810	0.0016	1255.0	18.0	1272.0	21.0	1224	37	-1.4	-0.9
160	17.609	101.0	5.2	136.0	4.3	133	1.35	2.6300	0.0690	0.22230	0.00400	0.5081	0.0860	0.0019	1307.0	20.0	1294.0	21.0	1347	43	1.0	0.7
42	10.379	208.0	24.0	19.3	3.6	213	0.09	2.6820	0.0740	0.22800	0.00540	0.7477	0.0857	0.0015	1322.0	20.0	1323.0	28.0	1335	36	-0.1	-0.1
279	21.808	135.3	5.4	55.4	1.3	148	0.41	2.7320	0.0600	0.22750	0.00400	0.3271	0.0857	0.0018	1336.0	16.0	1323.0	21.0	1328	41	1.0	0.8
263	21.341	52.8	1.5	30.1	1.0	60	0.57	2.9250	0.0800	0.22990	0.00440	0.3951	0.0905	0.0020	1388.0	21.0	1334.0	23.0	1448	46	3.9	2.6
58	21.808	140.3	4.9	73.7	2.7	158	0.53	2.8340	0.0670	0.23010	0.00380	0.5537	0.0897	0.0017	1363.0	18.0	1335.0	20.0	1413	36	2.1	1.6
145	20.291	173.9	4.1	75.1	1.2	192	0.43	2.7740	0.0670	0.23060	0.00430	0.5726	0.0872	0.0017	1349.0	18.0	1340.0	22.0	1363	37	0.7	0.5

Table 1: LA-ICP-MS Zircon Isotopic and Age Data Table: H3N 29-30m: Harvey County, KS Core Sample

								Corrected Isotopic Ratios[3]							Ages (Ma)[7]							
Grain #	Signal Duration (s)	U (ppm)[1]	2σ	Th (ppm)[2]	2σ	eU (ppm)[2]	Th/U	$^{207}Pb/^{235}U$	2σ[4]	$^{206}Pb/^{238}U$	2σ[4]	Rho[5]	$^{207}Pb/^{206}Pb$[6]	2σ	$^{207}Pb/^{235}U$	2σ	$^{206}Pb/^{238}U$	2σ	$^{207}Pb/^{206}Pb$	2σ	% Disc.[8]	Uncert. Wtd. Disc.[9]
270	21.808	56.2	7.3	22.2	2.6	61	0.40	2.7990	0.0790	0.23290	0.00500	0.3291	0.0872	0.0023	1352.0	21.0	1349.0	26.0	1363	50	0.2	0.1
224	21.808	38.9	1.6	17.4	0.4	43	0.45	2.8970	0.0930	0.23600	0.00490	0.4225	0.0908	0.0024	1377.0	24.0	1365.0	25.0	1427	52	0.9	0.5
69	21.808	88.8	4.2	48.6	2.3	100	0.55	2.8030	0.0780	0.23620	0.00430	0.5572	0.0867	0.0019	1358.0	20.0	1366.0	22.0	1350	44	-0.6	-0.4
171	19.708	156.0	10.0	56.7	2.5	169	0.36	2.8880	0.0810	0.23880	0.00530	0.5600	0.0862	0.0019	1378.0	21.0	1379.0	28.0	1335	43	-0.1	0.0
179	21.808	163.9	6.2	58.2	1.6	178	0.36	3.0490	0.0690	0.23880	0.00430	0.5770	0.0913	0.0017	1419.0	17.0	1380.0	23.0	1450	37	2.7	2.3
18	19.592	109.1	6.2	144.3	6.9	143	1.32	2.9510	0.0750	0.23870	0.00470	0.6289	0.0891	0.0017	1393.0	19.0	1382.0	24.0	1417	39	0.8	0.6
226	13.411	196.0	32.0	50.9	4.6	208	0.26	3.0110	0.0870	0.24050	0.00500	0.6384	0.0916	0.0018	1411.0	21.0	1392.0	26.0	1456	37	1.3	0.9
236	21.808	109.4	9.7	71.2	5.5	126	0.65	3.0230	0.0770	0.24130	0.00470	0.4864	0.0913	0.0020	1411.0	19.0	1393.0	24.0	1452	42	1.3	0.9
261	17.609	96.1	4.3	43.5	1.4	106	0.45	3.0300	0.0780	0.24160	0.00500	0.6232	0.0912	0.0019	1416.0	20.0	1394.0	26.0	1444	41	1.6	1.1
298	21.808	72.5	6.4	23.5	1.9	78	0.32	3.0690	0.0850	0.24170	0.00400	0.4121	0.0924	0.0019	1422.0	21.0	1395.0	21.0	1481	43	1.9	1.3
257	15.743	166.2	7.6	87.0	3.8	187	0.52	3.0440	0.0750	0.24170	0.00550	0.6585	0.0904	0.0019	1422.0	19.0	1399.0	28.0	1433	41	1.6	1.2
133	21.224	175.0	16.0	17.6	1.7	179	0.10	3.6200	0.1500	0.24240	0.00900	0.9049	0.1089	0.0022	1557.0	33.0	1402.0	45.0	1783	36	10.0	4.7
282	21.924	44.1	1.6	16.8	0.4	48	0.38	3.0860	0.0970	0.24390	0.00530	0.3983	0.0908	0.0025	1425.0	24.0	1406.0	27.0	1438	54	1.3	0.8
188	21.808	145.6	5.6	64.1	1.5	161	0.44	3.0910	0.0790	0.24430	0.00460	0.5589	0.0914	0.0019	1428.0	19.0	1408.0	24.0	1459	39	1.4	1.1
297	21.924	122.6	7.4	62.9	2.4	137	0.51	3.0460	0.0820	0.24500	0.00470	0.6261	0.0901	0.0019	1421.0	21.0	1412.0	24.0	1424	40	0.6	0.4
262	18.309	65.2	2.8	38.7	1.2	74	0.59	3.1120	0.0860	0.24520	0.00460	0.2490	0.0908	0.0024	1433.0	21.0	1413.0	24.0	1436	50	1.4	1.0
104	21.808	69.0	3.3	30.0	1.9	76	0.43	3.0070	0.0800	0.24540	0.00570	0.4242	0.0888	0.0022	1407.0	20.0	1414.0	29.0	1399	47	-0.5	-0.4
266	21.808	217.0	19.0	122.0	12.0	246	0.56	3.0520	0.0710	0.24550	0.00420	0.5618	0.0898	0.0016	1421.0	18.0	1415.0	22.0	1421	34	0.4	0.3
205	21.924	75.3	5.9	33.5	2.8	83	0.44	3.1040	0.0800	0.24590	0.00470	0.3359	0.0905	0.0023	1431.0	20.0	1416.0	24.0	1440	48	1.0	0.8
232	21.808	77.3	7.4	40.0	4.7	87	0.52	3.0960	0.0930	0.24580	0.00530	0.6106	0.0906	0.0020	1428.0	23.0	1416.0	27.0	1438	42	0.8	0.5
150	22.74	232.0	47.0	115.0	8.7	259	0.50	3.0600	0.0880	0.24610	0.00540	0.6618	0.0903	0.0019	1424.0	23.0	1417.0	28.0	1429	41	0.5	0.3
231	21.808	124.0	10.0	28.7	0.8	131	0.23	3.0410	0.0830	0.24590	0.00440	0.4952	0.0897	0.0018	1421.0	20.0	1417.0	23.0	1416	40	0.3	0.2
264	21.924	121.0	15.0	142.0	14.0	154	1.17	3.0850	0.0740	0.24540	0.00440	0.4767	0.0912	0.0020	1429.0	19.0	1417.0	22.0	1445	42	0.8	0.6
108	18.892	114.3	8.1	85.0	3.4	134	0.74	3.0390	0.0910	0.24620	0.00560	0.5914	0.0900	0.0022	1417.0	23.0	1418.0	29.0	1416	46	-0.1	0.0
83	21.924	108.2	4.6	40.6	1.2	118	0.38	3.0940	0.0770	0.24700	0.00460	0.6504	0.0909	0.0017	1429.0	19.0	1422.0	24.0	1448	37	0.5	0.4
203	21.808	108.0	17.0	128.0	12.0	138	1.19	3.1180	0.0800	0.24690	0.00470	0.5321	0.0918	0.0020	1437.0	20.0	1424.0	25.0	1455	41	0.9	0.7
98	14.927	125.7	6.5	60.1	2.5	140	0.48	3.0280	0.0750	0.24750	0.00480	0.4899	0.0888	0.0019	1413.0	19.0	1425.0	25.0	1395	41	-0.8	-0.6
176	21.458	401.0	21.0	79.2	6.9	420	0.20	3.1610	0.0760	0.24770	0.00490	0.6695	0.0918	0.0016	1446.0	19.0	1426.0	26.0	1463	33	1.4	1.1
218	18.892	260.0	15.0	153.2	7.7	296	0.59	3.1700	0.0720	0.24840	0.00460	0.5571	0.0923	0.0017	1449.0	18.0	1429.0	23.0	1473	36	1.4	1.1
202	21.808	60.3	5.0	28.8	2.7	67	0.48	3.0780	0.0910	0.24860	0.00470	0.2989	0.0906	0.0025	1428.0	23.0	1430.0	24.0	1432	53	-0.1	-0.1
158	19.592	67.2	2.6	27.9	0.7	74	0.42	3.0770	0.0820	0.24860	0.00470	0.4389	0.0892	0.0020	1429.0	20.0	1431.0	24.0	1410	45	-0.1	-0.1
151	21.808	99.0	23.0	20.2	0.8	104	0.20	3.1410	0.0830	0.24920	0.00550	0.5988	0.0904	0.0021	1440.0	20.0	1433.0	28.0	1435	45	0.5	0.4
60	21.808	119.0	3.8	31.9	3.1	126	0.27	3.1390	0.0700	0.24900	0.00370	0.3704	0.0919	0.0017	1442.0	17.0	1434.0	19.0	1467	35	0.6	0.5
272	21.808	134.0	12.0	37.7	2.7	143	0.28	3.1120	0.0730	0.24940	0.00410	0.5400	0.0896	0.0017	1437.0	18.0	1435.0	21.0	1416	36	0.1	0.1
64	16.676	156.4	6.7	34.5	1.1	165	0.22	3.1530	0.0730	0.25010	0.00430	0.5793	0.0921	0.0017	1445.0	18.0	1439.0	22.0	1469	34	0.4	0.3
50	21.808	131.0	5.8	54.1	1.8	144	0.41	3.1470	0.0690	0.25030	0.00340	0.3301	0.0916	0.0017	1446.0	16.0	1440.0	18.0	1458	35	0.4	0.4
125	15.977	100.1	2.8	54.5	0.9	113	0.54	3.0970	0.0760	0.25060	0.00480	0.5110	0.0894	0.0018	1431.0	19.0	1441.0	24.0	1407	39	-0.7	-0.5
99	15.16	64.9	2.3	30.0	0.8	72	0.46	3.0770	0.0930	0.25070	0.00440	0.3461	0.0908	0.0024	1425.0	23.0	1442.0	23.0	1441	52	-1.2	-0.7
299	21.808	69.7	4.0	32.2	1.6	77	0.46	3.1490	0.0860	0.25120	0.00500	0.4931	0.0911	0.0021	1446.0	22.0	1447.0	26.0	1452	43	-0.1	0.0
49	21.924	62.6	3.1	37.6	1.2	71	0.60	3.0560	0.0800	0.25260	0.00400	0.2115	0.0886	0.0021	1421.0	20.0	1452.0	21.0	1410	47	-2.2	-1.6
134	19.825	47.2	2.4	18.3	0.6	51	0.39	3.1160	0.0960	0.25400	0.00530	0.4674	0.0890	0.0023	1433.0	24.0	1458.0	27.0	1398	51	-1.7	-1.0

Table 1: LA-ICP-MS Zircon Isotopic and Age Data Table: H3N 29-30m: Harvey County, KS Core Sample

								Corrected Isotopic Ratios[3]							Ages (Ma)[7]							
Grain #	Signal Duration (s)	U (ppm)[1]	2σ	Th (ppm)[1]	2σ	eU (ppm)[2]	Th/U	$^{207}Pb/^{235}U$	2σ[4]	$^{206}Pb/^{238}U$	2σ[4]	Rho[5]	$^{207}Pb/^{206}Pb$[6]	2σ	$^{207}Pb/^{235}U$	2σ	$^{206}Pb/^{238}U$	2σ	$^{207}Pb/^{206}Pb$	2σ	% Disc.[8]	Uncert. Wtd. Disc.[9]
146	21.808	51.3	1.9	26.3	0.6	57	0.51	3.1860	0.0800	0.25390	0.00500	0.3272	0.0917	0.0023	1457.0	21.0	1458.0	25.0	1459	46	-0.1	0.0
57	21.808	271.0	14.0	125.4	4.9	300	0.46	3.1560	0.0640	0.25500	0.00370	0.5478	0.0908	0.0014	1448.0	15.0	1464.0	19.0	1442	30	-1.1	-1.1
63	17.726	62.5	2.8	22.5	0.9	68	0.36	3.1550	0.0820	0.25610	0.00450	0.2051	0.0902	0.0021	1444.0	20.0	1469.0	22.0	1420	46	-1.7	-1.3
139	18.426	229.0	13.0	85.8	4.8	249	0.37	3.2490	0.0780	0.25860	0.00490	0.5703	0.0909	0.0017	1469.0	19.0	1482.0	25.0	1451	37	-0.9	-0.7
70	20.875	136.8	7.3	58.0	2.2	150	0.42	3.1890	0.0790	0.25950	0.00490	0.5668	0.0897	0.0018	1453.0	19.0	1487.0	25.0	1420	39	-2.3	-1.8
277	21.924	158.4	7.7	42.5	1.1	168	0.27	3.4340	0.0770	0.26460	0.00460	0.5332	0.0936	0.0017	1511.0	18.0	1513.0	23.0	1498	35	-0.1	-0.1
25	17.959	80.0	11.0	31.5	0.6	87	0.39	3.3790	0.0840	0.26700	0.00530	0.3833	0.0917	0.0022	1502.0	20.0	1528.0	27.0	1452	46	-1.7	-1.3
65	20.875	378.0	30.0	26.6	0.7	384	0.07	3.9540	0.0900	0.28240	0.00480	0.8251	0.1029	0.0015	1625.0	19.0	1603.0	24.0	1675	27	1.4	1.2
97	21.924	154.0	12.0	40.4	2.4	163	0.26	4.2010	0.1000	0.28240	0.00540	0.6749	0.1094	0.0020	1676.0	19.0	1606.0	27.0	1789	32	4.2	3.7
59	21.808	379.0	21.0	93.1	4.4	401	0.25	4.0030	0.0840	0.28460	0.00410	0.4960	0.1022	0.0016	1633.8	17.0	1614.0	19.0	1663	29	1.2	1.2
111	21.808	185.0	11.0	54.0	1.2	198	0.29	4.0710	0.0910	0.28720	0.00590	0.6494	0.1034	0.0019	1647.0	18.0	1626.0	30.0	1682	33	1.3	1.2
194	20.175	100.0	15.0	33.4	1.9	108	0.33	4.1860	0.1100	0.28730	0.00560	0.4045	0.1052	0.0025	1673.0	22.0	1627.0	28.0	1723	43	2.7	2.1
1	15.271	109.4	7.4	41.6	2.1	119	0.38	3.9490	0.1100	0.28740	0.00600	0.7231	0.1005	0.0019	1622.0	21.0	1632.0	30.0	1634	35	-0.6	-0.5
250	21.808	104.9	3.2	42.8	1.1	115	0.41	4.1480	0.0980	0.29140	0.00510	0.4074	0.1035	0.0021	1664.0	19.0	1648.0	25.0	1693	35	1.0	0.8
229	17.609	70.9	2.2	54.3	2.5	84	0.77	4.1900	0.1100	0.29180	0.00570	0.5755	0.1039	0.0021	1677.0	21.0	1650.0	28.0	1699	37	1.6	1.3
271	17.259	71.6	3.1	33.4	1.4	79	0.47	4.2070	0.1000	0.29250	0.00660	0.5442	0.1038	0.0023	1678.0	21.0	1653.0	33.0	1702	42	1.5	1.2
230	21.924	89.6	4.3	28.5	0.9	96	0.32	4.0950	0.0990	0.29280	0.00520	0.4796	0.1015	0.0020	1651.0	20.0	1655.0	26.0	1646	37	-0.2	-0.2
123	21.808	167.3	6.8	37.4	0.9	176	0.22	4.1540	0.1000	0.29340	0.00510	0.4499	0.1031	0.0022	1665.0	21.0	1658.0	25.0	1681	39	0.4	0.3
190	15.16	133.6	4.2	69.0	2.3	150	0.52	4.3900	0.1100	0.29330	0.00690	0.5956	0.1073	0.0024	1709.0	21.0	1661.0	34.0	1752	41	2.8	2.3
253	18.426	131.2	4.5	27.2	0.6	138	0.21	4.1850	0.1000	0.29430	0.00590	0.6272	0.1025	0.0019	1669.0	20.0	1662.0	29.0	1669	35	0.4	0.4
185	21.924	174.1	7.3	38.6	1.1	183	0.22	4.2660	0.0930	0.29530	0.00530	0.5461	0.1033	0.0019	1687.0	17.0	1667.0	27.0	1687	32	1.2	1.2
242	21.808	67.6	3.2	32.7	1.4	75	0.48	4.2060	0.1100	0.29530	0.00500	0.5067	0.1046	0.0021	1673.0	21.0	1667.0	25.0	1705	37	0.4	0.3
112	21.808	26.6	1.5	10.6	0.6	29	0.40	4.3100	0.1400	0.29600	0.00640	0.4242	0.1058	0.0029	1696.0	26.0	1670.0	31.0	1732	54	1.5	1.0
294	21.808	30.6	1.2	19.4	0.8	35	0.63	4.2000	0.1200	0.29630	0.00570	0.4102	0.1034	0.0026	1673.0	24.0	1672.0	28.0	1682	48	0.1	0.0
2	17.843	463.0	59.0	27.4	1.9	469	0.06	4.2000	0.1300	0.29670	0.00830	0.8396	0.1017	0.0019	1671.0	24.0	1678.0	41.0	1655	35	-0.4	-0.3
117	16.21	74.2	8.6	10.8	1.0	77	0.15	4.1500	0.1400	0.29780	0.00660	0.5376	0.1038	0.0030	1663.0	28.0	1679.0	33.0	1681	55	-1.0	-0.6
84	19.475	140.7	4.4	50.0	2.6	152	0.36	4.1560	0.1100	0.29820	0.00550	0.6201	0.1026	0.0020	1663.0	21.0	1681.0	28.0	1671	38	-1.1	-0.9
100	21.808	125.1	5.6	54.0	1.4	138	0.43	4.1810	0.1100	0.29830	0.00590	0.6032	0.1034	0.0022	1672.0	21.0	1682.0	29.0	1692	38	-0.6	-0.5
142	17.259	137.0	4.2	25.8	0.6	143	0.19	4.3170	0.0960	0.29780	0.00450	0.4639	0.1045	0.0019	1697.0	19.0	1682.0	22.0	1705	33	0.9	0.8
37	14.927	278.3	9.2	52.1	1.5	291	0.19	4.2640	0.0980	0.29850	0.00540	0.7975	0.1037	0.0016	1685.0	19.0	1683.0	26.0	1689	28	0.1	0.1
284	17.843	106.7	3.2	36.3	1.0	115	0.34	4.3210	0.1100	0.29880	0.00530	0.6198	0.1043	0.0021	1696.0	21.0	1685.0	26.0	1704	36	0.6	0.5
8	16.56	169.0	13.0	64.2	4.1	184	0.38	4.2270	0.1200	0.29830	0.00760	0.7613	0.1022	0.0019	1679.0	24.0	1686.0	38.0	1660	35	-0.4	-0.3
138	15.86	69.9	2.8	29.7	1.0	77	0.43	4.2220	0.1100	0.30030	0.00490	0.4080	0.1019	0.0021	1679.0	20.0	1692.0	24.0	1654	39	-0.8	-0.7
76	21.808	195.0	7.9	79.3	1.9	214	0.41	4.3950	0.0960	0.30420	0.00550	0.5388	0.1058	0.0019	1710.0	18.0	1711.0	28.0	1727	34	-0.1	-0.1
254	21.808	230.0	22.0	73.4	6.1	247	0.32	4.4090	0.1100	0.30510	0.00580	0.5436	0.1038	0.0020	1712.0	20.0	1716.0	28.0	1694	35	-0.2	-0.2
161	13.994	149.0	7.8	33.9	0.9	157	0.23	4.4340	0.1100	0.30550	0.00560	0.5301	0.1037	0.0021	1719.0	22.0	1718.0	28.0	1691	39	0.1	0.0
124	17.609	193.0	11.0	116.8	5.2	220	0.61	4.4040	0.1000	0.30700	0.00530	0.5583	0.1044	0.0019	1713.0	19.0	1725.0	26.0	1705	33	-0.7	-0.6
249	21.924	402.0	67.0	58.5	7.5	416	0.15	4.5690	0.1200	0.30880	0.00630	0.7797	0.1065	0.0018	1741.0	21.0	1734.0	32.0	1738	31	0.4	0.3
198	19.942	86.4	6.5	33.4	2.6	94	0.39	4.4750	0.1300	0.31210	0.00670	0.5755	0.1052	0.0023	1730.0	24.0	1750.0	33.0	1724	40	-1.2	-0.8
82	21.924	135.0	14.0	55.4	4.1	148	0.41	4.5780	0.1200	0.31300	0.00690	0.5625	0.1077	0.0022	1745.0	21.0	1758.0	34.0	1763	37	-0.7	-0.6
233	18.775	175.0	16.0	57.2	2.4	188	0.33	4.5200	0.1200	0.31390	0.00660	0.6190	0.1040	0.0022	1732.0	22.0	1759.0	33.0	1695	38	-1.6	-1.2

Table 1: LA-ICP-MS Zircon Isotopic and Age Data Table: H3N 29-30m: Harvey County, KS Core Sample

								Corrected Isotopic Ratios[3]							Ages (Ma)[7]							
Grain #	Signal Duration (s)	U (ppm)[1]	2σ	Th (ppm)[1]	2σ	eU (ppm)[2]	Th/U	$^{207}Pb/^{235}U$	2σ[4]	$^{206}Pb/^{238}U$	2σ[4]	Rho[5]	$^{207}Pb/^{206}Pb$[6]	2σ	$^{207}Pb/^{235}U$	2σ	$^{206}Pb/^{238}U$	2σ	$^{207}Pb/^{206}Pb$	2σ	% Disc.[8]	Uncert. Wtd. Disc.[9]
207	14.227	60.0	1.1	19.3	0.5	65	0.32	4.6800	0.1300	0.31410	0.00510	0.5003	0.1069	0.0023	1761.0	23.0	1764.0	25.0	1747	39	-0.2	-0.1
228	19.942	71.6	6.4	23.6	1.0	77	0.33	4.5310	0.1100	0.31530	0.00530	0.5104	0.1041	0.0021	1738.0	20.0	1766.0	26.0	1692	37	-1.6	-1.4
24	11.895	203.3	9.3	88.6	3.6	224	0.44	4.6600	0.1400	0.31670	0.00710	0.8181	0.1059	0.0021	1761.0	25.0	1773.0	35.0	1727	37	-0.7	-0.5
216	18.659	152.6	3.4	28.6	0.9	159	0.19	4.5270	0.1000	0.31760	0.00550	0.7045	0.1024	0.0017	1735.0	19.0	1777.0	27.0	1669	31	-2.4	-2.2
39	18.892	177.0	12.0	35.6	2.1	185	0.20	4.7780	0.1000	0.32490	0.00540	0.5365	0.1074	0.0018	1780.0	18.0	1813.0	26.0	1756	32	-1.9	-1.8
126	18.309	221.0	18.0	28.5	1.4	228	0.13	4.8410	0.1200	0.33160	0.00630	0.6647	0.1054	0.0020	1790.0	21.0	1845.0	31.0	1725	36	-3.1	-2.6
6	16.326	136.0	10.0	49.8	4.0	148	0.37	5.1200	0.1400	0.34840	0.00750	0.7615	0.1077	0.0019	1843.0	23.0	1926.0	36.0	1765	34	-4.5	-3.6
156	10.496	78.7	4.5	34.4	2.2	87	0.44	7.3900	0.2400	0.39300	0.01500	0.7677	0.1344	0.0036	2156.0	29.0	2136.0	70.0	2157	45	0.9	0.7
80	15.627	21.4	0.9	5.1	0.2	23	0.24	11.1600	0.3300	0.46910	0.01100	0.3834	0.1747	0.0050	2533.0	28.0	2478.0	48.0	2600	49	2.2	2.0
170	19.242	33.0	2.0	17.8	1.0	37	0.54	11.7600	0.3300	0.48840	0.01100	0.5305	0.1729	0.0042	2584.0	27.0	2567.0	46.0	2583	40	0.7	0.6
73	19.825	60.4	1.4	18.5	1.0	65	0.31	13.7100	0.3000	0.53860	0.00910	0.5213	0.1861	0.0035	2731.0	21.0	2776.0	39.0	2704	31	-1.6	-2.1

[1]U and Th have been concentrations and the Th/U ratios are calculated relative to the GJ-1 standard value using 287 ± 76 ppm for U and 8.4 ± 2.6 ppm for Th (Jackson et al., 2004)

[2]Equivalent U defined by the equation: eU = U ppm + 0.235*Th ppm

[3]Corrected for U-Pb fractionation and background and normalized to the GJ-1 standard value: $^{207}Pb/^{235}U$ =0.8093 ± 0.0009 and $^{206}Pb/^{238}U$ = 0.09761 ± 0.00011 (Jackson et al., 2004)

[4]Propagated uncertainty of internal uncertanties (2SE) and within run reproducibility of GJ-1 (2SE)

[5]Uncertainty correlation between $^{206}Pb/^{238}U$ and $^{207}Pb/^{235}U$ uncertainties

[6]Corrected for background and Pb isotopicfractionation using the GJ-1 standard value: $^{207}Pb/^{206}Pb$ = 0.06014 ± 0.00001 (Jackson et al., 2004)

[7]U-Pb ages calculated relative to the GJ-1 standard

[8]Discordance defined as (($^{207}Pb/^{235}U$age - $^{206}Pb/^{238}U$age)/($^{207}Pb/^{235}U$ age))*100

[9]Uncertainty weighted age difference defined as ($^{207}Pb/^{235}U$ age - $^{206}Pb/^{238}U$ age)/($^{207}Pb/^{235}U$ age uncertainty)

Rows highlighted in grey were not used in interpretations or calculations based on discordance or short analysis times

Table 2: LA-ICP-MS Zircon Isotopic and Age Data Table: H3N 28-29m: Harvey County, KS Core Sample

								Corrected Isotopic Ratios[3]							Ages (Ma)[7]							
Grain #	Signal Duration (s)	U (ppm)[1]	2σ	Th (ppm)[1]	2σ	eU (ppm)[2]	Th/U	$^{207}Pb/^{235}U$	$2\sigma^{4}$	$^{206}Pb/^{238}U$	$2\sigma^{4}$	Rho[5]	$^{207}Pb/^{206}Pb^{6}$	2σ	$^{207}Pb/^{235}U$	2σ	$^{206}Pb/^{238}U$	2σ	$^{207}Pb/^{206}Pb$	2σ	% Disc.[8]	Uncert. Wtd. Disc.[9]
7	12.5	102.9	3.4	62.0	2.0	117	0.60	0.0013	0.0048	0.00121	0.00018	0.0846	0.0330	0.0470	1.1	4.8	7.8	1.2	-2400	1300	-609.1	-1.4
40	4.7	420.0	28.0	265.0	22.0	482	0.63	0.0299	0.0076	0.00265	0.00021	0.2934	0.0880	0.0220	29.8	7.5	17.1	1.3	1220	480	42.6	1.7
20	6.5	733.0	29.0	163.1	9.2	771	0.22	0.0293	0.0031	0.00314	0.00017	0.5000	0.0704	0.0088	29.3	3.1	20.2	1.1	790	260	31.1	2.9
51	10.6	587.0	20.0	335.3	8.0	666	0.57	0.0270	0.0024	0.00433	0.00018	0.0783	0.0473	0.0044	27.1	2.4	27.9	1.2	60	180	-3.0	-0.3
196	9.3	890.0	38.0	484.1	9.1	1004	0.54	0.0322	0.0027	0.00456	0.00017	0.3518	0.0499	0.0039	32.1	2.6	29.3	1.1	200	170	8.7	1.1
162	12.9	59.9	4.3	63.1	5.7	75	1.05	0.0390	0.0120	0.00471	0.00056	0.1199	0.0860	0.0310	40.0	11.0	30.3	3.6	200	670	24.3	0.9
16	4.4	111.3	6.4	75.0	5.5	129	0.67	0.0320	0.0110	0.00483	0.00062	0.0666	0.0500	0.0190	32.0	11.0	31.0	4.0	10	670	3.1	0.1
175	13.3	160.8	8.8	83.9	4.0	181	0.52	0.0329	0.0056	0.00486	0.00030	0.1392	0.0478	0.0082	32.6	5.5	31.2	1.9	80	310	4.3	0.3
112	12.6	228.6	7.6	121.7	3.2	257	0.53	0.0324	0.0042	0.00489	0.00026	0.0590	0.0499	0.0068	32.3	4.1	31.4	1.6	110	250	2.8	0.2
298	12.5	321.0	17.0	176.0	11.0	362	0.55	0.0362	0.0040	0.00504	0.00023	0.0946	0.0520	0.0064	36.0	4.0	32.4	1.5	290	240	10.0	0.9
57	7.6	322.0	12.0	185.0	10.0	365	0.57	0.0290	0.0039	0.00513	0.00028	0.0833	0.0404	0.0057	28.9	3.9	33.0	1.8	-170	270	-14.2	-1.1
206	12.6	838.0	31.0	1570.0	130.0	1207	1.87	0.0338	0.0024	0.00513	0.00019	0.1822	0.0474	0.0037	33.8	2.4	33.0	1.2	60	150	2.4	0.3
215	12.5	912.0	29.0	1411.0	25.0	1244	1.55	0.0340	0.0022	0.00515	0.00018	0.0380	0.0478	0.0031	34.0	2.1	33.1	1.2	90	130	2.6	0.4
228	12.6	290.0	14.0	130.3	4.6	321	0.45	0.0347	0.0044	0.00534	0.00030	0.0719	0.0458	0.0059	34.5	4.3	34.3	2.0	-50	240	0.6	0.0
168	12.5	308.0	10.0	121.9	3.1	337	0.40	0.0335	0.0036	0.00542	0.00026	0.2733	0.0448	0.0048	33.4	3.5	34.8	1.6	-80	200	-4.2	-0.4
251	12.6	227.8	5.4	111.5	3.2	254	0.49	0.0357	0.0053	0.00541	0.00027	0.1112	0.0462	0.0072	35.4	5.2	34.8	1.7	20	300	1.7	0.1
242	8.6	178.5	8.7	226.8	9.3	232	1.27	0.0388	0.0067	0.00543	0.00041	0.0667	0.0563	0.0096	38.4	6.5	34.9	2.6	240	320	9.1	0.5
160	13.2	324.0	11.0	238.6	6.6	380	0.74	0.0381	0.0038	0.00548	0.00024	0.0581	0.0501	0.0049	38.3	3.7	35.2	1.5	170	200	8.1	0.8
305	11.9	206.0	17.0	162.0	18.0	244	0.79	0.0346	0.0045	0.00551	0.00036	0.0668	0.0430	0.0061	34.4	4.4	35.4	2.3	-40	250	-2.9	-0.2
221	12.6	434.0	13.0	297.6	7.1	504	0.69	0.0344	0.0039	0.00557	0.00024	0.0301	0.0440	0.0051	34.2	3.8	35.8	1.6	-130	210	-4.7	-0.4
269	12.6	121.0	10.0	140.0	15.0	154	1.16	0.0420	0.0087	0.00563	0.00039	0.0740	0.0560	0.0130	41.3	8.4	36.2	2.5	340	380	12.3	0.6
177	12.3	1067.0	44.0	599.0	24.0	1208	0.56	0.0361	0.0022	0.00567	0.00023	0.2429	0.0464	0.0029	36.0	2.1	36.4	1.5	10	130	-1.1	-0.2
184	12.8	2020.0	210.0	1060.0	170.0	2269	0.52	0.0369	0.0017	0.00567	0.00017	0.0120	0.0466	0.0022	36.8	1.7	36.5	1.1	55	97	1.0	0.2
204	12.6	598.0	18.0	467.2	9.5	708	0.78	0.0355	0.0033	0.00570	0.00022	0.1177	0.0454	0.0041	35.4	3.3	36.6	1.4	-10	170	-3.4	-0.4
21	12.6	335.8	8.1	95.6	5.1	358	0.28	0.0380	0.0038	0.00572	0.00026	0.1087	0.0476	0.0049	37.7	3.8	36.8	1.6	130	210	2.4	0.2
163	8.3	463.0	32.0	156.0	6.6	500	0.34	0.0393	0.0029	0.00577	0.00028	0.1038	0.0497	0.0040	39.1	2.9	37.1	1.8	140	170	5.1	0.7
132	12.6	78.0	1.8	58.8	2.2	92	0.75	0.0760	0.0140	0.00580	0.00046	0.2676	0.0950	0.0190	73.0	13.0	37.3	2.9	1020	410	48.9	2.7
217	12.4	85.6	2.9	40.3	1.0	95	0.47	0.0240	0.0100	0.00582	0.00047	0.0065	0.0280	0.0130	24.0	10.0	37.4	3.0	-700	500	-55.8	-1.3
42	11.7	1550.0	150.0	510.0	60.0	1670	0.33	0.0392	0.0017	0.00583	0.00020	0.2804	0.0483	0.0021	39.1	1.7	37.5	1.3	98	92	4.1	0.9
14	13.0	134.0	14.0	71.1	5.4	151	0.53	0.0329	0.0068	0.00586	0.00045	0.0793	0.0460	0.0110	32.6	6.7	37.7	2.9	-180	350	-15.6	-0.8
267	12.6	335.9	9.9	454.0	18.0	443	1.35	0.0397	0.0040	0.00598	0.00034	0.3528	0.0472	0.0044	39.5	3.9	38.4	2.2	90	200	2.8	0.3
18	6.2	83.9	5.8	62.2	4.9	99	0.74	0.0460	0.0130	0.00633	0.00074	0.5000	0.0610	0.0200	45.0	13.0	40.7	4.8	330	600	9.6	0.3
59	12.6	71.4	3.2	41.4	3.2	81	0.58	0.0450	0.0110	0.00681	0.00051	0.0914	0.0650	0.0260	45.0	10.0	44.2	3.3	-100	440	1.8	0.1
13	13.2	238.0	12.0	104.1	7.3	262	0.44	0.0488	0.0048	0.00747	0.00038	0.5000	0.0497	0.0056	48.2	4.7	48.0	2.4	110	210	0.4	0.0
36	11.7	894.0	51.0	462.0	49.0	1003	0.52	0.0609	0.0040	0.00755	0.00028	0.2803	0.0584	0.0037	59.9	3.8	48.5	1.8	530	130	19.0	3.0
79	6.7	634.0	26.0	495.0	29.0	750	0.78	0.0659	0.0049	0.00779	0.00034	0.2303	0.0620	0.0044	64.8	4.7	50.0	2.1	620	150	22.8	3.1
123	10.9	1169.0	37.0	288.0	41.0	1237	0.25	0.0609	0.0033	0.00926	0.00028	0.2093	0.0479	0.0023	60.0	3.1	59.4	1.8	80	100	1.0	0.2
48	9.1	141.0	5.0	98.0	3.1	164	0.70	0.0701	0.0090	0.00936	0.00060	0.0455	0.0510	0.0070	68.4	8.5	60.0	3.9	310	280	12.3	1.0
259	12.6	651.0	23.0	283.8	6.1	718	0.44	0.0657	0.0042	0.00937	0.00036	0.1862	0.0486	0.0031	64.5	4.0	60.1	2.3	160	140	6.8	1.1
187	11.7	846.0	54.0	149.8	5.6	881	0.18	0.0610	0.0037	0.00938	0.00033	0.3687	0.0473	0.0026	60.5	3.5	60.2	2.1	70	110	0.5	0.1
299	12.5	757.0	35.0	293.0	16.0	826	0.39	0.0623	0.0034	0.00945	0.00029	0.5000	0.0486	0.0028	61.3	3.3	60.6	1.9	140	110	1.1	0.2

Table 2: LA-ICP-MS Zircon Isotopic and Age Data Table: H3N 28-29m: Harvey County, KS Core Sample

								Corrected Isotopic Ratios[3]							Ages (Ma)[7]							
Grain #	Signal Duration (s)	U (ppm)[1]	2σ	Th (ppm)[1]	2σ	eU (ppm)[2]	Th/U	$^{207}Pb/^{235}U$	2σ[4]	$^{206}Pb/^{238}U$	2σ[4]	Rho[5]	$^{207}Pb/^{206}Pb$[6]	2σ	$^{207}Pb/^{235}U$	2σ	$^{206}Pb/^{238}U$	2σ	$^{207}Pb/^{206}Pb$	2σ	% Disc.[8]	Uncert. Wtd. Disc.[9]
183	12.6	883.0	49.0	13.7	0.7	886	0.02	0.0646	0.0035	0.00981	0.00031	0.3599	0.0479	0.0023	63.5	3.4	62.9	2.0	94	98	0.9	0.2
128	12.5	196.2	4.8	128.9	3.6	226	0.66	0.0658	0.0064	0.00994	0.00043	0.5000	0.0475	0.0048	64.5	6.1	63.8	2.7	60	200	1.1	0.1
216	12.6	206.9	6.2	127.0	3.8	237	0.61	0.0688	0.0076	0.01012	0.00045	0.0963	0.0487	0.0054	68.3	7.4	64.9	2.9	130	220	5.0	0.5
182	12.6	64.3	3.3	38.8	1.8	73	0.60	0.0610	0.0120	0.01015	0.00062	0.5000	0.0490	0.0110	59.0	12.0	65.1	4.0	-130	360	-10.3	-0.5
83	7.9	111.5	6.0	210.6	9.8	161	1.89	0.0718	0.0096	0.01016	0.00076	0.5000	0.0514	0.0085	70.1	9.1	65.2	4.8	240	320	7.0	0.5
201	12.6	216.0	7.3	111.4	3.1	242	0.52	0.0655	0.0061	0.01026	0.00035	0.5000	0.0461	0.0045	64.1	5.8	65.8	2.2	10	190	-2.7	-0.3
11	12.6	181.0	13.0	124.2	9.9	210	0.69	0.0800	0.0071	0.01027	0.00046	0.2580	0.0571	0.0046	77.9	6.7	65.9	2.9	450	170	15.4	1.8
76	9.6	208.0	9.0	66.8	3.8	224	0.32	0.0655	0.0060	0.01030	0.00048	0.1702	0.0466	0.0045	64.2	5.7	66.0	3.1	60	190	-2.8	-0.3
291	13.5	59.4	2.6	68.2	3.8	75	1.15	0.0760	0.0140	0.01035	0.00079	0.1492	0.0560	0.0120	73.0	13.0	66.3	5.0	370	370	9.2	0.5
17	12.6	141.4	4.1	89.3	4.7	162	0.63	0.0790	0.0080	0.01036	0.00053	0.1605	0.0542	0.0054	78.0	7.7	66.4	3.4	380	220	14.9	1.5
239	12.6	128.1	4.6	51.8	3.3	140	0.40	0.0710	0.0110	0.01036	0.00061	0.0899	0.0500	0.0079	69.0	10.0	66.4	3.9	80	280	3.8	0.3
173	12.3	138.2	9.3	31.6	1.9	146	0.23	0.0639	0.0071	0.01048	0.00050	0.3006	0.0432	0.0043	62.6	6.8	67.2	3.2	-150	180	-7.3	-0.7
243	8.9	119.3	4.0	60.1	1.4	133	0.50	0.0680	0.0100	0.01048	0.00054	0.2511	0.0465	0.0068	66.4	9.8	67.2	3.5	30	280	-1.2	-0.1
87	12.6	329.3	9.4	96.4	3.7	352	0.29	0.0691	0.0047	0.01052	0.00040	0.0029	0.0486	0.0035	67.7	4.5	67.4	2.6	90	150	0.4	0.1
188	12.6	238.6	7.2	179.6	4.0	281	0.75	0.0694	0.0067	0.01055	0.00050	0.5000	0.0486	0.0052	67.9	6.3	67.6	3.2	100	210	0.4	0.0
118	12.6	355.8	9.2	107.3	3.8	381	0.30	0.0693	0.0040	0.01055	0.00039	0.1384	0.0477	0.0028	67.9	3.8	68.0	2.4	170	110	-0.1	0.0
186	12.3	416.0	10.0	158.0	5.7	453	0.38	0.0780	0.0047	0.01063	0.00035	0.1946	0.0534	0.0031	76.2	4.4	68.1	2.2	320	130	10.6	1.8
131	12.6	183.0	7.1	70.4	2.9	200	0.38	0.0715	0.0073	0.01068	0.00054	0.1824	0.0498	0.0051	69.8	7.0	68.5	3.4	210	200	1.9	0.2
75	8.1	145.7	4.9	181.8	4.3	188	1.25	0.0840	0.0110	0.01074	0.00055	0.1216	0.0542	0.0074	81.5	9.9	68.8	3.5	340	280	15.6	1.3
45	7.8	586.0	24.0	571.0	24.0	720	0.97	0.0767	0.0050	0.01079	0.00050	0.4380	0.0502	0.0031	74.9	4.7	69.2	3.2	180	130	7.6	1.2
137	12.1	340.0	10.0	101.1	5.1	364	0.30	0.0707	0.0051	0.01083	0.00037	0.1704	0.0480	0.0033	69.2	4.8	69.4	2.4	90	130	-0.3	0.0
140	12.6	102.1	3.0	43.5	1.2	112	0.43	0.0714	0.0082	0.01088	0.00052	0.2526	0.0477	0.0059	69.6	7.8	69.7	3.3	60	230	-0.1	0.0
219	12.6	687.0	44.0	255.0	23.0	747	0.37	0.0725	0.0042	0.01103	0.00040	0.2070	0.0468	0.0026	71.0	3.9	70.7	2.5	50	110	0.4	0.1
297	12.6	372.6	7.6	276.0	11.0	437	0.74	0.0692	0.0053	0.01106	0.00034	0.5000	0.0458	0.0035	68.6	4.9	70.9	2.2	-10	140	-3.4	-0.5
167	12.5	167.3	6.5	37.5	0.9	176	0.22	0.0715	0.0075	0.01108	0.00044	0.1780	0.0488	0.0050	69.8	7.1	71.0	2.8	150	190	-1.7	-0.2
32	12.5	34.0	3.6	44.9	3.7	45	1.32	0.0970	0.0220	0.01110	0.00100	0.5000	0.0590	0.0170	91.0	20.0	71.4	6.7	290	490	21.5	1.0
95	12.6	222.6	4.2	86.1	1.7	243	0.39	0.0782	0.0061	0.01117	0.00043	0.2697	0.0502	0.0043	76.2	5.8	71.6	2.7	180	170	6.0	0.8
88	12.6	57.3	1.6	43.0	1.3	67	0.75	0.0730	0.0130	0.01121	0.00078	0.5000	0.0519	0.0099	72.0	12.0	71.8	5.0	110	330	0.3	0.0
166	12.6	255.8	8.1	146.0	12.0	290	0.57	0.0747	0.0055	0.01120	0.00044	0.0797	0.0482	0.0035	73.0	5.2	71.8	2.8	100	140	1.6	0.2
37	12.5	107.6	3.1	51.2	4.4	120	0.48	0.0799	0.0088	0.01122	0.00060	0.0245	0.0525	0.0063	77.6	8.3	71.9	3.8	220	240	7.3	0.7
179	12.6	205.8	9.0	64.0	2.2	221	0.31	0.0767	0.0072	0.01123	0.00056	0.5000	0.0495	0.0049	74.7	6.8	72.0	3.5	120	200	3.6	0.4
5	12.6	134.5	5.3	56.6	2.1	148	0.42	0.4150	0.0480	0.01133	0.00069	0.6511	0.2560	0.0240	343.0	35.0	72.6	4.4	3180	170	78.8	7.7
288	12.6	75.7	4.0	25.4	1.4	82	0.34	0.0800	0.0130	0.01133	0.00077	0.1796	0.0496	0.0085	77.0	12.0	72.6	4.9	70	310	5.7	0.4
247	12.6	146.9	3.6	124.3	5.2	176	0.85	0.0819	0.0091	0.01136	0.00054	0.0736	0.0543	0.0063	79.4	8.5	72.8	3.5	290	220	8.3	0.8
94	12.6	517.0	18.0	242.2	8.3	574	0.47	0.0774	0.0039	0.01144	0.00036	0.0923	0.0497	0.0026	75.6	3.7	73.3	2.3	170	110	3.0	0.6
176	13.1	314.0	15.0	277.0	17.0	379	0.88	0.0775	0.0061	0.01153	0.00051	0.0808	0.0500	0.0037	75.6	5.8	73.9	3.3	190	150	2.2	0.3
101	12.6	34.0	0.8	50.7	1.7	46	1.49	0.0620	0.0190	0.01156	0.00094	0.5000	0.0410	0.0130	61.0	19.0	74.1	6.0	-150	480	-21.5	-0.7
65	12.5	156.2	4.2	21.6	0.7	161	0.14	0.0780	0.0061	0.01158	0.00052	0.0515	0.0501	0.0044	76.1	5.8	74.2	3.3	180	170	2.5	0.3
133	12.6	175.7	7.0	26.4	1.4	182	0.15	0.0740	0.0077	0.01158	0.00052	0.0068	0.0481	0.0056	72.1	7.3	74.2	3.3	70	210	-2.9	-0.3
80	12.5	330.3	7.5	199.3	4.0	377	0.60	0.0727	0.0060	0.01161	0.00045	0.5000	0.0441	0.0037	71.1	5.6	74.4	2.9	-40	170	-4.6	-0.6
86	10.5	121.8	7.4	21.4	1.5	127	0.18	0.0768	0.0094	0.01162	0.00064	0.1935	0.0479	0.0059	74.7	8.8	74.4	4.1	90	250	0.4	0.0

Table 2: LA-ICP-MS Zircon Isotopic and Age Data Table: H3N 28-29m: Harvey County, KS Core Sample

								Corrected Isotopic Ratios[3]							Ages (Ma)[7]							
Grain #	Signal Duration (s)	U (ppm)[1]	2σ	Th (ppm)[1]	2σ	eU (ppm)[2]	Th/U	$^{207}Pb/^{235}U$	2σ[4]	$^{206}Pb/^{238}U$	2σ[4]	Rho[5]	$^{207}Pb/^{206}Pb$[6]	2σ	$^{207}Pb/^{235}U$	2σ	$^{206}Pb/^{238}U$	2σ	$^{207}Pb/^{206}Pb$	2σ	% Disc.[8]	Uncert. Wtd. Disc.[9]
293	9.2	1549.0	45.0	275.1	9.3	1614	0.18	0.0749	0.0032	0.01161	0.00034	0.3194	0.0473	0.0018	73.3	3.0	74.4	2.2	61	83	-1.5	-0.4
209	12.6	96.7	3.2	82.2	6.9	116	0.85	0.0820	0.0110	0.01164	0.00071	0.0558	0.0476	0.0071	79.0	10.0	74.6	4.5	110	270	5.6	0.4
10	9.9	481.0	14.0	194.5	4.3	527	0.40	0.0788	0.0056	0.01167	0.00047	0.3107	0.0485	0.0029	76.9	5.2	74.8	3.0	130	120	2.7	0.4
171	12.6	227.0	6.2	146.8	3.1	261	0.65	0.0748	0.0058	0.01170	0.00049	0.1577	0.0470	0.0040	73.8	5.4	75.0	3.2	60	170	-1.6	-0.2
282	12.6	276.5	7.3	32.2	1.0	284	0.12	0.0818	0.0068	0.01172	0.00048	0.0468	0.0525	0.0044	79.6	6.4	75.1	3.1	270	180	5.7	0.7
89	12.4	150.0	14.0	117.1	9.8	178	0.78	0.0763	0.0069	0.01173	0.00048	0.0229	0.0473	0.0043	75.2	6.4	75.2	3.1	70	170	0.0	0.0
190	12.6	314.8	9.4	95.3	1.9	337	0.30	0.0722	0.0051	0.01174	0.00045	0.2220	0.0471	0.0036	70.6	4.9	75.2	2.9	60	160	-6.5	-0.9
85	12.1	104.1	9.1	44.2	5.5	114	0.42	0.0810	0.0110	0.01178	0.00053	0.4023	0.0476	0.0060	78.0	10.0	75.5	3.4	90	240	3.2	0.3
67	12.6	131.8	3.7	71.9	1.7	149	0.55	0.0767	0.0089	0.01183	0.00055	0.5000	0.0474	0.0058	74.5	8.4	75.8	3.5	10	230	-1.7	-0.2
69	12.5	48.6	1.6	69.2	1.5	65	1.42	0.1220	0.0260	0.01184	0.00080	0.3060	0.0770	0.0160	113.0	23.0	75.8	5.1	750	410	32.9	1.6
205	12.5	104.3	5.2	40.0	2.9	114	0.38	0.0850	0.0120	0.01185	0.00062	0.5000	0.0529	0.0078	84.0	11.0	75.9	4.0	230	280	9.6	0.7
130	11.0	264.8	7.2	136.8	6.2	297	0.52	0.0759	0.0070	0.01188	0.00048	0.2632	0.0463	0.0039	75.0	6.4	76.2	3.1	60	170	-1.6	-0.2
211	12.6	239.3	8.6	90.5	6.9	261	0.38	0.0764	0.0065	0.01192	0.00049	0.5000	0.0463	0.0042	74.5	6.1	76.4	3.1	0	170	-2.6	-0.3
141	9.9	228.2	8.7	33.3	1.6	236	0.15	0.0765	0.0079	0.01194	0.00057	0.2964	0.0461	0.0045	74.6	7.4	76.5	3.6	70	190	-2.5	-0.3
25	6.3	50.0	1.6	29.1	1.0	57	0.58	0.0840	0.0190	0.01200	0.00130	0.1966	0.0520	0.0130	81.0	18.0	76.6	8.6	180	470	5.4	0.2
92	12.5	75.8	2.0	45.3	1.0	86	0.60	0.0810	0.0110	0.01199	0.00062	0.5000	0.0491	0.0073	78.0	11.0	76.8	3.9	30	270	1.5	0.1
1	12.5	132.8	3.6	74.0	3.1	150	0.56	0.0830	0.0093	0.01207	0.00057	0.1939	0.0517	0.0055	80.5	8.7	77.3	3.6	190	210	4.0	0.4
31	11.2	158.4	6.1	91.2	3.7	180	0.58	0.0860	0.0097	0.01211	0.00047	0.5000	0.0518	0.0068	83.3	9.0	77.6	3.0	200	250	6.8	0.6
4	7.4	50.4	2.3	49.5	2.2	62	0.98	0.0870	0.0210	0.01220	0.00130	0.2492	0.0500	0.0120	83.0	20.0	77.9	8.1	190	440	6.1	0.3
9	8.6	62.2	2.0	32.5	1.0	70	0.52	0.0830	0.0170	0.01222	0.00100	0.5000	0.0470	0.0110	79.0	16.0	78.3	6.4	100	430	0.9	0.0
114	10.4	408.0	24.0	188.2	4.7	452	0.46	0.0841	0.0056	0.01228	0.00044	0.3158	0.0501	0.0029	81.8	5.3	78.7	2.8	190	130	3.8	0.6
119	12.9	129.4	5.6	76.9	2.9	147	0.59	0.0872	0.0099	0.01236	0.00061	0.2234	0.0531	0.0058	84.2	9.2	79.2	3.9	230	230	5.9	0.5
19	10.3	219.8	7.5	59.3	2.2	234	0.27	0.0881	0.0076	0.01238	0.00057	0.3430	0.0524	0.0043	85.4	7.0	79.3	3.6	240	170	7.1	0.9
225	12.6	558.0	18.0	237.7	5.2	614	0.43	0.0796	0.0050	0.01243	0.00044	0.3986	0.0461	0.0025	77.6	4.7	79.6	2.8	0	110	-2.6	-0.4
253	12.6	1403.0	68.0	343.0	18.0	1484	0.24	0.0836	0.0037	0.01249	0.00042	0.4625	0.0489	0.0019	81.5	3.5	80.0	2.7	129	82	1.8	0.4
268	12.5	308.0	11.0	136.9	7.9	340	0.44	0.0876	0.0062	0.01257	0.00054	0.1431	0.0508	0.0039	85.1	5.8	80.5	3.4	240	160	5.4	0.8
234	12.6	95.3	6.1	84.8	5.2	115	0.89	0.1670	0.0220	0.01263	0.00075	0.3163	0.0950	0.0120	154.0	19.0	80.9	4.8	1340	260	47.5	3.8
283	12.6	144.0	5.2	49.3	1.7	156	0.34	0.0867	0.0095	0.01266	0.00062	0.1489	0.0499	0.0052	83.9	8.8	81.1	3.9	290	190	3.3	0.3
68	7.1	184.0	12.0	129.8	9.6	215	0.71	0.0820	0.0110	0.01276	0.00053	0.0272	0.0454	0.0058	79.6	9.8	81.7	3.4	20	260	-2.6	-0.2
8	6.0	195.2	9.9	115.8	5.0	222	0.59	0.0935	0.0086	0.01309	0.00064	0.2950	0.0501	0.0049	90.6	8.0	83.8	4.0	200	210	7.5	0.9
250	12.6	918.0	31.0	438.0	14.0	1021	0.48	0.0870	0.0044	0.01314	0.00038	0.2963	0.0481	0.0021	84.6	4.1	84.1	2.4	91	92	0.6	0.1
301	12.5	178.6	4.4	110.9	4.9	205	0.62	0.0996	0.0087	0.01381	0.00058	0.4074	0.0516	0.0039	96.0	8.0	88.4	3.7	290	150	7.9	0.9
170	12.5	200.8	5.3	91.3	2.2	222	0.45	0.0932	0.0076	0.01437	0.00060	0.5000	0.0482	0.0040	91.0	7.0	91.9	3.8	90	160	-1.0	-0.1
70	8.3	1171.0	77.0	486.0	26.0	1285	0.42	0.0972	0.0049	0.01438	0.00048	0.3767	0.0486	0.0019	94.1	4.5	92.0	3.1	140	84	2.2	0.5
72	12.6	944.0	17.0	352.0	10.0	1027	0.37	0.0958	0.0046	0.01476	0.00042	0.4523	0.0471	0.0018	92.8	4.3	94.4	2.7	53	81	-1.7	-0.4
139	9.6	460.0	21.0	87.2	5.4	480	0.19	0.0999	0.0060	0.01491	0.00044	0.5000	0.0492	0.0034	96.5	5.5	95.4	2.8	120	140	1.1	0.2
303	12.6	1333.0	56.0	576.0	37.0	1468	0.43	0.0942	0.0040	0.01498	0.00055	0.3961	0.0453	0.0017	91.3	3.7	95.8	3.5	-30	79	-4.9	-1.2
149	7.9	650.0	14.0	349.5	9.6	732	0.54	0.1039	0.0050	0.01528	0.00054	0.2879	0.0499	0.0021	100.3	4.6	97.7	3.4	195	87	2.6	0.6
126	12.4	576.0	16.0	193.3	6.7	621	0.34	0.1047	0.0054	0.01551	0.00053	0.3479	0.0488	0.0022	101.0	5.0	99.2	3.4	132	98	1.8	0.4
208	12.5	279.0	46.0	119.0	24.0	307	0.43	0.1090	0.0079	0.01550	0.00063	0.0750	0.0492	0.0039	104.7	7.2	99.2	4.0	180	150	5.3	0.8
106	12.6	103.3	2.6	35.4	0.9	112	0.34	0.1060	0.0110	0.01556	0.00073	0.2018	0.0499	0.0054	103.2	10.0	99.5	4.6	180	210	3.6	0.4

Table 2: LA-ICP-MS Zircon Isotopic and Age Data Table: H3N 28-29m: Harvey County, KS Core Sample

								Corrected Isotopic Ratios[3]							Ages (Ma)[7]							
Grain #	Signal Duration (s)	U (ppm)[1]	2σ	Th (ppm)[1]	2σ	eU (ppm)[2]	Th/U	$^{207}Pb/^{235}U$	2σ[4]	$^{206}Pb/^{238}U$	2σ[4]	Rho[5]	$^{207}Pb/^{206}Pb$[6]	2σ	$^{207}Pb/^{235}U$	2σ	$^{206}Pb/^{238}U$	2σ	$^{207}Pb/^{206}Pb$	2σ	% Disc.[8]	Uncert. Wtd. Disc.[9]
307	12.6	255.0	17.0	81.9	5.4	274	0.32	0.1117	0.0072	0.01562	0.00072	0.1800	0.0531	0.0037	107.2	6.6	99.9	4.6	290	140	6.8	1.1
180	9.2	893.0	33.0	772.0	29.0	1074	0.86	0.1019	0.0042	0.01567	0.00056	0.3361	0.0473	0.0018	98.5	3.9	100.3	3.6	61	82	-1.8	-0.5
236	12.6	193.5	9.6	80.7	3.2	212	0.42	0.1140	0.0120	0.01583	0.00079	0.3121	0.0506	0.0052	109.0	11.0	101.2	5.0	180	210	7.2	0.7
292	12.6	259.0	11.0	127.4	2.4	289	0.49	0.1028	0.0077	0.01602	0.00056	0.1600	0.0468	0.0033	99.0	7.1	102.5	3.5	20	140	-3.5	-0.5
116	12.5	326.0	12.0	93.0	9.0	348	0.29	0.1049	0.0065	0.01605	0.00052	0.2771	0.0470	0.0026	101.1	6.0	102.7	3.3	40	110	-1.6	-0.3
2	4.5	168.9	6.8	45.7	4.2	180	0.27	0.1030	0.0160	0.01660	0.00100	0.3710	0.0446	0.0061	99.0	15.0	106.3	6.6	-10	280	-7.4	-0.5
143	12.3	314.0	43.0	30.3	5.4	321	0.10	0.1207	0.0073	0.01798	0.00065	0.2121	0.0510	0.0033	115.4	6.6	114.8	4.1	190	130	0.5	0.1
153	12.6	212.4	4.9	16.7	0.7	216	0.08	0.1830	0.0180	0.01900	0.00140	0.7518	0.0662	0.0038	169.0	15.0	121.1	8.8	820	120	28.3	3.2
29	12.7	406.0	24.0	192.0	16.0	451	0.47	0.1619	0.0075	0.02463	0.00079	0.4397	0.0481	0.0019	152.2	6.6	156.9	5.0	92	84	-3.1	-0.7
169	9.3	1445.0	62.0	368.0	36.0	1531	0.25	0.8940	0.0310	0.02502	0.00091	0.8542	0.2626	0.0061	648.0	16.0	159.3	5.7	3262	38	75.4	30.5
237	12.6	97.0	4.3	117.3	4.0	125	1.21	0.1930	0.0190	0.02590	0.00130	0.1356	0.0545	0.0055	177.0	17.0	164.6	8.5	280	210	7.0	0.7
200	12.5	479.0	19.0	354.2	9.8	562	0.74	0.1779	0.0085	0.02619	0.00081	0.2083	0.0491	0.0022	165.9	7.3	166.7	5.1	147	96	-0.5	-0.1
300	12.5	221.9	4.8	76.8	1.7	240	0.35	0.1850	0.0110	0.02790	0.00100	0.2449	0.0494	0.0030	172.1	9.6	177.3	6.5	130	120	-3.0	-0.5
197	12.3	321.0	25.0	214.0	24.0	371	0.67	0.1918	0.0092	0.02935	0.00095	0.2825	0.0472	0.0022	178.8	7.7	186.4	5.9	51	96	-4.3	-1.0
264	11.5	79.3	3.5	52.3	3.0	92	0.66	0.2280	0.0220	0.02960	0.00160	0.0467	0.0547	0.0056	207.0	18.0	188.1	9.7	400	220	9.1	1.1
240	12.6	923.0	37.0	461.0	19.0	1031	0.50	0.2506	0.0110	0.03562	0.00099	0.4964	0.0509	0.0017	226.7	8.9	225.6	6.2	220	72	0.5	0.1
263	5.9	378.0	14.0	64.6	1.5	393	0.17	0.4600	0.1200	0.03790	0.00860	0.9682	0.0796	0.0055	363.0	81.0	238.0	53.0	1170	150	34.4	1.5
266	12.6	326.0	11.0	115.7	2.5	353	0.35	0.3010	0.0140	0.04120	0.00150	0.5033	0.0520	0.0020	266.5	11.0	259.9	9.1	274	82	2.5	0.6
145	9.8	285.0	16.0	40.1	3.2	294	0.14	0.4400	0.0180	0.05420	0.00180	0.3517	0.0589	0.0022	369.0	13.0	340.1	11.0	566	88	7.8	2.2
274	12.6	205.2	5.5	446.0	14.0	310	2.17	0.7700	0.1300	0.05470	0.00180	0.4818	0.1000	0.0150	554.0	68.0	343.4	11.0	1380	280	38.0	3.1
91	9.1	488.0	25.0	136.9	7.8	520	0.28	0.4190	0.0150	0.05650	0.00160	0.2583	0.0535	0.0018	356.0	11.0	354.5	9.5	342	77	0.4	0.1
202	12.6	254.7	5.7	103.2	4.7	279	0.41	0.4360	0.0200	0.05890	0.00150	0.2131	0.0540	0.0021	367.0	14.0	368.7	9.2	343	86	-0.5	-0.1
181	12.6	107.2	4.5	45.3	1.8	118	0.42	0.4390	0.0240	0.05990	0.00180	0.1661	0.0529	0.0026	368.0	17.0	374.7	11.0	323	99	-1.8	-0.4
156	10.0	199.6	7.9	69.1	1.3	216	0.35	0.4630	0.0210	0.06100	0.00170	0.1805	0.0557	0.0022	387.0	15.0	381.8	10.0	415	88	1.3	0.3
238	12.5	588.0	19.0	267.9	5.1	651	0.46	0.4610	0.0190	0.06200	0.00230	0.5504	0.0549	0.0018	384.0	13.0	388.0	14.0	405	71	-1.0	-0.3
124	12.9	252.0	24.0	151.0	19.0	287	0.60	0.4650	0.0170	0.06250	0.00170	0.0818	0.0540	0.0018	387.2	12.0	390.6	11.0	371	78	-0.9	-0.3
99	12.6	172.0	5.5	49.2	2.0	184	0.29	0.4910	0.0270	0.06480	0.00190	0.4351	0.0557	0.0024	406.0	18.0	404.5	12.0	436	94	0.4	0.1
148	12.6	332.0	8.3	95.9	2.5	355	0.29	0.4950	0.0190	0.06490	0.00180	0.5125	0.0550	0.0014	407.3	13.0	405.3	11.0	401	57	0.5	0.2
55	6.1	145.0	11.0	48.8	3.5	156	0.34	0.5330	0.0310	0.06510	0.00260	0.3066	0.0586	0.0025	433.0	21.0	407.0	16.0	554	98	6.0	1.2
53	6.2	266.0	15.0	179.0	11.0	308	0.67	0.5210	0.0220	0.06560	0.00170	0.1873	0.0573	0.0021	425.0	15.0	409.3	11.0	504	88	3.7	1.0
33	12.6	73.3	3.0	30.8	1.1	81	0.42	0.5380	0.0310	0.06570	0.00270	0.3739	0.0599	0.0029	437.0	21.0	410.0	16.0	600	110	6.2	1.3
102	13.9	605.0	42.0	23.3	0.8	610	0.04	0.5090	0.0180	0.06640	0.00180	0.6326	0.0561	0.0013	417.0	12.0	414.6	11.0	451	52	0.6	0.2
127	12.4	295.0	16.0	65.7	2.0	310	0.22	0.5000	0.0200	0.06680	0.00200	0.3413	0.0545	0.0018	411.0	13.0	416.7	12.0	367	75	-1.4	-0.4
287	7.7	190.0	16.0	107.8	7.9	215	0.57	0.7160	0.0340	0.06710	0.00280	0.3295	0.0787	0.0037	547.0	20.0	418.0	17.0	1141	91	23.6	6.5
150	11.7	425.0	29.0	233.0	17.0	480	0.55	0.5090	0.0190	0.06710	0.00190	0.6234	0.0556	0.0015	417.1	13.0	418.3	12.0	423	60	-0.3	-0.1
108	6.8	460.0	16.0	39.0	1.9	469	0.08	0.5150	0.0230	0.06780	0.00210	0.4604	0.0542	0.0016	423.0	14.0	423.0	13.0	370	66	0.0	0.0
227	12.6	265.0	7.1	31.8	0.7	272	0.12	0.5100	0.0200	0.06810	0.00200	0.2645	0.0548	0.0020	419.0	14.0	424.5	12.0	390	80	-1.3	-0.4
231	12.6	375.0	29.0	19.6	0.8	380	0.05	0.5030	0.0200	0.06810	0.00220	0.4765	0.0549	0.0018	415.0	13.0	425.0	13.0	417	76	-2.4	-0.8
218	12.5	352.0	25.0	173.0	14.0	393	0.49	0.5130	0.0210	0.06850	0.00200	0.5132	0.0544	0.0016	421.0	13.0	426.8	12.0	377	67	-1.4	-0.4
296	8.7	423.0	11.0	302.1	7.4	494	0.71	0.5120	0.0220	0.06890	0.00210	0.4440	0.0542	0.0019	421.0	14.0	429.0	13.0	373	77	-1.9	-0.6
192	12.5	259.0	12.0	102.8	3.6	283	0.40	0.5250	0.0220	0.07000	0.00190	0.4951	0.0553	0.0016	429.0	14.0	435.8	12.0	425	69	-1.6	-0.5

Table 2: LA-ICP-MS Zircon Isotopic and Age Data Table: H3N 28-29m: Harvey County, KS Core Sample

								Corrected Isotopic Ratios[3]							Ages (Ma)[7]							
Grain #	Signal Duration (s)	U (ppm)[1]	2σ	Th (ppm)[1]	2σ	eU (ppm)[2]	Th/U	$^{207}Pb/^{235}U$	2σ[4]	$^{206}Pb/^{238}U$	2σ[4]	Rho[5]	$^{207}Pb/^{206}Pb$[6]	2σ	$^{207}Pb/^{235}U$	2σ	$^{206}Pb/^{238}U$	2σ	$^{207}Pb/^{206}Pb$	2σ	% Disc.[8]	Uncert. Wtd. Disc.[9]
203	12.6	179.0	4.8	122.0	11.0	208	0.68	0.5760	0.0240	0.07110	0.00190	0.3578	0.0594	0.0019	461.0	16.0	442.5	11.0	560	72	4.0	1.2
117	13.6	766.0	59.0	169.0	18.0	806	0.22	0.7440	0.0270	0.07130	0.00230	0.3568	0.0756	0.0026	564.0	16.0	444.0	14.0	1071	67	21.3	7.5
195	12.6	121.6	5.9	61.5	1.3	136	0.51	0.7920	0.0560	0.07140	0.00240	0.5000	0.0812	0.0063	587.0	30.0	444.0	14.0	1180	140	24.4	4.8
172	12.5	111.9	4.3	28.6	0.6	119	0.26	0.5600	0.0220	0.07280	0.00190	0.1785	0.0567	0.0022	451.0	14.0	453.1	12.0	471	85	-0.5	-0.2
125	13.0	129.2	3.1	54.3	1.8	142	0.42	0.5660	0.0280	0.07320	0.00240	0.4162	0.0562	0.0023	453.0	18.0	455.0	14.0	441	88	-0.4	-0.1
281	6.0	509.0	21.0	265.4	8.8	571	0.52	0.5670	0.0260	0.07310	0.00270	0.5991	0.0577	0.0019	458.0	16.0	455.0	16.0	509	74	0.7	0.2
286	12.6	398.7	9.7	357.5	9.4	483	0.90	0.5690	0.0210	0.07400	0.00210	0.5309	0.0571	0.0015	457.0	14.0	460.0	13.0	481	59	-0.7	-0.2
309	12.5	354.0	10.0	125.5	2.3	383	0.35	0.5820	0.0230	0.07420	0.00220	0.5235	0.0568	0.0018	466.0	15.0	461.0	13.0	481	69	1.1	0.3
265	12.6	440.0	24.0	218.0	11.0	491	0.50	0.6450	0.0290	0.07440	0.00240	0.3243	0.0621	0.0023	504.0	18.0	463.0	15.0	686	86	8.1	2.3
279	12.6	347.0	14.0	86.4	3.6	367	0.25	0.6400	0.0260	0.07870	0.00270	0.6103	0.0579	0.0015	503.0	16.0	488.0	16.0	511	58	3.0	0.9
295	12.6	187.6	8.5	218.0	11.0	239	1.16	0.6860	0.0310	0.08600	0.00220	0.5750	0.0582	0.0020	531.0	19.0	532.0	13.0	522	75	-0.2	-0.1
284	12.6	160.4	5.0	73.0	1.4	178	0.46	0.6750	0.0270	0.08630	0.00240	0.2907	0.0579	0.0020	523.0	16.0	533.0	15.0	511	76	-1.9	-0.6
278	12.5	356.0	39.0	40.5	1.5	366	0.11	0.7760	0.0550	0.08820	0.00430	0.8649	0.0635	0.0021	581.0	32.0	544.0	26.0	712	74	6.4	1.2
35	5.4	486.0	21.0	322.0	16.0	562	0.66	1.6940	0.0820	0.09450	0.00410	0.7865	0.1285	0.0034	1004.0	31.0	582.0	24.0	2074	47	42.0	13.6
152	12.3	274.1	9.7	342.5	9.2	355	1.25	0.8180	0.0280	0.10040	0.00280	0.4280	0.0589	0.0016	606.0	16.0	617.0	17.0	558	56	-1.8	-0.7
255	12.6	105.1	5.9	140.0	3.3	138	1.33	0.8590	0.0480	0.10530	0.00350	0.2746	0.0592	0.0031	628.0	26.0	645.0	20.0	520	110	-2.7	-0.7
144	9.4	705.0	17.0	102.0	11.0	729	0.14	1.1050	0.0650	0.10580	0.00530	0.9089	0.0764	0.0020	760.0	31.0	648.0	31.0	1098	52	14.7	3.6
138	7.1	107.1	4.4	43.4	3.9	117	0.41	2.2300	0.3800	0.15400	0.02600	0.9749	0.1041	0.0036	1140.0	130.0	910.0	140.0	1701	70	20.2	1.8
294	12.6	24.8	1.3	14.9	0.5	28	0.60	1.6360	0.0960	0.15720	0.00610	0.2793	0.0731	0.0039	995.0	39.0	940.0	34.0	1020	100	5.5	1.4
159	12.5	104.9	2.2	40.1	1.0	114	0.38	1.6210	0.0590	0.15880	0.00430	0.4423	0.0744	0.0020	976.0	23.0	950.0	24.0	1052	55	2.7	1.1
224	12.6	562.0	18.0	224.7	5.0	615	0.40	1.7840	0.0620	0.17470	0.00530	0.6948	0.0743	0.0014	1040.0	23.0	1041.0	30.0	1045	38	-0.1	0.0
233	12.6	110.7	5.4	42.0	0.8	121	0.38	1.7860	0.0790	0.17570	0.00720	0.6581	0.0730	0.0022	1040.0	29.0	1042.0	40.0	1024	63	-0.2	-0.1
232	12.6	151.5	6.4	122.0	3.1	180	0.81	1.8120	0.0700	0.17600	0.00630	0.4878	0.0750	0.0023	1047.0	25.0	1044.0	34.0	1069	64	0.3	0.1
304	12.5	98.3	5.1	27.7	1.0	105	0.28	1.7680	0.0740	0.17640	0.00630	0.6183	0.0726	0.0022	1033.0	27.0	1046.0	35.0	1002	59	-1.3	-0.5
302	12.5	80.7	1.8	53.7	1.6	93	0.67	1.7750	0.0730	0.17760	0.00570	0.2691	0.0742	0.0026	1033.0	26.0	1053.0	31.0	1032	73	-1.9	-0.8
198	12.6	88.6	2.7	70.8	2.0	105	0.80	1.8480	0.0730	0.17930	0.00560	0.3835	0.0755	0.0024	1060.0	26.0	1063.0	31.0	1072	64	-0.3	-0.1
98	12.6	153.9	6.7	28.7	1.3	161	0.19	1.7820	0.0600	0.17990	0.00450	0.2363	0.0715	0.0020	1039.0	22.0	1066.0	24.0	979	60	-2.6	-1.2
73	12.6	122.7	3.2	93.2	1.4	145	0.76	1.9300	0.0730	0.18120	0.00440	0.4072	0.0755	0.0021	1089.0	26.0	1073.0	24.0	1092	51	1.5	0.6
257	12.6	146.8	7.6	109.5	4.4	173	0.75	1.9130	0.0800	0.18150	0.00630	0.6446	0.0763	0.0020	1085.0	28.0	1074.0	34.0	1108	55	1.0	0.4
90	11.8	113.3	7.4	93.8	6.5	135	0.83	1.8980	0.0610	0.18350	0.00440	0.3615	0.0752	0.0019	1084.0	20.0	1086.0	24.0	1085	51	-0.2	-0.1
235	12.6	21.6	1.0	10.4	0.3	24	0.48	1.8700	0.1100	0.18400	0.01100	0.3547	0.0729	0.0044	1073.0	38.0	1087.0	60.0	1040	130	-1.3	-0.4
24	12.6	113.0	11.0	60.6	5.1	127	0.54	1.9520	0.0730	0.18510	0.00470	0.2887	0.0764	0.0024	1100.0	24.0	1094.0	25.0	1097	61	0.5	0.3
77	12.6	333.0	11.0	108.8	2.0	359	0.33	1.9220	0.0590	0.18530	0.00450	0.6300	0.0751	0.0015	1088.0	20.0	1096.0	24.0	1077	40	-0.7	-0.4
246	12.6	100.3	2.7	66.5	1.7	116	0.66	1.9220	0.0730	0.18660	0.00610	0.4680	0.0746	0.0025	1089.0	26.0	1102.0	33.0	1054	68	-1.2	-0.5
249	12.6	43.9	1.5	23.6	0.7	49	0.54	1.9630	0.0950	0.18680	0.00600	0.2853	0.0763	0.0033	1101.0	32.0	1103.0	32.0	1094	82	-0.2	-0.1
248	12.6	193.7	9.2	159.0	6.4	231	0.82	1.9390	0.0710	0.18820	0.00530	0.6515	0.0752	0.0019	1095.0	25.0	1111.0	29.0	1068	49	-1.5	-0.6
61	7.4	193.0	11.0	56.2	1.8	206	0.29	2.0580	0.0860	0.18890	0.00660	0.8193	0.0792	0.0018	1133.0	28.0	1115.0	36.0	1179	44	1.6	0.6
129	12.6	70.5	2.3	39.6	1.0	80	0.56	1.9510	0.0850	0.18990	0.00670	0.4947	0.0754	0.0026	1094.0	29.0	1120.0	36.0	1065	70	-2.4	-0.9
81	12.5	346.0	12.0	101.4	2.7	370	0.29	1.9990	0.0700	0.19320	0.00510	0.6985	0.0762	0.0015	1113.0	23.0	1138.0	27.0	1093	40	-2.2	-1.1
44	9.9	1013.0	31.0	269.0	68.0	1076	0.27	2.6200	0.3200	0.19600	0.02100	0.9926	0.0949	0.0027	1278.0	100.0	1140.0	120.0	1516	57	10.8	1.4
220	12.6	111.5	7.9	49.0	2.6	123	0.44	2.1070	0.0790	0.19450	0.00580	0.4485	0.0788	0.0024	1151.0	25.0	1149.0	30.0	1158	62	0.2	0.1

Table 2: LA-ICP-MS Zircon Isotopic and Age Data Table: H3N 28-29m: Harvey County, KS Core Sample

								Corrected Isotopic Ratios[3]							Ages (Ma)[7]							
Grain #	Signal Duration (s)	U (ppm)[1]	2σ	Th (ppm)[1]	2σ	eU (ppm)[2]	Th/U	$^{207}Pb/^{235}U$	$2\sigma^{4}$	$^{206}Pb/^{238}U$	$2\sigma^{4}$	Rho[5]	$^{207}Pb/^{206}Pb^{6}$	2σ	$^{207}Pb/^{235}U$	2σ	$^{206}Pb/^{238}U$	2σ	$^{207}Pb/^{206}Pb$	2σ	% Disc.[8]	Uncert. Wtd. Disc.[9]
107	9.4	123.2	4.8	72.7	1.7	140	0.59	2.0280	0.0740	0.19530	0.00610	0.2946	0.0774	0.0023	1126.0	25.0	1150.0	33.0	1129	63	-2.1	-1.0
30	12.6	82.0	5.7	64.8	3.3	97	0.79	2.2720	0.0960	0.19740	0.00550	0.2664	0.0824	0.0030	1200.0	30.0	1161.0	30.0	1251	72	3.3	1.3
275	12.6	33.8	1.0	28.7	0.8	41	0.85	2.0540	0.0930	0.19790	0.00710	0.3914	0.0746	0.0031	1129.0	31.0	1163.0	38.0	1049	83	-3.0	-1.1
15	12.5	127.9	3.1	57.3	2.3	141	0.45	2.1410	0.0760	0.20090	0.00620	0.6098	0.0788	0.0021	1163.0	26.0	1179.0	34.0	1168	51	-1.4	-0.6
270	12.5	24.4	1.0	2.5	0.3	25	0.10	2.1700	0.1200	0.20740	0.00870	0.5197	0.0772	0.0036	1168.0	41.0	1213.0	47.0	1110	96	-3.9	-1.1
164	11.5	173.7	7.7	103.0	16.0	198	0.59	2.3320	0.0820	0.20720	0.00550	0.6694	0.0820	0.0020	1220.0	25.0	1217.0	28.0	1249	47	0.2	0.1
111	12.6	251.0	4.9	54.1	1.7	264	0.22	2.5860	0.0990	0.21130	0.00690	0.7151	0.0896	0.0022	1296.0	28.0	1234.0	37.0	1413	45	4.8	2.2
245	12.6	673.0	17.0	25.8	1.8	679	0.04	2.7190	0.0900	0.21400	0.00610	0.7835	0.0915	0.0019	1332.0	25.0	1249.0	32.0	1450	39	6.2	3.3
260	11.9	350.0	110.0	36.6	4.5	359	0.10	2.6400	0.2200	0.21700	0.01800	0.9077	0.0897	0.0027	1303.0	63.0	1257.0	95.0	1421	54	3.5	0.7
49	8.5	84.0	2.9	13.4	0.6	87	0.16	2.7050	0.0950	0.21990	0.00760	0.4747	0.0877	0.0026	1328.0	26.0	1280.0	40.0	1394	55	3.6	1.8
64	12.6	115.1	3.9	33.2	1.1	123	0.29	2.7990	0.1000	0.23260	0.00650	0.4054	0.0862	0.0025	1361.0	25.0	1347.0	34.0	1328	55	1.0	0.6
97	12.6	26.3	1.1	24.6	2.1	32	0.94	2.8100	0.1300	0.23390	0.00890	0.1347	0.0865	0.0040	1360.0	34.0	1353.0	47.0	1325	89	0.5	0.2
165	12.6	34.4	2.2	32.1	1.3	42	0.93	2.8400	0.1300	0.23420	0.00750	0.5402	0.0873	0.0030	1360.0	34.0	1355.0	39.0	1364	66	0.4	0.1
199	10.2	47.8	1.7	56.3	1.9	61	1.18	2.8600	0.1300	0.23450	0.00790	0.3079	0.0906	0.0040	1377.0	36.0	1357.0	41.0	1437	83	1.5	0.6
308	12.6	84.5	2.9	56.8	1.3	98	0.67	2.8330	0.1200	0.23500	0.00850	0.5764	0.0874	0.0026	1366.0	31.0	1359.0	44.0	1362	56	0.5	0.2
113	12.5	32.8	1.5	24.7	0.8	39	0.75	2.8500	0.1200	0.23450	0.00900	0.3657	0.0868	0.0033	1368.0	32.0	1362.0	48.0	1361	75	0.4	0.2
213	11.1	155.2	8.1	69.2	5.4	171	0.45	2.8870	0.1100	0.23870	0.00640	0.6094	0.0883	0.0022	1379.0	27.0	1379.0	33.0	1381	48	0.0	0.0
277	12.6	73.0	2.9	33.6	1.0	81	0.46	3.0100	0.1300	0.24110	0.00830	0.5636	0.0913	0.0029	1408.0	32.0	1391.0	43.0	1443	62	1.2	0.5
50	12.6	190.0	15.0	28.7	5.3	197	0.15	3.0260	0.1100	0.24140	0.00660	0.7121	0.0904	0.0021	1417.0	26.0	1393.0	34.0	1431	43	1.7	0.9
158	9.5	115.3	3.7	53.1	1.9	128	0.46	3.0380	0.1000	0.24270	0.00620	0.3869	0.0911	0.0023	1418.0	25.0	1400.0	32.0	1447	49	1.3	0.7
52	12.1	385.0	41.0	173.0	16.0	426	0.45	3.1830	0.1300	0.24370	0.00980	0.8581	0.0959	0.0019	1462.0	32.0	1403.0	51.0	1540	37	4.0	1.8
100	11.0	95.6	3.1	84.8	2.3	116	0.89	2.9730	0.1000	0.24340	0.00670	0.3294	0.0876	0.0024	1401.0	27.0	1404.0	35.0	1379	50	-0.2	-0.1
222	12.6	493.0	50.0	313.0	30.0	567	0.63	3.1120	0.1100	0.24650	0.00680	0.7022	0.0918	0.0018	1433.0	26.0	1420.0	35.0	1461	38	0.9	0.5
60	12.6	97.4	3.0	95.4	2.1	120	0.98	3.0490	0.1000	0.24680	0.00750	0.4484	0.0895	0.0025	1423.0	25.0	1421.0	39.0	1401	55	0.1	0.1
252	12.6	310.8	9.0	96.1	2.6	333	0.31	3.0570	0.0960	0.24700	0.00620	0.6558	0.0907	0.0018	1423.0	24.0	1422.0	32.0	1434	38	0.1	0.0
261	12.6	115.9	4.2	93.5	2.8	138	0.81	3.1700	0.1200	0.24760	0.00920	0.5581	0.0941	0.0027	1447.0	28.0	1424.0	48.0	1497	56	1.6	0.8
285	12.5	142.8	3.9	62.7	1.4	158	0.44	3.1100	0.0990	0.24860	0.00590	0.4714	0.0908	0.0021	1436.0	24.0	1431.0	30.0	1440	43	0.3	0.2
193	12.5	112.5	3.3	81.2	1.7	132	0.72	3.0920	0.1200	0.24890	0.00730	0.6540	0.0910	0.0024	1434.0	28.0	1432.0	38.0	1447	49	0.1	0.1
212	12.5	590.0	150.0	19.4	3.1	595	0.03	3.0510	0.1000	0.24930	0.00720	0.9105	0.0899	0.0018	1412.0	32.0	1434.0	37.0	1429	39	-1.6	-0.7
273	12.5	77.9	2.0	68.2	1.6	94	0.88	3.1030	0.1200	0.24930	0.00780	0.5367	0.0899	0.0027	1433.0	29.0	1434.0	40.0	1416	59	-0.1	0.0
39	12.2	263.8	7.2	106.4	3.6	289	0.40	3.1180	0.0920	0.25010	0.00600	0.5192	0.0900	0.0017	1438.0	23.0	1438.0	31.0	1429	36	0.0	0.0
191	12.6	239.6	7.2	93.9	1.9	262	0.39	3.1680	0.1000	0.25070	0.00680	0.5801	0.0906	0.0018	1452.0	24.0	1441.0	35.0	1433	39	0.8	0.5
289	12.6	115.1	7.2	113.1	7.9	142	0.98	3.0970	0.1100	0.25100	0.00710	0.5866	0.0903	0.0023	1429.0	28.0	1447.0	37.0	1422	48	-1.3	-0.6
142	12.6	55.1	1.9	24.9	1.1	61	0.45	3.1780	0.1200	0.25160	0.00810	0.6005	0.0940	0.0026	1452.0	31.0	1450.0	41.0	1503	55	0.1	0.1
271	12.6	170.7	4.5	88.3	1.7	191	0.52	3.1080	0.1100	0.25230	0.00680	0.5744	0.0908	0.0023	1432.0	27.0	1450.0	35.0	1431	49	-1.3	-0.7
46	12.6	244.9	6.2	28.1	1.5	252	0.11	3.1650	0.0990	0.25270	0.00620	0.6149	0.0907	0.0017	1447.0	24.0	1452.0	32.0	1435	35	-0.3	-0.2
62	9.5	43.8	2.8	51.1	3.5	56	1.17	3.1300	0.1400	0.25400	0.00790	0.5138	0.0892	0.0031	1442.0	33.0	1458.0	40.0	1438	62	-1.1	-0.5
161	12.6	115.1	6.1	38.0	1.3	124	0.33	3.1600	0.1000	0.25400	0.00620	0.5034	0.0909	0.0022	1446.0	25.0	1458.0	32.0	1441	46	-0.8	-0.5
258	12.5	146.0	13.0	83.4	3.6	166	0.57	3.2300	0.1300	0.25460	0.00910	0.6366	0.0905	0.0028	1460.0	32.0	1466.0	48.0	1428	57	-0.4	-0.2
241	9.7	776.0	27.0	406.0	16.0	871	0.52	3.9220	0.1400	0.25580	0.00900	0.7920	0.1068	0.0025	1616.0	28.0	1467.0	46.0	1739	44	9.2	5.3
110	12.6	220.0	20.0	115.0	12.0	247	0.52	3.2520	0.1200	0.25590	0.00700	0.7321	0.0921	0.0019	1469.0	27.0	1468.0	36.0	1462	40	0.1	0.0

Table 2: LA-ICP-MS Zircon Isotopic and Age Data Table: H3N 28-29m: Harvey County, KS Core Sample

								Corrected Isotopic Ratios[3]							Ages (Ma)[7]							
Grain #	Signal Duration (s)	U (ppm)[1]	2σ	Th (ppm)[1]	2σ	eU (ppm)[2]	Th/U	$^{207}Pb/^{235}U$	2σ[4]	$^{206}Pb/^{238}U$	2σ[4]	Rho[5]	$^{207}Pb/^{206}Pb$[6]	2σ	$^{207}Pb/^{235}U$	2σ	$^{206}Pb/^{238}U$	2σ	$^{207}Pb/^{206}Pb$	2σ	% Disc.[8]	Uncert. Wtd. Disc.[9]
272	12.6	200.0	5.1	64.4	1.3	215	0.32	3.2060	0.1100	0.25790	0.00780	0.7065	0.0907	0.0021	1459.0	27.0	1478.0	40.0	1438	43	-1.3	-0.7
226	12.6	71.3	2.0	69.5	1.6	88	0.97	3.1820	0.1200	0.25850	0.00820	0.4157	0.0892	0.0027	1452.0	29.0	1481.0	42.0	1400	57	-2.0	-1.0
105	12.1	1425.0	61.0	41.3	1.1	1435	0.03	3.6460	0.1100	0.25900	0.00670	0.7999	0.1017	0.0016	1558.0	24.0	1488.0	35.0	1652	30	4.5	2.9
210	11.3	33.9	1.3	53.9	2.3	47	1.59	3.3800	0.1500	0.26170	0.00720	0.2748	0.0940	0.0036	1499.0	33.0	1498.0	37.0	1485	73	0.1	0.0
194	12.5	89.8	3.3	39.3	1.7	99	0.44	3.3800	0.1400	0.26160	0.00840	0.5209	0.0970	0.0032	1500.0	30.0	1501.0	44.0	1550	60	-0.1	0.0
115	12.6	85.2	3.5	129.7	4.4	116	1.52	3.3080	0.1200	0.26300	0.00760	0.5061	0.0920	0.0028	1483.0	28.0	1504.0	39.0	1459	59	-1.4	-0.8
276	12.6	169.9	6.6	111.4	2.1	196	0.66	3.3500	0.1200	0.26470	0.00740	0.5156	0.0934	0.0021	1496.0	27.0	1513.0	38.0	1501	44	-1.1	-0.6
12	8.5	37.8	2.0	12.8	1.0	41	0.34	3.3300	0.1400	0.27000	0.01100	0.4471	0.0909	0.0041	1485.0	33.0	1547.0	51.0	1465	82	-4.2	-1.9
223	12.3	964.0	98.0	29.1	5.1	971	0.03	3.9320	0.1300	0.27790	0.00760	0.7289	0.1016	0.0020	1626.0	27.0	1580.0	38.0	1648	36	2.8	1.7
189	12.5	110.2	3.0	21.0	0.9	115	0.19	3.7000	0.1500	0.28240	0.00970	0.6827	0.0973	0.0027	1568.0	32.0	1601.0	49.0	1567	53	-2.1	-1.0
22	12.5	204.0	28.0	81.0	13.0	223	0.40	4.1100	0.2200	0.28600	0.01200	0.9797	0.1062	0.0038	1642.0	56.0	1620.0	60.0	1650	150	1.3	0.4
6	9.1	108.7	5.9	35.2	1.4	117	0.32	4.3080	0.1500	0.29050	0.00860	0.6142	0.1078	0.0027	1693.0	28.0	1643.0	43.0	1763	44	3.0	1.8
26	12.5	205.0	11.0	92.5	4.7	227	0.45	4.1910	0.1300	0.29120	0.00710	0.6366	0.1041	0.0022	1673.0	25.0	1647.0	36.0	1691	39	1.6	1.0
120	12.6	117.7	3.3	42.4	1.4	128	0.36	4.1600	0.1500	0.29060	0.00890	0.6706	0.1033	0.0022	1663.0	29.0	1648.0	45.0	1677	40	0.9	0.5
214	12.5	86.5	7.8	69.2	5.9	103	0.80	4.1600	0.1500	0.29440	0.00850	0.5270	0.1039	0.0026	1668.0	29.0	1662.0	42.0	1686	46	0.4	0.2
34	7.6	146.7	8.8	103.5	6.3	171	0.71	4.1010	0.1300	0.29700	0.00830	0.5004	0.0999	0.0022	1653.0	26.0	1676.0	41.0	1625	44	-1.4	-0.9
290	12.6	202.1	5.7	129.2	3.2	232	0.64	4.2650	0.1400	0.29730	0.00810	0.7497	0.1037	0.0019	1689.0	25.0	1677.0	40.0	1691	34	0.7	0.5
262	12.6	194.4	5.0	43.1	1.1	205	0.22	4.4190	0.1500	0.29980	0.00940	0.5665	0.1059	0.0030	1717.0	29.0	1688.0	47.0	1718	51	1.7	1.0
27	9.4	71.1	2.3	21.7	1.1	76	0.31	4.3300	0.1600	0.30140	0.00870	0.5907	0.1040	0.0026	1696.0	31.0	1697.0	43.0	1710	48	-0.1	0.0
74	12.6	165.9	5.0	35.9	0.8	174	0.22	4.3780	0.1400	0.30300	0.00790	0.6653	0.1057	0.0020	1709.0	26.0	1705.0	39.0	1721	35	0.2	0.2
54	12.6	143.6	5.9	47.0	1.6	155	0.33	4.2920	0.1400	0.30450	0.00860	0.5570	0.1020	0.0022	1690.0	27.0	1712.0	43.0	1669	39	-1.3	-0.8
84	10.8	186.2	4.0	106.4	7.0	211	0.57	4.3730	0.1300	0.30420	0.00700	0.5380	0.1041	0.0020	1706.0	25.0	1712.0	35.0	1704	36	-0.4	-0.2
3	6.7	117.1	8.6	44.5	3.6	128	0.38	4.4510	0.1500	0.30570	0.01000	0.5977	0.1077	0.0027	1721.0	28.0	1718.0	50.0	1756	47	0.2	0.1
280	12.5	330.0	10.0	221.5	6.2	382	0.67	4.4140	0.1400	0.30710	0.00860	0.7914	0.1045	0.0019	1713.0	26.0	1725.0	42.0	1713	34	-0.7	-0.5
63	12.5	287.0	18.0	56.8	1.2	300	0.20	4.4470	0.1500	0.30910	0.00880	0.7310	0.1041	0.0020	1721.0	27.0	1735.0	43.0	1698	35	-0.8	-0.5
230	12.6	333.0	38.0	149.0	11.0	368	0.45	4.5500	0.1500	0.30930	0.00870	0.6863	0.1064	0.0023	1738.0	28.0	1736.0	43.0	1737	41	0.1	0.1
47	8.0	296.0	25.0	23.2	1.3	301	0.08	4.5450	0.1400	0.30980	0.00830	0.5546	0.1073	0.0026	1738.0	26.0	1739.0	41.0	1754	44	-0.1	0.0
41	8.1	147.6	9.0	49.8	3.6	159	0.34	4.4800	0.1500	0.31900	0.00990	0.6403	0.1024	0.0025	1729.0	26.0	1784.0	48.0	1669	44	-3.2	-2.1
256	12.5	232.0	16.0	39.6	1.9	241	0.17	4.6560	0.1400	0.32110	0.00960	0.6449	0.1051	0.0024	1762.0	26.0	1793.0	47.0	1714	42	-1.8	-1.2
96	12.6	52.4	3.1	21.0	2.2	57	0.40	4.7700	0.1700	0.33710	0.01000	0.5653	0.1028	0.0028	1776.0	31.0	1871.0	49.0	1670	51	-5.3	-3.1
43	4.3	196.0	8.3	59.3	2.2	210	0.30	4.6800	0.2000	0.33800	0.01300	0.7981	0.1015	0.0028	1761.0	36.0	1888.0	66.0	1647	50	-7.2	-3.5
121	12.6	1.7	0.1	0.0	0.0	2	0.00	44.6000	3.2000	0.38500	0.03300	0.6072	0.8440	0.0560	3867.0	68.0	2070.0	150.0	5100	120	46.5	26.4
178	12.6	149.3	7.6	80.1	2.3	168	0.54	12.6400	0.4200	0.51700	0.01400	0.6817	0.1802	0.0038	2650.0	32.0	2685.0	59.0	2653	34	-1.3	-1.1
254	2.0	1.5	0.2	0.0	0.0	1	0.00	75.0000	15.0000	0.58000	0.07100	0.3361	0.9200	0.1700	4360.0	200.0	2930.0	290.0	5230	380	32.8	7.2
244	4.5	1.2	0.1	0.0	0.0	1	0.00	75.7000	9.6000	0.67800	0.08900	0.6362	0.7930	0.0730	4360.0	130.0	3360.0	320.0	4940	170	22.9	7.7
71	12.6	0.9	0.1	0.0	0.0	1	0.00	77.7000	8.6000	0.72000	0.10000	0.7001	0.7990	0.0840	4450.0	120.0	3590.0	370.0	4960	190	19.3	7.2

[1]U and Th have been concentrations and the Th/U ratios are calculated relative to the GJ-1 standard value using 287 ± 76 ppm for U and 8.4 ± 2.6 ppm for Th (Jackson et al., 2004)

[2]Equivalent U defined by the equation: eU = U ppm + 0.235*Th ppm

[3]Corrected for U-Pb fractionation and background and normalized to the GJ-1 standard value: $^{207}Pb/^{235}U = 0.8093 \pm 0.0009$ and $^{206}Pb/^{238}U = 0.09761 \pm 0.00011$ (Jackson et al., 2004)

[4]Propagated uncertainty of internal uncertainties (2SE) and within run reproducibility of GJ-1 (2SE)

Table 2: LA-ICP-MS Zircon Isotopic and Age Data Table: H3N 28-29m: Harvey County, KS Core Sample

								Corrected Isotopic Ratios[3]							Ages (Ma)[7]							
Grain #	Signal Duration (s)	U (ppm)[1]	2σ	Th (ppm)[1]	2σ	eU (ppm)[2]	Th/U	$^{207}Pb/^{235}U$	2σ[4]	$^{206}Pb/^{238}U$	2σ[4]	Rho[5]	$^{207}Pb/^{206}Pb$[6]	2σ	$^{207}Pb/^{235}U$	2σ	$^{206}Pb/^{238}U$	2σ	$^{207}Pb/^{206}Pb$	2σ	% Disc.[8]	Uncert. Wtd. Disc.[9]

[5]Uncertainty correlation between $^{206}Pb/^{238}U$ and $^{207}Pb/^{235}U$ uncertainties

[6]Corrected for background and Pb isotopic fractionation using the GJ-1 standard value: $^{207}Pb/^{206}Pb = 0.06014 \pm 0.00001$ (Jackson et al., 2004)

[7]U-Pb ages calculated relative to the GJ-1 standard

[8]Discordance defined as (($^{207}Pb/^{235}U$ age - $^{206}Pb/^{238}U$ age)/($^{207}Pb/^{235}U$ age))*100

[9]Uncertainty weighted age difference defined as ($^{207}Pb/^{235}U$ age - $^{206}Pb/^{238}U$ age)/($^{207}Pb/^{235}U$ age uncertainty)

Rows highlighted in grey were not used in interpretations or calculations based on discordance or short analysis times

Table 3: LA-ICP-MS Zircon Isotopic and Age Data Table: H3N 21-22m: Harvey County, KS Core Sample

								Corrected Isotopic Ratios[3]							Ages (Ma)[7]							
Grain #	Signal Duration (s)	U (ppm)[1]	2σ	Th (ppm)[1]	2σ	eU (ppm)[2]	Th/U	$^{207}Pb/^{235}U$	2σ[4]	$^{206}Pb/^{238}U$	2σ[4]	Rho[5]	$^{207}Pb/^{206}Pb$[6]	2σ	$^{207}Pb/^{235}U$	2σ	$^{206}Pb/^{238}U$	2σ	$^{207}Pb/^{206}Pb$	2σ	% Disc.[8]	Uncert. Wtd. Disc.[9]
119	21.7	339.0	15.0	189.0	11.0	383	0.56	0.0270	0.0024	0.00415	0.00012	0.0596	0.0470	0.0042	27.0	2.4	26.7	0.8	90	160	1.0	0.1
230	5.6	129.4	5.4	76.7	3.0	147	0.59	0.0380	0.0110	0.00449	0.00039	0.2386	0.0630	0.0190	38.0	11.0	28.9	2.5	490	590	23.9	0.8
57	14.7	685.0	21.0	561.0	13.0	817	0.82	0.0354	0.0017	0.00529	0.00014	0.0069	0.0488	0.0025	35.3	1.6	34.0	0.9	160	110	3.6	0.8
121	21.2	131.6	5.7	76.9	4.0	150	0.58	0.0372	0.0048	0.00540	0.00022	0.0360	0.0501	0.0068	36.9	4.7	34.7	1.4	110	240	6.0	0.5
247	20.4	297.0	19.0	206.0	15.0	345	0.69	0.0353	0.0035	0.00541	0.00015	0.0079	0.0470	0.0046	35.6	3.5	34.8	0.9	80	180	2.2	0.2
58	20.7	630.0	10.0	568.0	14.0	763	0.90	0.0363	0.0023	0.00560	0.00009	0.0474	0.0477	0.0031	36.2	2.3	36.0	0.6	100	130	0.6	0.1
194	19.3	326.0	12.0	183.5	3.5	369	0.56	0.0383	0.0029	0.00560	0.00014	0.1486	0.0504	0.0040	38.1	2.8	36.0	0.9	180	150	5.5	0.8
241	12.9	172.3	4.4	63.1	1.2	187	0.37	0.0379	0.0058	0.00561	0.00025	0.0333	0.0524	0.0080	38.5	5.8	36.0	1.6	200	290	6.5	0.4
222	21.4	940.0	170.0	730.0	120.0	1112	0.78	0.0354	0.0019	0.00562	0.00012	0.1327	0.0458	0.0025	35.3	1.9	36.1	0.8	13	100	-2.3	-0.4
210	18.4	1554.0	34.0	353.1	6.7	1637	0.23	0.0370	0.0013	0.00568	0.00010	0.0699	0.0478	0.0020	36.8	1.3	36.5	0.6	97	82	0.9	0.2
116	15.0	147.0	19.0	121.0	12.0	175	0.82	0.0409	0.0065	0.00588	0.00026	0.1339	0.0532	0.0091	41.5	6.1	37.8	1.6	340	290	8.9	0.6
300	9.8	583.0	24.0	345.0	19.0	664	0.59	0.0425	0.0032	0.00603	0.00023	0.1231	0.0486	0.0044	42.3	3.1	38.8	1.5	220	160	8.3	1.1
284	17.3	514.0	22.0	297.4	9.2	584	0.58	0.0396	0.0027	0.00608	0.00017	0.0829	0.0491	0.0035	39.3	2.6	39.1	1.1	150	130	0.5	0.1
46	13.7	249.0	12.0	89.5	6.0	270	0.36	0.0456	0.0044	0.00665	0.00023	0.0636	0.0498	0.0053	45.2	4.3	42.7	1.5	140	190	5.5	0.6
211	8.4	620.0	17.0	282.4	9.2	686	0.46	0.0486	0.0043	0.00751	0.00022	0.2317	0.0473	0.0043	48.1	4.1	48.2	1.4	80	180	-0.2	0.0
68	21.7	131.6	5.9	151.6	5.5	167	1.15	0.3080	0.0150	0.00777	0.00023	0.2452	0.2900	0.0140	273.0	12.0	49.9	1.5	3400	76	81.7	18.6
11	14.4	129.2	5.1	110.3	3.7	155	0.85	0.0475	0.0059	0.00794	0.00028	0.0161	0.0425	0.0053	46.9	5.7	51.0	1.8	-70	210	-8.7	-0.7
90	17.4	640.0	14.0	149.3	5.4	675	0.23	0.0587	0.0031	0.00936	0.00014	0.0481	0.0460	0.0024	57.9	2.9	60.1	0.9	25	98	-3.7	-0.7
115	20.9	509.0	13.0	111.7	9.2	535	0.22	0.0639	0.0036	0.01001	0.00020	0.1140	0.0466	0.0026	63.2	3.5	64.2	1.3	90	110	-1.6	-0.3
158	20.5	398.0	28.0	229.0	12.0	452	0.58	0.0717	0.0038	0.01055	0.00021	0.2118	0.0489	0.0026	70.2	3.6	67.7	1.3	160	110	3.6	0.7
174	15.1	107.0	14.0	81.5	9.4	126	0.76	0.0778	0.0096	0.01103	0.00047	0.1657	0.0526	0.0066	75.5	9.1	70.7	3.0	300	240	6.4	0.5
85	9.4	191.0	10.0	189.0	14.0	235	0.99	0.0780	0.0110	0.01105	0.00049	0.1144	0.0512	0.0072	76.0	10.0	70.8	3.1	180	260	6.8	0.5
109	21.6	187.4	9.4	25.7	0.6	193	0.14	0.0754	0.0062	0.01116	0.00025	0.0171	0.0484	0.0038	73.4	5.8	71.5	1.6	140	140	2.6	0.3
55	10.3	102.7	4.9	42.3	1.3	113	0.41	0.0770	0.0110	0.01127	0.00053	0.0535	0.0489	0.0075	75.0	11.0	72.3	3.4	170	280	3.6	0.2
255	13.8	217.7	7.7	72.3	6.6	235	0.33	0.0703	0.0061	0.01147	0.00027	0.3025	0.0451	0.0036	68.7	5.7	73.5	1.7	-10	140	-7.0	-0.8
207	13.9	273.0	10.0	81.7	2.2	292	0.30	0.0782	0.0064	0.01154	0.00026	0.3160	0.0487	0.0037	76.2	6.0	73.9	1.7	170	150	3.0	0.4
66	21.7	391.8	9.5	408.0	7.1	488	1.04	0.0778	0.0044	0.01156	0.00020	0.1555	0.0483	0.0027	76.3	4.3	74.1	1.3	150	110	2.9	0.5
44	19.0	95.2	4.4	23.7	0.9	101	0.25	0.0814	0.0073	0.01163	0.00036	0.1533	0.0508	0.0044	80.1	7.1	74.6	2.3	210	170	6.9	0.8
45	18.8	17.2	1.2	10.8	0.7	20	0.63	0.0630	0.0230	0.01174	0.00075	-0.0596	0.0350	0.0150	64.0	22.0	75.2	4.8	-440	470	-17.5	-0.5
198	8.1	96.6	3.7	64.7	3.1	112	0.67	0.0830	0.0120	0.01189	0.00055	0.0826	0.0508	0.0075	80.0	11.0	76.2	3.5	210	280	4.8	0.3
111	14.1	147.0	16.0	209.0	18.0	196	1.42	0.0877	0.0085	0.01201	0.00036	-0.0561	0.0544	0.0057	85.0	7.9	77.0	2.3	320	210	9.4	1.0
186	15.8	517.0	55.0	178.0	21.0	559	0.34	0.0810	0.0042	0.01213	0.00027	0.4266	0.0487	0.0025	79.0	4.0	77.8	1.7	137	100	1.5	0.3
248	17.4	130.0	12.0	76.7	6.2	148	0.59	0.0807	0.0072	0.01256	0.00042	0.3222	0.0464	0.0039	78.4	6.7	80.5	2.7	120	160	-2.7	-0.3
122	19.0	88.0	11.0	50.1	4.3	100	0.57	0.0880	0.0110	0.01259	0.00057	0.1144	0.0500	0.0066	85.0	11.0	80.6	3.6	130	230	5.2	0.4
201	20.2	482.0	15.0	268.0	12.0	545	0.56	0.0925	0.0039	0.01364	0.00029	0.1817	0.0491	0.0021	89.7	3.6	87.3	1.8	157	86	2.7	0.7
31	21.5	191.7	7.5	79.7	2.9	210	0.42	0.1004	0.0069	0.01538	0.00032	0.0641	0.0478	0.0033	96.7	6.4	98.4	2.0	90	130	-1.8	-0.3
3	16.2	176.4	8.8	132.0	10.0	207	0.75	0.1410	0.0140	0.01572	0.00038	0.5905	0.0654	0.0061	133.0	12.0	100.6	2.4	740	180	24.4	2.7
14	12.4	887.0	38.0	718.0	30.0	1056	0.81	0.1047	0.0044	0.01578	0.00031	0.2133	0.0481	0.0020	101.1	4.1	100.9	2.0	122	87	0.2	0.0
43	21.7	67.4	3.9	67.4	4.0	83	1.00	0.1640	0.0150	0.02556	0.00065	0.1267	0.0462	0.0044	153.0	13.0	162.7	4.1	90	180	-6.3	-0.7
95	21.7	223.0	12.0	108.9	6.5	249	0.49	0.1765	0.0075	0.02568	0.00044	0.2031	0.0502	0.0019	165.4	6.6	163.4	2.8	184	82	1.2	0.3
271	17.7	220.3	9.2	185.9	4.2	264	0.84	0.1811	0.0100	0.02573	0.00060	0.3040	0.0502	0.0027	168.5	8.7	163.7	3.8	220	110	2.8	0.6
169	21.7	443.0	22.0	160.0	5.4	481	0.36	0.1833	0.0063	0.02689	0.00045	0.0556	0.0491	0.0018	171.3	5.3	171.0	2.9	151	74	0.2	0.1

Table 3: LA-ICP-MS Zircon Isotopic and Age Data Table: H3N 21-22m: Harvey County, KS Core Sample

								Corrected Isotopic Ratios[3]							Ages (Ma)[7]								
Grain #	Signal Duration (s)	U (ppm)[1]	2σ	Th (ppm)[1]	2σ	eU (ppm)[2]	Th/U	$^{207}Pb/^{235}U$	2σ[4]	$^{206}Pb/^{238}U$	2σ[4]	Rho[5]	$^{207}Pb/^{206}Pb$[6]	2σ	$^{207}Pb/^{235}U$	2σ	$^{206}Pb/^{238}U$	2σ	$^{207}Pb/^{206}Pb$	2σ	% Disc.[8]	Uncert. Wtd. Disc.[9]
112	15.9	305.0	37.0	99.2	8.5	328	0.33	0.2027	0.0081	0.02854	0.00052	0.0460	0.0530	0.0021	188.1	7.0	181.4	3.3	311	85	3.6	1.0
110	21.6	91.0	15.0	8.6	1.2	93	0.09	0.5330	0.0320	0.04750	0.00340	0.5568	0.0805	0.0047	431.0	22.0	298.0	21.0	1160	110	30.9	6.0
153	18.0	230.0	15.0	137.7	3.4	262	0.60	0.3530	0.0150	0.04957	0.00084	0.3685	0.0518	0.0019	306.0	11.0	311.8	5.1	267	80	-1.9	-0.5
261	21.5	3070.0	190.0	42400.0	1900.0	13034	13.81	0.3858	0.0079	0.05126	0.00060	0.4499	0.0545	0.0010	331.2	5.8	322.3	3.7	395	40	2.7	1.5
70	21.8	571.0	50.0	370.0	30.0	658	0.65	0.5060	0.0150	0.05403	0.00093	0.4050	0.0679	0.0018	416.0	10.0	339.2	5.7	876	56	18.5	7.7
113	4.9	130.0	18.0	2.6	0.8	131	0.02	0.4250	0.0460	0.05610	0.00170	0.6213	0.0550	0.0050	357.0	33.0	352.0	11.0	380	200	1.4	0.2
291	21.7	191.0	13.0	149.4	6.9	226	0.78	0.4210	0.0140	0.05657	0.00097	0.2171	0.0543	0.0019	357.0	10.0	354.7	5.9	358	76	0.6	0.2
257	21.7	275.0	18.0	24.7	1.6	281	0.09	0.4250	0.0150	0.05720	0.00110	0.3195	0.0540	0.0018	358.7	10.0	358.3	6.8	367	69	0.1	0.0
167	20.6	679.0	81.0	298.0	32.0	749	0.44	0.8890	0.0360	0.05730	0.00220	0.8708	0.1140	0.0026	645.0	19.0	359.0	14.0	1862	42	44.3	15.1
87	21.7	285.0	10.0	209.0	25.0	334	0.73	0.4280	0.0140	0.05799	0.00088	0.3844	0.0530	0.0015	361.1	9.7	363.3	5.3	315	61	-0.6	-0.2
73	16.4	360.0	17.0	48.2	1.3	371	0.13	0.4250	0.0150	0.05827	0.00072	0.2637	0.0531	0.0017	358.7	11.0	365.1	4.4	332	73	-1.8	-0.6
28	21.7	318.0	15.0	196.4	7.6	364	0.62	0.4286	0.0120	0.05840	0.00073	0.3622	0.0536	0.0014	361.7	8.5	365.9	4.5	345	59	-1.2	-0.5
10	14.0	289.0	21.0	216.0	16.0	340	0.75	0.7970	0.0330	0.05870	0.00150	0.5506	0.0989	0.0035	596.0	19.0	367.7	8.9	1605	67	38.3	12.0
93	12.6	284.0	12.0	201.3	5.5	331	0.71	0.4410	0.0150	0.05980	0.00120	0.1745	0.0539	0.0020	370.5	10.0	374.3	7.4	362	81	-1.0	-0.4
88	20.7	517.0	32.0	76.2	3.7	535	0.15	0.4780	0.0130	0.06302	0.00077	0.2481	0.0550	0.0013	397.1	8.5	393.9	4.6	399	54	0.8	0.4
200	12.6	262.0	29.0	165.0	28.0	301	0.63	0.4700	0.0210	0.06330	0.00160	0.3538	0.0543	0.0023	390.0	15.0	395.4	9.7	402	100	-1.4	-0.4
193	16.6	422.0	12.0	203.3	7.5	470	0.48	0.5010	0.0140	0.06490	0.00110	0.5034	0.0556	0.0014	412.3	9.2	405.5	6.9	438	56	1.6	0.7
163	20.0	214.0	11.0	51.4	3.0	226	0.24	0.5060	0.0200	0.06650	0.00130	0.4336	0.0557	0.0018	421.0	13.0	415.1	7.8	435	75	1.4	0.5
54	19.6	250.0	19.0	149.5	9.4	285	0.60	0.5150	0.0160	0.06698	0.00090	0.2752	0.0557	0.0016	421.0	11.0	417.9	5.4	439	62	0.7	0.3
199	16.1	241.1	8.2	132.2	3.4	272	0.55	0.5120	0.0180	0.06770	0.00140	0.3518	0.0546	0.0018	419.0	12.0	422.4	8.3	377	72	-0.8	-0.3
98	20.1	535.0	38.0	125.2	8.2	564	0.23	0.5140	0.0140	0.06821	0.00089	0.3418	0.0549	0.0013	420.5	9.5	425.3	5.4	408	54	-1.1	-0.5
78	21.6	440.0	16.0	162.5	5.9	478	0.37	0.5290	0.0150	0.06875	0.00100	0.5195	0.0556	0.0013	430.5	9.7	428.6	6.2	442	52	0.4	0.2
4	21.7	323.0	10.0	126.6	4.9	353	0.39	0.5270	0.0160	0.06927	0.00084	0.4797	0.0550	0.0014	429.1	11.0	431.7	5.1	409	58	-0.6	-0.2
117	21.0	60.8	2.1	70.0	1.8	77	1.15	0.5470	0.0260	0.07050	0.00170	0.5255	0.0562	0.0024	441.0	17.0	439.0	11.0	452	90	0.5	0.1
286	21.7	77.9	2.6	55.1	1.2	91	0.71	0.5590	0.0280	0.07110	0.00150	0.3261	0.0550	0.0027	448.0	18.0	442.4	9.2	395	100	1.3	0.3
52	17.6	284.7	6.1	32.0	1.2	292	0.11	0.5470	0.0170	0.07130	0.00100	0.4363	0.0550	0.0014	442.3	11.0	443.9	6.2	399	58	-0.4	-0.1
128	16.2	133.2	2.5	48.1	0.9	144	0.36	0.5560	0.0200	0.07150	0.00130	0.1898	0.0557	0.0021	448.0	13.0	445.4	7.6	415	84	0.6	0.2
179	21.7	304.0	13.0	102.7	3.0	328	0.34	0.5460	0.0190	0.07180	0.00120	0.3374	0.0544	0.0017	442.0	12.0	447.0	7.1	390	70	-1.1	-0.4
60	21.8	216.0	10.0	64.9	2.6	231	0.30	0.5600	0.0150	0.07186	0.00093	0.1965	0.0560	0.0016	450.9	9.9	447.3	5.6	455	64	0.8	0.4
24	14.0	90.2	4.5	65.0	2.6	105	0.72	0.5500	0.0260	0.07190	0.00120	0.1959	0.0571	0.0026	448.0	17.0	447.8	7.1	477	100	0.0	0.0
237	21.7	164.0	12.0	64.6	4.8	179	0.39	0.5580	0.0200	0.07280	0.00150	0.2194	0.0564	0.0020	451.0	14.0	453.0	9.0	441	79	-0.4	-0.1
161	21.1	427.0	22.0	265.0	16.0	489	0.62	0.5690	0.0160	0.07290	0.00120	0.5343	0.0571	0.0014	456.5	11.0	453.5	7.1	494	55	0.7	0.3
226	21.6	108.4	8.2	73.6	4.5	126	0.68	0.5620	0.0200	0.07300	0.00120	0.1955	0.0572	0.0021	453.0	13.0	454.8	7.1	489	80	-0.4	-0.1
152	14.0	109.0	15.0	93.0	16.0	131	0.85	0.6050	0.0300	0.07470	0.00150	0.1158	0.0590	0.0028	479.0	19.0	464.3	8.9	590	110	3.1	0.8
29	19.9	76.2	4.0	52.1	3.1	88	0.68	0.5970	0.0220	0.07500	0.00130	0.2060	0.0569	0.0020	474.0	14.0	466.2	8.1	480	79	1.6	0.6
53	14.1	214.5	9.3	85.6	7.2	235	0.40	0.5830	0.0200	0.07570	0.00120	0.2759	0.0562	0.0018	466.0	13.0	470.3	7.1	447	70	-0.9	-0.3
178	19.7	264.0	19.0	91.2	6.2	285	0.35	0.6230	0.0200	0.07810	0.00160	0.4694	0.0580	0.0017	492.2	12.0	484.7	9.6	541	61	1.5	0.6
269	20.7	300.0	17.0	53.9	1.9	313	0.18	0.6040	0.0220	0.07820	0.00180	0.3253	0.0565	0.0020	479.0	14.0	485.0	11.0	475	78	-1.3	-0.4
22	9.8	432.0	13.0	55.8	2.4	445	0.13	0.6510	0.0250	0.08100	0.00160	0.6092	0.0584	0.0018	513.0	14.0	502.1	9.4	543	71	2.1	0.8
154	20.9	73.6	6.6	41.5	4.0	83	0.56	0.6570	0.0300	0.08470	0.00180	0.1338	0.0566	0.0026	512.0	18.0	524.0	11.0	434	100	-2.3	-0.7
41	16.8	375.0	10.0	104.8	2.1	400	0.28	0.6700	0.0170	0.08470	0.00120	0.4191	0.0571	0.0013	521.6	9.9	524.3	6.9	495	50	-0.5	-0.3
40	21.6	165.4	7.0	40.3	1.2	175	0.24	0.6940	0.0240	0.08510	0.00120	0.5368	0.0592	0.0017	536.0	15.0	526.4	7.4	564	62	1.8	0.6

Table 3: LA-ICP-MS Zircon Isotopic and Age Data Table: H3N 21-22m: Harvey County, KS Core Sample

								Corrected Isotopic Ratios[3]							Ages (Ma)[7]							
Grain #	Signal Duration (s)	U (ppm)[1]	2σ	Th (ppm)[1]	2σ	eU (ppm)[2]	Th/U	$^{207}Pb/^{235}U$	2σ[4]	$^{206}Pb/^{238}U$	2σ[4]	Rho[5]	$^{207}Pb/^{206}Pb$[6]	2σ	$^{207}Pb/^{235}U$	2σ	$^{206}Pb/^{238}U$	2σ	$^{207}Pb/^{206}Pb$	2σ	% Disc.[8]	Uncert. Wtd. Disc.[9]
69	15.7	119.7	4.2	77.1	1.9	138	0.64	0.7350	0.0300	0.08580	0.00170	0.3281	0.0626	0.0022	560.0	18.0	530.6	9.9	684	73	5.3	1.6
118	9.3	202.0	16.0	146.0	13.0	236	0.72	1.2080	0.0460	0.09040	0.00310	0.6719	0.0963	0.0032	803.0	22.0	558.0	18.0	1555	66	30.5	11.1
108	15.6	771.0	86.0	163.0	15.0	809	0.21	0.7700	0.0200	0.09380	0.00150	0.6976	0.0604	0.0012	579.1	12.0	577.8	8.5	615	45	0.2	0.1
220	21.6	71.3	3.5	23.6	0.6	77	0.33	0.7690	0.0350	0.09440	0.00210	0.3173	0.0597	0.0026	576.0	21.0	581.0	12.0	575	95	-0.9	-0.2
63	21.7	256.0	23.0	37.8	1.5	265	0.15	0.9040	0.0240	0.10700	0.00200	0.4930	0.0615	0.0015	654.4	12.0	655.0	12.0	660	52	-0.1	-0.1
125	21.4	112.3	9.3	65.4	2.9	128	0.58	0.9180	0.0330	0.10810	0.00230	0.4055	0.0613	0.0020	659.0	17.0	663.0	14.0	631	73	-0.6	-0.2
138	17.6	219.4	6.7	44.0	1.7	230	0.20	1.9520	0.0850	0.12330	0.00500	0.8179	0.1150	0.0029	1093.0	29.0	749.0	29.0	1886	46	31.5	11.9
19	21.1	41.2	1.5	26.2	0.8	47	0.63	1.0960	0.0410	0.12600	0.00250	0.2617	0.0641	0.0024	753.0	19.0	765.0	14.0	745	78	-1.6	-0.6
278	13.3	45.5	1.8	7.5	0.2	47	0.16	1.1960	0.0690	0.13090	0.00360	0.2834	0.0674	0.0038	803.0	32.0	793.0	21.0	850	120	1.2	0.3
65	21.5	185.0	13.0	85.4	6.2	205	0.46	1.2270	0.0330	0.13130	0.00170	0.4742	0.0682	0.0017	812.0	15.0	796.1	10.0	892	48	2.0	1.1
275	10.5	515.0	49.0	98.8	7.8	538	0.19	1.8800	0.0680	0.13330	0.00440	0.6496	0.1014	0.0028	1072.0	24.0	810.0	24.0	1653	55	24.4	10.9
287	21.0	41.1	1.9	16.5	0.5	45	0.40	1.4680	0.0590	0.15100	0.00310	0.2464	0.0718	0.0027	919.0	24.0	906.0	17.0	967	81	1.4	0.5
245	21.7	108.9	3.8	39.6	0.7	118	0.36	1.5300	0.0480	0.15610	0.00260	0.4007	0.0714	0.0020	944.0	19.0	935.0	15.0	968	56	1.0	0.5
34	21.7	71.2	5.9	25.9	2.2	77	0.36	1.5250	0.0530	0.15790	0.00200	0.2253	0.0705	0.0023	942.0	21.0	945.0	11.0	942	69	-0.3	-0.1
252	21.6	68.7	9.2	9.7	0.3	71	0.14	1.5950	0.0600	0.16040	0.00350	0.3232	0.0715	0.0027	969.0	24.0	959.0	20.0	974	74	1.0	0.4
235	21.7	193.0	16.0	31.8	1.6	200	0.16	1.5990	0.0420	0.16090	0.00270	0.4182	0.0719	0.0017	968.0	16.0	963.0	14.0	974	49	0.5	0.3
236	21.7	220.0	18.0	52.5	4.0	232	0.24	1.6330	0.0500	0.16320	0.00320	0.6724	0.0733	0.0017	982.0	19.0	974.0	18.0	1021	48	0.8	0.4
272	21.6	149.0	2.5	171.5	2.2	189	1.15	1.6570	0.0520	0.16390	0.00280	0.5139	0.0745	0.0020	992.0	20.0	978.0	16.0	1047	54	1.4	0.7
77	19.8	34.1	0.9	12.9	0.5	37	0.38	1.6430	0.0650	0.16470	0.00330	0.0307	0.0710	0.0030	985.0	24.0	983.0	18.0	949	85	0.2	0.1
149	14.9	43.7	2.8	12.6	0.5	47	0.29	1.6650	0.0640	0.16710	0.00420	0.5261	0.0718	0.0025	992.0	24.0	996.0	23.0	963	70	-0.4	-0.2
293	21.7	100.3	8.3	67.4	5.6	116	0.67	1.6820	0.0530	0.16830	0.00300	0.2725	0.0725	0.0024	999.0	20.0	1002.0	16.0	999	66	-0.3	-0.2
215	15.7	117.2	4.0	26.3	0.7	123	0.22	1.7140	0.0550	0.16930	0.00370	0.7308	0.0743	0.0021	1015.0	22.0	1011.0	21.0	1053	55	0.4	0.2
185	16.5	260.0	12.0	70.6	2.4	277	0.27	1.7340	0.0440	0.17100	0.00250	0.5806	0.0735	0.0016	1022.0	16.0	1017.0	14.0	1023	43	0.5	0.3
254	13.0	111.9	3.5	41.0	1.1	122	0.37	1.6970	0.0520	0.17120	0.00400	0.4897	0.0719	0.0021	1006.0	19.0	1018.0	22.0	979	59	-1.2	-0.6
253	10.2	321.0	11.0	57.4	2.7	334	0.18	1.7100	0.0670	0.17140	0.00620	0.6245	0.0733	0.0027	1010.0	25.0	1019.0	34.0	1008	74	-0.9	-0.4
15	21.6	25.7	0.9	24.2	0.6	31	0.94	1.7150	0.0700	0.17160	0.00300	0.0765	0.0719	0.0030	1016.0	27.0	1021.0	16.0	999	84	-0.5	-0.2
221	21.7	120.1	7.8	135.7	6.3	152	1.13	1.7430	0.0510	0.17130	0.00310	0.4110	0.0729	0.0020	1022.0	19.0	1021.0	17.0	1009	55	0.1	0.1
61	11.0	135.7	7.8	75.6	5.1	153	0.56	1.7700	0.0480	0.17210	0.00260	0.3438	0.0754	0.0018	1036.0	18.0	1023.0	14.0	1075	49	1.3	0.7
181	17.9	126.2	4.0	47.2	1.8	137	0.37	1.7040	0.0520	0.17200	0.00340	0.3052	0.0715	0.0022	1008.0	20.0	1023.0	19.0	970	62	-1.5	-0.8
97	20.4	122.6	7.5	56.4	2.6	136	0.46	1.7290	0.0450	0.17230	0.00230	0.2021	0.0735	0.0018	1018.0	17.0	1025.0	13.0	1018	51	-0.7	-0.4
13	11.9	46.7	3.8	11.6	0.8	49	0.25	1.8120	0.0740	0.17250	0.00300	0.0359	0.0757	0.0030	1051.0	26.0	1026.0	17.0	1080	78	2.4	1.0
251	21.7	123.3	6.1	33.5	1.1	131	0.27	1.7500	0.0520	0.17350	0.00350	0.4178	0.0732	0.0021	1025.0	19.0	1031.0	19.0	1026	56	-0.6	-0.3
244	15.0	37.3	0.8	15.9	0.4	41	0.43	1.7710	0.0750	0.17410	0.00390	0.3620	0.0745	0.0030	1039.0	27.0	1034.0	22.0	1066	78	0.5	0.2
282	14.8	212.0	23.0	28.4	1.5	219	0.13	1.8250	0.0500	0.17430	0.00400	0.3503	0.0760	0.0022	1053.0	18.0	1035.0	22.0	1089	60	1.7	1.0
79	17.9	394.0	17.0	189.8	6.7	439	0.48	1.7640	0.0420	0.17430	0.00230	0.6219	0.0735	0.0014	1032.0	15.0	1036.0	12.0	1024	39	-0.4	-0.3
81	14.4	98.1	6.1	25.6	1.7	104	0.26	1.7680	0.0510	0.17440	0.00220	0.2801	0.0740	0.0022	1035.0	20.0	1036.0	12.0	1028	60	-0.1	-0.1
250	18.4	141.2	2.8	120.5	3.7	170	0.85	1.8270	0.0520	0.17450	0.00360	0.4773	0.0760	0.0021	1053.0	19.0	1036.0	20.0	1095	55	1.6	0.9
203	15.3	716.0	33.0	135.0	8.2	748	0.19	1.7860	0.0470	0.17450	0.00330	0.7508	0.0742	0.0015	1039.0	17.0	1037.0	18.0	1054	41	0.2	0.1
229	21.7	92.6	3.5	28.9	0.7	99	0.31	1.7840	0.0570	0.17420	0.00290	0.5454	0.0754	0.0020	1043.0	21.0	1037.0	16.0	1088	55	0.6	0.3
132	17.8	20.4	2.3	6.9	0.4	22	0.34	1.7610	0.0930	0.17550	0.00470	0.0747	0.0732	0.0043	1022.0	34.0	1041.0	26.0	990	120	-1.9	-0.6
140	12.4	119.0	4.3	28.0	2.3	126	0.24	1.7880	0.0610	0.17550	0.00460	0.2752	0.0752	0.0025	1042.0	23.0	1042.0	25.0	1081	66	0.0	0.0
151	18.2	45.6	2.9	13.3	0.5	49	0.29	1.8080	0.0720	0.17560	0.00390	0.3465	0.0748	0.0027	1050.0	25.0	1042.0	21.0	1060	73	0.8	0.3

Table 3: LA-ICP-MS Zircon Isotopic and Age Data Table: H3N 21-22m: Harvey County, KS Core Sample

Grain #	Signal Duration (s)	U (ppm)[1]	2σ	Th (ppm)[1]	2σ	eU (ppm)[2]	Th/U	Corrected Isotopic Ratios[3] $^{207}Pb/^{235}U$	2σ[4]	$^{206}Pb/^{238}U$	2σ[4]	Rho[5]	$^{207}Pb/^{206}Pb$[6]	2σ	Ages (Ma)[7] $^{207}Pb/^{235}U$	2σ	$^{206}Pb/^{238}U$	2σ	$^{207}Pb/^{206}Pb$	2σ	% Disc.[8]	Uncert. Wtd. Disc.[9]
156	20.2	29.3	1.2	14.9	0.5	33	0.51	1.9360	0.0840	0.17510	0.00390	0.2553	0.0807	0.0034	1094.0	29.0	1042.0	22.0	1185	87	4.8	1.8
190	21.7	83.3	1.6	22.9	0.6	89	0.28	1.7970	0.0600	0.17550	0.00380	0.4570	0.0746	0.0021	1041.0	22.0	1042.0	21.0	1060	58	-0.1	0.0
234	21.7	39.5	0.7	16.2	0.8	43	0.41	1.8250	0.0700	0.17560	0.00370	0.2833	0.0764	0.0029	1057.0	24.0	1042.0	20.0	1088	77	1.4	0.6
195	22.4	213.0	27.0	29.1	1.7	220	0.14	2.3500	0.1200	0.17530	0.00840	0.9189	0.0965	0.0023	1226.0	36.0	1043.0	46.0	1549	45	14.9	5.1
213	21.7	130.1	8.4	78.4	3.4	149	0.60	1.7890	0.0500	0.17550	0.00290	0.5088	0.0737	0.0018	1041.0	18.0	1046.0	16.0	1043	47	-0.5	-0.3
150	15.0	46.3	2.0	20.3	0.8	51	0.44	1.8190	0.0750	0.17660	0.00390	0.3917	0.0765	0.0029	1048.0	27.0	1048.0	21.0	1098	74	0.0	0.0
292	7.3	400.0	16.0	32.2	1.4	408	0.08	1.8080	0.0750	0.17680	0.00600	0.7150	0.0749	0.0025	1046.0	27.0	1049.0	33.0	1058	68	-0.3	-0.1
91	16.7	240.9	9.5	112.4	6.3	267	0.47	1.8150	0.0450	0.17790	0.00250	0.4939	0.0740	0.0016	1050.0	16.0	1055.0	14.0	1040	46	-0.5	-0.3
219	12.7	13.8	0.9	19.5	1.2	18	1.41	1.7000	0.1300	0.17800	0.00640	0.1830	0.0684	0.0050	1002.0	48.0	1055.0	35.0	870	150	-5.3	-1.1
16	21.6	30.6	1.6	24.6	1.0	36	0.80	1.9360	0.0730	0.17820	0.00230	0.1732	0.0785	0.0028	1091.0	26.0	1057.0	13.0	1146	71	3.1	1.3
299	21.7	16.3	1.3	15.2	0.9	20	0.93	1.8900	0.1100	0.17850	0.00480	0.1973	0.0766	0.0047	1070.0	39.0	1058.0	26.0	1060	120	1.1	0.3
35	21.6	378.0	27.0	72.9	4.8	395	0.19	1.8420	0.0390	0.17860	0.00190	0.3778	0.0747	0.0013	1059.9	14.0	1059.4	10.0	1066	37	0.0	0.0
12	20.5	56.4	3.8	25.4	1.6	62	0.45	1.8110	0.0650	0.17880	0.00270	0.4971	0.0721	0.0022	1045.0	23.0	1060.0	15.0	993	62	-1.4	-0.7
126	16.6	178.0	24.0	162.0	24.0	216	0.91	1.8500	0.0670	0.17940	0.00480	0.6469	0.0750	0.0021	1063.0	23.0	1063.0	26.0	1072	54	0.0	0.0
177	18.7	56.1	2.2	28.3	1.0	63	0.50	1.8750	0.0630	0.17960	0.00330	0.3730	0.0763	0.0023	1072.0	23.0	1065.0	18.0	1087	62	0.7	0.3
260	20.3	124.0	4.2	47.5	1.0	135	0.38	1.8100	0.0510	0.17990	0.00320	0.3457	0.0737	0.0020	1052.0	19.0	1066.0	17.0	1038	56	-1.3	-0.7
162	16.3	96.2	4.6	33.3	1.6	104	0.35	1.8620	0.0660	0.18020	0.00290	0.3834	0.0748	0.0024	1070.0	24.0	1068.0	16.0	1071	62	0.2	0.1
94	20.6	8.6	0.4	4.0	0.2	10	0.46	1.8700	0.1400	0.18100	0.00520	0.1102	0.0762	0.0062	1067.0	52.0	1071.0	29.0	980	170	-0.4	-0.1
47	18.1	97.2	4.9	81.2	3.6	116	0.84	1.9000	0.0500	0.18100	0.00270	0.3510	0.0765	0.0019	1084.0	18.0	1074.0	14.0	1104	49	0.9	0.6
208	18.3	176.0	21.0	79.3	3.6	195	0.45	1.9030	0.0450	0.18140	0.00270	0.4174	0.0760	0.0018	1081.0	16.0	1074.0	15.0	1099	46	0.6	0.4
263	18.1	32.5	1.9	15.4	0.7	36	0.48	1.8330	0.0700	0.18150	0.00450	0.3062	0.0742	0.0030	1062.0	26.0	1074.0	25.0	1049	75	-1.1	-0.5
249	21.6	82.9	4.4	43.1	1.9	93	0.52	1.8920	0.0550	0.18170	0.00350	0.3483	0.0747	0.0020	1076.0	19.0	1076.0	19.0	1065	57	0.0	0.0
86	20.1	180.0	21.0	56.9	2.5	193	0.32	2.3590	0.0930	0.18220	0.00720	0.8742	0.0946	0.0023	1234.0	27.0	1077.0	39.0	1516	46	12.7	5.8
130	8.5	169.4	7.1	144.0	11.0	203	0.85	1.8870	0.0630	0.18220	0.00500	0.6987	0.0758	0.0022	1079.0	21.0	1078.0	27.0	1093	56	0.1	0.0
124	21.1	61.3	3.2	17.4	0.5	65	0.28	1.9420	0.0650	0.18220	0.00350	0.4008	0.0769	0.0023	1092.0	22.0	1079.0	19.0	1107	59	1.2	0.6
243	18.2	115.9	4.6	71.4	1.6	133	0.62	1.9070	0.0510	0.18240	0.00270	0.4183	0.0760	0.0019	1084.0	17.0	1080.0	15.0	1087	48	0.4	0.2
258	20.2	63.8	2.3	55.4	1.5	77	0.87	1.8970	0.0670	0.18280	0.00290	0.4181	0.0761	0.0024	1076.0	24.0	1082.0	16.0	1085	64	-0.6	-0.3
144	16.8	59.9	1.3	20.5	0.5	65	0.34	1.8710	0.0680	0.18340	0.00290	0.4652	0.0729	0.0021	1077.0	23.0	1085.0	16.0	1036	65	-0.7	-0.3
290	21.7	124.0	4.0	89.9	1.9	145	0.73	1.9130	0.0510	0.18370	0.00290	0.3701	0.0746	0.0018	1085.0	18.0	1087.0	16.0	1059	49	-0.2	-0.1
56	16.6	72.6	4.6	37.5	2.2	81	0.52	1.8750	0.0670	0.18400	0.00350	0.4231	0.0734	0.0024	1069.0	24.0	1091.0	19.0	1014	67	-2.1	-0.9
188	14.3	47.8	1.8	23.3	0.8	53	0.49	1.8760	0.0800	0.18460	0.00420	0.3618	0.0733	0.0025	1072.0	27.0	1091.0	23.0	1007	68	-1.8	-0.7
285	21.7	251.0	15.0	17.2	0.6	255	0.07	1.8940	0.0500	0.18460	0.00310	0.4850	0.0746	0.0017	1079.0	17.0	1092.0	17.0	1058	46	-1.2	-0.8
107	14.5	177.7	6.0	51.8	1.9	190	0.29	1.9500	0.0570	0.18530	0.00310	0.6211	0.0760	0.0017	1101.0	20.0	1096.0	17.0	1101	45	0.5	0.3
142	12.4	63.6	3.6	42.1	2.7	73	0.66	1.8700	0.0750	0.18540	0.00360	0.3620	0.0727	0.0025	1067.0	27.0	1096.0	20.0	1014	75	-2.7	-1.1
157	21.6	108.5	4.9	45.6	1.3	119	0.42	1.9280	0.0550	0.18500	0.00340	0.4971	0.0754	0.0021	1091.0	19.0	1096.0	19.0	1087	55	-0.5	-0.3
141	21.4	113.8	5.4	31.8	1.2	121	0.28	1.9470	0.0580	0.18560	0.00330	0.6062	0.0752	0.0018	1099.0	19.0	1099.0	17.0	1073	47	0.0	0.0
277	21.6	23.4	0.5	5.5	0.2	25	0.24	1.9850	0.0950	0.18640	0.00470	0.3853	0.0797	0.0034	1115.0	33.0	1101.0	25.0	1145	89	1.3	0.4
280	21.7	145.0	5.9	58.7	1.3	159	0.40	1.9600	0.0550	0.18680	0.00320	0.4535	0.0762	0.0019	1101.0	19.0	1104.0	18.0	1102	48	-0.3	-0.2
242	21.7	70.6	4.0	20.3	0.8	75	0.29	1.9960	0.0600	0.18690	0.00360	0.4870	0.0788	0.0020	1111.0	21.0	1106.0	19.0	1156	50	0.5	0.2
192	16.2	392.0	22.0	7.9	1.1	394	0.02	2.0740	0.0560	0.18740	0.00370	0.6364	0.0794	0.0018	1141.0	19.0	1107.0	20.0	1175	46	3.0	1.8
75	13.4	165.0	11.0	148.1	7.3	200	0.90	2.0050	0.0540	0.18800	0.00320	0.5801	0.0771	0.0018	1116.0	18.0	1110.0	18.0	1118	45	0.5	0.3
297	21.7	242.0	11.0	105.2	3.7	267	0.43	1.9710	0.0480	0.18820	0.00310	0.5969	0.0756	0.0016	1104.0	17.0	1111.0	17.0	1091	42	-0.6	-0.4

Table 3: LA-ICP-MS Zircon Isotopic and Age Data Table: H3N 21-22m: Harvey County, KS Core Sample

Grain #	Signal Duration (s)	U (ppm)[1]	2σ	Th (ppm)[1]	2σ	eU (ppm)[2]	Th/U	Corrected Isotopic Ratios[3] $^{207}Pb/^{235}U$	2σ[4]	$^{206}Pb/^{238}U$	2σ[4]	Rho[5]	$^{207}Pb/^{206}Pb$[6]	2σ	Ages (Ma)[7] $^{207}Pb/^{235}U$	2σ	$^{206}Pb/^{238}U$	2σ	$^{207}Pb/^{206}Pb$	2σ	% Disc.[8]	Uncert. Wtd. Disc.[9]
266	21.4	54.0	1.5	13.0	0.5	57	0.24	2.1990	0.0690	0.18780	0.00420	0.5377	0.0835	0.0024	1178.0	22.0	1112.0	23.0	1290	58	5.6	3.0
9	17.6	616.0	66.0	76.0	8.1	634	0.12	1.9890	0.0470	0.18910	0.00310	0.6871	0.0760	0.0014	1112.0	16.0	1116.0	17.0	1091	37	-0.4	-0.3
183	12.8	75.3	2.2	19.0	0.5	80	0.25	2.0190	0.0680	0.18950	0.00420	0.3695	0.0774	0.0023	1120.0	23.0	1118.0	23.0	1131	64	0.2	0.1
123	14.7	27.4	3.3	17.8	3.5	32	0.65	2.0830	0.0980	0.18990	0.00550	0.4648	0.0791	0.0036	1142.0	34.0	1120.0	30.0	1168	87	1.9	0.6
148	8.6	163.7	8.6	56.0	2.6	177	0.34	2.0160	0.0690	0.19000	0.00520	0.5405	0.0769	0.0022	1120.0	23.0	1121.0	28.0	1123	61	-0.1	0.0
172	17.6	78.0	2.2	49.4	1.0	90	0.63	2.0960	0.0600	0.19350	0.00370	0.4779	0.0784	0.0019	1146.0	20.0	1140.0	20.0	1173	51	0.5	0.3
184	15.4	103.4	2.7	8.2	0.2	105	0.08	2.1180	0.0660	0.19490	0.00430	0.4233	0.0797	0.0025	1155.0	22.0	1147.0	23.0	1190	59	0.7	0.4
267	17.4	236.8	8.8	129.3	2.5	267	0.55	2.1250	0.0570	0.19500	0.00330	0.5253	0.0787	0.0018	1155.0	19.0	1148.0	18.0	1168	42	0.6	0.4
173	13.8	233.0	17.0	80.4	5.8	252	0.35	2.1340	0.0610	0.19570	0.00470	0.6132	0.0786	0.0019	1161.0	20.0	1152.0	25.0	1157	47	0.8	0.5
134	19.6	64.0	9.0	19.4	3.6	69	0.30	2.1720	0.0710	0.19610	0.00320	0.3989	0.0802	0.0023	1169.0	22.0	1154.0	17.0	1199	57	1.3	0.7
246	18.4	56.9	2.3	22.2	1.0	62	0.39	2.1120	0.0790	0.19690	0.00440	0.3875	0.0772	0.0029	1155.0	26.0	1161.0	24.0	1108	73	-0.5	-0.2
105	12.0	202.4	9.0	47.1	1.1	213	0.23	2.1580	0.0550	0.19750	0.00340	0.5382	0.0792	0.0018	1167.0	18.0	1162.0	19.0	1177	43	0.4	0.3
80	14.4	115.0	3.8	34.7	1.1	123	0.30	2.1780	0.0570	0.19820	0.00270	0.3465	0.0796	0.0020	1173.0	18.0	1167.0	14.0	1181	48	0.5	0.3
6	14.8	67.5	5.8	54.3	4.6	80	0.80	2.1050	0.0690	0.19950	0.00340	0.2242	0.0764	0.0023	1148.0	23.0	1172.0	18.0	1095	60	-2.1	-1.0
216	20.9	335.0	17.0	96.8	3.1	358	0.29	2.0520	0.0510	0.20020	0.00390	0.7498	0.0751	0.0015	1133.0	17.0	1176.0	21.0	1076	40	-3.8	-2.5
59	15.1	98.7	8.0	54.9	4.1	112	0.56	2.0840	0.0610	0.20070	0.00270	0.4997	0.0759	0.0019	1142.0	20.0	1179.0	15.0	1085	51	-3.2	-1.9
50	15.3	137.8	3.6	44.0	0.8	148	0.32	2.1870	0.0560	0.20090	0.00340	0.3670	0.0785	0.0020	1176.0	18.0	1180.0	18.0	1163	47	-0.3	-0.2
21	21.7	196.9	7.3	38.6	1.1	206	0.20	2.2180	0.0510	0.20130	0.00210	0.3946	0.0800	0.0016	1186.0	16.0	1182.0	11.0	1192	40	0.3	0.3
145	17.6	54.6	4.1	27.8	2.6	61	0.51	2.1640	0.0680	0.20190	0.00360	0.2146	0.0779	0.0023	1167.0	22.0	1185.0	19.0	1138	61	-1.5	-0.8
37	21.7	112.9	3.4	91.6	5.9	134	0.81	2.2150	0.0590	0.20230	0.00270	0.5092	0.0792	0.0019	1184.0	19.0	1187.0	14.0	1182	46	-0.3	-0.2
256	21.7	59.2	5.3	21.6	2.3	64	0.36	2.1950	0.0750	0.20180	0.00420	0.5234	0.0784	0.0024	1180.0	25.0	1187.0	22.0	1151	61	-0.6	-0.3
164	13.7	110.8	5.5	39.8	2.3	120	0.36	2.2160	0.0860	0.20310	0.00430	0.5384	0.0790	0.0026	1182.0	27.0	1191.0	23.0	1175	62	-0.8	-0.3
23	11.2	152.3	5.3	24.7	0.7	158	0.16	2.2170	0.0680	0.20320	0.00320	0.3922	0.0789	0.0022	1187.0	21.0	1192.0	17.0	1169	56	-0.4	-0.2
67	10.3	338.0	78.0	100.0	26.0	362	0.30	2.2690	0.0640	0.20410	0.00350	0.5742	0.0810	0.0017	1207.0	18.0	1197.0	19.0	1218	42	0.8	0.6
92	18.6	64.1	2.5	11.3	0.4	67	0.18	2.2960	0.0700	0.20460	0.00340	0.4705	0.0820	0.0022	1215.0	22.0	1200.0	18.0	1250	52	1.2	0.7
25	15.0	37.7	1.6	5.2	0.6	39	0.14	2.2490	0.0950	0.20540	0.00400	0.2105	0.0798	0.0034	1203.0	29.0	1204.0	21.0	1175	85	-0.1	0.0
27	14.3	264.0	11.0	96.7	3.9	287	0.37	2.3170	0.0570	0.20550	0.00290	0.5292	0.0817	0.0016	1218.0	18.0	1205.0	15.0	1236	40	1.1	0.7
139	14.8	205.0	23.0	106.6	7.3	230	0.52	2.3030	0.0600	0.20880	0.00320	0.4444	0.0797	0.0018	1214.0	18.0	1222.0	17.0	1184	46	-0.7	-0.4
131	14.0	486.0	47.0	9.4	0.3	488	0.02	2.4150	0.0640	0.21050	0.00400	0.5819	0.0839	0.0019	1248.0	20.0	1231.0	22.0	1284	45	1.4	0.9
189	12.6	102.3	4.2	27.7	0.7	109	0.27	2.4220	0.0840	0.21060	0.00400	0.3332	0.0844	0.0028	1247.0	25.0	1232.0	21.0	1298	66	1.2	0.6
42	18.9	25.5	1.2	11.1	0.5	28	0.44	2.3260	0.0980	0.21130	0.00370	0.3609	0.0802	0.0033	1218.0	29.0	1235.0	20.0	1197	82	-1.4	-0.6
171	14.8	33.3	2.3	14.5	0.9	37	0.44	2.3320	0.0920	0.21150	0.00470	0.1326	0.0808	0.0034	1226.0	30.0	1236.0	25.0	1216	81	-0.8	-0.3
76	18.4	140.4	8.9	33.5	1.4	148	0.24	2.3350	0.0620	0.21200	0.00270	0.4861	0.0805	0.0018	1221.0	19.0	1239.0	15.0	1217	44	-1.5	-0.9
168	17.5	127.4	4.2	52.5	1.8	140	0.41	2.4540	0.0680	0.21380	0.00450	0.5044	0.0844	0.0022	1257.0	20.0	1248.0	24.0	1298	50	0.7	0.5
64	11.8	216.0	10.0	36.4	1.6	225	0.17	2.4410	0.0680	0.21560	0.00480	0.6155	0.0814	0.0019	1254.0	20.0	1258.0	26.0	1227	46	-0.3	-0.2
96	12.8	5020.0	140.0	766.0	21.0	5200	0.15	2.7590	0.0600	0.21800	0.00320	0.7711	0.0912	0.0015	1344.0	16.0	1271.0	17.0	1449	31	5.4	4.6
202	17.3	53.3	4.0	22.9	1.3	59	0.43	2.5180	0.0900	0.21970	0.00470	0.3876	0.0841	0.0029	1276.0	26.0	1279.0	25.0	1282	68	-0.2	-0.1
279	20.2	466.0	41.0	20.2	1.5	471	0.04	2.4040	0.0610	0.22040	0.00390	0.7019	0.0788	0.0017	1242.0	18.0	1283.0	21.0	1176	39	-3.3	-2.3
51	18.2	60.1	2.0	25.1	0.7	66	0.42	2.6270	0.0790	0.22520	0.00340	0.3916	0.0843	0.0024	1306.0	22.0	1309.0	18.0	1298	53	-0.2	-0.1
268	10.6	150.6	4.6	40.4	1.7	160	0.27	2.7080	0.1000	0.22620	0.00710	0.7643	0.0875	0.0025	1328.0	29.0	1320.0	39.0	1365	54	0.6	0.3
62	14.0	90.7	2.1	29.8	0.8	98	0.33	2.7910	0.0870	0.22910	0.00280	0.2007	0.0876	0.0026	1351.0	23.0	1329.0	15.0	1370	58	1.6	1.0
89	15.9	42.5	1.5	12.8	1.0	46	0.30	2.7470	0.0890	0.22920	0.00390	0.3770	0.0862	0.0025	1338.0	24.0	1330.0	21.0	1338	60	0.6	0.3

Table 3: LA-ICP-MS Zircon Isotopic and Age Data Table: H3N 21-22m: Harvey County, KS Core Sample

								Corrected Isotopic Ratios[3]							Ages (Ma)[7]							
Grain #	Signal Duration (s)	U (ppm)[1]	2σ	Th (ppm)[1]	2σ	eU (ppm)[2]	Th/U	$^{207}Pb/^{235}U$	2σ[4]	$^{206}Pb/^{238}U$	2σ[4]	Rho[5]	$^{207}Pb/^{206}Pb$[6]	2σ	$^{207}Pb/^{235}U$	2σ	$^{206}Pb/^{238}U$	2σ	$^{207}Pb/^{206}Pb$	2σ	% Disc.[8]	Uncert. Wtd. Disc.[9]
259	13.3	166.0	4.8	37.2	1.2	175	0.22	2.6750	0.0830	0.22990	0.00420	0.4974	0.0847	0.0025	1319.0	23.0	1334.0	22.0	1298	56	-1.1	-0.7
83	21.1	138.5	4.4	43.0	0.8	149	0.31	2.7030	0.0660	0.23020	0.00280	0.3569	0.0855	0.0019	1331.0	17.0	1335.0	15.0	1320	43	-0.3	-0.2
160	21.7	309.8	9.7	94.1	1.4	332	0.30	2.7540	0.0650	0.23020	0.00340	0.6019	0.0870	0.0018	1342.0	18.0	1335.0	18.0	1359	38	0.5	0.4
38	14.9	79.8	4.7	14.3	0.5	83	0.18	2.7420	0.0800	0.23070	0.00390	0.1999	0.0862	0.0024	1340.0	21.0	1338.0	21.0	1333	56	0.1	0.1
49	10.1	22.3	1.5	2.4	0.1	23	0.11	4.1900	0.1800	0.23160	0.00800	0.2225	0.1324	0.0064	1674.0	33.0	1342.0	42.0	2108	86	19.8	10.1
228	12.3	102.8	6.0	97.5	7.3	126	0.95	2.8720	0.0820	0.23600	0.00590	0.7246	0.0888	0.0020	1373.0	22.0	1365.0	31.0	1397	43	0.6	0.4
270	12.5	323.0	18.0	189.0	16.0	367	0.59	2.8850	0.0840	0.23590	0.00480	0.4037	0.0881	0.0023	1376.0	22.0	1365.0	25.0	1385	52	0.8	0.5
72	20.3	132.0	20.0	76.0	11.0	150	0.58	2.8750	0.0730	0.23740	0.00310	0.4059	0.0870	0.0019	1374.0	19.0	1373.0	16.0	1360	42	0.1	0.1
101	9.0	220.0	12.0	85.3	6.8	240	0.39	2.9260	0.0920	0.23960	0.00510	0.5452	0.0878	0.0025	1387.0	24.0	1384.0	26.0	1371	55	0.2	0.1
33	15.8	84.7	7.3	22.4	1.2	90	0.26	2.9970	0.0780	0.24260	0.00380	0.4581	0.0891	0.0022	1405.0	20.0	1400.0	19.0	1406	46	0.4	0.3
223	20.1	69.4	3.6	51.7	2.1	82	0.74	3.1870	0.0990	0.24380	0.00410	0.3946	0.0948	0.0026	1450.0	24.0	1406.0	21.0	1525	52	3.0	1.8
265	14.7	82.7	5.1	21.9	1.2	88	0.26	3.0590	0.1000	0.24460	0.00510	0.6030	0.0905	0.0025	1423.0	25.0	1410.0	26.0	1434	53	0.9	0.5
239	19.7	88.8	2.8	36.2	0.6	97	0.41	3.0960	0.0820	0.24540	0.00510	0.2966	0.0913	0.0025	1432.0	20.0	1414.0	26.0	1452	51	1.3	0.9
224	18.9	152.0	9.7	111.6	5.5	178	0.73	2.8150	0.0770	0.24660	0.00460	0.5520	0.0830	0.0020	1362.0	22.0	1420.0	24.0	1262	47	-4.3	-2.6
32	20.8	136.0	15.0	17.8	3.4	140	0.13	3.1160	0.0750	0.24740	0.00330	0.4528	0.0917	0.0020	1435.0	19.0	1425.0	17.0	1464	39	0.7	0.5
170	19.8	326.0	35.0	459.0	63.0	434	1.41	3.1230	0.0740	0.24760	0.00400	0.5836	0.0917	0.0019	1437.0	18.0	1426.0	21.0	1460	41	0.8	0.6
288	21.7	75.6	3.1	34.8	0.7	84	0.46	3.1120	0.0830	0.24860	0.00510	0.4432	0.0915	0.0024	1435.0	20.0	1430.0	26.0	1449	51	0.3	0.3
30	16.0	93.5	4.8	45.4	1.8	104	0.49	3.0930	0.0890	0.24810	0.00410	0.4331	0.0904	0.0023	1431.0	22.0	1431.0	22.0	1433	50	0.0	0.0
20	11.8	25.6	1.2	12.8	0.8	29	0.50	3.1970	0.1100	0.25000	0.00440	0.2324	0.0918	0.0032	1458.0	27.0	1438.0	23.0	1459	66	1.4	0.7
26	21.7	121.4	4.9	62.0	1.7	136	0.51	3.1210	0.0670	0.25010	0.00280	0.4397	0.0908	0.0018	1436.9	16.0	1439.0	14.0	1437	37	-0.1	-0.1
129	10.9	97.1	3.1	55.8	2.7	110	0.57	3.1320	0.1000	0.25020	0.00500	0.4910	0.0909	0.0027	1442.0	25.0	1439.0	26.0	1443	55	0.2	0.1
281	16.1	154.3	6.6	73.9	2.1	172	0.48	3.1250	0.0910	0.25020	0.00430	0.5336	0.0911	0.0023	1439.0	23.0	1439.0	22.0	1446	47	0.0	0.0
18	17.9	495.0	60.0	11.5	0.5	498	0.02	3.1490	0.0710	0.25160	0.00300	0.6777	0.0913	0.0017	1444.0	17.0	1447.0	16.0	1450	35	-0.2	-0.2
71	11.7	266.0	12.0	79.1	3.4	285	0.30	3.1250	0.0700	0.25170	0.00310	0.5130	0.0907	0.0018	1440.0	18.0	1447.0	16.0	1438	38	-0.5	-0.4
146	21.0	51.6	1.8	31.2	0.6	59	0.60	3.3960	0.1100	0.25240	0.00550	0.3991	0.0990	0.0031	1499.0	25.0	1453.0	29.0	1600	58	3.1	1.8
182	12.2	224.0	13.0	55.0	1.4	237	0.25	3.1600	0.1200	0.25350	0.00800	0.6574	0.0897	0.0027	1445.0	28.0	1455.0	41.0	1418	58	-0.7	-0.4
196	21.7	52.9	2.3	20.2	0.6	58	0.38	3.1870	0.0970	0.25440	0.00570	0.5383	0.0907	0.0025	1457.0	23.0	1460.0	29.0	1437	53	-0.2	-0.1
295	15.0	110.0	5.3	40.4	1.6	119	0.37	3.2060	0.0870	0.25530	0.00420	0.4013	0.0915	0.0024	1457.0	21.0	1465.0	21.0	1466	51	-0.5	-0.4
102	11.3	159.4	8.6	60.3	2.8	174	0.38	3.5330	0.0900	0.25580	0.00450	0.5030	0.0997	0.0024	1534.0	20.0	1468.0	23.0	1627	48	4.3	3.3
100	19.9	250.0	16.0	51.3	2.3	262	0.21	3.2480	0.0720	0.25690	0.00330	0.6142	0.0918	0.0017	1468.0	17.0	1474.0	17.0	1462	35	-0.4	-0.4
103	18.2	180.0	10.0	59.9	3.1	194	0.33	3.2290	0.0720	0.25660	0.00350	0.4766	0.0921	0.0019	1463.0	17.0	1474.0	18.0	1464	39	-0.8	-0.6
296	17.5	52.5	3.8	36.2	1.9	61	0.69	3.2340	0.0950	0.25830	0.00490	0.2866	0.0920	0.0026	1465.0	24.0	1480.0	25.0	1455	55	-1.0	-0.6
143	13.5	153.4	7.7	67.9	3.0	169	0.44	3.2460	0.0890	0.25970	0.00450	0.5645	0.0899	0.0020	1469.0	21.0	1488.0	23.0	1425	45	-1.3	-0.9
298	10.9	23.4	1.2	11.6	0.7	26	0.50	3.3400	0.1900	0.26180	0.00920	0.5221	0.0917	0.0044	1481.0	45.0	1497.0	47.0	1465	93	-1.1	-0.4
225	8.8	216.0	15.0	105.5	8.9	241	0.49	3.9220	0.1100	0.26860	0.00510	0.6189	0.1068	0.0025	1620.0	21.0	1534.0	26.0	1748	44	5.3	4.1
273	21.7	185.0	13.0	63.3	3.9	200	0.34	3.5900	0.1000	0.27040	0.00490	0.5712	0.0973	0.0023	1547.0	22.0	1542.0	25.0	1574	43	0.3	0.2
136	15.7	143.0	4.3	34.2	0.7	151	0.24	3.6280	0.0880	0.27580	0.00430	0.5099	0.0961	0.0022	1554.0	19.0	1570.0	22.0	1553	40	-1.0	-0.8
238	11.9	168.0	16.0	34.8	4.2	176	0.21	3.7800	0.1500	0.27600	0.00850	0.6644	0.1005	0.0033	1585.0	32.0	1577.0	41.0	1632	58	0.5	0.3
155	8.5	84.4	3.8	82.5	3.7	104	0.98	3.9280	0.1200	0.28420	0.00580	0.3988	0.0993	0.0030	1618.0	25.0	1612.0	29.0	1605	55	0.4	0.2
137	22.6	384.0	53.0	41.5	4.2	394	0.11	3.9700	0.1500	0.28700	0.00660	0.8378	0.1019	0.0021	1623.0	30.0	1625.0	34.0	1658	38	-0.1	-0.1
147	20.9	159.3	3.7	67.0	1.3	175	0.42	3.9650	0.1000	0.28700	0.00530	0.6205	0.0991	0.0022	1625.0	21.0	1625.0	26.0	1608	42	0.0	0.0
264	17.6	90.7	2.5	59.3	3.8	105	0.65	4.0600	0.1300	0.29140	0.00760	0.5205	0.1007	0.0028	1645.0	25.0	1647.0	38.0	1633	51	-0.1	-0.1

Table 3: LA-ICP-MS Zircon Isotopic and Age Data Table: H3N 21-22m: Harvey County, KS Core Sample

Grain #	Signal Duration (s)	U (ppm)[1]	2σ	Th (ppm)[1]	2σ	eU (ppm)[2]	Th/U	Corrected Isotopic Ratios[3]							Ages (Ma)[7]						% Disc.[8]	Uncert. Wtd. Disc.[9]
								$^{207}Pb/^{235}U$	2σ[4]	$^{206}Pb/^{238}U$	2σ[4]	Rho[5]	$^{207}Pb/^{206}Pb$[6]	2σ	$^{207}Pb/^{235}U$	2σ	$^{206}Pb/^{238}U$	2σ	$^{207}Pb/^{206}Pb$	2σ		
1	21.6	54.3	1.7	52.2	1.7	67	0.96	4.1530	0.1000	0.29230	0.00330	0.4014	0.1035	0.0022	1663.0	20.0	1653.0	16.0	1685	41	0.6	0.5
82	10.5	46.5	1.2	26.7	0.8	53	0.57	4.2000	0.1500	0.29310	0.00610	0.4716	0.1051	0.0032	1670.0	29.0	1656.0	31.0	1709	56	0.8	0.5
187	17.6	128.8	3.8	35.6	1.1	137	0.28	4.1270	0.1100	0.29340	0.00590	0.6521	0.1055	0.0023	1662.0	24.0	1657.0	30.0	1718	39	0.3	0.2
135	19.1	300.0	14.0	25.5	0.8	306	0.08	4.2690	0.1100	0.29450	0.00450	0.6177	0.1048	0.0020	1686.0	20.0	1663.0	22.0	1712	34	1.4	1.2
274	18.5	58.9	2.0	23.2	0.5	64	0.39	4.2000	0.1200	0.29520	0.00550	0.3483	0.1028	0.0027	1674.0	24.0	1667.0	27.0	1665	50	0.4	0.3
127	18.5	102.2	3.4	19.9	0.5	107	0.19	4.1700	0.1100	0.29560	0.00480	0.6289	0.1030	0.0022	1666.0	21.0	1672.0	25.0	1675	39	-0.4	-0.3
84	16.2	418.0	11.0	63.8	1.2	433	0.15	4.2240	0.0880	0.29690	0.00380	0.3086	0.1032	0.0020	1678.1	17.0	1676.0	19.0	1680	36	0.1	0.1
231	21.7	470.0	10.0	76.8	2.0	488	0.16	4.2840	0.1000	0.29800	0.00510	0.6855	0.1045	0.0020	1690.0	20.0	1681.0	25.0	1706	34	0.5	0.5
276	21.7	88.2	6.8	38.0	2.2	97	0.43	4.2460	0.1100	0.29950	0.00510	0.5490	0.1031	0.0025	1683.0	22.0	1688.0	25.0	1682	43	-0.3	-0.2
17	19.3	260.0	50.0	23.7	4.4	266	0.09	4.2560	0.1000	0.30050	0.00390	0.5368	0.1026	0.0020	1685.0	20.0	1693.0	19.0	1671	36	-0.5	-0.4
232	20.6	116.2	6.4	27.3	1.3	123	0.23	4.3750	0.1100	0.30240	0.00500	0.4815	0.1047	0.0024	1706.0	21.0	1703.0	25.0	1715	40	0.2	0.1
133	17.9	173.7	7.8	61.3	1.6	188	0.35	4.3460	0.1000	0.30270	0.00520	0.4732	0.1050	0.0024	1704.0	20.0	1704.0	26.0	1709	41	0.0	0.0
48	21.7	1220.0	130.0	45.2	1.4	1231	0.04	4.3850	0.0970	0.30330	0.00440	0.7893	0.1048	0.0018	1710.0	18.0	1707.0	22.0	1710	31	0.2	0.2
289	19.7	134.6	1.9	96.6	3.9	157	0.72	4.3010	0.1100	0.30370	0.00530	0.6808	0.1039	0.0022	1691.0	22.0	1709.0	26.0	1689	40	-1.1	-0.8
191	15.8	59.5	3.3	21.4	1.1	65	0.36	4.3600	0.1300	0.30400	0.00590	0.4598	0.1045	0.0029	1702.0	25.0	1710.0	29.0	1708	52	-0.5	-0.3
166	20.1	96.5	8.1	39.2	3.5	106	0.41	4.3770	0.1100	0.30360	0.00540	0.4572	0.1042	0.0025	1706.0	22.0	1711.0	27.0	1692	45	-0.3	-0.2
294	16.2	230.1	9.0	40.6	2.8	240	0.18	4.3900	0.1100	0.30520	0.00530	0.6810	0.1040	0.0021	1709.0	21.0	1716.0	26.0	1701	39	-0.4	-0.3
39	16.8	289.7	6.8	74.8	1.1	307	0.26	4.4590	0.0910	0.30820	0.00310	0.5950	0.1042	0.0018	1724.1	18.0	1732.0	15.0	1704	32	-0.5	-0.4
2	6.2	384.0	27.0	103.9	7.2	408	0.27	4.5670	0.1200	0.30900	0.00420	0.5887	0.1064	0.0022	1743.0	22.0	1735.0	21.0	1737	39	0.5	0.4
106	12.7	314.0	14.0	86.4	3.0	334	0.28	4.5100	0.1100	0.30970	0.00540	0.7733	0.1044	0.0020	1732.0	21.0	1739.0	27.0	1702	35	-0.4	-0.3
204	15.4	190.0	15.0	41.9	1.4	200	0.22	4.4910	0.1200	0.31020	0.00840	0.6184	0.1044	0.0025	1727.0	23.0	1740.0	41.0	1699	44	-0.8	-0.6
283	16.4	198.0	20.0	102.4	8.9	222	0.52	4.3650	0.1100	0.31080	0.00470	0.4213	0.1013	0.0023	1704.0	20.0	1744.0	23.0	1647	43	-2.3	-2.0
240	19.9	186.8	7.3	33.6	1.0	195	0.18	4.7600	0.1300	0.31200	0.00490	0.2761	0.1103	0.0027	1777.0	22.0	1750.0	24.0	1797	46	1.5	1.2
212	16.7	175.9	9.5	31.8	1.4	183	0.18	4.6840	0.1100	0.31620	0.00440	0.5045	0.1063	0.0022	1765.0	20.0	1771.0	21.0	1733	38	-0.3	-0.3
209	22.2	171.0	11.0	108.2	8.0	196	0.63	4.5810	0.1200	0.31840	0.00560	0.7126	0.1040	0.0021	1745.0	21.0	1781.0	27.0	1697	36	-2.1	-1.7
197	15.8	81.0	11.0	63.3	9.4	96	0.78	4.7300	0.1300	0.31950	0.00570	0.4485	0.1071	0.0027	1773.0	23.0	1787.0	28.0	1744	47	-0.8	-0.6
217	10.7	721.0	20.0	130.7	3.2	752	0.18	4.6800	0.1300	0.32060	0.00970	0.5789	0.1058	0.0030	1769.0	22.0	1791.0	48.0	1729	54	-1.2	-1.0
99	11.8	170.0	23.0	49.4	7.6	182	0.29	5.0000	0.1800	0.32580	0.00710	0.4878	0.1121	0.0034	1816.0	31.0	1817.0	35.0	1825	55	-0.1	0.0
262	19.4	135.5	8.8	46.0	2.9	146	0.34	5.0140	0.1300	0.32810	0.00590	0.6597	0.1104	0.0024	1820.0	21.0	1832.0	28.0	1812	40	-0.7	-0.6
36	16.7	101.0	7.6	27.9	1.9	108	0.28	5.0050	0.1200	0.32990	0.00480	0.4947	0.1099	0.0023	1819.0	20.0	1837.0	23.0	1797	37	-1.0	-0.9
104	16.9	137.4	9.4	47.6	2.7	149	0.35	5.1700	0.2000	0.33400	0.01200	0.8771	0.1130	0.0025	1853.0	34.0	1851.0	60.0	1843	40	0.1	0.1
74	6.1	800.0	49.0	169.7	7.8	840	0.21	5.3900	0.1400	0.34130	0.00650	0.7283	0.1152	0.0022	1882.0	22.0	1893.0	31.0	1887	37	-0.6	-0.5
206	14.5	133.0	15.0	76.3	9.1	151	0.57	8.3100	0.2500	0.34270	0.00740	0.5854	0.1725	0.0044	2266.0	26.0	1904.0	37.0	2587	42	16.0	13.9
214	18.6	285.0	11.0	210.7	8.6	335	0.74	5.0530	0.1300	0.34470	0.00660	0.6248	0.1065	0.0023	1830.0	22.0	1912.0	32.0	1744	39	-4.5	-3.7
7	20.7	137.0	14.0	52.3	1.0	149	0.38	6.1110	0.1300	0.36230	0.00420	0.5287	0.1233	0.0023	1992.0	19.0	1992.0	20.0	2004	32	0.0	0.0
218	14.3	219.2	8.3	88.9	1.9	240	0.41	7.3800	0.1900	0.39700	0.01000	0.7632	0.1353	0.0028	2159.0	22.0	2154.0	47.0	2165	35	0.2	0.2
233	21.4	144.0	18.0	142.0	17.0	177	0.99	11.1700	0.4900	0.42900	0.01700	0.9200	0.1887	0.0037	2527.0	41.0	2291.0	77.0	2731	32	9.3	5.8
205	14.9	78.2	2.5	16.4	0.4	82	0.21	9.9400	0.2700	0.43050	0.00750	0.6799	0.1679	0.0037	2427.0	25.0	2307.0	34.0	2537	38	4.9	4.8
227	12.4	159.7	7.3	79.0	11.0	178	0.49	10.3800	0.3500	0.46800	0.01500	0.7558	0.1591	0.0039	2470.0	29.0	2471.0	65.0	2447	44	0.0	0.0
165	21.1	138.8	4.8	37.1	3.2	148	0.27	11.9500	0.3000	0.47720	0.00860	0.7148	0.1810	0.0035	2598.0	23.0	2513.0	37.0	2664	33	3.3	3.7
8	11.2	96.0	11.0	161.0	20.0	134	1.68	12.8100	0.3000	0.51100	0.00780	0.5531	0.1825	0.0039	2664.0	22.0	2660.0	33.0	2674	35	0.2	0.2
114	9.9	60.4	3.1	34.2	2.1	68	0.57	14.4600	0.4500	0.55200	0.01700	0.6216	0.1893	0.0055	2778.0	30.0	2842.0	72.0	2731	48	-2.3	-2.1

Table 3: LA-ICP-MS Zircon Isotopic and Age Data Table: H3N 21-22m: Harvey County, KS Core Sample

								Corrected Isotopic Ratios[3]						Ages (Ma)[7]							
Grain #	Signal Duration (s)	U (ppm)[1]	2σ	Th (ppm)[1]	2σ	eU (ppm)[2]	Th/U	$^{207}Pb/^{235}U$	2σ[4]	$^{206}Pb/^{238}U$	2σ[4]	Rho[5]	$^{207}Pb/^{206}Pb$[6]	2σ	$^{207}Pb/^{235}U$	2σ	$^{206}Pb/^{238}U$	2σ	$^{207}Pb/^{206}Pb$	2σ	% Disc.[8]	Uncert. Wtd. Disc.[9]

[1]U and Th have been concentrations and the Th/U ratios are calculated relative to the GJ-1 standard value using 287 ± 76 ppm for U and 8.4 ± 2.6 ppm for Th (Jackson et al., 2004)

[2]Equivalent U defined by the equation: eU = U ppm + 0.235*Th ppm

[3]Corrected for U-Pb fractionation and background and normalized to the GJ-1 standard value: $^{207}Pb/^{235}U$ =0.8093 ± 0.0009 and $^{206}Pb/^{238}U$ = 0.09761 ± 0.00011 (Jackson et al., 2004)

[4]Propagated uncertainty of internal uncertanties (2SE) and within run reproducibility of GJ-1 (2SE)

[5]Uncertainty correlation between $^{206}Pb/^{238}U$ and $^{207}Pb/^{235}U$ uncertainties

[6]Corrected for background and Pb isotopicfractionation using the GJ-1 standard value: $^{207}Pb/^{206}Pb$ = 0.06014 ± 0.00001 (Jackson et al., 2004)

[7]U-Pb ages calculated relative to the GJ-1 standard

[8]Discordance defined as (($^{207}Pb/^{235}U$age - $^{206}Pb/^{238}U$age)/($^{207}Pb/^{235}U$ age))*100

[9]Uncertainty weighted age difference defined as ($^{207}Pb/^{235}U$ age - $^{206}Pb/^{238}U$ age)/($^{207}Pb/^{235}U$ age uncertainty)

Rows highlighted in grey were not used in interpretations or calculations based on discordance or short analysis times

Table 4: LA-ICP-MS Zircon Isotopic and Age Data Table: H3N 17-18m: Harvey County, KS Core Sample

Grain #	Signal Duration (s)	U (ppm)[1]	2σ	Th (ppm)[1]	2σ	eU (ppm)[2]	Th/U	Corrected Isotopic Ratios[3]							Ages (Ma)[7]						% Disc.[8]	Uncert. Wtd. Disc.[9]
								$^{207}Pb/^{235}U$	2σ[4]	$^{206}Pb/^{238}U$	2σ[4]	Rho[5]	$^{207}Pb/^{206}Pb$[6]	2σ	$^{207}Pb/^{235}U$	2σ	$^{206}Pb/^{238}U$	2σ	$^{207}Pb/^{206}Pb$	2σ		
244	20.2	108.0	3.1	38.9	2.6	117	0.36	0.0140	0.0041	0.00163	0.00011	0.5000	0.0640	0.0190	13.9	4.1	10.5	0.7	330	240	24.7	0.8
216	18.8	498.0	14.0	201.6	3.2	545	0.40	0.0276	0.0021	0.00400	0.00009	0.5000	0.0513	0.0043	27.6	2.1	25.7	0.6	200	100	6.7	0.9
258	22.1	172.7	5.4	122.7	2.4	202	0.71	0.0281	0.0029	0.00420	0.00013	0.1370	0.0481	0.0048	28.0	2.8	27.0	0.8	130	83	3.4	0.3
69	20.3	205.0	12.0	157.0	11.0	242	0.77	0.0310	0.0031	0.00438	0.00013	0.1985	0.0516	0.0052	30.9	3.1	28.2	0.8	270	110	8.9	0.9
16	18.0	379.0	24.0	189.0	10.0	423	0.50	0.0308	0.0023	0.00451	0.00011	0.1382	0.0500	0.0037	30.8	2.2	29.0	0.7	220	80	5.9	0.8
211	21.9	130.1	7.2	55.5	3.4	143	0.43	0.0351	0.0040	0.00483	0.00018	0.5000	0.0547	0.0067	34.9	4.0	31.1	1.1	290	110	10.9	0.9
49	16.3	239.0	4.9	271.8	6.9	303	1.14	0.0341	0.0038	0.00488	0.00013	0.1302	0.0506	0.0057	34.5	3.9	31.4	0.8	190	83	9.1	0.8
21	21.8	79.0	4.1	79.0	5.3	98	1.00	0.0458	0.0063	0.00516	0.00020	0.0792	0.0653	0.0090	45.0	6.1	33.1	1.3	660	150	26.4	2.0
180	16.6	199.3	3.5	179.1	4.7	241	0.90	0.0360	0.0035	0.00526	0.00015	0.5000	0.0497	0.0052	35.9	3.4	33.8	1.0	130	86	5.8	0.6
115	22.6	43.5	4.0	50.4	4.2	55	1.16	0.0580	0.0120	0.00537	0.00030	0.5000	0.0820	0.0210	55.0	12.0	34.5	1.9	640	260	37.3	1.7
57	18.9	302.0	30.0	195.0	25.0	348	0.65	0.0339	0.0031	0.00542	0.00012	0.2172	0.0450	0.0040	33.7	3.0	34.9	0.8	10	75	-3.5	-0.4
75	21.4	120.0	19.0	126.0	22.0	150	1.05	0.0400	0.0056	0.00545	0.00020	0.1355	0.0521	0.0072	40.3	5.6	35.0	1.3	270	150	13.2	0.9
245	20.8	459.0	22.0	388.0	17.0	550	0.85	0.0366	0.0022	0.00548	0.00011	0.5000	0.0488	0.0031	36.7	2.1	35.2	0.7	150	64	4.0	0.7
109	22.7	105.2	8.4	69.1	5.2	121	0.66	0.0377	0.0054	0.00550	0.00017	0.5000	0.0500	0.0077	37.3	5.3	35.4	1.1	170	140	5.1	0.4
182	22.4	104.6	5.8	109.6	6.4	130	1.05	0.0333	0.0057	0.00551	0.00022	0.0564	0.0436	0.0079	33.0	5.6	35.4	1.4	-60	170	-7.3	-0.4
162	13.5	59.5	2.0	25.6	1.2	66	0.43	0.0470	0.0110	0.00559	0.00035	0.5000	0.0610	0.0150	47.0	10.0	35.9	2.2	420	220	23.6	1.1
30	21.5	429.0	28.0	279.0	30.0	495	0.65	0.0347	0.0025	0.00562	0.00012	0.1958	0.0447	0.0030	34.6	2.5	36.2	0.8	-20	61	-4.5	-0.6
147	22.4	259.6	8.4	269.8	5.2	323	1.04	0.0370	0.0030	0.00564	0.00013	0.5000	0.0473	0.0041	36.8	3.0	36.2	0.8	90	100	1.5	0.2
253	21.9	333.0	16.0	189.1	6.1	377	0.57	0.0387	0.0026	0.00567	0.00012	0.5000	0.0493	0.0035	38.5	2.6	36.4	0.8	170	81	5.4	0.8
289	20.6	740.0	31.0	434.3	9.9	842	0.59	0.0381	0.0021	0.00569	0.00013	0.0825	0.0486	0.0027	38.0	2.0	36.6	0.8	120	64	3.8	0.7
240	19.8	19.2	0.7	7.7	0.2	21	0.40	0.0480	0.0220	0.00573	0.00043	0.5000	0.0670	0.0340	43.0	21.0	36.8	2.8	-320	260	14.4	0.3
278	22.4	930.0	30.0	138.9	4.7	963	0.15	0.0397	0.0018	0.00628	0.00012	0.3803	0.0456	0.0018	39.5	1.8	40.4	0.8	7	47	-2.3	-0.5
124	17.4	169.0	13.0	118.8	6.6	197	0.70	0.0476	0.0051	0.00659	0.00021	0.1291	0.0542	0.0058	47.0	4.9	42.4	1.4	280	96	9.8	0.9
228	21.9	150.0	6.1	65.1	2.8	165	0.43	0.1870	0.0290	0.00859	0.00047	0.9044	0.1520	0.0180	168.0	23.0	55.1	3.0	2260	160	67.2	4.9
178	21.7	866.0	18.0	227.7	5.8	920	0.26	0.0605	0.0026	0.00941	0.00015	0.3476	0.0470	0.0019	59.6	2.5	60.4	1.0	63	42	-1.3	-0.3
80	21.7	105.4	4.8	41.5	1.6	115	0.39	0.0696	0.0068	0.00957	0.00027	0.0204	0.0528	0.0055	67.9	6.4	61.4	1.7	280	100	9.6	1.0
31	21.5	137.4	8.3	72.7	2.8	154	0.53	0.0639	0.0046	0.00978	0.00025	0.0628	0.0481	0.0037	62.7	4.4	62.8	1.6	110	79	-0.2	0.0
217	21.9	160.6	7.6	59.1	2.1	174	0.37	0.0700	0.0061	0.00996	0.00026	0.5000	0.0502	0.0044	68.3	5.8	63.9	1.7	160	85	6.4	0.8
269	21.9	209.1	6.9	194.7	3.4	255	0.93	0.0617	0.0045	0.00996	0.00020	0.0504	0.0444	0.0032	60.6	4.3	63.9	1.3	10	80	-5.4	-0.8
19	16.9	174.9	4.5	90.3	2.4	196	0.52	0.0708	0.0053	0.01009	0.00024	0.0805	0.0504	0.0039	69.3	5.1	64.7	1.5	260	70	6.6	0.9
154	15.6	557.4	9.5	372.0	11.0	645	0.67	0.0654	0.0033	0.01011	0.00024	0.1269	0.0480	0.0025	64.3	3.1	64.9	1.5	120	60	-0.9	-0.2
120	16.5	103.0	4.2	89.2	3.7	124	0.87	0.0753	0.0078	0.01039	0.00027	0.5000	0.0531	0.0058	73.3	7.4	66.7	1.7	270	110	9.0	0.9
40	21.2	288.8	7.5	105.3	2.4	314	0.36	0.0729	0.0038	0.01095	0.00023	0.0693	0.0484	0.0025	71.4	3.6	70.2	1.5	115	55	1.7	0.3
209	22.3	171.6	9.9	15.9	1.0	175	0.09	0.0727	0.0049	0.01112	0.00026	0.5000	0.0482	0.0035	71.0	4.6	71.3	1.7	130	54	-0.4	-0.1
24	21.1	334.0	22.0	176.0	12.0	375	0.53	0.0755	0.0039	0.01125	0.00024	0.2382	0.0489	0.0027	73.8	3.6	72.1	1.5	130	66	2.3	0.5
11	22.4	186.5	6.0	26.7	1.2	193	0.14	0.0761	0.0050	0.01129	0.00025	0.0555	0.0490	0.0034	74.8	4.6	72.3	1.6	160	58	3.3	0.5
60	19.9	64.6	5.3	37.8	3.0	73	0.59	0.0850	0.0120	0.01132	0.00047	0.5000	0.0567	0.0083	81.0	12.0	72.6	3.0	330	120	10.4	0.7
214	21.9	164.4	8.4	82.5	3.9	184	0.50	0.0787	0.0060	0.01138	0.00024	0.5000	0.0500	0.0041	76.6	5.6	72.9	1.5	210	84	4.8	0.7
247	21.9	228.4	9.8	53.4	2.3	241	0.23	0.0732	0.0047	0.01138	0.00021	0.0153	0.0459	0.0030	71.5	4.4	72.9	1.3	60	84	-2.0	-0.3
279	23.0	140.6	5.2	56.6	2.3	154	0.40	0.0844	0.0060	0.01140	0.00028	0.5000	0.0532	0.0042	82.6	5.5	73.1	1.8	320	65	11.5	1.7
136	21.0	67.6	2.7	49.8	1.1	79	0.74	0.0790	0.0096	0.01143	0.00035	0.5000	0.0503	0.0063	78.7	9.1	73.3	2.2	190	130	6.9	0.6
113	22.2	384.0	24.0	31.6	2.4	391	0.08	0.0739	0.0032	0.01150	0.00017	0.1543	0.0463	0.0020	72.3	3.0	73.7	1.1	36	48	-1.9	-0.5
260	21.9	260.3	4.6	176.5	3.9	302	0.68	0.0743	0.0042	0.01153	0.00025	0.1959	0.0468	0.0026	72.6	4.0	73.9	1.6	50	57	-1.8	-0.3
212	21.9	283.0	20.0	69.8	6.1	299	0.25	0.0770	0.0042	0.01156	0.00019	0.2028	0.0489	0.0028	75.6	4.1	74.1	1.2	140	46	2.0	0.4

Table 4: LA-ICP-MS Zircon Isotopic and Age Data Table: H3N 17-18m: Harvey County, KS Core Sample

								Corrected Isotopic Ratios[2]							Ages (Ma)[7]							
Grain #	Signal Duration (s)	U (ppm)[1]	2σ	Th (ppm)[1]	2σ	eU (ppm)[2]	Th/U	$^{207}Pb/^{235}U$	2σ[4]	$^{206}Pb/^{238}U$	2σ[4]	Rho[5]	$^{207}Pb/^{206}Pb$[6]	2σ	$^{207}Pb/^{235}U$	2σ	$^{206}Pb/^{238}U$	2σ	$^{207}Pb/^{206}Pb$	2σ	% Disc.[8]	Uncert. Wtd. Disc.[9]
237	21.9	78.1	2.5	28.5	0.6	85	0.36	0.0805	0.0083	0.01158	0.00034	0.5000	0.0509	0.0055	78.0	7.8	74.2	2.2	230	100	4.9	0.5
265	21.9	108.6	2.8	42.5	1.8	119	0.39	0.0794	0.0062	0.01158	0.00036	0.1227	0.0490	0.0039	77.2	5.8	74.2	2.3	150	73	3.9	0.5
285	21.9	66.2	1.3	38.0	0.6	75	0.57	0.0792	0.0090	0.01158	0.00041	0.0372	0.0493	0.0056	76.7	8.4	74.2	2.6	160	92	3.3	0.3
134	20.7	38.4	3.9	26.0	2.1	45	0.68	0.0710	0.0150	0.01163	0.00047	0.5000	0.0452	0.0089	71.0	13.0	74.5	3.0	30	140	-4.9	-0.3
197	21.9	254.0	29.0	99.0	10.0	277	0.39	0.0737	0.0043	0.01170	0.00025	0.2497	0.0469	0.0027	72.1	4.1	75.0	1.6	60	59	-4.0	-0.7
143	19.0	96.6	4.1	92.7	3.6	118	0.96	0.0809	0.0084	0.01174	0.00040	0.5000	0.0499	0.0055	79.4	7.8	75.2	2.5	190	99	5.3	0.5
119	22.0	40.9	1.0	43.2	1.9	51	1.06	0.0850	0.0120	0.01174	0.00044	0.1704	0.0523	0.0072	82.0	11.0	75.3	2.8	240	110	8.2	0.6
73	22.0	767.0	52.0	277.0	19.0	832	0.36	0.0776	0.0026	0.01179	0.00021	0.3147	0.0479	0.0016	75.8	2.4	75.6	1.4	97	41	0.3	0.1
27	21.9	99.2	6.1	62.5	3.1	114	0.63	0.0795	0.0068	0.01185	0.00032	0.1380	0.0499	0.0045	77.3	6.4	75.9	2.1	220	82	1.8	0.2
291	22.9	214.0	12.0	158.8	5.6	251	0.74	0.0730	0.0042	0.01206	0.00024	0.5000	0.0440	0.0026	71.8	3.9	77.3	1.5	-60	76	-7.7	-1.4
35	22.0	89.9	5.2	78.4	3.7	108	0.87	0.0841	0.0070	0.01218	0.00039	0.5000	0.0515	0.0049	83.4	6.8	78.0	2.5	270	83	6.5	0.8
139	21.9	125.0	13.0	60.7	6.4	139	0.49	0.0824	0.0067	0.01238	0.00033	0.0260	0.0489	0.0041	80.0	6.3	79.3	2.1	160	73	0.9	0.1
220	19.6	412.0	18.0	95.1	5.2	434	0.23	0.0827	0.0042	0.01239	0.00031	0.2658	0.0488	0.0023	80.5	3.9	79.4	2.0	145	49	1.4	0.3
6	21.3	151.5	6.5	25.4	1.4	157	0.17	0.1060	0.0100	0.01363	0.00068	0.8866	0.0570	0.0038	101.4	9.3	87.2	4.3	460	86	14.0	1.5
288	20.8	888.0	45.0	494.0	32.0	1004	0.56	0.0949	0.0039	0.01410	0.00028	0.2326	0.0495	0.0021	92.0	3.6	90.2	1.8	164	51	2.0	0.5
236	22.1	324.0	29.0	159.0	19.0	361	0.49	0.0990	0.0048	0.01449	0.00025	0.2088	0.0494	0.0022	95.7	4.4	92.7	1.6	162	55	3.1	0.7
58	22.5	120.2	5.1	43.6	1.0	130	0.36	0.1064	0.0065	0.01479	0.00032	0.0221	0.0521	0.0033	102.4	5.9	94.6	2.1	280	66	7.6	1.3
157	21.9	247.0	20.0	136.7	9.8	279	0.55	0.0979	0.0053	0.01484	0.00026	0.1049	0.0473	0.0026	94.6	5.0	95.0	1.7	80	49	-0.4	-0.1
138	22.0	16.0	1.1	19.0	1.8	20	1.19	0.6100	0.1200	0.01600	0.00140	0.9030	0.2670	0.0380	434.0	69.0	102.4	8.9	2950	180	76.4	4.8
225	21.6	396.0	31.0	117.7	7.2	424	0.30	0.1165	0.0048	0.01690	0.00039	0.1394	0.0493	0.0022	112.2	4.5	108.0	2.5	169	49	3.7	0.9
202	22.5	148.2	6.1	181.0	10.0	191	1.22	0.1910	0.0090	0.02506	0.00051	0.2341	0.0554	0.0026	176.9	7.7	159.5	3.2	401	64	9.8	2.3
227	20.9	180.0	13.0	180.0	15.0	222	1.00	0.1782	0.0091	0.02547	0.00057	0.2681	0.0497	0.0027	165.9	7.9	162.1	3.6	180	61	2.3	0.5
163	21.9	343.0	10.0	147.2	2.5	378	0.43	0.1790	0.0070	0.02582	0.00033	0.2621	0.0508	0.0018	167.6	5.9	164.3	2.1	217	40	2.0	0.6
5	22.6	498.0	10.0	423.9	7.5	598	0.85	0.1741	0.0048	0.02589	0.00036	0.3087	0.0492	0.0013	162.8	4.2	164.8	2.2	153	29	-1.2	-0.5
223	21.9	403.0	23.0	216.0	14.0	454	0.54	0.1808	0.0062	0.02621	0.00049	0.0925	0.0498	0.0018	168.6	5.4	166.8	3.1	174	47	1.1	0.3
213	21.9	151.3	5.7	71.0	2.4	168	0.47	0.1847	0.0084	0.02782	0.00048	0.2939	0.0480	0.0021	173.3	7.2	176.8	3.0	117	48	-2.0	-0.5
121	17.8	117.8	2.3	90.5	2.0	139	0.77	0.2230	0.0130	0.03236	0.00095	0.4850	0.0494	0.0027	203.0	11.0	205.3	5.9	170	60	-1.1	-0.2
133	21.9	29.5	2.2	28.0	2.1	36	0.95	1.8000	0.2000	0.03900	0.00170	0.7720	0.3240	0.0260	1031.0	71.0	247.0	10.0	3510	130	76.0	11.0
206	21.7	82.4	4.5	160.7	6.3	120	1.95	0.3850	0.0190	0.04675	0.00093	0.1782	0.0604	0.0029	330.0	13.0	294.5	5.7	605	63	10.8	2.7
229	22.2	341.0	30.0	192.1	7.6	386	0.56	0.3800	0.0098	0.05221	0.00066	0.2726	0.0523	0.0013	326.7	7.4	328.1	4.0	300	34	-0.4	-0.2
14	22.5	271.0	16.0	232.0	9.7	326	0.86	0.4130	0.0130	0.05497	0.00087	0.5678	0.0540	0.0014	350.4	9.0	344.9	5.3	370	33	1.6	0.6
52	21.5	410.0	24.0	92.7	4.0	432	0.23	0.7180	0.0270	0.05670	0.00180	0.8851	0.0919	0.0019	549.0	15.0	355.0	11.0	1460	27	35.3	12.9
54	22.4	160.5	9.5	70.4	3.3	177	0.44	0.4250	0.0130	0.05671	0.00091	0.2996	0.0545	0.0017	358.9	9.1	355.5	5.6	386	40	0.9	0.4
142	23.0	417.0	63.0	39.0	1.9	426	0.09	0.4310	0.0130	0.05748	0.00098	0.3580	0.0535	0.0015	364.2	8.7	360.2	6.0	348	38	1.1	0.5
44	19.5	120.0	12.0	35.6	1.3	128	0.30	0.4360	0.0150	0.05781	0.00091	0.2550	0.0549	0.0020	369.0	11.0	362.2	5.6	401	41	1.8	0.6
186	21.9	106.1	9.5	85.0	6.7	126	0.80	0.4200	0.0170	0.05799	0.00086	0.2978	0.0524	0.0020	356.0	12.0	363.4	5.3	299	44	-2.1	-0.6
25	19.7	534.0	46.0	149.6	8.3	569	0.28	0.4413	0.0110	0.05852	0.00098	0.6450	0.0548	0.0011	371.6	7.3	366.6	6.0	404	31	1.3	0.7
226	15.6	111.9	2.4	44.2	4.3	122	0.39	0.4370	0.0210	0.05880	0.00110	0.1708	0.0519	0.0025	367.0	15.0	368.3	6.7	320	57	-0.4	-0.1
96	21.9	430.0	23.0	32.0	1.6	438	0.07	0.4430	0.0120	0.05930	0.00110	0.6179	0.0528	0.0013	371.5	8.4	371.4	6.8	316	31	0.0	0.0
59	20.0	330.0	12.0	59.5	6.4	344	0.18	0.4490	0.0120	0.05910	0.00110	0.4672	0.0547	0.0014	377.9	8.9	371.8	6.5	393	32	1.6	0.7
181	21.9	338.0	36.0	201.0	21.0	385	0.59	1.4400	0.1700	0.05940	0.00130	0.6039	0.1730	0.0180	859.0	68.0	371.8	7.7	2340	180	56.7	7.2
117	21.9	304.0	19.0	78.6	4.2	322	0.26	0.4447	0.0110	0.05961	0.00077	0.2985	0.0535	0.0014	373.2	7.6	373.2	4.7	354	32	0.0	0.0
298	21.9	203.0	28.0	140.0	11.0	236	0.69	0.4420	0.0150	0.05984	0.00086	0.1838	0.0541	0.0018	372.1	10.0	374.6	5.2	380	45	-0.7	-0.3
7	14.1	72.5	1.8	28.9	0.8	79	0.40	0.4400	0.0420	0.06080	0.00110	0.6544	0.0527	0.0046	357.0	22.0	380.7	6.7	250	110	-6.6	-1.1

Table 4: LA-ICP-MS Zircon Isotopic and Age Data Table: H3N 17-18m: Harvey County, KS Core Sample

Grain #	Signal Duration (s)	U (ppm)[1]	2σ	Th (ppm)[1]	2σ	eU (ppm)[2]	Th/U	Corrected Isotopic Ratios[3]							Ages (Ma)[7]						% Disc.[8]	Uncert. Wtd. Disc.[9]
								$^{207}Pb/^{235}U$	2σ[4]	$^{206}Pb/^{238}U$	2σ[4]	Rho[5]	$^{207}Pb/^{206}Pb$[6]	2σ	$^{207}Pb/^{235}U$	2σ	$^{206}Pb/^{238}U$	2σ	$^{207}Pb/^{206}Pb$	2σ		
252	21.9	29.7	1.0	12.3	0.5	33	0.41	0.4410	0.0340	0.06130	0.00140	0.2816	0.0514	0.0037	368.0	23.0	383.5	8.6	230	68	-4.2	-0.7
12	21.6	373.0	27.0	212.0	18.0	423	0.57	1.1640	0.0780	0.06400	0.00160	0.3128	0.1336	0.0086	776.0	37.0	399.9	9.6	2140	110	48.5	10.2
176	21.9	217.0	20.0	27.4	0.9	223	0.13	0.4850	0.0150	0.06406	0.00085	0.2009	0.0546	0.0016	402.1	9.8	400.3	5.2	392	35	0.4	0.2
150	21.9	191.3	8.5	31.1	0.8	199	0.16	0.4780	0.0150	0.06414	0.00095	0.2914	0.0544	0.0018	397.0	10.0	400.7	5.7	388	37	-0.9	-0.4
81	22.0	128.6	5.3	50.1	1.2	140	0.39	0.4960	0.0160	0.06500	0.00100	0.3105	0.0548	0.0018	409.0	11.0	405.8	6.3	413	47	0.8	0.3
231	21.9	257.0	10.0	76.2	1.6	275	0.30	0.4830	0.0140	0.06522	0.00098	0.4002	0.0535	0.0015	399.3	9.8	407.3	5.9	336	34	-2.0	-0.8
300	21.9	513.0	38.0	18.4	0.9	517	0.04	1.9100	0.0700	0.06530	0.00170	0.3259	0.2123	0.0083	1079.0	25.0	408.0	10.0	2925	62	62.2	26.8
167	21.9	140.9	8.8	41.1	2.0	151	0.29	0.4950	0.0150	0.06545	0.00100	0.1971	0.0548	0.0017	407.3	10.0	409.3	6.2	400	41	-0.5	-0.2
144	21.9	248.0	11.0	89.7	2.8	269	0.36	0.5040	0.0140	0.06570	0.00110	0.3494	0.0558	0.0015	414.5	9.1	410.2	6.4	430	35	1.0	0.5
39	21.9	171.8	4.3	56.3	1.0	185	0.33	0.5710	0.0470	0.06610	0.00130	0.6943	0.0611	0.0039	452.0	27.0	412.8	7.7	560	100	8.7	1.5
45	21.6	597.0	45.0	281.0	20.0	663	0.47	0.5370	0.0150	0.06619	0.00090	0.3322	0.0594	0.0017	436.1	9.6	413.1	5.5	565	47	5.3	2.4
185	22.1	292.0	14.0	113.0	12.0	319	0.39	0.5060	0.0130	0.06646	0.00075	0.2866	0.0558	0.0014	416.7	8.9	414.8	4.5	443	33	0.5	0.2
98	21.9	134.6	7.4	54.4	2.3	147	0.40	0.5150	0.0170	0.06710	0.00130	0.4434	0.0562	0.0016	422.0	11.0	418.4	8.0	443	41	0.9	0.3
13	16.9	378.0	24.0	143.2	9.1	412	0.38	0.5057	0.0120	0.06720	0.00110	0.3988	0.0550	0.0014	415.2	8.1	419.4	6.5	416	31	-1.0	-0.5
4	22.0	158.8	7.0	66.3	1.2	174	0.42	0.5210	0.0170	0.06798	0.00100	0.1866	0.0559	0.0019	425.9	11.0	423.9	6.1	441	46	0.5	0.2
222	20.1	495.0	24.0	441.0	11.0	599	0.89	0.5420	0.0130	0.06952	0.00100	0.3136	0.0564	0.0014	440.4	8.8	433.2	6.1	471	29	1.6	0.8
20	22.0	88.8	4.4	30.5	1.0	96	0.34	0.5370	0.0230	0.07040	0.00110	0.1693	0.0561	0.0024	436.0	15.0	438.5	6.6	414	53	-0.6	-0.2
218	21.9	164.4	6.2	38.8	0.9	174	0.24	0.5500	0.0170	0.07050	0.00100	0.3164	0.0563	0.0016	445.0	11.0	439.2	6.3	454	35	1.3	0.5
47	21.7	430.0	13.0	7.3	0.2	432	0.02	0.5573	0.0130	0.07053	0.00096	0.5180	0.0570	0.0012	449.3	8.3	439.3	5.7	493	24	2.2	1.2
63	21.9	424.0	22.0	112.9	4.0	451	0.27	0.5472	0.0120	0.07084	0.00087	0.3105	0.0562	0.0013	442.9	7.8	441.2	5.2	458	31	0.4	0.2
26	19.6	295.0	13.0	37.7	1.2	304	0.13	0.5550	0.0140	0.07230	0.00110	0.1578	0.0562	0.0016	447.6	9.4	450.1	6.5	460	37	-0.6	-0.3
170	11.8	123.6	2.9	63.7	1.6	139	0.52	0.5610	0.0230	0.07300	0.00140	0.3304	0.0559	0.0022	455.0	15.0	454.2	8.4	439	47	0.2	0.1
79	22.6	170.3	7.0	77.3	5.7	188	0.45	0.5860	0.0160	0.07310	0.00120	0.1632	0.0575	0.0017	468.6	10.0	454.9	7.0	498	35	2.9	1.4
61	21.9	163.0	11.0	22.3	2.8	168	0.14	0.5790	0.0180	0.07330	0.00120	0.3749	0.0569	0.0018	463.0	12.0	456.1	7.2	495	40	1.5	0.6
192	21.9	335.0	23.0	207.4	9.0	384	0.62	1.1590	0.0660	0.07340	0.00150	0.3708	0.1145	0.0063	783.0	31.0	456.6	9.2	1860	96	41.7	10.5
37	18.6	259.0	12.0	65.0	3.4	274	0.25	0.5710	0.0160	0.07362	0.00100	0.2511	0.0553	0.0016	458.2	11.0	457.9	6.2	421	34	0.1	0.0
281	22.9	264.0	30.0	83.1	5.3	284	0.31	0.5900	0.0170	0.07600	0.00120	0.1605	0.0557	0.0017	470.9	11.0	472.3	7.4	427	36	-0.3	-0.1
97	22.5	70.6	5.0	42.1	2.5	80	0.60	0.6610	0.0250	0.07610	0.00160	0.4142	0.0630	0.0022	515.0	16.0	473.0	9.8	713	49	8.2	2.6
233	21.9	575.0	34.0	7.0	0.6	577	0.01	0.6080	0.0150	0.07660	0.00120	0.3911	0.0580	0.0014	481.9	9.6	475.5	7.1	522	38	1.3	0.7
271	22.5	146.6	6.7	95.9	1.6	169	0.65	0.5970	0.0210	0.07950	0.00140	0.2626	0.0549	0.0020	474.0	14.0	492.8	8.2	407	41	-4.0	-1.3
158	21.7	156.0	16.0	135.0	11.0	188	0.87	2.0900	0.2400	0.08080	0.00250	0.9114	0.1880	0.0180	1122.0	89.0	501.0	15.0	2630	170	55.3	7.0
23	22.1	416.0	22.0	25.6	2.7	422	0.06	0.6520	0.0150	0.08250	0.00110	0.1905	0.0576	0.0014	509.4	9.3	510.8	6.6	507	42	-0.3	-0.2
71	21.9	166.3	8.4	29.2	1.0	173	0.18	0.6560	0.0180	0.08260	0.00120	0.3905	0.0571	0.0015	511.7	10.0	511.7	7.1	499	32	0.0	0.0
230	21.2	34.6	2.2	13.8	0.8	38	0.40	0.6960	0.0390	0.08390	0.00180	0.0804	0.0605	0.0034	534.0	23.0	519.0	11.0	610	58	2.8	0.7
189	21.9	69.8	2.1	41.6	1.3	80	0.60	0.8120	0.0300	0.09700	0.00130	0.0702	0.0601	0.0023	605.0	16.0	596.8	7.8	622	51	1.4	0.5
201	21.9	228.0	11.0	37.0	0.8	237	0.16	0.8170	0.0210	0.09750	0.00130	0.2642	0.0603	0.0016	606.6	11.0	599.6	7.7	612	26	1.2	0.6
270	21.9	173.0	13.0	58.6	3.6	187	0.34	0.8430	0.0250	0.09970	0.00160	0.2957	0.0613	0.0018	621.0	14.0	612.3	9.3	651	36	1.4	0.6
224	18.5	237.0	7.1	78.3	2.4	255	0.33	0.8440	0.0240	0.10060	0.00160	0.3883	0.0607	0.0016	622.0	14.0	619.2	9.1	630	26	0.5	0.2
295	20.4	175.0	22.0	162.0	23.0	213	0.93	0.8540	0.0250	0.10150	0.00160	0.2656	0.0611	0.0018	625.0	14.0	623.1	9.3	660	39	0.3	0.1
2	22.3	44.5	2.6	11.9	1.3	47	0.27	1.3800	0.2200	0.11400	0.01700	0.9710	0.0832	0.0051	770.0	110.0	680.0	100.0	1250	58	11.7	0.8
127	21.9	393.0	42.0	135.0	13.0	425	0.34	1.3700	0.2700	0.12100	0.02000	0.9963	0.0689	0.0042	740.0	110.0	720.0	110.0	790	120	2.7	0.2
53	22.6	439.0	35.0	51.2	2.6	451	0.12	2.8180	0.0990	0.12160	0.00500	0.9156	0.1736	0.0041	1355.0	25.0	738.0	29.0	2592	30	45.5	24.7
87	21.5	1455.0	38.0	51.3	1.4	1467	0.04	1.6500	0.0360	0.12880	0.00280	0.8601	0.0933	0.0017	988.0	14.0	781.0	16.0	1490	19	21.0	14.8
174	21.9	125.5	9.5	20.3	1.0	130	0.16	1.5040	0.0470	0.14870	0.00280	0.6980	0.0725	0.0018	931.0	18.0	893.0	16.0	998	28	4.1	2.1

Table 4: LA-ICP-MS Zircon Isotopic and Age Data Table: H3N 17-18m: Harvey County, KS Core Sample

								Corrected Isotopic Ratios[2]							Ages (Ma)[7]							
Grain #	Signal Duration (s)	U (ppm)[1]	2σ	Th (ppm)[1]	2σ	eU (ppm)[2]	Th/U	$^{207}Pb/^{235}U$	2σ[4]	$^{206}Pb/^{238}U$	2σ[4]	Rho[5]	$^{207}Pb/^{206}Pb$[6]	2σ	$^{207}Pb/^{235}U$	2σ	$^{206}Pb/^{238}U$	2σ	$^{207}Pb/^{206}Pb$	2σ	% Disc.[8]	Uncert. Wtd. Disc.[9]
132	22.1	127.4	5.7	36.5	1.3	136	0.29	1.4710	0.0380	0.14970	0.00190	0.5286	0.0710	0.0017	919.0	15.0	899.0	11.0	965	24	2.2	1.3
188	21.9	61.2	3.6	17.9	0.9	65	0.29	1.4500	0.0440	0.15070	0.00200	0.3128	0.0704	0.0021	911.0	18.0	906.0	11.0	929	35	0.5	0.3
10	22.3	78.3	2.4	29.7	1.1	85	0.38	1.6370	0.0510	0.15260	0.00240	0.3771	0.0782	0.0023	984.0	19.0	915.0	13.0	1144	51	7.0	3.6
250	21.9	138.6	6.1	31.1	1.0	146	0.22	1.4790	0.0320	0.15420	0.00230	0.2256	0.0698	0.0016	923.7	13.0	924.0	13.0	913	29	0.0	0.0
193	21.9	49.6	2.3	16.8	0.8	54	0.34	1.5260	0.0490	0.15590	0.00230	0.1818	0.0718	0.0023	944.0	20.0	934.0	13.0	989	41	1.1	0.5
232	21.9	153.6	5.4	24.5	0.5	159	0.16	1.5170	0.0380	0.15870	0.00240	0.4005	0.0697	0.0017	936.0	15.0	949.0	14.0	913	31	-1.4	-0.9
89	21.9	142.6	5.1	21.9	0.6	148	0.15	1.6730	0.0390	0.16300	0.00280	0.6798	0.0732	0.0015	997.0	15.0	973.0	15.0	1014	27	2.4	1.6
93	21.9	68.6	3.0	17.9	0.3	73	0.26	1.7130	0.0480	0.16500	0.00330	0.4524	0.0742	0.0022	1015.0	18.0	984.0	18.0	1049	31	3.1	1.7
46	21.8	22.5	0.7	6.0	0.2	24	0.26	1.6890	0.0650	0.16530	0.00350	0.1166	0.0740	0.0031	1008.0	25.0	986.0	20.0	1057	48	2.2	0.9
293	21.9	62.9	5.3	30.1	2.4	70	0.48	1.6200	0.0530	0.16680	0.00310	0.4512	0.0704	0.0021	975.0	20.0	994.0	17.0	928	35	-1.9	-1.0
296	21.9	137.5	9.5	26.8	1.4	144	0.19	1.7230	0.0380	0.16720	0.00240	0.4597	0.0745	0.0017	1016.0	14.0	996.0	13.0	1052	25	2.0	1.4
66	22.0	84.3	3.1	28.4	0.8	91	0.34	1.7350	0.0440	0.17020	0.00210	0.3604	0.0738	0.0017	1020.0	16.0	1013.0	12.0	1039	31	0.7	0.4
248	21.9	380.0	15.0	78.3	1.4	398	0.21	1.7250	0.0320	0.17070	0.00230	0.3985	0.0735	0.0015	1017.4	12.0	1016.0	13.0	1022	23	0.1	0.1
149	21.9	138.9	3.1	63.0	1.0	154	0.45	1.7320	0.0420	0.17140	0.00280	0.3830	0.0744	0.0017	1024.0	16.0	1019.0	15.0	1045	25	0.5	0.3
277	21.9	22.6	0.9	26.9	0.9	29	1.19	1.8000	0.0740	0.17230	0.00330	0.2829	0.0761	0.0031	1045.0	27.0	1024.0	18.0	1088	43	2.0	0.8
111	18.5	151.0	12.0	55.7	4.3	164	0.37	1.7720	0.0390	0.17230	0.00210	0.5649	0.0743	0.0016	1034.0	15.0	1025.0	11.0	1044	21	0.9	0.6
55	22.0	99.8	3.7	23.1	0.6	105	0.23	1.7920	0.0450	0.17240	0.00240	0.5602	0.0756	0.0018	1043.0	16.0	1027.0	13.0	1081	25	1.5	1.0
235	21.9	180.5	8.9	73.3	2.4	198	0.41	1.7510	0.0380	0.17260	0.00220	0.5254	0.0738	0.0016	1026.0	14.0	1028.0	12.0	1033	23	-0.2	-0.1
282	21.9	114.1	6.1	51.1	2.4	126	0.45	1.7150	0.0470	0.17300	0.00320	0.5543	0.0716	0.0019	1014.0	18.0	1028.0	18.0	983	26	-1.4	-0.8
208	19.8	40.1	2.2	8.0	0.4	42	0.20	1.7530	0.0530	0.17280	0.00290	0.2910	0.0752	0.0025	1028.0	19.0	1029.0	16.0	1080	41	-0.1	-0.1
254	21.9	27.4	1.4	26.6	1.2	34	0.97	1.8310	0.0750	0.17310	0.00310	0.2259	0.0756	0.0031	1056.0	27.0	1029.0	17.0	1095	58	2.6	1.0
276	15.8	118.3	2.9	30.8	0.8	126	0.26	1.7480	0.0500	0.17310	0.00280	0.4694	0.0728	0.0020	1025.0	18.0	1029.0	15.0	1020	25	-0.4	-0.2
179	21.9	37.9	2.4	29.9	2.1	45	0.79	1.7470	0.0560	0.17310	0.00310	0.2449	0.0732	0.0023	1031.0	21.0	1031.0	17.0	1035	37	0.0	0.0
249	21.9	104.7	4.3	40.4	1.1	114	0.39	1.7490	0.0470	0.17320	0.00210	0.3871	0.0738	0.0019	1028.0	17.0	1031.0	12.0	1030	30	-0.3	-0.2
173	21.9	121.7	4.8	37.3	0.9	130	0.31	1.7890	0.0390	0.17340	0.00200	0.2383	0.0754	0.0018	1043.0	14.0	1032.0	11.0	1075	27	1.1	0.8
203	19.9	86.6	4.0	78.9	2.2	105	0.91	1.7530	0.0470	0.17350	0.00290	0.3699	0.0735	0.0019	1032.0	18.0	1033.0	16.0	1029	27	-0.1	-0.1
184	21.9	23.6	1.3	11.4	0.7	26	0.48	1.7200	0.0670	0.17410	0.00290	0.2377	0.0721	0.0028	1019.0	25.0	1034.0	16.0	988	50	-1.5	-0.6
74	22.0	41.9	2.2	21.5	0.9	47	0.51	1.8220	0.0520	0.17430	0.00290	0.0908	0.0759	0.0024	1053.0	18.0	1035.0	16.0	1087	36	1.7	1.0
294	21.9	44.8	1.3	19.6	0.5	49	0.44	1.8300	0.0640	0.17410	0.00300	0.1998	0.0779	0.0029	1060.0	23.0	1038.0	16.0	1139	34	2.1	1.0
164	21.9	483.0	34.0	84.1	4.1	503	0.17	1.7730	0.0380	0.17500	0.00240	0.7166	0.0733	0.0014	1035.0	14.0	1040.0	14.0	1019	26	-0.5	-0.4
243	21.9	23.3	1.3	6.2	0.2	25	0.26	1.8050	0.0680	0.17480	0.00300	0.5000	0.0743	0.0033	1047.0	25.0	1040.0	16.0	1045	45	0.7	0.3
65	22.0	115.0	4.0	35.0	0.8	123	0.30	1.8200	0.0430	0.17500	0.00250	0.4449	0.0744	0.0016	1051.0	16.0	1041.0	14.0	1064	24	1.0	0.6
129	21.9	26.9	1.3	19.1	0.6	31	0.71	1.7940	0.0660	0.17560	0.00360	0.2968	0.0748	0.0029	1052.0	24.0	1044.0	19.0	1051	44	0.8	0.3
200	21.9	273.0	17.0	44.2	2.1	283	0.16	1.8340	0.0380	0.17590	0.00250	0.3656	0.0756	0.0017	1058.2	13.0	1044.0	14.0	1088	23	1.3	1.1
241	21.8	282.0	42.0	99.0	14.0	305	0.35	1.8120	0.0410	0.17630	0.00290	0.5543	0.0744	0.0017	1050.0	15.0	1047.0	16.0	1053	22	0.3	0.2
67	21.9	74.2	2.1	26.5	1.4	80	0.36	1.7990	0.0490	0.17670	0.00310	0.5181	0.0737	0.0019	1045.0	18.0	1051.0	17.0	1033	30	-0.6	-0.3
114	21.9	77.4	3.8	37.6	1.4	86	0.49	1.8280	0.0460	0.17720	0.00240	0.0944	0.0741	0.0021	1054.0	16.0	1052.0	13.0	1046	30	0.2	0.1
234	21.9	217.0	17.0	47.8	1.7	228	0.22	1.8290	0.0410	0.17760	0.00310	0.6816	0.0746	0.0015	1055.0	15.0	1053.0	17.0	1067	26	0.2	0.1
169	21.9	54.7	2.3	24.2	1.0	60	0.44	1.8680	0.0510	0.17770	0.00300	0.2794	0.0762	0.0021	1071.0	17.0	1054.0	17.0	1091	25	1.6	1.0
264	21.9	95.7	6.5	22.2	1.4	101	0.23	1.8180	0.0480	0.17770	0.00270	0.2068	0.0736	0.0021	1051.0	18.0	1054.0	15.0	1020	35	-0.3	-0.2
299	21.9	219.8	5.3	60.4	1.0	234	0.27	1.8020	0.0350	0.17760	0.00210	0.2890	0.0732	0.0015	1045.5	13.0	1054.0	12.0	1018	26	-0.8	-0.7
108	21.8	27.5	1.0	17.7	0.7	32	0.64	1.8240	0.0620	0.17810	0.00270	0.5000	0.0745	0.0029	1053.0	22.0	1056.0	14.0	1038	45	-0.3	-0.1
156	21.9	103.5	4.3	47.0	1.3	115	0.45	1.8410	0.0450	0.17830	0.00230	0.3813	0.0752	0.0018	1062.0	15.0	1057.0	13.0	1069	28	0.5	0.3
204	21.9	29.2	1.2	29.5	0.7	36	1.01	1.7870	0.0620	0.17830	0.00320	0.2274	0.0726	0.0025	1039.0	23.0	1057.0	17.0	1008	37	-1.7	-0.8

Table 4: LA-ICP-MS Zircon Isotopic and Age Data Table: H3N 17-18m: Harvey County, KS Core Sample

								Corrected Isotopic Ratios[2]							Ages (Ma)[7]							
Grain #	Signal Duration (s)	U (ppm)[1]	2σ	Th (ppm)[1]	2σ	eU (ppm)[2]	Th/U	$^{207}Pb/^{235}U$	2σ[4]	$^{206}Pb/^{238}U$	2σ[4]	Rho[5]	$^{207}Pb/^{206}Pb$[6]	2σ	$^{207}Pb/^{235}U$	2σ	$^{206}Pb/^{238}U$	2σ	$^{207}Pb/^{206}Pb$	2σ	% Disc.[8]	Uncert. Wtd. Disc.[9]
102	21.9	112.3	5.9	43.3	3.2	122	0.39	1.8050	0.0520	0.17850	0.00390	0.6053	0.0723	0.0019	1045.0	19.0	1061.0	21.0	992	30	-1.5	-0.8
104	21.6	102.3	3.7	45.4	1.2	113	0.44	1.8950	0.0440	0.17870	0.00220	0.3166	0.0762	0.0018	1078.0	15.0	1061.0	12.0	1102	26	1.6	1.1
86	16.0	337.0	27.0	12.6	0.9	340	0.04	2.2700	0.0850	0.17930	0.00400	0.6096	0.0902	0.0027	1198.0	26.0	1063.0	22.0	1425	52	11.3	5.2
137	21.9	48.4	4.2	21.3	0.6	53	0.44	1.8560	0.0620	0.17940	0.00270	0.3524	0.0743	0.0023	1064.0	22.0	1063.0	15.0	1043	34	0.1	0.0
42	22.0	117.7	3.6	84.4	1.5	138	0.72	1.8620	0.0410	0.17980	0.00250	0.3657	0.0755	0.0018	1067.0	15.0	1066.0	13.0	1073	27	0.1	0.1
103	21.9	93.8	3.8	53.6	1.7	106	0.57	1.8850	0.0410	0.18060	0.00210	0.1608	0.0754	0.0018	1075.0	15.0	1070.0	12.0	1076	28	0.5	0.3
92	17.3	107.0	6.7	64.1	4.6	122	0.60	1.8980	0.0480	0.18120	0.00370	0.3665	0.0758	0.0022	1081.0	17.0	1073.0	20.0	1096	28	0.7	0.5
9	21.7	411.0	37.0	124.0	8.6	440	0.30	2.4620	0.0580	0.18170	0.00570	0.6342	0.1009	0.0029	1259.0	17.0	1075.0	31.0	1632	51	14.6	10.8
112	22.0	73.1	5.1	49.8	3.8	85	0.68	1.8910	0.0460	0.18300	0.00240	0.0340	0.0749	0.0020	1079.0	16.0	1083.0	13.0	1052	32	-0.4	-0.3
255	21.9	108.7	5.0	39.1	1.0	118	0.36	1.9200	0.0480	0.18320	0.00290	0.4256	0.0765	0.0019	1086.0	17.0	1084.0	16.0	1101	19	0.2	0.1
275	21.9	102.7	4.4	67.8	3.4	119	0.66	1.8860	0.0520	0.18320	0.00350	0.5226	0.0748	0.0019	1076.0	19.0	1084.0	19.0	1061	30	-0.7	-0.4
15	22.4	110.9	8.5	33.9	2.2	119	0.31	1.9460	0.0540	0.18440	0.00280	0.6057	0.0758	0.0018	1096.0	19.0	1090.0	15.0	1080	30	0.5	0.3
110	19.9	102.0	16.0	74.0	11.0	119	0.73	1.9850	0.0540	0.18520	0.00300	0.3831	0.0782	0.0019	1108.0	19.0	1095.0	16.0	1161	36	1.2	0.7
128	21.6	302.0	29.0	29.0	1.9	309	0.10	2.3240	0.0590	0.18510	0.00310	0.6772	0.0900	0.0019	1223.0	18.0	1095.0	17.0	1426	22	10.5	7.1
123	22.5	12.8	0.8	9.1	0.5	15	0.71	1.9560	0.0980	0.18590	0.00390	0.1159	0.0764	0.0040	1090.0	34.0	1098.0	21.0	1080	59	-0.7	-0.2
177	21.9	101.8	5.2	23.9	1.0	107	0.23	1.9630	0.0510	0.18590	0.00250	0.3937	0.0772	0.0020	1103.0	17.0	1100.0	14.0	1119	31	0.3	0.2
38	22.0	85.5	3.4	66.3	1.9	101	0.78	1.9240	0.0460	0.18630	0.00300	0.5267	0.0754	0.0017	1088.0	16.0	1101.0	16.0	1081	24	-1.2	-0.8
283	21.9	43.7	2.1	26.3	0.8	50	0.60	1.9000	0.0570	0.18600	0.00290	0.2870	0.0742	0.0023	1082.0	20.0	1101.0	16.0	1046	35	-1.8	-1.0
274	21.9	164.8	6.3	58.5	1.4	179	0.35	1.9650	0.0490	0.18730	0.00340	0.4441	0.0757	0.0018	1102.0	17.0	1106.0	18.0	1092	23	-0.4	-0.2
267	21.9	101.9	4.6	39.8	1.2	111	0.39	1.9510	0.0480	0.18740	0.00280	0.2967	0.0765	0.0019	1100.0	16.0	1107.0	15.0	1107	29	-0.6	-0.4
77	16.6	103.0	8.8	30.8	2.4	110	0.30	2.0230	0.0570	0.18870	0.00290	0.3911	0.0767	0.0022	1124.0	20.0	1114.0	16.0	1108	33	0.9	0.5
85	22.8	35.9	3.3	18.5	2.0	40	0.52	2.0450	0.0700	0.19020	0.00360	0.2741	0.0776	0.0027	1131.0	23.0	1122.0	19.0	1134	38	0.8	0.4
88	22.0	106.5	6.1	24.8	1.2	112	0.23	2.0970	0.0500	0.19070	0.00320	0.4851	0.0782	0.0019	1146.0	16.0	1124.0	17.0	1156	31	1.9	1.4
125	15.6	85.8	1.7	53.6	1.3	98	0.62	2.0530	0.0660	0.19010	0.00350	0.6024	0.0772	0.0023	1130.0	22.0	1124.0	18.0	1134	35	0.5	0.3
101	21.5	334.0	27.0	74.2	3.7	351	0.22	2.0470	0.0510	0.19070	0.00360	0.6977	0.0760	0.0016	1129.0	17.0	1125.0	19.0	1092	21	0.4	0.2
172	21.9	68.7	4.4	12.6	0.6	72	0.18	2.0670	0.0550	0.19080	0.00260	0.4135	0.0782	0.0020	1137.0	18.0	1126.0	14.0	1147	26	1.0	0.6
195	21.9	155.1	7.2	63.3	4.2	170	0.41	2.0280	0.0500	0.19200	0.00340	0.5490	0.0775	0.0018	1123.0	17.0	1132.0	18.0	1132	25	-0.8	-0.5
284	21.9	605.0	33.0	14.0	1.1	608	0.02	2.4020	0.1000	0.19310	0.00740	0.9705	0.0882	0.0017	1240.0	31.0	1136.0	40.0	1386	27	8.4	3.4
261	21.9	58.0	3.7	15.7	0.6	62	0.27	2.0950	0.0640	0.19310	0.00390	0.5315	0.0792	0.0023	1152.0	19.0	1137.0	21.0	1172	32	1.3	0.8
151	21.9	74.8	2.0	23.6	0.5	80	0.32	2.1070	0.0550	0.19370	0.00290	0.3108	0.0792	0.0021	1151.0	18.0	1141.0	16.0	1175	31	0.9	0.6
146	21.9	58.3	2.2	30.1	0.8	65	0.52	2.1230	0.0590	0.19400	0.00270	0.3727	0.0797	0.0021	1160.0	18.0	1143.0	15.0	1193	35	1.5	0.9
160	21.9	168.0	4.3	58.3	1.9	182	0.35	2.2230	0.0540	0.19420	0.00390	0.6301	0.0827	0.0018	1192.0	17.0	1143.0	21.0	1260	24	4.1	2.9
219	21.9	28.6	1.3	3.5	0.1	29	0.12	2.1330	0.0740	0.19520	0.00330	0.1036	0.0789	0.0030	1155.0	24.0	1149.0	18.0	1163	45	0.5	0.3
242	20.3	98.3	3.3	33.1	0.6	106	0.34	2.0690	0.0530	0.19540	0.00270	0.3835	0.0770	0.0018	1137.0	17.0	1150.0	14.0	1117	25	-1.1	-0.8
140	21.9	72.5	4.0	22.2	0.8	78	0.31	2.1080	0.0580	0.19550	0.00340	0.5395	0.0778	0.0020	1151.0	19.0	1151.0	19.0	1140	30	0.0	0.0
297	21.9	148.0	11.0	44.5	2.6	158	0.30	2.1500	0.0470	0.19670	0.00280	0.3253	0.0790	0.0018	1164.0	15.0	1157.0	15.0	1173	26	0.6	0.5
196	21.9	479.0	23.0	125.3	6.1	508	0.26	2.1630	0.0420	0.19710	0.00220	0.5044	0.0798	0.0015	1168.5	13.0	1159.0	12.0	1194	21	0.8	0.7
272	22.1	83.6	2.8	41.2	1.5	93	0.49	2.0960	0.0570	0.19700	0.00310	0.3072	0.0776	0.0022	1145.0	19.0	1159.0	17.0	1137	31	-1.2	-0.7
106	22.3	55.0	14.0	18.5	2.4	59	0.34	2.2510	0.1000	0.20100	0.00540	0.5383	0.0834	0.0033	1201.0	31.0	1182.0	29.0	1262	47	1.6	0.6
32	22.0	305.0	9.2	108.5	2.4	330	0.36	2.1760	0.0470	0.20200	0.00330	0.5685	0.0786	0.0017	1173.0	15.0	1185.0	18.0	1155	18	-1.0	-0.8
161	21.5	171.0	27.0	41.9	5.4	181	0.25	2.2370	0.0830	0.20250	0.00510	0.9206	0.0796	0.0020	1187.0	27.0	1188.0	28.0	1183	34	-0.1	0.0
118	22.6	95.0	10.0	40.7	5.3	105	0.43	2.3240	0.0640	0.20370	0.00370	0.6046	0.0819	0.0021	1217.0	20.0	1194.0	20.0	1237	28	1.9	1.2
95	21.9	225.6	9.6	92.4	7.2	247	0.41	2.2960	0.0540	0.20620	0.00390	0.6543	0.0809	0.0017	1211.0	16.0	1208.0	21.0	1217	18	0.2	0.2
62	22.0	67.9	2.0	20.3	0.7	73	0.30	2.3300	0.0560	0.20700	0.00350	0.4861	0.0807	0.0020	1219.0	17.0	1212.0	19.0	1218	32	0.6	0.4

Table 4: LA-ICP-MS Zircon Isotopic and Age Data Table: H3N 17-18m: Harvey County, KS Core Sample

								Corrected Isotopic Ratios[2]							Ages (Ma)[7]							
Grain #	Signal Duration (s)	U (ppm)[1]	2σ	Th (ppm)[1]	2σ	eU (ppm)[2]	Th/U	$^{207}Pb/^{235}U$	2σ[4]	$^{206}Pb/^{238}U$	2σ[4]	Rho[5]	$^{207}Pb/^{206}Pb$[6]	2σ	$^{207}Pb/^{235}U$	2σ	$^{206}Pb/^{238}U$	2σ	$^{207}Pb/^{206}Pb$	2σ	% Disc.[8]	Uncert. Wtd. Disc.[9]
159	18.0	157.0	13.0	44.4	4.0	167	0.28	2.3210	0.0520	0.20930	0.00290	0.6268	0.0809	0.0017	1218.0	17.0	1227.0	16.0	1222	25	-0.7	-0.5
210	21.9	93.2	1.7	59.7	2.7	107	0.64	2.4040	0.0590	0.20990	0.00330	0.3881	0.0827	0.0021	1242.0	18.0	1228.0	18.0	1268	29	1.1	0.8
141	21.9	84.9	6.9	19.4	0.9	89	0.23	2.3700	0.0680	0.21090	0.00370	0.6111	0.0815	0.0020	1231.0	20.0	1233.0	20.0	1228	30	-0.2	-0.1
155	21.9	236.3	6.4	37.8	0.5	245	0.16	2.4100	0.0520	0.21060	0.00300	0.6785	0.0829	0.0016	1244.0	15.0	1236.0	16.0	1267	19	0.6	0.5
50	22.0	96.7	5.3	43.0	1.5	107	0.44	2.6600	0.0640	0.21180	0.00430	0.7090	0.0917	0.0018	1322.0	19.0	1238.0	23.0	1458	24	6.4	4.4
36	17.0	115.0	10.0	28.0	1.8	122	0.24	2.4120	0.0770	0.21420	0.00470	0.5989	0.0817	0.0021	1249.0	23.0	1250.0	25.0	1234	29	-0.1	0.0
100	22.5	59.5	2.7	10.8	0.3	62	0.18	2.3740	0.0610	0.21490	0.00360	0.5047	0.0800	0.0020	1233.0	18.0	1254.0	19.0	1197	24	-1.7	-1.2
187	21.9	55.7	1.2	19.2	0.5	60	0.34	2.6160	0.0650	0.22510	0.00270	0.2660	0.0834	0.0020	1307.0	18.0	1308.0	14.0	1274	27	-0.1	-0.1
78	22.0	42.7	1.1	8.2	0.2	45	0.19	2.7650	0.0830	0.22650	0.00340	0.3583	0.0868	0.0025	1345.0	23.0	1318.0	17.0	1361	35	2.0	1.2
56	22.0	119.4	6.5	50.0	1.3	131	0.42	2.7200	0.0570	0.22780	0.00320	0.5780	0.0863	0.0018	1332.0	16.0	1323.0	17.0	1340	24	0.7	0.6
130	21.9	45.4	1.7	26.3	0.9	52	0.58	2.8300	0.0840	0.22840	0.00380	0.4192	0.0890	0.0024	1359.0	22.0	1328.0	20.0	1397	24	2.3	1.4
148	21.9	189.0	42.0	47.9	4.0	200	0.25	2.8100	0.1100	0.23170	0.00710	0.8858	0.0894	0.0020	1362.0	29.0	1341.0	37.0	1406	28	1.5	0.7
41	22.0	50.6	2.4	46.2	1.6	61	0.91	2.8480	0.0700	0.23340	0.00370	0.5954	0.0889	0.0020	1366.0	18.0	1352.0	19.0	1395	25	1.0	0.8
84	22.0	64.4	3.7	24.3	1.2	70	0.38	2.8760	0.0740	0.23300	0.00380	0.5220	0.0877	0.0021	1373.0	19.0	1352.0	20.0	1384	22	1.5	1.1
239	23.0	58.4	5.0	26.1	1.9	65	0.45	3.1160	0.0930	0.23490	0.00470	0.5350	0.0961	0.0026	1435.0	23.0	1359.0	24.0	1548	40	5.3	3.3
90	22.0	48.6	2.5	21.1	1.2	54	0.43	2.9680	0.0830	0.23680	0.00480	0.5257	0.0890	0.0025	1400.0	21.0	1369.0	25.0	1412	31	2.2	1.5
94	21.9	126.5	4.1	56.8	1.8	140	0.45	2.8750	0.0630	0.23610	0.00510	0.5845	0.0872	0.0020	1374.0	17.0	1369.0	27.0	1361	25	0.4	0.3
68	22.5	242.0	23.0	78.6	8.2	260	0.32	2.9150	0.0570	0.23690	0.00290	0.5619	0.0893	0.0017	1385.0	15.0	1370.0	15.0	1407	21	1.1	1.0
1	19.1	345.0	74.0	43.3	2.6	355	0.13	2.9090	0.0620	0.23830	0.00350	0.5160	0.0883	0.0018	1385.0	16.0	1380.0	18.0	1388	21	0.4	0.3
3	23.1	53.0	4.9	18.5	2.0	57	0.35	2.8550	0.0840	0.24030	0.00450	0.5982	0.0860	0.0020	1368.0	22.0	1390.0	23.0	1335	29	-1.6	-1.0
72	22.0	94.5	3.2	55.6	1.4	108	0.59	3.0470	0.0650	0.24080	0.00290	0.4164	0.0909	0.0018	1422.0	16.0	1390.0	15.0	1454	26	2.3	2.0
76	21.9	37.3	0.7	10.5	0.3	40	0.28	3.0130	0.0830	0.24150	0.00440	0.3298	0.0893	0.0026	1410.0	21.0	1396.0	23.0	1400	33	1.0	0.7
17	22.4	89.5	4.7	49.7	2.2	101	0.56	3.0240	0.0660	0.24240	0.00360	0.5471	0.0909	0.0019	1414.0	17.0	1399.0	19.0	1448	19	1.1	0.9
48	22.0	82.0	2.8	39.3	1.1	91	0.48	3.0350	0.0700	0.24260	0.00400	0.4952	0.0895	0.0019	1416.0	17.0	1399.0	20.0	1412	28	1.2	1.0
153	21.9	68.0	3.1	28.5	1.0	75	0.42	2.9930	0.0750	0.24200	0.00360	0.2796	0.0895	0.0023	1403.0	18.0	1399.0	18.0	1414	26	0.3	0.2
168	21.4	117.1	8.1	35.6	1.2	125	0.30	3.0410	0.0690	0.24280	0.00340	0.4832	0.0905	0.0020	1416.0	17.0	1401.0	18.0	1437	23	1.1	0.9
183	21.9	86.9	2.5	17.3	0.6	91	0.20	3.0520	0.0660	0.24330	0.00270	0.3187	0.0908	0.0020	1419.0	17.0	1403.0	14.0	1435	22	1.1	0.9
198	21.9	101.0	3.8	73.7	1.5	118	0.73	3.0360	0.0700	0.24380	0.00320	0.5659	0.0908	0.0019	1418.0	17.0	1406.0	16.0	1440	21	0.8	0.7
262	21.9	51.3	1.2	11.3	0.3	54	0.22	3.0580	0.0730	0.24470	0.00440	0.5172	0.0904	0.0021	1420.0	18.0	1410.0	23.0	1441	28	0.7	0.6
191	21.9	139.7	5.8	62.4	2.6	154	0.45	3.0110	0.0620	0.24530	0.00300	0.4816	0.0895	0.0018	1411.0	16.0	1414.0	15.0	1410	17	-0.2	-0.2
135	18.8	67.4	5.4	37.8	3.2	76	0.56	3.0720	0.0780	0.24570	0.00310	0.3977	0.0912	0.0023	1426.0	19.0	1416.0	16.0	1443	26	0.7	0.5
99	21.3	88.3	2.9	27.8	0.7	95	0.31	3.1070	0.0950	0.24610	0.00500	0.5759	0.0912	0.0023	1438.0	22.0	1420.0	26.0	1456	30	1.3	0.8
171	21.9	69.7	7.9	28.7	2.9	76	0.41	3.1100	0.0760	0.24680	0.00370	0.3977	0.0913	0.0023	1437.0	19.0	1421.0	19.0	1452	24	1.1	0.8
190	21.9	58.1	2.4	26.4	0.9	64	0.45	3.0830	0.0700	0.24680	0.00310	0.2998	0.0911	0.0022	1428.0	17.0	1421.0	16.0	1440	25	0.5	0.4
82	22.2	62.8	5.5	44.6	4.7	73	0.71	3.1900	0.0770	0.24730	0.00410	0.4745	0.0920	0.0023	1452.0	19.0	1424.0	21.0	1471	24	1.9	1.5
165	22.5	155.5	7.2	107.6	6.4	181	0.69	3.1230	0.0670	0.24740	0.00340	0.6567	0.0904	0.0017	1437.0	17.0	1425.0	18.0	1440	21	0.8	0.7
221	21.9	74.7	5.8	37.2	2.6	83	0.50	3.0850	0.0750	0.24760	0.00400	0.3318	0.0899	0.0022	1428.0	18.0	1426.0	21.0	1419	27	0.1	0.1
286	21.9	32.1	2.4	20.5	1.2	37	0.64	3.0630	0.1000	0.24780	0.00480	0.3971	0.0905	0.0028	1421.0	25.0	1426.0	25.0	1437	39	-0.4	-0.2
175	21.9	167.5	5.7	52.5	4.0	180	0.31	3.0660	0.0660	0.24870	0.00310	0.4935	0.0898	0.0018	1423.0	16.0	1431.0	16.0	1420	22	-0.6	-0.5
131	20.7	213.0	28.0	10.1	1.5	215	0.05	3.1890	0.0760	0.25050	0.00390	0.7273	0.0921	0.0018	1452.0	18.0	1440.0	20.0	1469	25	0.8	0.7
215	17.5	138.6	3.1	45.2	0.9	149	0.33	3.1470	0.0650	0.25050	0.00350	0.5300	0.0914	0.0019	1443.0	16.0	1440.0	18.0	1455	23	0.2	0.2
287	21.9	97.6	5.3	55.3	2.3	111	0.57	3.1380	0.0700	0.25040	0.00360	0.5048	0.0907	0.0020	1440.0	17.0	1442.0	18.0	1436	27	-0.1	-0.1
273	13.7	284.7	8.1	264.1	8.8	347	0.93	3.1230	0.0870	0.25200	0.00540	0.6184	0.0900	0.0020	1444.0	20.0	1448.0	28.0	1426	29	-0.3	-0.2
207	21.9	80.7	2.6	18.8	0.6	85	0.23	3.1740	0.0710	0.25440	0.00350	0.4145	0.0902	0.0020	1449.0	17.0	1461.0	19.0	1427	25	-0.8	-0.7

Table 4: LA-ICP-MS Zircon Isotopic and Age Data Table: H3N 17-18m: Harvey County, KS Core Sample

								Corrected Isotopic Ratios[2]							Ages (Ma)[7]							
Grain #	Signal Duration (s)	U (ppm)[1]	2σ	Th (ppm)[1]	2σ	eU (ppm)[2]	Th/U	$^{207}Pb/^{235}U$	2σ[4]	$^{206}Pb/^{238}U$	2σ[4]	Rho[5]	$^{207}Pb/^{206}Pb$[6]	2σ	$^{207}Pb/^{235}U$	2σ	$^{206}Pb/^{238}U$	2σ	$^{207}Pb/^{206}Pb$	2σ	% Disc.[8]	Uncert. Wtd. Disc.[9]
34	21.9	62.5	4.9	50.9	6.1	74	0.81	3.2510	0.0930	0.25850	0.00570	0.6020	0.0911	0.0023	1468.0	22.0	1481.0	29.0	1445	28	-0.9	-0.6
22	22.3	153.0	13.0	135.0	11.0	185	0.88	3.2640	0.0750	0.26210	0.00430	0.6299	0.0904	0.0019	1472.0	18.0	1500.0	22.0	1433	22	-1.9	-1.6
33	22.5	327.0	17.0	34.5	0.9	335	0.11	3.8310	0.0870	0.26830	0.00520	0.7928	0.1030	0.0020	1597.0	19.0	1531.0	27.0	1674	15	4.1	3.5
290	21.9	195.0	37.0	37.1	2.8	204	0.19	3.3950	0.0930	0.27050	0.00590	0.7120	0.0908	0.0020	1502.0	21.0	1542.0	30.0	1440	23	-2.7	-1.9
246	21.8	167.3	6.5	84.1	2.1	187	0.50	3.8270	0.0810	0.27240	0.00400	0.5663	0.1018	0.0021	1600.0	18.0	1552.0	20.0	1663	20	3.0	2.7
194	22.0	113.9	4.8	29.1	1.1	121	0.26	3.9450	0.0770	0.27960	0.00340	0.1961	0.1030	0.0023	1626.0	16.0	1589.0	17.0	1684	30	2.3	2.3
292	21.9	65.3	3.0	10.3	0.5	68	0.16	3.8510	0.1100	0.28400	0.00620	0.7237	0.0966	0.0021	1605.0	22.0	1610.0	31.0	1560	23	-0.3	-0.2
70	22.0	147.8	2.4	96.7	3.4	171	0.65	3.9780	0.0740	0.28420	0.00350	0.5235	0.1011	0.0020	1628.8	15.0	1612.0	18.0	1647	18	1.0	1.1
199	21.9	768.0	53.0	37.0	2.2	777	0.05	3.8230	0.0910	0.28500	0.00520	0.8650	0.0974	0.0017	1599.0	19.0	1616.0	26.0	1573	22	-1.1	-0.9
8	22.3	32.4	1.0	17.1	0.4	36	0.53	3.9900	0.1100	0.28860	0.00450	0.4207	0.1009	0.0025	1631.0	21.0	1634.0	22.0	1640	24	-0.2	-0.1
145	21.9	137.1	3.0	59.8	1.7	151	0.44	4.0860	0.0870	0.28920	0.00420	0.4767	0.1025	0.0021	1650.0	17.0	1637.0	21.0	1665	22	0.8	0.8
18	22.7	206.0	17.0	74.8	2.9	224	0.36	4.6400	0.1300	0.29090	0.00610	0.8387	0.1145	0.0022	1756.0	23.0	1644.0	30.0	1873	22	6.4	4.9
91	17.9	301.4	7.4	30.0	0.8	308	0.10	4.3120	0.1100	0.29210	0.00490	0.5965	0.1071	0.0024	1700.0	21.0	1651.0	25.0	1745	23	2.9	2.3
166	19.7	398.0	15.0	102.0	17.0	422	0.26	4.1310	0.0860	0.29200	0.00420	0.7401	0.1033	0.0020	1661.0	17.0	1651.0	21.0	1684	20	0.6	0.6
43	21.8	74.8	4.1	13.9	0.7	78	0.19	4.2620	0.1100	0.29560	0.00500	0.6823	0.1040	0.0024	1692.0	22.0	1668.0	25.0	1704	26	1.4	1.1
83	22.0	137.8	9.9	21.7	1.0	143	0.16	4.2200	0.0940	0.29430	0.00490	0.7244	0.1034	0.0020	1676.0	18.0	1668.0	24.0	1682	18	0.5	0.4
29	21.8	99.5	5.6	39.2	1.6	109	0.39	4.2750	0.0890	0.29610	0.00420	0.4551	0.1054	0.0022	1689.0	17.0	1672.0	21.0	1716	24	1.0	1.0
257	21.9	160.7	6.1	47.1	1.1	172	0.29	4.2800	0.0890	0.29660	0.00420	0.6310	0.1057	0.0021	1690.0	17.0	1676.0	20.0	1722	17	0.8	0.8
51	22.9	243.0	15.0	77.3	6.6	261	0.32	4.3760	0.0870	0.29870	0.00360	0.6398	0.1056	0.0020	1708.0	16.0	1684.0	18.0	1725	18	1.4	1.5
251	21.9	189.0	15.0	85.7	9.0	209	0.45	4.3060	0.0890	0.30030	0.00380	0.6898	0.1047	0.0020	1693.0	17.0	1692.0	19.0	1706	20	0.1	0.1
238	21.9	84.4	3.3	12.6	0.6	87	0.15	4.2120	0.0870	0.30180	0.00480	0.5032	0.1015	0.0022	1676.0	17.0	1702.0	24.0	1650	18	-1.6	-1.5
64	22.0	57.6	1.6	10.9	0.3	60	0.19	4.3760	0.1000	0.30310	0.00410	0.4591	0.1031	0.0023	1709.0	19.0	1706.0	20.0	1678	21	0.2	0.2
28	21.8	177.8	9.2	20.0	2.4	183	0.11	4.4750	0.0870	0.30620	0.00490	0.6136	0.1063	0.0020	1725.0	16.0	1721.0	24.0	1737	23	0.2	0.3
122	21.9	402.0	19.0	108.4	3.4	427	0.27	4.4670	0.0930	0.30680	0.00450	0.7559	0.1050	0.0019	1725.0	17.0	1724.0	22.0	1716	19	0.1	0.1
280	21.9	150.9	9.8	42.5	1.7	161	0.28	4.3810	0.0980	0.30680	0.00480	0.5289	0.1038	0.0021	1710.0	19.0	1727.0	23.0	1696	22	-1.0	-0.9
268	21.9	135.0	6.6	45.6	1.3	146	0.34	4.4600	0.0960	0.30780	0.00540	0.5055	0.1048	0.0024	1722.0	18.0	1732.0	26.0	1713	23	-0.6	-0.6
205	21.9	240.0	19.0	103.1	4.5	264	0.43	4.4790	0.0900	0.30910	0.00420	0.6728	0.1057	0.0020	1727.0	17.0	1736.0	20.0	1728	18	-0.5	-0.5
266	22.1	131.0	17.0	37.6	2.6	140	0.29	4.5180	0.1000	0.31200	0.00480	0.5045	0.1050	0.0023	1734.0	19.0	1750.0	23.0	1716	26	-0.9	-0.8
259	22.3	133.0	14.0	47.1	5.0	144	0.35	4.8400	0.1300	0.31200	0.00870	0.8110	0.1133	0.0024	1792.0	23.0	1752.0	42.0	1847	24	2.2	1.7
107	21.9	199.6	6.4	35.8	0.8	208	0.18	4.7490	0.1000	0.31440	0.00420	0.7428	0.1101	0.0020	1776.0	19.0	1762.0	20.0	1803	17	0.8	0.7
105	21.9	168.0	20.0	76.6	8.6	186	0.46	4.5120	0.1100	0.31650	0.00690	0.8524	0.1033	0.0019	1739.0	19.0	1771.0	34.0	1683	18	-1.8	-1.7
263	22.3	63.2	7.6	33.4	4.7	71	0.53	4.6670	0.1100	0.32030	0.00510	0.5636	0.1051	0.0023	1759.0	20.0	1793.0	25.0	1714	21	-1.9	-1.7
152	21.9	416.0	43.0	107.9	8.9	441	0.26	5.1900	0.1600	0.33510	0.00570	0.6343	0.1137	0.0029	1849.0	27.0	1865.0	27.0	1854	39	-0.9	-0.6
256	21.9	199.0	13.0	40.7	3.3	209	0.20	4.8050	0.1100	0.33620	0.00620	0.7113	0.1042	0.0022	1784.0	19.0	1867.0	30.0	1694	17	-4.7	-4.4
126	21.9	27.7	1.0	12.6	0.3	31	0.46	5.6900	0.1400	0.34830	0.00570	0.3613	0.1186	0.0030	1927.0	22.0	1928.0	27.0	1930	25	-0.1	0.0
116	21.9	40.3	1.1	89.7	1.6	61	2.23	13.3500	0.2600	0.52050	0.00730	0.5866	0.1845	0.0036	2703.0	18.0	2700.0	31.0	2695	15	0.1	0.2

[1]U and Th have been concentrations and the Th/U ratios are calculated relative to the GJ-1 standard value using 287 ± 76 ppm for U and 8.4 ± 2.6 ppm for Th (Jackson et al., 2004)

[2]Equivalent U defined by the equation: eU = U ppm + 0.235*Th ppm

[3]Corrected for U-Pb fractionation and background and normalized to the GJ-1 standard value: $^{207}Pb/^{235}U$ =0.8093 ± 0.0009 and $^{206}Pb/^{238}U$ = 0.09761 ± 0.00011 (Jackson et al., 2004)

[4]Propagated uncertainty of internal uncertainties (2SE) and within run reproducibility of GJ-1 (2SE)

[5]Uncertainty correlation between $^{206}Pb/^{238}U$ and $^{207}Pb/^{235}U$ uncertainties

[6]Corrected for background and Pb isotopicfractionation using the GJ-1 standard value: $^{207}Pb/^{206}Pb$ = 0.06014 ± 0.00001 (Jackson et al., 2004)

[7]U-Pb ages calculated relative to the GJ-1 standard

Table 4: LA-ICP-MS Zircon Isotopic and Age Data Table: H3N 17-18m: Harvey County, KS Core Sample

								Corrected Isotopic Ratios[3]							Ages (Ma)[7]							
Grain #	Signal Duration (s)	U (ppm)[1]	2σ	Th (ppm)[1]	2σ	eU (ppm)[2]	Th/U	$^{207}Pb/^{235}U$	2σ[4]	$^{206}Pb/^{238}U$	2σ[4]	Rho[5]	$^{207}Pb/^{206}Pb$[6]	2σ	$^{207}Pb/^{235}U$	2σ	$^{206}Pb/^{238}U$	2σ	$^{207}Pb/^{206}Pb$	2σ	% Disc.[8]	Uncert. Wtd. Disc.[9]

[8]Discordance defined as (($^{207}Pb/^{235}U$age - $^{206}Pb/^{238}U$age)/($^{207}Pb/^{235}U$ age))*100

[9]Uncertainty weighted age difference defined as ($^{207}Pb/^{235}U$ age - $^{206}Pb/^{238}U$ age)/($^{207}Pb/^{235}U$ age uncertainty)

Rows highlighted in grey were not used in interpretations or calculations based on discordance or short analysis times

Table 5: LA-ICP-MS Zircon Isotopic and Age Data Table: SC15-01: Scott County, KS Paleosol Sample

								Corrected Isotopic Ratios[3]							Ages (Ma)[7]							
Grain #	Signal Duration (s)	U (ppm)[1]	2σ	Th (ppm)[1]	2σ	eU (ppm)[2]	Th/U	$^{207}Pb/^{235}U$	2σ[4]	$^{206}Pb/^{238}U$	2σ[4]	Rho[5]	$^{207}Pb/^{206}Pb$[6]	2σ	$^{207}Pb/^{235}U$	2σ	$^{206}Pb/^{238}U$	2σ	$^{207}Pb/^{206}Pb$	2σ	% Disc.[8]	Uncert. Wtd. Disc.[9]
298	4.2	200.7	8.4	74.1	5.4	218	0.37	0.0228	0.0086	0.00143	0.00019	0.0281	0.1240	0.0510	22.8	8.6	9.2	1.2	1650	940	59.6	1.6
272	15.1	204.0	11.0	89.4	3.5	225	0.44	0.0103	0.0031	0.00149	0.00009	0.0745	0.0560	0.0170	10.4	3.1	9.6	0.6	160	480	7.8	0.3
250	17.0	104.3	3.3	48.1	1.3	116	0.46	0.0132	0.0058	0.00164	0.00014	0.0406	0.0660	0.0340	13.1	5.8	10.5	0.9	-80	750	19.6	0.4
103	21.7	192.0	14.0	207.1	9.4	241	1.08	0.0255	0.0036	0.00396	0.00015	0.1200	0.0460	0.0064	25.4	3.5	25.5	1.0	70	240	-0.3	0.0
202	15.3	46.7	3.4	45.1	5.3	57	0.97	0.0270	0.0130	0.00412	0.00028	0.1200	0.0520	0.0250	27.0	14.0	26.5	1.8	-200	650	1.9	0.0
13	17.3	352.5	9.5	168.3	4.6	392	0.48	0.0255	0.0030	0.00417	0.00015	0.0782	0.0449	0.0052	25.5	3.0	26.8	0.9	-20	200	-5.2	-0.4
136	6.6	483.0	49.0	238.0	32.0	539	0.49	0.0294	0.0043	0.00430	0.00018	0.4406	0.0526	0.0073	29.4	4.2	27.6	1.2	250	270	6.1	0.4
112	19.1	182.0	10.0	141.0	10.0	215	0.77	0.0268	0.0049	0.00447	0.00016	0.1200	0.0447	0.0083	26.6	4.9	28.8	1.0	-30	290	-8.2	-0.4
78	19.7	367.0	44.0	109.0	12.0	393	0.30	0.0331	0.0033	0.00471	0.00014	0.1200	0.0510	0.0054	33.0	3.3	30.3	0.9	260	200	8.2	0.8
128	14.8	450.0	31.0	241.0	15.0	507	0.54	0.0320	0.0030	0.00506	0.00018	0.0990	0.0458	0.0046	31.9	2.9	32.5	1.1	30	170	-1.9	-0.2
129	14.4	184.0	13.0	87.4	5.2	205	0.48	0.0456	0.0061	0.00517	0.00022	0.0001	0.0648	0.0090	45.0	5.9	33.2	1.4	660	280	26.2	2.0
234	5.8	202.0	15.0	305.0	28.0	274	1.51	0.0376	0.0094	0.00517	0.00029	0.1200	0.0560	0.0150	37.3	9.2	33.3	1.8	250	480	10.7	0.4
279	14.8	165.8	4.0	112.1	2.3	192	0.68	0.0372	0.0055	0.00518	0.00025	0.1027	0.0544	0.0084	36.9	5.4	33.3	1.6	260	280	9.8	0.7
98	17.3	257.0	10.0	175.0	15.0	298	0.68	0.0342	0.0035	0.00523	0.00016	0.1368	0.0482	0.0051	34.1	3.5	33.6	1.0	120	190	1.5	0.1
33	15.3	297.0	12.0	162.4	5.8	335	0.55	0.0361	0.0038	0.00525	0.00018	0.0781	0.0498	0.0056	35.9	3.7	33.8	1.2	190	190	5.8	0.6
151	9.7	95.7	8.4	77.0	10.0	114	0.80	0.0335	0.0094	0.00527	0.00041	0.2037	0.0460	0.0140	33.1	9.2	33.9	2.6	50	420	-2.4	-0.1
232	21.7	167.0	11.0	206.0	12.0	215	1.23	0.0344	0.0050	0.00528	0.00017	0.1200	0.0477	0.0073	34.8	5.1	33.9	1.1	160	260	2.6	0.2
247	16.6	193.0	13.0	144.0	14.0	227	0.75	0.0411	0.0044	0.00535	0.00021	0.1527	0.0573	0.0064	40.8	4.3	34.4	1.3	420	210	15.7	1.5
266	21.7	492.0	30.0	433.0	22.0	594	0.88	0.0344	0.0022	0.00537	0.00013	0.1200	0.0465	0.0032	34.5	2.2	34.6	0.8	80	130	-0.1	0.0
59	10.2	356.0	22.0	253.0	12.0	415	0.71	0.0344	0.0046	0.00538	0.00022	0.1200	0.0481	0.0069	34.2	4.5	34.6	1.4	70	250	-1.2	-0.1
6	7.8	414.0	32.0	207.9	8.3	463	0.50	0.0358	0.0045	0.00542	0.00024	0.2223	0.0495	0.0061	35.6	4.5	34.8	1.6	150	240	2.2	0.2
1	21.7	742.0	50.0	660.0	33.0	897	0.89	0.0351	0.0022	0.00543	0.00013	0.3373	0.0472	0.0027	35.0	2.2	34.9	0.8	80	110	0.2	0.0
297	13.8	488.0	63.0	361.0	52.0	573	0.74	0.0340	0.0032	0.00544	0.00015	0.0097	0.0464	0.0043	33.9	3.2	35.0	0.9	30	170	-3.2	-0.3
174	20.8	390.3	8.9	193.1	2.3	436	0.49	0.0348	0.0029	0.00545	0.00014	0.1200	0.0462	0.0043	34.6	2.9	35.1	0.9	10	160	-1.3	-0.2
286	21.7	204.0	12.0	131.7	9.2	235	0.65	0.0386	0.0041	0.00555	0.00018	0.1459	0.0508	0.0053	38.7	3.9	35.7	1.1	200	190	7.8	0.8
225	20.6	429.0	16.0	270.4	6.1	493	0.63	0.0374	0.0023	0.00558	0.00015	0.2072	0.0501	0.0032	37.2	2.3	35.9	0.9	190	130	3.5	0.6
71	21.7	830.0	47.0	820.0	140.0	1023	0.99	0.0364	0.0019	0.00558	0.00012	0.0605	0.0493	0.0026	36.3	1.9	35.9	0.8	160	100	1.1	0.2
85	9.5	333.0	30.0	170.0	19.0	373	0.51	0.0637	0.0082	0.00568	0.00024	0.2680	0.0830	0.0110	62.4	7.8	36.5	1.5	1090	260	41.5	3.3
47	21.5	493.0	16.0	279.5	4.3	559	0.57	0.0370	0.0024	0.00568	0.00013	0.2502	0.0478	0.0031	36.8	2.3	36.5	0.8	120	130	0.7	0.1
116	17.3	371.0	20.0	173.0	14.0	412	0.47	0.0377	0.0036	0.00569	0.00015	0.1200	0.0469	0.0046	37.5	3.5	36.6	1.0	60	180	2.5	0.3
74	19.1	151.6	7.0	165.0	11.0	190	1.09	0.0391	0.0055	0.00571	0.00018	0.1200	0.0483	0.0069	39.4	5.4	36.7	1.2	140	250	6.9	0.5
66	16.2	543.0	25.0	349.0	13.0	625	0.64	0.0397	0.0033	0.00575	0.00014	0.0218	0.0507	0.0043	39.5	3.2	36.9	0.9	180	160	6.5	0.8
281	16.8	91.4	5.0	116.8	4.4	119	1.28	0.0403	0.0090	0.00579	0.00029	0.1200	0.0570	0.0170	39.5	8.8	37.2	1.8	40	400	5.8	0.3
68	19.1	55.2	4.6	39.2	3.3	64	0.71	0.0380	0.0120	0.00588	0.00036	0.0991	0.0490	0.0160	37.0	12.0	37.8	2.3	-130	460	-2.2	-0.1
213	18.3	101.8	3.5	111.9	4.2	128	1.10	0.0397	0.0066	0.00590	0.00028	0.0320	0.0475	0.0085	39.1	6.5	37.9	1.8	70	280	3.1	0.2
284	21.7	409.0	14.0	231.7	5.1	463	0.57	0.0389	0.0029	0.00596	0.00013	0.0543	0.0469	0.0037	38.7	2.9	38.3	0.8	80	140	1.0	0.1
167	11.9	182.0	15.0	154.0	16.0	218	0.85	0.0609	0.0093	0.00598	0.00022	0.1200	0.0740	0.0120	59.6	8.9	38.4	1.4	950	340	35.6	2.4
217	17.4	294.0	21.0	534.0	30.0	419	1.82	0.0421	0.0043	0.00602	0.00018	0.0408	0.0501	0.0055	41.7	4.2	38.7	1.1	160	190	7.2	0.7
117	16.8	164.0	10.0	147.4	9.8	199	0.90	0.0388	0.0053	0.00607	0.00018	0.1455	0.0470	0.0062	39.2	5.0	39.0	1.1	80	220	0.5	0.0
83	21.7	379.0	21.0	263.1	7.1	441	0.69	0.0418	0.0033	0.00608	0.00017	0.0671	0.0504	0.0040	41.4	3.2	39.1	1.1	200	150	5.6	0.7
203	13.6	105.5	3.8	75.0	2.5	123	0.71	0.0438	0.0088	0.00616	0.00036	0.0104	0.0570	0.0120	44.3	8.3	39.6	2.3	250	360	10.6	0.6

Table 5: LA-ICP-MS Zircon Isotopic and Age Data Table: SC15-01: Scott County, KS Paleosol Sample

								Corrected Isotopic Ratios[3]							Ages (Ma)[7]							
Grain #	Signal Duration (s)	U (ppm)[1]	2σ	Th (ppm)[1]	2σ	eU (ppm)[2]	Th/U	$^{207}Pb/^{235}U$	2σ[4]	$^{206}Pb/^{238}U$	2σ[4]	Rho[5]	$^{207}Pb/^{206}Pb$[6]	2σ	$^{207}Pb/^{235}U$	2σ	$^{206}Pb/^{238}U$	2σ	$^{207}Pb/^{206}Pb$	2σ	% Disc.[8]	Uncert. Wtd. Disc.[9]
65	11.1	260.0	16.0	193.0	19.0	305	0.74	0.0396	0.0039	0.00642	0.00022	0.1692	0.0447	0.0046	39.4	3.9	41.3	1.4	10	190	-4.8	-0.5
204	18.7	422.0	14.0	101.6	3.2	446	0.24	0.0403	0.0031	0.00660	0.00014	0.1213	0.0442	0.0036	40.1	3.0	42.4	0.9	-40	140	-5.7	-0.8
293	11.1	94.8	7.3	107.9	7.3	120	1.14	0.0530	0.0120	0.00683	0.00029	0.0912	0.0590	0.0140	51.0	12.0	43.9	1.8	320	440	13.9	0.6
28	21.2	317.0	19.0	66.3	3.2	333	0.21	0.0448	0.0038	0.00689	0.00017	0.0920	0.0482	0.0042	44.4	3.7	44.3	1.1	110	150	0.2	0.0
288	21.7	139.0	13.0	291.0	36.0	207	2.09	0.0482	0.0069	0.00694	0.00025	0.0472	0.0494	0.0073	47.3	6.7	44.6	1.6	140	250	5.7	0.4
149	11.9	106.0	11.0	86.1	8.1	126	0.81	0.0630	0.0110	0.00906	0.00054	0.2237	0.0522	0.0093	62.0	10.0	58.1	3.5	340	330	6.3	0.4
275	21.7	1288.0	35.0	486.0	15.0	1402	0.38	0.0588	0.0022	0.00919	0.00016	0.2612	0.0473	0.0019	57.9	2.1	59.0	1.0	74	78	-1.8	-0.5
62	18.5	1460.0	110.0	48.6	2.2	1471	0.03	0.0598	0.0024	0.00927	0.00023	0.3597	0.0473	0.0016	58.9	2.3	59.5	1.4	93	74	-1.0	-0.3
207	21.7	466.0	9.4	123.7	3.0	495	0.27	0.0591	0.0031	0.00932	0.00022	0.1646	0.0465	0.0025	58.3	3.0	59.8	1.4	39	99	-2.6	-0.5
69	20.6	865.0	42.0	97.5	4.4	888	0.11	0.0552	0.0022	0.00935	0.00017	0.0686	0.0433	0.0019	54.6	2.1	60.0	1.1	-90	77	-9.9	-2.6
10	9.1	143.0	10.0	67.4	5.0	159	0.47	0.0627	0.0095	0.00956	0.00038	0.1860	0.0495	0.0078	61.4	9.0	61.3	2.5	100	270	0.2	0.0
18	9.0	266.8	5.2	125.6	4.9	296	0.47	0.0632	0.0077	0.00984	0.00023	0.3409	0.0473	0.0055	62.0	7.4	63.1	1.5	60	210	-1.8	-0.1
79	11.5	451.0	31.0	220.8	8.9	503	0.49	0.0675	0.0049	0.00987	0.00025	0.0298	0.0506	0.0040	66.2	4.7	63.3	1.6	220	160	4.4	0.6
230	21.7	99.0	5.7	40.3	2.0	108	0.41	0.0681	0.0085	0.00995	0.00039	0.1470	0.0514	0.0065	66.2	8.0	63.8	2.5	180	220	3.6	0.3
175	16.8	109.3	3.4	48.7	1.6	121	0.45	0.0665	0.0078	0.01001	0.00037	0.0058	0.0480	0.0062	64.9	7.5	64.2	2.4	130	230	1.1	0.1
176	14.6	179.2	8.1	86.4	4.0	200	0.48	0.0663	0.0076	0.01001	0.00036	0.0288	0.0476	0.0058	65.9	7.0	64.2	2.3	200	220	2.6	0.2
156	21.7	201.0	14.0	111.8	7.5	227	0.56	0.0678	0.0055	0.01002	0.00022	0.0534	0.0493	0.0042	66.3	5.2	64.3	1.4	150	150	3.0	0.4
183	21.3	384.0	14.0	88.3	5.5	405	0.23	0.0701	0.0045	0.01008	0.00024	0.2162	0.0503	0.0031	68.7	4.2	64.6	1.5	200	120	6.0	1.0
220	17.0	179.5	9.4	46.0	1.8	190	0.26	0.0664	0.0066	0.01012	0.00033	0.2371	0.0477	0.0052	65.9	6.5	64.9	2.1	110	190	1.5	0.2
161	18.3	270.3	4.1	27.4	1.8	277	0.10	0.0688	0.0054	0.01019	0.00021	0.0143	0.0488	0.0039	67.4	5.2	65.3	1.3	170	160	3.1	0.4
56	10.5	196.0	12.0	142.8	6.3	230	0.73	0.0706	0.0091	0.01019	0.00054	0.1369	0.0510	0.0060	69.0	8.5	65.4	3.4	230	230	5.2	0.4
181	19.0	266.8	7.7	97.8	8.3	290	0.37	0.0709	0.0048	0.01021	0.00026	0.0568	0.0486	0.0038	69.3	4.5	65.5	1.7	120	140	5.5	0.8
242	21.7	254.2	8.8	312.0	25.0	328	1.23	0.0674	0.0048	0.01021	0.00025	0.2118	0.0486	0.0033	66.1	4.6	65.5	1.6	130	130	0.9	0.1
20	11.1	398.0	16.0	16.5	0.5	402	0.04	0.0702	0.0059	0.01024	0.00031	0.1476	0.0518	0.0044	68.8	5.6	65.7	2.0	240	170	4.5	0.6
34	9.5	242.3	4.8	93.3	6.1	264	0.39	0.0676	0.0069	0.01027	0.00033	0.0486	0.0491	0.0054	66.2	6.6	65.9	2.1	130	200	0.5	0.0
104	21.7	230.0	14.0	88.2	6.5	251	0.38	0.0706	0.0052	0.01033	0.00024	0.0041	0.0499	0.0038	69.0	4.9	66.2	1.5	180	140	4.1	0.6
15	17.6	387.0	18.0	116.7	4.5	414	0.30	0.0666	0.0044	0.01034	0.00022	0.1333	0.0462	0.0030	65.9	4.1	66.3	1.4	40	120	-0.6	-0.1
5	10.3	241.0	14.0	142.7	7.5	275	0.59	0.0681	0.0078	0.01040	0.00029	0.1180	0.0479	0.0054	66.6	7.4	66.7	1.9	80	210	-0.2	0.0
160	21.7	69.3	2.2	79.2	0.9	88	1.14	0.0700	0.0110	0.01040	0.00044	0.1038	0.0497	0.0081	71.9	9.7	66.7	2.8	220	260	7.2	0.5
273	13.9	218.0	10.0	50.1	1.4	230	0.23	0.0649	0.0066	0.01041	0.00033	0.1404	0.0446	0.0044	63.6	6.3	66.7	2.1	-40	170	-4.9	-0.5
51	17.5	210.0	5.5	57.1	2.1	223	0.27	0.0733	0.0060	0.01042	0.00037	0.1216	0.0506	0.0041	72.3	5.8	66.8	2.3	210	160	7.6	0.9
197	21.7	331.0	12.0	136.9	2.8	363	0.41	0.0680	0.0043	0.01043	0.00025	0.2081	0.0487	0.0030	67.2	4.0	66.9	1.6	170	120	0.4	0.1
141	9.5	179.0	11.0	79.9	6.1	198	0.45	0.0690	0.0110	0.01044	0.00038	0.2184	0.0526	0.0084	67.7	10.0	67.0	2.4	210	290	1.0	0.1
37	9.5	138.0	11.0	159.0	8.5	175	1.15	0.0650	0.0110	0.01046	0.00048	0.1643	0.0472	0.0072	63.0	10.0	67.1	3.1	90	250	-6.5	-0.4
100	10.0	229.0	28.0	126.0	15.0	259	0.55	0.0679	0.0082	0.01048	0.00040	0.0122	0.0447	0.0054	66.4	7.8	67.2	2.6	40	230	-1.2	-0.1
271	18.3	99.0	10.0	30.9	3.5	106	0.31	0.0652	0.0086	0.01048	0.00048	0.0392	0.0460	0.0066	64.9	7.8	67.2	3.0	70	220	-3.5	-0.3
195	16.9	120.1	4.7	38.1	1.1	129	0.32	0.0750	0.0098	0.01055	0.00033	0.1966	0.0517	0.0064	72.8	9.2	67.7	2.1	240	230	7.0	0.6
105	18.2	116.6	4.5	207.6	8.0	165	1.78	0.0721	0.0082	0.01057	0.00034	0.1930	0.0505	0.0055	71.3	7.6	67.8	2.1	240	200	4.9	0.5
96	21.0	242.0	32.0	52.2	9.9	254	0.22	0.0701	0.0056	0.01072	0.00027	0.1568	0.0462	0.0036	68.6	5.3	68.8	1.7	50	130	-0.3	0.0
144	15.8	126.3	5.8	27.1	1.8	133	0.21	0.0664	0.0079	0.01077	0.00036	0.0250	0.0460	0.0058	64.9	7.5	69.0	2.3	40	220	-6.3	-0.5
123	18.8	63.6	5.8	38.6	2.0	73	0.61	0.0800	0.0110	0.01078	0.00046	0.0571	0.0579	0.0089	77.0	11.0	69.1	2.9	330	280	10.3	0.7

Table 5: LA-ICP-MS Zircon Isotopic and Age Data Table: SC15-01: Scott County, KS Paleosol Sample

								Corrected Isotopic Ratios[3]							Ages (Ma)[7]							
Grain #	Signal Duration (s)	U (ppm)[1]	2σ	Th (ppm)[1]	2σ	eU (ppm)[2]	Th/U	$^{207}Pb/^{235}U$	2σ[4]	$^{206}Pb/^{238}U$	2σ[4]	Rho[5]	$^{207}Pb/^{206}Pb$[6]	2σ	$^{207}Pb/^{235}U$	2σ	$^{206}Pb/^{238}U$	2σ	$^{207}Pb/^{206}Pb$	2σ	% Disc.[8]	Uncert. Wtd. Disc.[9]
193	21.7	112.4	2.3	63.8	2.3	127	0.57	0.0719	0.0074	0.01089	0.00037	0.1456	0.0483	0.0049	70.9	6.9	69.8	2.3	170	180	1.6	0.2
168	17.9	234.1	9.0	120.3	6.1	262	0.51	0.0711	0.0048	0.01096	0.00022	0.1931	0.0475	0.0030	69.6	4.5	70.3	1.4	110	120	-1.0	-0.2
262	16.7	134.1	6.5	33.6	1.4	142	0.25	0.0759	0.0070	0.01098	0.00041	0.0575	0.0513	0.0050	75.1	6.8	70.4	2.6	250	190	6.3	0.7
84	15.0	27.8	0.6	32.2	1.7	35	1.16	0.0820	0.0250	0.01102	0.00080	0.0881	0.0650	0.0190	76.0	24.0	70.6	5.1	260	520	7.1	0.2
240	21.7	130.3	2.0	47.5	2.3	141	0.36	0.0710	0.0078	0.01101	0.00030	0.0097	0.0464	0.0052	69.9	7.3	70.6	1.9	110	200	-1.0	-0.1
291	12.1	47.0	4.7	29.8	2.4	54	0.63	0.0800	0.0220	0.01101	0.00073	0.0629	0.0580	0.0160	76.0	21.0	70.6	4.7	210	480	7.1	0.3
43	16.9	84.7	6.6	82.1	4.4	104	0.97	0.0740	0.0120	0.01103	0.00046	0.1400	0.0487	0.0079	72.0	11.0	70.7	2.9	40	270	1.8	0.1
127	15.0	286.0	43.0	60.4	8.4	300	0.21	0.0720	0.0065	0.01107	0.00033	0.0215	0.0480	0.0042	71.2	6.0	70.9	2.1	140	160	0.4	0.0
300	17.6	133.0	14.0	104.0	10.0	157	0.78	0.0755	0.0084	0.01114	0.00047	0.3664	0.0498	0.0051	73.4	7.9	71.4	3.0	170	180	2.7	0.3
214	15.0	352.0	20.0	82.0	3.1	371	0.23	0.0751	0.0046	0.01119	0.00043	0.2218	0.0475	0.0032	73.4	4.4	71.7	2.7	140	120	2.3	0.4
137	11.5	96.9	8.1	49.0	6.1	108	0.51	0.0800	0.0120	0.01123	0.00045	0.0082	0.0506	0.0076	79.0	11.0	72.0	2.9	330	290	8.9	0.6
270	9.4	22.9	1.3	22.7	1.0	28	0.99	0.1510	0.0430	0.01130	0.00120	0.2171	0.0990	0.0290	137.0	37.0	72.1	7.7	1370	580	47.4	1.8
38	13.4	148.7	4.0	22.8	0.6	154	0.15	0.0738	0.0094	0.01127	0.00046	0.1397	0.0493	0.0063	71.8	8.9	72.2	2.9	150	240	-0.6	0.0
296	14.4	160.0	13.0	40.3	1.9	169	0.25	0.0766	0.0078	0.01126	0.00044	0.1135	0.0498	0.0062	74.6	7.3	72.2	2.8	150	210	3.2	0.3
60	8.5	429.0	17.0	84.0	5.5	449	0.20	0.0756	0.0073	0.01128	0.00041	0.3328	0.0483	0.0048	73.8	6.9	72.3	2.6	110	190	2.0	0.2
90	14.4	82.9	6.7	46.6	4.8	94	0.56	0.0740	0.0110	0.01128	0.00045	0.1623	0.0491	0.0071	72.0	10.0	72.3	2.8	170	250	-0.4	0.0
233	21.7	142.0	11.0	65.2	3.3	157	0.46	0.0778	0.0084	0.01132	0.00037	0.1725	0.0487	0.0049	75.4	7.9	72.5	2.4	140	180	3.8	0.4
9	11.3	207.7	9.3	94.8	2.4	230	0.46	0.0725	0.0076	0.01132	0.00034	0.0605	0.0472	0.0048	70.8	7.2	72.6	2.1	60	180	-2.5	-0.3
77	15.6	222.9	8.8	153.5	5.5	259	0.69	0.0778	0.0057	0.01133	0.00028	0.0952	0.0509	0.0040	75.9	5.4	72.6	1.8	220	160	4.3	0.6
19	11.1	117.2	4.3	34.8	1.7	125	0.30	0.0812	0.0097	0.01139	0.00045	0.3079	0.0537	0.0074	78.8	9.1	73.0	2.9	260	260	7.4	0.6
22	6.1	487.0	15.0	292.7	7.9	556	0.60	0.0745	0.0057	0.01139	0.00038	0.0343	0.0495	0.0046	74.1	5.7	73.0	2.4	150	180	1.5	0.2
59	11.8	158.3	5.9	68.1	2.8	174	0.43	0.0780	0.0110	0.01141	0.00042	0.0976	0.0500	0.0071	76.1	10.0	73.1	2.7	160	260	3.9	0.3
295	13.2	321.0	32.0	169.5	5.0	361	0.53	0.0791	0.0058	0.01140	0.00048	0.1950	0.0520	0.0039	77.1	5.5	73.1	3.1	300	150	5.2	0.7
95	7.1	26.9	0.8	16.1	1.0	31	0.60	0.0800	0.0330	0.01140	0.00120	0.1967	0.0560	0.0220	75.0	30.0	73.2	7.4	430	640	2.4	0.1
113	21.7	188.2	9.1	5.1	0.4	189	0.03	0.0741	0.0073	0.01142	0.00028	0.1166	0.0473	0.0050	72.2	6.9	73.2	1.8	70	180	-1.4	-0.1
79	21.7	212.0	12.0	63.4	4.1	227	0.30	0.0748	0.0054	0.01150	0.00025	0.0235	0.0486	0.0037	73.0	5.1	73.7	1.6	120	140	-1.0	-0.1
219	16.3	221.7	5.3	92.5	1.9	243	0.42	0.0736	0.0068	0.01151	0.00033	0.1888	0.0452	0.0038	71.8	6.4	73.8	2.1	40	160	-2.8	-0.3
194	17.8	136.0	14.0	96.2	7.4	159	0.71	0.0823	0.0084	0.01152	0.00045	0.1063	0.0549	0.0056	79.8	7.9	73.9	2.9	350	200	7.4	0.7
52	11.5	293.0	23.0	33.6	2.1	301	0.11	0.0709	0.0073	0.01155	0.00054	0.1152	0.0454	0.0048	69.3	6.9	74.0	3.5	30	190	-6.8	-0.7
224	21.7	220.7	9.5	216.0	9.5	271	0.98	0.0763	0.0057	0.01157	0.00028	0.1734	0.0484	0.0037	74.4	5.4	74.2	1.8	110	140	0.3	0.0
189	12.7	59.6	4.1	34.9	1.8	68	0.59	0.0850	0.0160	0.01161	0.00064	0.1709	0.0560	0.0100	81.0	14.0	74.4	4.1	340	340	8.1	0.5
283	3.7	108.3	6.7	97.5	9.1	131	0.90	0.0850	0.0170	0.01160	0.00085	0.0711	0.0550	0.0110	83.0	16.0	74.4	5.4	320	390	10.4	0.5
97	20.7	126.0	10.0	97.8	6.7	149	0.78	0.0872	0.0086	0.01163	0.00036	0.1613	0.0539	0.0052	84.3	8.0	74.5	2.3	360	190	11.6	1.2
44	14.2	102.9	2.3	41.0	1.4	113	0.40	0.0790	0.0110	0.01165	0.00040	0.0620	0.0491	0.0074	76.0	10.0	74.7	2.6	70	250	1.7	0.1
139	21.7	75.7	3.3	49.1	1.4	87	0.65	0.0798	0.0095	0.01166	0.00047	0.0805	0.0522	0.0064	77.2	8.9	74.7	3.0	200	220	3.2	0.3
138	18.1	890.0	81.0	51.6	4.9	902	0.06	0.0775	0.0035	0.01175	0.00028	0.1833	0.0475	0.0019	75.7	3.3	75.3	1.8	80	78	0.5	0.1
178	21.7	202.4	5.3	90.7	1.7	224	0.45	0.0797	0.0052	0.01175	0.00031	0.0972	0.0503	0.0033	77.6	4.9	75.3	2.0	190	130	3.0	0.5
29	13.5	171.0	13.0	147.0	14.0	206	0.86	0.0776	0.0078	0.01179	0.00031	0.0429	0.0480	0.0049	75.6	7.3	75.6	2.0	120	190	0.0	0.0
260	21.7	312.0	11.0	270.0	15.0	375	0.87	0.0769	0.0046	0.01179	0.00027	0.4135	0.0474	0.0025	75.1	4.4	75.6	1.7	90	100	-0.7	-0.1
154	21.7	753.0	35.0	92.6	6.7	775	0.12	0.0769	0.0034	0.01183	0.00022	0.1959	0.0475	0.0020	75.2	3.2	75.8	1.4	97	81	-0.8	-0.2
121	14.1	143.0	14.0	74.0	5.5	160	0.52	0.0778	0.0090	0.01186	0.00042	0.1362	0.0487	0.0051	75.6	8.5	76.0	2.7	170	190	-0.5	0.0

Table 5: LA-ICP-MS Zircon Isotopic and Age Data Table: SC15-01: Scott County, KS Paleosol Sample

								Corrected Isotopic Ratios[3]							Ages (Ma)[7]							
Grain #	Signal Duration (s)	U (ppm)[1]	2σ	Th (ppm)[1]	2σ	eU (ppm)[2]	Th/U	$^{207}Pb/^{235}U$	2σ[4]	$^{206}Pb/^{238}U$	2σ[4]	Rho[5]	$^{207}Pb/^{206}Pb$[6]	2σ	$^{207}Pb/^{235}U$	2σ	$^{206}Pb/^{238}U$	2σ	$^{207}Pb/^{206}Pb$	2σ	% Disc.[8]	Uncert. Wtd. Disc.[9]
276	21.7	55.4	1.9	12.0	0.5	58	0.22	0.0790	0.0140	0.01190	0.00052	0.2202	0.0503	0.0092	77.0	14.0	76.2	3.3	170	290	1.0	0.1
196	14.0	115.0	14.0	108.0	15.0	140	0.94	0.0854	0.0086	0.01190	0.00047	0.0142	0.0529	0.0064	82.8	7.9	76.3	3.0	350	210	7.9	0.8
236	16.9	210.3	8.4	74.2	3.5	228	0.35	0.0741	0.0058	0.01191	0.00028	0.0066	0.0444	0.0037	72.4	5.5	76.3	1.8	-20	140	-5.4	-0.7
130	17.0	115.1	5.8	50.0	1.9	127	0.43	0.0750	0.0099	0.01196	0.00041	0.1248	0.0464	0.0063	72.7	9.3	76.6	2.6	50	230	-5.4	-0.4
102	11.7	277.0	49.0	108.0	17.0	302	0.39	0.0762	0.0081	0.01200	0.00041	0.2272	0.0482	0.0058	74.3	7.6	76.9	2.6	70	210	-3.5	-0.3
269	17.2	825.0	36.0	1599.0	76.0	1201	1.94	0.0813	0.0039	0.01205	0.00028	0.1192	0.0492	0.0023	79.3	3.7	77.2	1.8	150	95	2.6	0.6
289	21.7	110.8	5.6	55.5	4.5	124	0.50	0.0782	0.0078	0.01207	0.00037	0.1645	0.0481	0.0051	75.9	7.3	77.3	2.4	100	190	-1.8	-0.2
12	19.0	368.0	19.0	196.4	7.3	414	0.53	0.0800	0.0046	0.01209	0.00027	0.1217	0.0483	0.0028	78.5	4.4	77.5	1.7	120	110	1.3	0.2
131	12.4	129.2	3.7	74.4	2.8	147	0.58	0.0803	0.0078	0.01210	0.00046	0.0828	0.0480	0.0050	78.1	7.3	77.5	3.0	150	200	0.8	0.1
148	18.6	404.0	14.0	400.7	9.0	498	0.99	0.0806	0.0039	0.01211	0.00035	0.3303	0.0494	0.0022	78.6	3.6	77.6	2.2	164	91	1.3	0.3
114	19.3	84.1	5.4	47.8	2.7	95	0.57	0.0840	0.0110	0.01214	0.00036	0.1800	0.0490	0.0060	80.9	9.9	77.8	2.3	240	220	3.8	0.3
133	19.0	41.3	4.2	47.5	3.7	52	1.15	0.0760	0.0210	0.01215	0.00065	0.0245	0.0430	0.0120	78.0	20.0	77.8	4.1	-100	400	0.3	0.0
246	17.5	195.0	19.0	151.0	16.0	230	0.77	0.0806	0.0080	0.01214	0.00030	0.1331	0.0484	0.0046	78.2	7.5	77.8	1.9	140	160	0.5	0.1
135	19.7	291.0	16.0	89.7	5.4	312	0.31	0.0787	0.0043	0.01222	0.00028	0.1977	0.0471	0.0027	76.8	4.0	78.3	1.8	80	110	-2.0	-0.4
111	16.3	28.7	0.9	22.3	0.7	34	0.78	0.1030	0.0250	0.01214	0.00063	0.1641	0.0600	0.0160	102.0	23.0	78.4	4.2	370	420	23.1	1.0
185	14.3	161.3	3.7	66.2	2.1	177	0.41	0.0781	0.0092	0.01224	0.00047	0.1380	0.0480	0.0057	75.8	8.6	78.4	3.0	100	220	-3.4	-0.3
198	16.5	196.0	14.0	86.2	9.3	216	0.44	0.0854	0.0078	0.01225	0.00034	0.0281	0.0494	0.0046	82.8	7.3	78.5	2.1	140	170	5.2	0.6
165	21.7	467.0	28.0	285.0	14.0	534	0.61	0.0778	0.0039	0.01232	0.00020	0.2302	0.0459	0.0021	75.9	3.6	78.9	1.3	20	89	-4.0	-0.8
147	15.8	118.6	8.8	41.4	2.7	128	0.35	0.0810	0.0110	0.01243	0.00055	0.0643	0.0493	0.0070	82.0	11.0	79.6	3.5	140	240	2.9	0.2
294	13.3	83.3	6.1	73.9	5.4	101	0.89	0.0800	0.0130	0.01257	0.00052	0.1137	0.0483	0.0078	83.0	11.0	80.5	3.3	300	260	3.0	0.2
48	12.0	450.0	100.0	137.0	31.0	482	0.30	0.0856	0.0072	0.01265	0.00043	0.3808	0.0508	0.0042	84.5	7.2	81.1	2.8	200	160	4.0	0.5
101	21.7	130.2	7.0	63.1	4.4	145	0.48	0.0839	0.0086	0.01287	0.00037	0.0226	0.0485	0.0051	82.2	7.8	82.4	2.3	100	180	-0.2	0.0
63	21.7	648.0	18.0	312.9	7.8	722	0.48	0.0849	0.0036	0.01296	0.00029	0.2479	0.0475	0.0020	83.0	3.3	83.0	1.9	83	82	0.0	0.0
106	17.8	242.0	31.0	115.0	13.0	269	0.48	0.0866	0.0063	0.01300	0.00032	0.1878	0.0480	0.0034	84.0	5.9	83.3	2.1	100	130	0.8	0.1
7	14.9	145.6	5.8	63.6	2.1	161	0.44	0.0834	0.0083	0.01306	0.00044	0.2003	0.0457	0.0040	81.0	7.7	83.6	2.8	10	160	-3.2	-0.3
99	18.1	264.0	20.0	164.0	12.0	303	0.62	0.0867	0.0068	0.01339	0.00038	0.2000	0.0472	0.0037	85.0	6.1	85.7	2.4	100	140	-0.8	-0.1
119	20.3	78.8	8.7	2.9	0.2	79	0.04	0.0860	0.0120	0.01358	0.00055	0.1963	0.0467	0.0068	82.0	11.0	86.9	3.5	60	240	-6.0	-0.4
184	13.9	223.0	12.0	124.5	3.3	252	0.56	0.0898	0.0076	0.01385	0.00043	0.0218	0.0489	0.0044	87.0	7.0	88.7	2.7	120	170	-2.0	-0.2
89	20.7	1300.0	130.0	560.0	42.0	1432	0.43	0.0918	0.0031	0.01392	0.00022	0.2860	0.0477	0.0014	89.1	2.8	89.1	1.4	83	60	0.0	0.0
299	19.8	174.8	7.0	115.0	4.4	202	0.66	0.0936	0.0068	0.01404	0.00042	0.3357	0.0498	0.0035	90.5	6.3	89.9	2.7	170	140	0.7	0.1
164	14.7	268.2	9.5	162.0	4.9	306	0.60	0.0995	0.0075	0.01491	0.00038	0.2647	0.0490	0.0034	96.0	6.9	95.4	2.4	150	130	0.6	0.1
159	13.6	133.9	9.3	105.8	7.3	159	0.79	0.0994	0.0099	0.01503	0.00051	0.2138	0.0502	0.0046	97.2	8.8	96.2	3.2	200	180	1.0	0.1
282	21.9	534.0	22.0	237.0	10.0	590	0.44	0.0973	0.0042	0.01527	0.00031	0.2093	0.0465	0.0019	94.2	3.9	97.7	2.0	43	77	-3.7	-0.9
126	21.1	37.9	5.1	36.8	4.0	47	0.97	0.3030	0.0310	0.01551	0.00077	0.0307	0.1440	0.0180	270.0	25.0	99.2	4.9	2230	210	63.3	6.8
41	19.1	385.0	21.0	148.0	12.0	420	0.38	0.1017	0.0051	0.01552	0.00037	0.4012	0.0473	0.0020	98.2	4.7	99.3	2.3	77	83	-1.1	-0.2
186	21.7	306.0	14.0	107.9	3.3	331	0.35	0.1035	0.0054	0.01568	0.00033	0.0396	0.0488	0.0027	99.8	5.0	100.3	2.1	150	110	-0.5	-0.1
155	21.7	168.5	3.7	140.5	6.0	202	0.83	0.0994	0.0075	0.01576	0.00038	0.0898	0.0461	0.0036	95.8	7.0	100.8	2.4	30	140	-5.2	-0.7
182	17.0	310.5	8.4	517.0	16.0	432	1.67	0.1055	0.0058	0.01645	0.00034	0.1585	0.0472	0.0026	101.6	5.4	105.2	2.1	60	110	-3.5	-0.7
257	14.2	226.8	6.1	104.6	3.3	251	0.46	0.1091	0.0077	0.01739	0.00044	0.0830	0.0448	0.0031	104.8	7.0	111.1	2.8	-20	130	-6.0	-0.9
173	16.4	181.0	13.0	29.6	3.4	188	0.16	0.1209	0.0098	0.01848	0.00053	0.4491	0.0484	0.0036	115.3	8.9	118.0	3.4	130	140	-2.3	-0.3
152	21.7	693.0	23.0	501.0	17.0	811	0.72	0.1792	0.0064	0.02653	0.00051	0.5030	0.0501	0.0015	167.1	5.5	168.8	3.2	193	64	-1.0	-0.3

Table 5: LA-ICP-MS Zircon Isotopic and Age Data Table: SC15-01: Scott County, KS Paleosol Sample

								Corrected Isotopic Ratios[3]							Ages (Ma)[7]							
Grain #	Signal Duration (s)	U (ppm)[1]	2σ	Th (ppm)[1]	2σ	eU (ppm)[2]	Th/U	$^{207}Pb/^{235}U$	2σ[4]	$^{206}Pb/^{238}U$	2σ[4]	Rho[5]	$^{207}Pb/^{206}Pb$[6]	2σ	$^{207}Pb/^{235}U$	2σ	$^{206}Pb/^{238}U$	2σ	$^{207}Pb/^{206}Pb$	2σ	% Disc.[8]	Uncert. Wtd. Disc.[9]
2	18.2	486.0	18.0	267.3	6.4	549	0.55	0.1793	0.0070	0.02666	0.00064	0.3511	0.0477	0.0016	167.2	6.0	169.6	4.0	100	69	-1.4	-0.4
278	21.7	199.1	7.5	76.7	2.0	217	0.39	0.1819	0.0097	0.02679	0.00064	0.1175	0.0491	0.0027	169.9	8.5	170.4	4.0	150	110	-0.3	-0.1
134	16.3	401.0	65.0	146.0	16.0	435	0.36	0.1949	0.0081	0.02911	0.00060	0.4294	0.0502	0.0017	181.4	6.8	185.0	3.8	187	75	-2.0	-0.5
73	21.7	109.8	3.6	85.0	2.5	130	0.77	0.2070	0.0110	0.02913	0.00056	0.0634	0.0528	0.0031	189.9	9.7	185.1	3.5	280	120	2.5	0.5
229	21.7	119.7	5.6	31.3	1.0	127	0.26	0.2020	0.0150	0.03066	0.00075	0.2193	0.0510	0.0035	192.0	13.0	194.7	4.7	220	130	-1.4	-0.2
180	14.0	773.0	23.0	316.0	16.0	847	0.41	0.2493	0.0080	0.03569	0.00078	0.5189	0.0518	0.0015	226.8	6.7	226.0	4.8	274	66	0.4	0.1
108	21.6	595.0	43.0	220.0	25.0	647	0.37	0.2946	0.0080	0.04125	0.00065	0.2362	0.0519	0.0014	261.9	6.3	260.6	4.0	269	58	0.5	0.2
143	13.3	933.0	48.0	162.4	5.3	971	0.17	0.3000	0.0130	0.04160	0.00120	0.4592	0.0532	0.0018	265.8	10.0	262.8	7.1	344	81	1.1	0.3
179	21.7	276.0	11.0	101.4	3.9	300	0.37	0.3210	0.0120	0.04434	0.00077	0.2134	0.0527	0.0018	282.2	8.9	279.7	4.8	307	74	0.9	0.3
267	21.7	417.0	24.0	39.9	1.2	426	0.10	0.3483	0.0099	0.04833	0.00094	0.2468	0.0530	0.0015	303.9	7.6	304.2	5.8	320	62	-0.1	0.0
107	11.0	424.0	17.0	96.1	7.0	447	0.23	0.9030	0.0330	0.05300	0.00210	0.5856	0.1232	0.0047	652.0	18.0	333.0	13.0	1997	70	48.9	17.7
263	13.7	239.0	19.0	74.4	5.0	256	0.31	0.5050	0.0330	0.05700	0.00200	0.6824	0.0659	0.0028	416.0	21.0	357.0	12.0	787	93	14.2	2.8
163	19.4	263.0	36.0	34.3	1.0	271	0.13	0.4860	0.0190	0.06530	0.00120	0.2458	0.0545	0.0021	401.0	13.0	408.5	7.3	384	83	-1.9	-0.6
188	21.7	159.0	9.9	102.7	3.6	183	0.65	0.5030	0.0200	0.06610	0.00120	0.1676	0.0557	0.0020	412.0	14.0	412.4	7.2	421	81	-0.1	0.0
218	15.5	312.0	21.0	152.0	18.0	348	0.49	0.5290	0.0210	0.06800	0.00170	0.5843	0.0567	0.0018	430.0	14.0	423.9	10.0	479	70	1.4	0.4
14	12.4	503.0	26.0	384.0	20.0	593	0.76	0.5280	0.0160	0.06880	0.00130	0.3573	0.0557	0.0017	431.4	11.0	428.8	7.7	446	63	0.6	0.2
287	17.1	377.0	14.0	30.4	1.7	384	0.08	2.4340	0.0720	0.07040	0.00190	0.7780	0.2498	0.0045	1250.0	21.0	439.0	11.0	3184	30	64.9	38.6
94	17.2	220.0	15.0	12.6	1.5	223	0.06	0.6590	0.0230	0.08240	0.00150	0.3205	0.0575	0.0019	515.0	14.0	510.4	8.7	536	69	0.9	0.3
146	17.3	306.0	15.0	56.2	8.0	319	0.18	0.6590	0.0230	0.08300	0.00180	0.6760	0.0571	0.0014	513.0	14.0	513.6	11.0	489	53	-0.1	0.0
32	22.0	153.9	4.9	49.7	0.9	166	0.32	0.6630	0.0240	0.08380	0.00120	0.2576	0.0572	0.0019	514.0	15.0	519.0	7.3	472	74	-1.0	-0.3
169	21.7	47.3	2.0	43.3	1.1	57	0.92	0.7530	0.0430	0.09160	0.00210	0.1978	0.0604	0.0033	574.0	24.0	565.0	13.0	550	120	1.6	0.4
53	14.3	237.8	8.9	149.0	14.0	273	0.63	0.8260	0.0250	0.10040	0.00180	0.2484	0.0600	0.0019	612.0	13.0	616.6	10.0	595	66	-0.8	-0.4
226	21.8	610.0	70.0	36.2	3.6	619	0.06	4.1000	0.2300	0.12180	0.00430	0.8152	0.2497	0.0096	1658.0	48.0	740.0	25.0	3187	59	55.4	19.1
64	8.5	96.1	5.5	80.0	6.5	115	0.83	1.5420	0.0690	0.12910	0.00460	0.5165	0.0851	0.0036	945.0	27.0	782.0	26.0	1302	81	17.2	6.0
93	21.4	443.0	74.0	51.1	4.2	455	0.12	1.6480	0.0870	0.13120	0.00620	0.9464	0.0904	0.0017	982.0	33.0	793.0	35.0	1431	37	19.2	5.7
248	10.4	188.0	19.0	52.5	3.7	200	0.28	1.9400	0.0740	0.17760	0.00480	0.6185	0.0791	0.0024	1092.0	25.0	1053.0	26.0	1164	62	3.6	1.6
70	21.7	64.9	2.2	40.9	0.8	75	0.63	1.8750	0.0570	0.18090	0.00330	0.3317	0.0759	0.0022	1076.0	21.0	1072.0	18.0	1081	57	0.4	0.2
249	21.7	80.2	7.1	40.9	3.8	90	0.51	1.9130	0.0560	0.18140	0.00310	0.1633	0.0769	0.0021	1092.0	19.0	1074.0	17.0	1121	56	1.6	0.9
30	21.7	78.3	2.7	66.1	2.2	94	0.84	1.8960	0.0560	0.18150	0.00300	0.4815	0.0762	0.0017	1077.0	19.0	1075.0	17.0	1101	45	0.2	0.1
118	21.4	82.4	4.1	68.9	3.1	99	0.84	1.9130	0.0550	0.18180	0.00370	0.5802	0.0772	0.0020	1085.0	19.0	1079.0	21.0	1123	51	0.6	0.3
258	21.7	141.1	5.5	106.0	2.8	166	0.75	1.9230	0.0450	0.18260	0.00310	0.2243	0.0763	0.0016	1088.0	16.0	1081.0	17.0	1100	43	0.6	0.4
4	19.7	111.4	4.8	77.6	3.4	130	0.70	1.9370	0.0520	0.18510	0.00320	0.4148	0.0767	0.0018	1092.0	18.0	1094.0	17.0	1104	48	-0.2	-0.1
285	10.2	206.0	17.0	88.1	6.2	227	0.43	2.1500	0.1200	0.18700	0.01000	0.8704	0.0842	0.0022	1160.0	38.0	1104.0	57.0	1300	55	4.8	1.5
54	14.5	248.0	12.0	99.2	3.4	271	0.40	1.9570	0.0620	0.18780	0.00410	0.7995	0.0757	0.0013	1099.0	21.0	1109.0	22.0	1084	36	-0.9	-0.5
268	19.7	280.0	12.0	75.4	1.9	298	0.27	1.9960	0.0480	0.18860	0.00350	0.5442	0.0773	0.0015	1113.0	16.0	1113.0	19.0	1126	41	0.0	0.0
57	5.7	113.2	7.4	61.1	4.1	128	0.54	2.1000	0.1200	0.19470	0.00740	0.5902	0.0746	0.0036	1144.0	39.0	1146.0	40.0	1060	110	-0.2	-0.1
82	18.0	90.7	8.9	43.7	3.7	101	0.48	2.0930	0.0860	0.19530	0.00750	0.7775	0.0784	0.0021	1144.0	28.0	1148.0	40.0	1145	53	-0.3	-0.1
8	20.8	283.0	24.0	69.3	5.0	299	0.24	2.1550	0.0540	0.20780	0.00410	0.6804	0.0752	0.0014	1167.0	17.0	1216.0	22.0	1079	37	-4.2	-2.9
290	20.2	36.8	6.0	15.7	0.8	40	0.43	2.3140	0.1000	0.21090	0.00430	0.0642	0.0796	0.0037	1215.0	32.0	1233.0	23.0	1180	96	-1.5	-0.6
72	21.7	82.9	4.8	50.8	3.4	95	0.61	2.6880	0.0690	0.22590	0.00350	0.2690	0.0857	0.0020	1323.0	19.0	1314.0	19.0	1343	42	0.7	0.5
158	6.3	259.3	7.4	19.2	0.5	264	0.07	2.7240	0.0900	0.22720	0.00670	0.5215	0.0873	0.0024	1338.0	23.0	1319.0	35.0	1362	52	1.4	0.8

Table 5: LA-ICP-MS Zircon Isotopic and Age Data Table: SC15-01: Scott County, KS Paleosol Sample

								Corrected Isotopic Ratios[3]							Ages (Ma)[7]							
Grain #	Signal Duration (s)	U (ppm)[1]	2σ	Th (ppm)[1]	2σ	eU (ppm)[2]	Th/U	$^{207}Pb/^{235}U$	2σ[4]	$^{206}Pb/^{238}U$	2σ[4]	Rho[5]	$^{207}Pb/^{206}Pb$[6]	2σ	$^{207}Pb/^{235}U$	2σ	$^{206}Pb/^{238}U$	2σ	$^{207}Pb/^{206}Pb$	2σ	% Disc.[8]	Uncert. Wtd. Disc.[9]
27	21.5	75.6	4.6	58.0	3.0	89	0.77	2.7410	0.0700	0.22780	0.00390	0.3873	0.0880	0.0021	1342.0	19.0	1323.0	20.0	1382	47	1.4	1.0
36	21.7	97.7	4.3	50.3	1.6	110	0.51	2.7460	0.0750	0.23060	0.00420	0.4503	0.0861	0.0020	1338.0	20.0	1337.0	22.0	1334	44	0.1	0.1
274	3.8	74.1	5.1	26.6	0.9	80	0.36	2.8000	0.2500	0.23400	0.01900	0.7244	0.0840	0.0052	1349.0	65.0	1353.0	99.0	1320	140	-0.3	-0.1
172	21.6	771.0	80.0	39.3	2.3	780	0.05	3.0010	0.0630	0.23720	0.00400	0.5922	0.0920	0.0015	1407.0	16.0	1372.0	21.0	1467	32	2.5	2.2
150	21.7	184.4	6.0	87.1	1.4	205	0.47	2.9470	0.0730	0.23960	0.00440	0.5509	0.0884	0.0019	1392.0	19.0	1384.0	23.0	1388	41	0.6	0.4
31	13.5	151.9	9.5	89.8	3.6	173	0.59	2.9530	0.0710	0.24030	0.00440	0.4192	0.0905	0.0021	1397.0	19.0	1388.0	23.0	1431	44	0.6	0.5
26	21.7	263.0	20.0	11.6	1.7	266	0.04	3.0260	0.0630	0.24090	0.00330	0.4583	0.0900	0.0015	1413.0	16.0	1391.0	17.0	1425	31	1.6	1.4
238	18.7	71.3	1.4	40.5	1.4	81	0.57	2.9470	0.0860	0.24160	0.00420	0.2869	0.0903	0.0023	1394.0	22.0	1395.0	22.0	1425	51	-0.1	0.0
171	13.8	84.2	1.7	47.2	1.2	95	0.56	2.9790	0.0960	0.24200	0.00520	0.3666	0.0925	0.0026	1403.0	23.0	1397.0	27.0	1468	53	0.4	0.3
58	5.6	87.9	4.0	30.3	1.2	95	0.34	2.9800	0.1300	0.24230	0.00660	0.2406	0.0884	0.0034	1400.0	34.0	1398.0	34.0	1426	77	0.1	0.1
88	11.4	311.0	18.0	36.9	2.3	320	0.12	3.8200	0.1300	0.24250	0.00730	0.8404	0.1145	0.0024	1594.0	27.0	1399.0	38.0	1868	38	12.2	7.2
80	21.0	196.0	15.0	169.0	10.0	236	0.86	3.0370	0.0640	0.24350	0.00300	0.0306	0.0907	0.0018	1416.0	16.0	1405.0	16.0	1446	36	0.8	0.7
222	21.7	212.0	11.0	181.5	8.3	255	0.86	2.9860	0.0990	0.24330	0.00610	0.7568	0.0897	0.0018	1406.0	26.0	1406.0	31.0	1421	39	0.0	0.0
209	11.6	170.0	17.0	156.0	22.0	207	0.92	2.9830	0.1100	0.24410	0.00720	0.6933	0.0912	0.0026	1408.0	28.0	1413.0	36.0	1449	52	-0.4	-0.2
55	13.3	111.9	4.7	79.3	2.2	131	0.71	3.0580	0.0920	0.24490	0.00430	0.0666	0.0912	0.0028	1420.0	23.0	1415.0	23.0	1456	59	0.4	0.2
227	18.8	413.0	37.0	52.5	6.6	425	0.13	3.4600	0.2600	0.24500	0.01700	0.9721	0.1017	0.0019	1519.0	58.0	1415.0	87.0	1660	35	6.8	1.8
25	14.6	96.4	2.5	64.0	3.8	111	0.66	3.0810	0.0780	0.24530	0.00390	0.0221	0.0926	0.0023	1432.0	18.0	1416.0	20.0	1473	46	1.1	0.9
252	18.3	91.0	4.2	55.4	2.1	104	0.61	3.0630	0.0870	0.24530	0.00440	0.3724	0.0909	0.0024	1421.0	22.0	1416.0	22.0	1439	49	0.4	0.2
231	20.7	195.3	8.5	85.5	2.7	215	0.44	3.1400	0.0730	0.24670	0.00380	0.4815	0.0920	0.0018	1441.0	18.0	1421.0	20.0	1474	36	1.4	1.1
125	17.7	273.0	49.0	63.0	2.5	288	0.23	2.9990	0.0740	0.24660	0.00400	0.5814	0.0890	0.0017	1408.0	19.0	1423.0	21.0	1400	38	-1.1	-0.8
243	12.0	157.3	4.8	47.3	1.3	168	0.30	3.0800	0.0910	0.24730	0.00500	0.6071	0.0917	0.0020	1426.0	23.0	1424.0	26.0	1457	42	0.1	0.1
142	18.4	98.0	14.0	57.9	6.8	112	0.59	3.0550	0.1000	0.24760	0.00600	0.4770	0.0901	0.0026	1420.0	26.0	1425.0	31.0	1435	55	-0.4	-0.2
177	16.9	151.9	6.0	61.9	1.8	166	0.41	3.0800	0.0720	0.24750	0.00440	0.4254	0.0906	0.0019	1427.0	18.0	1425.0	23.0	1432	40	0.1	0.1
124	12.9	225.0	19.0	147.0	16.0	260	0.65	3.0310	0.0710	0.24770	0.00420	0.1617	0.0901	0.0021	1415.0	18.0	1426.0	22.0	1427	45	-0.8	-0.6
192	16.3	66.4	1.5	33.7	0.9	74	0.51	3.0310	0.0890	0.24660	0.00500	0.3309	0.0888	0.0027	1413.0	22.0	1428.0	28.0	1409	59	-1.1	-0.7
11	13.5	857.0	97.0	15.6	1.2	861	0.02	3.0900	0.0880	0.24840	0.00700	0.7995	0.0925	0.0018	1432.0	23.0	1429.0	36.0	1473	38	0.2	0.1
199	17.1	152.9	8.1	137.2	3.8	185	0.90	3.1380	0.0820	0.24870	0.00480	0.6084	0.0910	0.0018	1442.0	20.0	1431.0	25.0	1450	40	0.8	0.6
215	11.4	187.0	22.0	72.9	8.8	204	0.39	3.1400	0.1700	0.24900	0.01300	0.7753	0.0937	0.0033	1440.0	41.0	1432.0	67.0	1500	65	0.6	0.2
45	10.8	232.5	9.5	68.3	2.6	249	0.29	3.0900	0.1100	0.24810	0.00640	0.6822	0.0916	0.0023	1427.0	28.0	1433.0	34.0	1453	47	-0.4	-0.2
259	21.7	144.3	7.3	110.1	4.7	170	0.76	3.0620	0.0790	0.24900	0.00420	0.4375	0.0890	0.0019	1423.0	19.0	1435.0	21.0	1418	40	-0.8	-0.6
61	12.3	236.0	11.0	97.1	2.8	259	0.41	3.1270	0.0770	0.25100	0.00450	0.2670	0.0899	0.0023	1438.0	19.0	1443.0	23.0	1424	46	-0.3	-0.3
255	21.7	61.0	2.2	48.3	1.0	72	0.79	3.1500	0.0830	0.25150	0.00460	0.2756	0.0928	0.0025	1443.0	20.0	1445.0	24.0	1486	50	-0.1	-0.1
17	20.9	64.7	2.1	42.5	1.0	75	0.66	3.1470	0.0880	0.25170	0.00400	0.2864	0.0915	0.0024	1445.0	22.0	1447.0	21.0	1447	51	-0.1	-0.1
212	13.4	134.0	13.0	114.5	7.9	161	0.85	3.0800	0.1100	0.25130	0.00700	0.5348	0.0893	0.0025	1428.0	27.0	1449.0	35.0	1433	60	-1.5	-0.8
49	21.6	184.9	7.8	73.1	2.9	202	0.40	3.1570	0.0710	0.25260	0.00410	0.5020	0.0915	0.0017	1449.0	17.0	1452.0	21.0	1455	36	-0.2	-0.2
206	15.3	116.1	5.0	51.2	2.4	128	0.44	3.1360	0.0910	0.25310	0.00540	0.5105	0.0914	0.0023	1442.0	21.0	1454.0	28.0	1446	47	-0.8	-0.6
205	9.0	222.7	8.6	71.9	1.9	240	0.32	3.1700	0.0900	0.25360	0.00750	0.5248	0.0922	0.0027	1449.0	22.0	1456.0	38.0	1473	56	-0.5	-0.3
280	17.7	99.9	4.3	39.0	0.9	109	0.39	3.0900	0.0890	0.25370	0.00420	0.3516	0.0884	0.0023	1430.0	23.0	1457.0	22.0	1380	51	-1.9	-1.2
16	14.7	201.0	14.0	70.8	5.8	218	0.35	3.2400	0.0810	0.25490	0.00450	0.5490	0.0920	0.0017	1467.0	19.0	1463.0	23.0	1464	36	0.3	0.2
221	21.7	166.5	5.4	78.5	1.4	185	0.47	3.2200	0.0780	0.25500	0.00400	0.3886	0.0921	0.0019	1462.0	19.0	1464.0	20.0	1471	37	-0.1	-0.1
21	21.0	801.0	71.0	59.0	12.0	815	0.07	3.4580	0.0920	0.25680	0.00390	0.7465	0.0982	0.0017	1515.0	21.0	1473.0	20.0	1590	31	2.8	2.0

Table 5: LA-ICP-MS Zircon Isotopic and Age Data Table: SC15-01: Scott County, KS Paleosol Sample

								Corrected Isotopic Ratios[3]							Ages (Ma)[7]							
Grain #	Signal Duration (s)	U (ppm)[1]	2σ	Th (ppm)[1]	2σ	eU (ppm)[2]	Th/U	$^{207}Pb/^{235}U$	2σ[4]	$^{206}Pb/^{238}U$	2σ[4]	Rho[5]	$^{207}Pb/^{206}Pb$[6]	2σ	$^{207}Pb/^{235}U$	2σ	$^{206}Pb/^{238}U$	2σ	$^{207}Pb/^{206}Pb$	2σ	% Disc.[8]	Uncert. Wtd. Disc.[9]
109	18.9	352.0	28.0	123.0	9.5	381	0.35	3.3700	0.1300	0.25730	0.00920	0.9252	0.0941	0.0017	1492.0	29.0	1480.0	48.0	1512	33	0.8	0.4
261	21.3	65.5	3.3	24.2	0.7	71	0.37	3.2320	0.0980	0.25850	0.00520	0.4306	0.0918	0.0025	1463.0	23.0	1481.0	27.0	1459	50	-1.2	-0.8
46	18.1	379.0	49.0	42.0	3.3	389	0.11	3.3170	0.0860	0.25860	0.00570	0.8101	0.0915	0.0016	1483.0	20.0	1486.0	30.0	1454	33	-0.2	-0.2
92	14.4	79.9	7.8	26.9	2.5	86	0.34	3.2900	0.1200	0.25960	0.00690	0.6158	0.0892	0.0026	1475.0	28.0	1486.0	35.0	1404	54	-0.7	-0.4
190	21.6	463.0	36.0	199.0	15.0	510	0.43	3.2130	0.0700	0.25950	0.00480	0.6452	0.0901	0.0016	1462.0	18.0	1487.0	25.0	1429	35	-1.7	-1.4
81	5.0	1380.0	210.0	76.0	13.0	1398	0.06	3.3400	0.2300	0.26300	0.01400	0.7825	0.0942	0.0027	1485.0	53.0	1502.0	70.0	1525	64	-1.1	-0.3
75	20.5	194.0	20.0	57.8	6.0	208	0.30	3.3310	0.0790	0.26360	0.00430	0.5042	0.0918	0.0017	1487.0	19.0	1508.0	22.0	1461	34	-1.4	-1.1
87	21.2	173.7	3.2	69.0	1.2	190	0.40	3.3490	0.0760	0.26560	0.00360	0.4552	0.0909	0.0016	1491.0	18.0	1518.0	18.0	1443	34	-1.8	-1.5
200	16.2	93.7	2.1	36.3	1.2	102	0.39	3.7150	0.0960	0.27590	0.00540	0.5050	0.0966	0.0021	1575.0	20.0	1570.0	27.0	1558	42	0.3	0.3
40	20.8	262.0	20.0	8.6	1.3	264	0.03	3.7400	0.1400	0.27800	0.00920	0.9495	0.0953	0.0017	1576.0	31.0	1578.0	47.0	1534	34	-0.1	-0.1
228	17.8	626.0	57.0	24.4	4.2	632	0.04	3.9340	0.1000	0.27800	0.00580	0.8412	0.1033	0.0017	1621.0	22.0	1580.0	29.0	1684	30	2.5	1.9
223	15.0	630.0	37.0	11.0	0.9	633	0.02	3.8010	0.1000	0.28140	0.00690	0.7011	0.0994	0.0020	1596.0	22.0	1597.0	35.0	1613	36	-0.1	0.0
264	12.8	61.4	2.3	13.2	0.4	64	0.21	4.0700	0.1500	0.28920	0.00710	0.2582	0.1035	0.0037	1645.0	30.0	1637.0	36.0	1682	66	0.5	0.3
301	12.4	167.6	4.5	31.8	0.7	175	0.19	4.1730	0.0910	0.28950	0.00610	0.4119	0.1061	0.0022	1668.0	18.0	1638.0	30.0	1736	36	1.8	1.7
237	16.8	394.0	23.0	38.4	2.5	403	0.10	4.0190	0.0900	0.28990	0.00510	0.4927	0.1016	0.0019	1639.0	18.0	1640.0	26.0	1653	33	-0.1	-0.1
187	16.5	251.0	13.0	51.8	4.5	263	0.21	4.2900	0.1300	0.29150	0.00570	0.7980	0.1050	0.0020	1688.0	25.0	1648.0	28.0	1718	37	2.4	1.6
244	14.2	68.8	1.7	24.7	0.6	75	0.36	4.0800	0.1300	0.29230	0.00620	0.3168	0.1029	0.0028	1654.0	25.0	1652.0	31.0	1668	51	0.1	0.1
24	21.2	178.0	11.0	91.8	6.5	200	0.52	4.2600	0.0870	0.29260	0.00350	0.3640	0.1053	0.0017	1686.0	17.0	1654.0	17.0	1717	30	1.9	1.9
170	18.5	182.2	3.2	30.6	1.6	189	0.17	4.1010	0.0970	0.29210	0.00580	0.5787	0.1031	0.0019	1653.0	19.0	1654.0	30.0	1685	36	-0.1	-0.1
153	16.8	110.2	4.5	63.3	1.7	125	0.57	4.2370	0.1000	0.29320	0.00510	0.1218	0.1054	0.0025	1684.0	19.0	1657.0	26.0	1725	44	1.6	1.4
42	14.0	45.8	1.8	30.7	0.8	53	0.67	4.2000	0.1400	0.29530	0.00570	0.2486	0.1016	0.0035	1671.0	27.0	1667.0	29.0	1645	66	0.2	0.1
251	21.7	214.1	7.7	151.5	3.4	250	0.71	4.1610	0.0910	0.29650	0.00460	0.5020	0.1025	0.0019	1667.0	18.0	1673.0	23.0	1674	34	-0.4	-0.3
110	19.8	281.0	26.0	29.1	6.7	288	0.10	4.2000	0.1400	0.29710	0.00880	0.8991	0.0994	0.0020	1670.0	29.0	1674.0	45.0	1610	39	-0.2	-0.1
166	21.3	636.0	22.0	186.6	9.0	680	0.29	4.3080	0.0880	0.29660	0.00450	0.7285	0.1052	0.0015	1694.0	17.0	1674.0	22.0	1716	27	1.2	1.2
140	19.4	77.7	8.1	15.3	5.1	81	0.20	4.1600	0.2300	0.29800	0.01300	0.9380	0.1018	0.0026	1668.0	47.0	1676.0	66.0	1646	48	-0.5	-0.2
91	16.3	125.2	4.9	57.0	3.3	139	0.46	4.2970	0.1100	0.29830	0.00390	0.2810	0.1047	0.0024	1693.0	21.0	1682.0	20.0	1712	42	0.6	0.5
157	15.6	158.9	6.9	46.6	1.4	170	0.29	4.2510	0.1100	0.29750	0.00510	0.5444	0.1035	0.0024	1682.0	21.0	1682.0	26.0	1681	44	0.0	0.0
210	21.4	295.0	67.0	16.4	0.8	299	0.06	4.3900	0.1300	0.29800	0.00810	0.7553	0.1054	0.0021	1711.0	24.0	1684.0	40.0	1723	38	1.6	1.1
216	21.6	179.0	19.0	52.2	7.7	191	0.29	4.2700	0.1400	0.29910	0.00670	0.7766	0.1027	0.0020	1689.0	27.0	1685.0	34.0	1667	37	0.2	0.1
208	12.3	218.7	9.8	69.5	1.8	235	0.32	4.2000	0.1300	0.29920	0.00740	0.6181	0.1045	0.0026	1670.0	26.0	1686.0	36.0	1705	44	-1.0	-0.6
239	21.7	159.0	11.0	29.2	3.1	166	0.18	4.3080	0.0970	0.29940	0.00450	0.3839	0.1043	0.0021	1695.0	18.0	1688.0	22.0	1699	37	0.4	0.4
241	21.7	131.0	2.7	81.0	2.0	150	0.62	4.2840	0.1000	0.30000	0.00510	0.5897	0.1039	0.0019	1690.0	20.0	1691.0	25.0	1696	35	-0.1	-0.1
245	18.4	199.6	5.0	63.4	2.9	214	0.32	4.2870	0.0940	0.29980	0.00440	0.6623	0.1046	0.0018	1691.0	18.0	1692.0	22.0	1705	31	-0.1	-0.1
3	11.2	90.5	3.5	63.3	4.2	105	0.70	4.2390	0.1200	0.30090	0.00550	0.2103	0.1032	0.0026	1683.0	22.0	1695.0	27.0	1690	50	-0.7	-0.5
162	21.7	126.0	8.4	59.8	4.1	140	0.47	4.2920	0.0990	0.30100	0.00460	0.3803	0.1037	0.0019	1692.0	19.0	1698.0	23.0	1686	34	-0.4	-0.3
39	13.2	304.5	8.2	37.7	1.4	313	0.12	4.3700	0.1200	0.30230	0.00650	0.6415	0.1064	0.0021	1705.0	23.0	1702.0	32.0	1741	37	0.2	0.1
191	19.5	240.0	49.0	38.1	5.7	249	0.16	4.2800	0.1800	0.30300	0.01200	0.8714	0.1018	0.0023	1685.0	34.0	1703.0	62.0	1667	41	-1.1	-0.5
86	21.6	305.0	13.0	71.5	7.4	322	0.23	4.3900	0.0890	0.30270	0.00450	0.4958	0.1044	0.0017	1709.0	17.0	1704.0	22.0	1703	29	0.3	0.3
145	15.5	190.0	16.0	50.3	2.6	202	0.26	4.3040	0.1200	0.30280	0.00760	0.5230	0.1035	0.0025	1692.0	23.0	1704.0	38.0	1693	44	-0.7	-0.5
235	3.4	128.8	3.0	95.0	3.7	151	0.74	4.3400	0.1700	0.30300	0.01200	0.4753	0.1073	0.0038	1700.0	32.0	1704.0	57.0	1750	65	-0.2	-0.1
256	18.0	127.5	5.6	74.1	3.1	145	0.58	4.3370	0.1200	0.30270	0.00480	0.4955	0.1053	0.0023	1700.0	21.0	1704.0	24.0	1713	40	-0.2	-0.2

Table 5: LA-ICP-MS Zircon Isotopic and Age Data Table: SC15-01: Scott County, KS Paleosol Sample

								Corrected Isotopic Ratios[3]							Ages (Ma)[7]							
Grain #	Signal Duration (s)	U (ppm)[1]	2σ	Th (ppm)[1]	2σ	eU (ppm)[2]	Th/U	$^{207}Pb/^{235}U$	2σ[4]	$^{206}Pb/^{238}U$	2σ[4]	Rho[5]	$^{207}Pb/^{206}Pb$[6]	2σ	$^{207}Pb/^{235}U$	2σ	$^{206}Pb/^{238}U$	2σ	$^{207}Pb/^{206}Pb$	2σ	% Disc.[8]	Uncert. Wtd. Disc.[9]
292	16.4	198.0	19.0	183.0	17.0	241	0.92	4.3800	0.1100	0.30410	0.00600	0.5809	0.1043	0.0021	1707.0	20.0	1711.0	30.0	1698	37	-0.2	-0.2
277	21.7	92.0	4.1	36.9	1.5	101	0.40	4.3800	0.1300	0.30410	0.00690	0.5717	0.1053	0.0025	1707.0	24.0	1714.0	33.0	1719	44	-0.4	-0.3
265	19.6	132.7	8.7	43.4	0.7	143	0.33	4.4170	0.1100	0.30610	0.00560	0.5047	0.1052	0.0020	1717.0	19.0	1721.0	27.0	1721	35	-0.2	-0.2
23	10.0	202.0	5.8	69.3	5.0	218	0.34	4.4520	0.1100	0.30660	0.00510	0.5284	0.1082	0.0022	1724.0	20.0	1723.0	25.0	1767	37	0.1	0.1
35	12.0	762.0	45.0	112.1	3.5	788	0.15	4.5300	0.1200	0.30900	0.00720	0.6259	0.1064	0.0023	1735.0	22.0	1735.0	36.0	1740	41	0.0	0.0
253	18.6	160.0	12.0	50.2	1.2	172	0.31	4.4910	0.1100	0.30820	0.00600	0.5376	0.1059	0.0022	1727.0	21.0	1735.0	30.0	1728	39	-0.5	-0.4
120	20.7	182.0	24.0	58.9	4.4	196	0.32	4.3900	0.1100	0.31040	0.00480	0.6715	0.1030	0.0018	1710.0	20.0	1742.0	23.0	1682	33	-1.9	-1.6
132	19.1	94.2	8.7	65.8	7.2	110	0.70	4.2500	0.1100	0.31070	0.00550	0.4322	0.1001	0.0022	1683.0	21.0	1743.0	27.0	1619	41	-3.6	-2.9
211	17.3	416.0	43.0	148.0	19.0	451	0.36	4.7270	0.1200	0.32540	0.00630	0.6453	0.1052	0.0018	1775.0	21.0	1815.0	31.0	1715	32	-2.3	-1.9
115	14.9	99.0	6.8	47.4	2.1	110	0.48	5.0350	0.1300	0.33070	0.00590	0.5623	0.1088	0.0023	1823.0	21.0	1845.0	29.0	1788	37	-1.2	-1.0
122	15.9	169.0	30.0	85.1	9.4	189	0.50	4.7240	0.1200	0.33340	0.00630	0.4731	0.1041	0.0023	1770.0	21.0	1854.0	30.0	1701	42	-4.7	-4.0
201	20.9	220.0	10.0	84.4	7.0	240	0.38	4.8550	0.1200	0.33620	0.00650	0.7445	0.1053	0.0018	1792.0	21.0	1867.0	31.0	1719	30	-4.2	-3.6
67	15.4	128.0	11.0	58.3	1.2	142	0.46	9.7800	0.4400	0.45200	0.01100	0.8059	0.1566	0.0039	2403.0	43.0	2402.0	50.0	2419	42	0.0	0.0
254	21.1	45.3	3.5	28.6	0.8	52	0.63	12.4200	0.3200	0.48520	0.00910	0.6193	0.1860	0.0035	2637.0	24.0	2548.0	40.0	2710	32	3.4	3.7

[1]U and Th have been concentrations and the Th/U ratios are calculated relative to the GJ-1 standard value using 287 ± 76 ppm for U and 8.4 ± 2.6 ppm for Th (Jackson et al., 2004)

[2]Equivalent U defined by the equation: eU = U ppm + 0.235*Th ppm

[3]Corrected for U-Pb fractionation and background and normalized to the GJ-1 standard value: $^{207}Pb/^{235}U$ =0.8093 ± 0.0009 and $^{206}Pb/^{238}U$ = 0.09761 ± 0.00011 (Jackson et al., 2004)

[4]Propagated uncertainty of internal uncertanties (2SE) and within run reproducibility of GJ-1 (2SE)

[5]Uncertainty correlation between $^{206}Pb/^{238}U$ and $^{207}Pb/^{235}U$ uncertainties

[6]Corrected for background and Pb isotopicfractionation using the GJ-1 standard value: $^{207}Pb/^{206}Pb$ = 0.06014 ± 0.00001 (Jackson et al., 2004)

[7]U-Pb ages calculated relative to the GJ-1 standard

[8]Discordance defined as (($^{207}Pb/^{235}U$age - $^{206}Pb/^{238}U$age)/($^{207}Pb/^{235}U$ age))*100

[9]Uncertainty weighted age difference defined as ($^{207}Pb/^{235}U$ age - $^{206}Pb/^{238}U$ age)/($^{207}Pb/^{235}U$ age uncertainty)

Rows highlighted in grey were not used in interpretations or calculations based on discordance or short analysis times

Table 6: LA-ICP-MS Zircon Isotopic and Age Data Table: SC15-06: Scott County, KS Paleosol Sample

								Corrected Isotopic Ratios[3]							Ages (Ma)[7]							
Grain #	Signal Duration (s)	U (ppm)[1]	2σ	Th (ppm)[2]	2σ	eU (ppm)[2]	Th/U	$^{207}Pb/^{235}U$	2σ[4]	$^{206}Pb/^{238}U$	2σ[4]	Rho[5]	$^{207}Pb/^{206}Pb$[6]	2σ	$^{207}Pb/^{235}U$	2σ	$^{206}Pb/^{238}U$	2σ	$^{207}Pb/^{206}Pb$	2σ	% Disc.[8]	Uncert. Wtd. Disc.[9]
159	21.6	239.0	17.0	120.0	11.0	267	0.50	0.0094	0.0030	0.00152	0.00009	0.1600	0.0470	0.0150	9.4	3.0	9.8	0.6	10	430	-4.3	-0.1
32	11.8	179.5	9.4	71.9	3.1	196	0.40	0.0144	0.0046	0.00159	0.00013	0.0443	0.0690	0.0210	14.4	4.6	10.2	0.8	500	580	29.0	0.9
205	16.0	211.0	17.0	83.8	6.3	231	0.40	0.0111	0.0038	0.00163	0.00012	0.1600	0.0650	0.0240	11.1	3.8	10.5	0.8	20	520	5.4	0.2
20	8.3	98.9	2.8	50.8	1.1	111	0.51	0.0550	0.0170	0.00165	0.00023	0.1697	0.2630	0.0780	53.0	16.0	10.6	1.5	2950	580	80.0	2.7
296	12.5	444.0	22.0	251.9	9.6	503	0.57	0.0119	0.0020	0.00171	0.00008	0.1600	0.0504	0.0081	12.0	2.0	11.0	0.5	210	280	8.3	0.5
292	20.3	118.3	5.1	46.2	1.4	129	0.39	0.0131	0.0049	0.00176	0.00017	0.1600	0.0600	0.0240	13.0	4.8	11.3	1.1	120	560	13.1	0.4
153	16.4	139.3	9.3	64.5	5.1	154	0.46	0.0154	0.0050	0.00178	0.00012	0.1600	0.0700	0.0200	15.3	5.0	11.5	0.8	440	550	25.0	0.8
264	16.9	452.0	11.0	286.3	7.1	519	0.63	0.0163	0.0022	0.00187	0.00008	0.0544	0.0622	0.0087	16.4	2.2	12.0	0.5	550	270	26.7	2.0
287	12.8	104.0	3.3	60.6	1.1	118	0.58	0.0263	0.0069	0.00425	0.00031	0.0433	0.0500	0.0130	26.1	6.8	27.3	2.0	50	400	-4.6	-0.2
8	17.9	248.0	10.0	122.8	2.4	277	0.50	0.0296	0.0037	0.00428	0.00018	0.0773	0.0506	0.0067	29.5	3.7	27.6	1.2	140	230	6.4	0.5
272	17.4	433.0	23.0	217.0	18.0	484	0.50	0.0288	0.0027	0.00433	0.00014	0.0149	0.0497	0.0051	29.2	2.8	27.8	0.9	170	180	4.7	0.5
173	20.0	121.8	4.4	78.0	4.3	140	0.64	0.0302	0.0057	0.00437	0.00021	0.1600	0.0526	0.0099	29.9	5.6	28.1	1.3	150	310	6.0	0.3
294	14.6	528.1	9.8	235.3	7.8	583	0.45	0.0308	0.0027	0.00443	0.00014	0.1114	0.0510	0.0047	30.8	2.6	28.5	0.9	220	180	7.5	0.9
78	10.0	1840.0	160.0	1340.0	130.0	2155	0.73	0.0307	0.0021	0.00449	0.00014	0.2764	0.0487	0.0030	30.7	2.1	28.9	0.9	160	120	6.0	0.9
140	16.3	106.7	6.2	77.5	7.9	125	0.73	0.1610	0.0260	0.00464	0.00033	0.4707	0.2530	0.0350	148.0	23.0	29.8	2.1	3160	230	79.9	5.1
72	15.9	122.6	2.6	75.7	2.1	140	0.62	0.0341	0.0061	0.00489	0.00025	0.1600	0.0560	0.0110	33.8	5.9	31.4	1.6	210	330	7.1	0.4
36	15.5	286.0	12.0	126.5	4.3	316	0.44	0.0692	0.0083	0.00490	0.00017	0.4433	0.0980	0.0110	68.6	8.1	31.5	1.1	1440	240	54.1	4.6
230	11.6	571.0	11.0	732.0	26.0	743	1.28	0.0290	0.0032	0.00500	0.00021	0.0226	0.0415	0.0045	29.0	3.2	32.2	1.3	-160	180	-11.0	-1.0
120	16.5	875.0	26.0	334.7	6.7	954	0.38	0.0327	0.0019	0.00510	0.00014	0.1608	0.0458	0.0030	32.7	1.9	32.8	0.9	10	120	-0.2	0.0
147	14.8	147.0	3.6	86.6	2.7	167	0.59	0.0556	0.0094	0.00515	0.00022	0.1600	0.0790	0.0140	54.3	9.0	33.1	1.4	870	350	39.0	2.4
83	14.4	57.7	2.6	51.6	1.4	70	0.89	0.0350	0.0130	0.00525	0.00042	0.1600	0.0530	0.0190	34.0	13.0	33.8	2.7	-180	550	0.6	0.0
9	17.2	131.0	5.8	25.6	0.8	137	0.20	0.0346	0.0065	0.00533	0.00026	0.1600	0.0457	0.0082	34.2	6.4	34.5	1.6	-60	290	-0.9	0.0
68	13.0	498.0	11.0	304.5	4.9	570	0.61	0.0354	0.0031	0.00537	0.00015	0.1929	0.0488	0.0044	35.3	3.1	34.5	1.0	150	170	2.3	0.3
12	15.9	193.1	8.4	181.7	4.3	236	0.94	0.0368	0.0052	0.00539	0.00023	0.1600	0.0472	0.0071	36.5	5.0	34.6	1.5	120	250	5.2	0.4
266	19.1	238.4	4.9	253.4	4.5	298	1.06	0.0383	0.0044	0.00540	0.00020	0.1977	0.0526	0.0062	38.0	4.3	34.7	1.3	250	220	8.7	0.8
258	21.6	548.0	17.0	330.1	7.4	626	0.60	0.0365	0.0024	0.00542	0.00015	0.1224	0.0489	0.0033	36.3	2.3	34.9	1.0	170	130	3.9	0.6
73	19.5	413.0	21.0	242.2	8.3	470	0.59	0.0357	0.0032	0.00545	0.00013	0.1617	0.0473	0.0041	35.6	3.1	35.0	0.9	100	160	1.7	0.2
132	11.3	974.0	19.0	1452.0	37.0	1315	1.49	0.0341	0.0023	0.00547	0.00016	0.1131	0.0458	0.0032	34.0	2.3	35.2	1.0	10	130	-3.4	-0.5
46	19.3	302.0	16.0	188.1	7.8	346	0.62	0.0376	0.0038	0.00551	0.00018	0.1600	0.0495	0.0052	37.9	3.8	35.4	1.1	180	190	6.6	0.7
152	10.6	220.0	28.0	161.0	25.0	258	0.73	0.0360	0.0065	0.00550	0.00018	0.1600	0.0455	0.0083	35.8	6.4	35.4	1.2	120	300	1.1	0.1
250	8.8	1395.0	47.0	521.0	19.0	1517	0.37	0.0376	0.0019	0.00555	0.00017	0.4264	0.0492	0.0023	37.4	1.9	35.7	1.1	154	97	4.5	0.9
291	14.5	310.0	27.0	379.0	35.0	399	1.22	0.0515	0.0065	0.00557	0.00021	0.1499	0.0659	0.0080	50.7	6.2	35.8	1.3	710	250	29.4	2.4
35	16.7	548.0	17.0	347.6	8.9	630	0.63	0.0376	0.0030	0.00558	0.00015	0.0186	0.0485	0.0039	37.4	2.9	35.9	1.0	130	160	4.1	0.5
237	17.4	1164.0	55.0	483.0	18.0	1278	0.41	0.0347	0.0019	0.00558	0.00014	0.2697	0.0472	0.0027	34.6	1.9	35.9	0.9	100	110	-3.7	-0.7
39	10.1	435.0	12.0	246.7	5.2	493	0.57	0.0359	0.0035	0.00560	0.00023	0.2283	0.0477	0.0050	35.8	3.4	36.0	1.5	110	200	-0.6	-0.1
69	16.8	481.0	19.0	446.0	11.0	586	0.93	0.0369	0.0031	0.00574	0.00016	0.2089	0.0458	0.0037	36.7	3.0	36.9	1.0	30	150	-0.6	-0.1
280	17.2	74.8	1.4	74.7	1.3	92	1.00	0.0377	0.0093	0.00577	0.00035	0.1151	0.0550	0.0130	36.9	9.1	37.1	2.3	160	390	-0.5	0.0
79	16.9	97.5	5.7	79.3	3.5	116	0.81	0.0950	0.0140	0.00579	0.00029	0.3064	0.1200	0.0170	93.0	13.0	37.2	1.8	1770	280	60.0	4.3
111	13.4	577.0	15.0	547.0	27.0	706	0.95	0.0401	0.0032	0.00583	0.00019	0.1852	0.0512	0.0042	39.9	3.1	37.5	1.2	210	160	6.0	0.8
113	20.3	420.0	26.0	275.0	17.0	485	0.65	0.0353	0.0030	0.00589	0.00015	0.1712	0.0440	0.0036	35.6	3.0	37.8	0.9	-20	150	-6.3	-0.7
293	13.5	132.3	8.8	87.0	5.7	153	0.66	0.0422	0.0075	0.00590	0.00027	0.0081	0.0570	0.0110	41.6	7.3	37.9	1.7	300	330	8.9	0.5

Table 6: LA-ICP-MS Zircon Isotopic and Age Data Table: SC15-06: Scott County, KS Paleosol Sample

								Corrected Isotopic Ratios[3]							Ages (Ma)[7]							
Grain #	Signal Duration (s)	U (ppm)[1]	2σ	Th (ppm)[2]	2σ	eU (ppm)[2]	Th/U	$^{207}Pb/^{235}U$	2σ[4]	$^{206}Pb/^{238}U$	2σ[4]	Rho[5]	$^{207}Pb/^{206}Pb$[6]	2σ	$^{207}Pb/^{235}U$	2σ	$^{206}Pb/^{238}U$	2σ	$^{207}Pb/^{206}Pb$	2σ	% Disc.[8]	Uncert. Wtd. Disc.[9]
183	16.1	346.0	12.0	202.5	4.3	394	0.59	0.0410	0.0037	0.00599	0.00021	0.1232	0.0489	0.0043	40.7	3.6	38.5	1.3	150	170	5.4	0.6
56	19.9	53.3	6.6	35.6	4.7	62	0.67	0.0390	0.0150	0.00610	0.00043	0.1600	0.0590	0.0220	39.0	15.0	39.2	2.7	240	530	-0.5	0.0
6	16.9	73.8	5.8	63.7	5.7	89	0.86	0.0399	0.0097	0.00611	0.00030	0.0375	0.0500	0.0120	40.3	9.2	39.3	1.9	120	370	2.5	0.1
298	19.9	318.0	24.0	174.5	9.2	359	0.55	0.0415	0.0036	0.00612	0.00018	0.1600	0.0507	0.0049	41.6	3.4	39.3	1.1	230	180	5.5	0.7
10	17.4	861.0	96.0	738.0	48.0	1034	0.86	0.0397	0.0028	0.00616	0.00016	0.0380	0.0464	0.0035	39.8	2.7	39.6	1.0	70	140	0.5	0.1
185	21.6	240.0	15.0	137.0	11.0	272	0.57	0.1091	0.0074	0.00638	0.00020	0.2329	0.1219	0.0091	105.5	6.6	41.0	1.3	1950	140	61.1	9.8
74	16.7	54.5	1.1	54.4	1.6	67	1.00	0.0500	0.0120	0.00747	0.00050	0.1535	0.0490	0.0130	48.0	11.0	48.0	3.2	130	400	0.0	0.0
25	19.1	521.0	23.0	99.0	2.9	544	0.19	0.0563	0.0032	0.00895	0.00019	0.0701	0.0454	0.0027	55.5	3.1	57.4	1.2	0	110	-3.4	-0.6
260	18.9	464.0	16.0	13.5	0.6	467	0.03	0.0610	0.0034	0.00928	0.00019	0.1395	0.0479	0.0026	60.1	3.2	59.5	1.2	110	110	1.0	0.2
194	21.6	1790.0	80.0	54.0	1.6	1803	0.03	0.0633	0.0019	0.00960	0.00017	0.3663	0.0478	0.0014	62.3	1.8	61.6	1.1	104	65	1.1	0.4
202	6.5	150.9	7.7	107.0	9.1	176	0.71	0.0625	0.0099	0.00961	0.00076	0.0008	0.0530	0.0100	61.3	9.5	61.7	4.8	220	360	-0.7	0.0
3	16.9	76.2	4.9	63.8	6.3	91	0.84	0.0690	0.0110	0.01001	0.00047	0.1979	0.0517	0.0083	67.0	11.0	64.2	3.0	130	280	4.2	0.3
59	21.6	122.7	4.3	76.5	3.5	141	0.62	0.0621	0.0060	0.01004	0.00031	0.1121	0.0465	0.0045	60.9	5.7	64.4	2.0	60	170	-5.7	-0.6
18	18.7	57.5	2.0	22.1	0.8	63	0.38	0.0740	0.0130	0.01008	0.00044	0.1522	0.0513	0.0098	71.0	13.0	64.7	2.8	190	320	8.9	0.5
200	15.1	68.5	2.8	66.8	1.4	84	0.98	0.0670	0.0130	0.01018	0.00049	0.3918	0.0500	0.0110	68.0	12.0	65.3	3.1	160	350	4.0	0.2
5	18.6	104.1	3.3	74.6	1.4	122	0.72	0.0709	0.0086	0.01021	0.00038	0.2126	0.0488	0.0056	70.2	8.3	65.8	2.4	150	210	6.3	0.5
166	14.4	269.0	19.0	76.9	2.6	287	0.29	0.0751	0.0068	0.01030	0.00026	0.4681	0.0541	0.0045	73.3	6.4	66.0	1.7	340	160	10.0	1.1
243	13.3	214.0	15.0	27.5	1.1	220	0.13	0.0747	0.0079	0.01032	0.00035	0.0581	0.0524	0.0057	72.8	7.5	66.2	2.2	250	210	9.1	0.9
178	21.7	338.0	15.0	117.8	3.2	366	0.35	0.0644	0.0041	0.01041	0.00025	0.0800	0.0450	0.0031	63.2	4.0	66.8	1.6	0	120	-5.7	-0.9
235	21.6	290.0	15.0	204.0	9.5	338	0.70	0.0680	0.0050	0.01052	0.00029	0.0914	0.0465	0.0034	67.1	4.7	67.5	1.8	70	130	-0.6	-0.1
267	21.6	228.8	7.4	79.8	2.0	248	0.35	0.0718	0.0053	0.01054	0.00023	0.0929	0.0493	0.0039	70.8	5.1	67.6	1.5	170	150	4.5	0.6
122	19.7	38.6	2.7	25.7	1.4	45	0.67	0.0780	0.0200	0.01070	0.00064	0.1134	0.0520	0.0140	73.0	19.0	68.6	4.1	110	410	6.0	0.2
37	21.5	344.0	17.0	344.0	13.0	425	1.00	0.0679	0.0048	0.01081	0.00027	0.0792	0.0456	0.0034	66.5	4.5	69.3	1.7	-10	130	-4.2	-0.6
211	21.6	66.1	4.0	42.8	1.8	76	0.65	0.0700	0.0100	0.01101	0.00048	0.0377	0.0472	0.0076	69.0	10.0	70.6	3.1	110	260	-2.3	-0.2
64	12.9	83.6	3.9	27.7	2.1	90	0.33	0.0850	0.0130	0.01103	0.00052	0.0084	0.0576	0.0091	82.0	12.0	70.7	3.3	410	310	13.8	0.9
114	21.6	554.0	14.0	131.7	3.3	585	0.24	0.0746	0.0040	0.01106	0.00029	0.4178	0.0492	0.0025	72.9	3.8	70.9	1.9	164	100	2.7	0.5
165	13.4	187.0	16.0	76.7	5.8	205	0.41	0.0794	0.0065	0.01105	0.00032	0.1744	0.0524	0.0047	77.4	6.1	70.9	2.1	250	170	8.4	1.1
26	16.9	134.6	6.1	128.3	2.8	165	0.95	0.0892	0.0081	0.01125	0.00039	0.0089	0.0593	0.0058	86.3	7.5	72.1	2.5	520	190	16.5	1.9
106	14.2	530.0	110.0	175.0	30.0	571	0.33	0.0759	0.0068	0.01143	0.00066	0.4889	0.0466	0.0035	74.1	6.5	73.2	4.2	50	140	1.2	0.1
188	21.6	98.2	6.6	95.5	2.6	121	0.97	0.0729	0.0078	0.01147	0.00043	0.1523	0.0483	0.0055	70.9	7.4	73.5	2.7	80	200	-3.7	-0.4
249	21.7	328.0	16.0	182.4	7.1	371	0.56	0.0740	0.0042	0.01146	0.00028	0.1852	0.0468	0.0028	72.3	4.0	73.5	1.8	60	110	-1.7	-0.3
256	21.6	320.0	12.0	341.0	10.0	400	1.07	0.0747	0.0047	0.01148	0.00028	0.0614	0.0449	0.0029	72.9	4.4	73.6	1.8	10	120	-1.0	-0.2
257	21.6	178.3	4.8	117.2	4.2	206	0.66	0.0770	0.0069	0.01151	0.00030	0.0143	0.0486	0.0046	74.9	6.5	73.8	1.9	160	180	1.5	0.2
213	21.6	259.6	8.1	149.0	3.6	295	0.57	0.0748	0.0058	0.01156	0.00032	0.2479	0.0467	0.0035	73.0	5.4	74.1	2.0	90	140	-1.5	-0.2
24	18.4	71.6	1.4	52.1	1.3	84	0.73	0.0780	0.0120	0.01158	0.00051	0.2601	0.0508	0.0078	77.0	11.0	74.2	3.2	130	260	3.6	0.3
271	16.6	63.0	10.0	21.4	2.9	68	0.34	0.0750	0.0120	0.01158	0.00055	0.1120	0.0466	0.0083	73.0	12.0	74.2	3.5	0	290	-1.6	-0.1
228	16.4	232.2	7.2	60.9	3.3	247	0.26	0.0720	0.0061	0.01176	0.00034	0.2130	0.0446	0.0035	71.2	5.7	75.3	2.2	-10	140	-5.8	-0.7
119	13.6	198.0	35.0	154.0	20.0	234	0.78	0.0835	0.0090	0.01182	0.00056	0.3867	0.0519	0.0057	81.0	8.4	75.7	3.6	330	180	6.5	0.6
176	19.8	444.0	23.0	151.0	15.0	479	0.34	0.0812	0.0040	0.01183	0.00025	0.2304	0.0494	0.0025	79.1	3.7	75.8	1.6	155	100	4.2	0.9
247	21.7	74.0	13.0	19.7	2.9	79	0.27	0.0800	0.0160	0.01187	0.00063	0.0621	0.0490	0.0100	78.0	15.0	76.0	4.0	190	310	2.6	0.1
4	18.2	166.3	8.7	48.2	2.1	178	0.29	0.0782	0.0076	0.01191	0.00044	0.2623	0.0486	0.0046	77.2	7.3	76.3	2.8	110	170	1.2	0.1

Table 6: LA-ICP-MS Zircon Isotopic and Age Data Table: SC15-06: Scott County, KS Paleosol Sample

								Corrected Isotopic Ratios[3]							Ages (Ma)[7]							
Grain #	Signal Duration (s)	U (ppm)[1]	2σ	Th (ppm)[2]	2σ	eU (ppm)[2]	Th/U	$^{207}Pb/^{235}U$	2σ[4]	$^{206}Pb/^{238}U$	2σ[4]	Rho[5]	$^{207}Pb/^{206}Pb$[6]	2σ	$^{207}Pb/^{235}U$	2σ	$^{206}Pb/^{238}U$	2σ	$^{207}Pb/^{206}Pb$	2σ	% Disc.[8]	Uncert. Wtd. Disc.[9]
115	21.6	277.0	17.0	101.6	5.1	301	0.37	0.0766	0.0050	0.01206	0.00035	0.0788	0.0447	0.0033	74.7	4.7	77.3	2.2	-10	130	-3.5	-0.6
54	21.5	299.0	14.0	291.0	12.0	367	0.97	0.0781	0.0050	0.01209	0.00033	0.1084	0.0474	0.0031	76.8	4.8	77.5	2.1	70	120	-0.9	-0.1
220	9.9	113.9	5.9	89.0	3.9	135	0.78	0.0741	0.0083	0.01211	0.00059	0.0154	0.0450	0.0051	73.9	8.3	77.6	3.7	20	210	-5.0	-0.4
238	14.4	276.0	25.0	156.0	22.0	313	0.57	0.0807	0.0074	0.01230	0.00041	0.2123	0.0493	0.0046	78.5	6.9	78.8	2.6	160	180	-0.4	0.0
88	18.2	299.0	26.0	75.2	7.8	317	0.25	0.0825	0.0057	0.01235	0.00032	0.2627	0.0478	0.0031	80.2	5.3	79.1	2.1	120	130	1.4	0.2
169	15.3	173.0	14.0	46.4	3.1	184	0.27	0.0842	0.0095	0.01235	0.00038	0.0419	0.0504	0.0060	81.5	8.9	79.2	2.4	180	220	2.8	0.3
252	9.2	374.0	16.0	269.0	11.0	437	0.72	0.0848	0.0072	0.01238	0.00066	0.3428	0.0515	0.0046	82.5	6.7	79.3	4.2	230	180	3.9	0.5
98	13.7	183.0	15.0	91.0	11.0	204	0.50	0.0900	0.0110	0.01253	0.00047	0.3713	0.0531	0.0064	88.0	11.0	80.3	3.0	300	220	8.8	0.7
94	14.2	96.0	6.3	88.9	5.5	117	0.93	0.0940	0.0130	0.01255	0.00051	0.2158	0.0531	0.0075	91.0	12.0	80.4	3.3	250	260	11.6	0.9
167	16.4	117.0	5.2	57.7	3.2	131	0.49	0.0950	0.0110	0.01263	0.00046	0.0978	0.0581	0.0072	93.0	10.0	80.9	2.9	430	250	13.0	1.2
241	18.9	84.7	5.7	81.3	7.2	104	0.96	0.0900	0.0130	0.01264	0.00063	0.1436	0.0554	0.0079	86.0	12.0	80.9	4.0	310	250	5.9	0.4
290	18.9	118.0	12.0	94.0	11.0	140	0.80	0.0838	0.0092	0.01263	0.00045	0.2642	0.0487	0.0054	81.0	8.7	80.9	2.8	110	200	0.1	0.0
131	12.8	90.4	5.3	60.2	3.1	105	0.67	0.0870	0.0130	0.01268	0.00052	0.0683	0.0528	0.0085	84.0	12.0	81.2	3.3	170	280	3.3	0.2
11	21.7	457.0	21.0	189.8	8.0	502	0.42	0.0826	0.0037	0.01273	0.00026	0.2660	0.0455	0.0020	80.4	3.5	81.6	1.7	21	84	-1.5	-0.3
110	12.1	204.3	8.9	36.1	1.8	213	0.18	0.0875	0.0084	0.01282	0.00042	0.1419	0.0484	0.0045	84.8	7.8	82.1	2.7	110	170	3.2	0.3
181	8.7	373.0	14.0	235.5	8.5	428	0.63	0.0908	0.0076	0.01313	0.00036	0.2056	0.0495	0.0038	89.3	7.3	84.1	2.3	220	170	5.8	0.7
91	14.7	632.0	33.0	286.0	10.0	699	0.45	0.0906	0.0043	0.01342	0.00035	0.2909	0.0485	0.0023	88.0	4.0	85.9	2.2	125	94	2.4	0.5
263	17.5	823.0	37.0	233.0	11.0	878	0.28	0.0891	0.0042	0.01344	0.00029	0.4131	0.0477	0.0021	86.5	3.9	86.1	1.8	84	87	0.5	0.1
14	6.9	122.8	8.8	56.0	5.2	136	0.46	0.2030	0.0210	0.01402	0.00098	0.2133	0.1084	0.0098	191.0	19.0	89.8	6.2	1790	190	53.0	5.3
116	20.8	118.8	7.0	50.4	3.1	131	0.42	0.0981	0.0098	0.01422	0.00047	0.2331	0.0510	0.0051	94.2	9.0	91.0	3.0	190	180	3.4	0.4
133	21.6	157.0	9.5	51.3	2.3	169	0.33	0.0997	0.0088	0.01479	0.00046	0.0816	0.0497	0.0045	96.9	8.2	94.6	2.9	170	170	2.4	0.3
49	17.5	166.4	4.2	62.8	2.7	181	0.38	0.1044	0.0078	0.01525	0.00047	0.0747	0.0499	0.0040	100.4	7.2	97.6	3.0	190	150	2.8	0.4
40	21.6	735.0	30.0	480.0	10.0	848	0.65	0.1018	0.0039	0.01542	0.00033	0.2751	0.0472	0.0018	98.3	3.5	98.7	2.1	80	75	-0.4	-0.1
29	12.2	106.7	3.2	62.0	5.1	121	0.58	0.0980	0.0120	0.01601	0.00061	0.4054	0.0470	0.0050	97.0	11.0	102.4	3.9	160	200	-5.6	-0.5
284	15.2	482.0	12.0	243.2	8.0	539	0.50	0.1065	0.0046	0.01628	0.00034	0.4214	0.0469	0.0019	102.6	4.2	104.1	2.2	56	81	-1.5	-0.4
99	21.7	195.0	10.0	74.8	2.1	213	0.38	0.1169	0.0077	0.01751	0.00042	0.2197	0.0484	0.0032	112.6	6.9	111.9	2.7	170	130	0.6	0.1
23	17.3	223.0	13.0	309.0	32.0	296	1.39	0.1380	0.0079	0.02009	0.00060	0.1599	0.0488	0.0031	130.9	7.1	128.2	3.8	150	130	2.1	0.4
219	21.6	207.8	8.5	103.4	2.3	232	0.50	0.1618	0.0082	0.02355	0.00046	0.2090	0.0505	0.0025	151.8	7.1	150.0	2.9	199	100	1.2	0.3
70	18.9	85.6	2.7	133.4	3.0	117	1.56	0.1710	0.0150	0.02510	0.00068	0.0871	0.0484	0.0045	160.0	14.0	159.8	4.2	110	170	0.1	0.0
97	15.9	47.8	3.2	59.1	4.1	62	1.24	0.1950	0.0220	0.02596	0.00093	0.0135	0.0560	0.0066	184.0	20.0	165.2	5.8	390	230	10.2	0.9
175	20.7	400.0	16.0	206.9	5.2	449	0.52	0.1934	0.0070	0.02757	0.00056	0.1481	0.0504	0.0020	179.2	6.0	175.3	3.5	220	84	2.2	0.6
218	21.6	282.0	12.0	112.8	3.2	309	0.40	0.1879	0.0067	0.02803	0.00051	0.1643	0.0483	0.0019	174.5	5.7	178.2	3.2	116	80	-2.1	-0.6
265	21.6	173.3	3.5	61.6	2.2	188	0.36	0.2080	0.0110	0.03031	0.00066	0.2410	0.0498	0.0025	191.2	8.8	192.5	4.1	183	99	-0.7	-0.1
239	21.6	125.0	7.4	49.4	2.9	137	0.40	0.2700	0.0130	0.03901	0.00093	0.2129	0.0513	0.0025	243.1	9.9	246.6	5.8	255	100	-1.4	-0.4
121	21.6	307.0	17.0	115.7	2.7	334	0.38	0.3051	0.0095	0.04312	0.00100	0.3947	0.0507	0.0016	271.6	7.4	272.1	6.2	226	69	-0.2	-0.1
137	21.7	161.2	5.1	43.1	1.5	171	0.27	0.3140	0.0150	0.04426	0.00110	0.3300	0.0511	0.0022	276.0	11.0	279.1	6.5	259	94	-1.1	-0.3
161	21.7	1080.0	100.0	1203.0	62.0	1363	1.11	0.8000	0.0440	0.05460	0.00360	0.9562	0.1069	0.0024	596.0	25.0	342.0	22.0	1746	40	42.6	10.2
57	3.9	520.0	26.0	143.7	5.8	554	0.28	0.4150	0.0350	0.05470	0.00360	0.7340	0.0582	0.0038	351.0	25.0	343.0	22.0	520	140	2.3	0.3
149	15.7	453.0	62.0	77.0	10.0	471	0.17	0.4080	0.0100	0.05467	0.00110	0.0025	0.0537	0.0017	347.2	7.5	343.1	6.7	345	72	1.2	0.5
142	21.6	706.0	84.0	7.9	0.6	708	0.01	0.8720	0.0300	0.05960	0.00180	0.8218	0.1072	0.0023	634.0	16.0	373.0	11.0	1753	39	41.2	16.3
236	13.1	213.8	6.1	41.9	1.1	224	0.20	0.4790	0.0230	0.06570	0.00160	0.4404	0.0532	0.0024	396.0	16.0	410.4	9.5	333	97	-3.6	-0.9

Table 6: LA-ICP-MS Zircon Isotopic and Age Data Table: SC15-06: Scott County, KS Paleosol Sample

								Corrected Isotopic Ratios[3]							Ages (Ma)[7]							
Grain #	Signal Duration (s)	U (ppm)[1]	2σ	Th (ppm)[2]	2σ	eU (ppm)[2]	Th/U	$^{207}Pb/^{235}U$	2σ[4]	$^{206}Pb/^{238}U$	2σ[4]	Rho[5]	$^{207}Pb/^{206}Pb$[6]	2σ	$^{207}Pb/^{235}U$	2σ	$^{206}Pb/^{238}U$	2σ	$^{207}Pb/^{206}Pb$	2σ	% Disc.[8]	Uncert. Wtd. Disc.[9]
164	21.6	149.0	11.0	80.0	8.4	168	0.54	0.5210	0.0180	0.06780	0.00160	0.4790	0.0555	0.0019	426.0	12.0	422.9	9.7	416	71	0.7	0.3
17	17.0	207.3	7.1	83.1	2.0	227	0.40	0.5440	0.0160	0.07190	0.00160	0.4804	0.0549	0.0017	442.0	10.0	447.4	9.6	400	70	-1.2	-0.5
141	21.6	134.0	15.0	11.1	0.7	137	0.08	0.5670	0.0260	0.07340	0.00250	0.6703	0.0552	0.0020	456.0	16.0	456.0	15.0	401	80	0.0	0.0
187	17.0	332.0	10.0	227.8	6.8	386	0.69	0.5800	0.0160	0.07380	0.00150	0.5343	0.0567	0.0015	465.0	10.0	458.8	9.2	472	56	1.3	0.6
151	12.0	143.0	18.0	24.2	2.3	149	0.17	0.7970	0.0540	0.07480	0.00310	0.6296	0.0742	0.0037	590.0	30.0	464.0	19.0	1050	110	21.4	4.2
150	17.1	161.0	22.0	37.2	2.7	170	0.23	0.6030	0.0220	0.07510	0.00160	0.4590	0.0598	0.0022	478.0	14.0	466.5	9.8	567	81	2.4	0.8
261	21.6	66.4	2.9	27.8	0.9	73	0.42	0.6990	0.0280	0.08530	0.00180	0.1072	0.0586	0.0026	536.0	17.0	527.4	11.0	541	98	1.6	0.5
255	15.2	112.3	5.2	94.5	1.5	135	0.84	0.8240	0.0350	0.09680	0.00280	0.3811	0.0615	0.0026	611.0	19.0	595.0	17.0	659	81	2.6	0.8
53	21.6	85.4	3.9	2.6	0.2	86	0.03	0.8430	0.0330	0.10180	0.00220	0.1654	0.0612	0.0027	620.0	19.0	625.0	13.0	632	93	-0.8	-0.3
146	13.7	34.1	2.8	27.8	2.3	41	0.82	0.9630	0.0610	0.10730	0.00340	0.1228	0.0652	0.0048	684.0	31.0	656.0	20.0	690	160	4.1	0.9
156	19.3	221.0	26.0	52.2	3.3	233	0.24	1.5300	0.0490	0.10920	0.00310	0.7242	0.1022	0.0023	942.0	19.0	668.0	18.0	1667	45	29.1	14.4
192	21.6	47.6	3.1	27.5	2.3	54	0.58	1.7260	0.0590	0.17430	0.00330	0.3092	0.0717	0.0024	1016.0	22.0	1037.0	18.0	957	71	-2.1	-1.0
268	21.6	73.7	2.8	39.3	1.3	83	0.53	1.8440	0.0460	0.17590	0.00320	0.2661	0.0748	0.0022	1059.0	16.0	1044.0	17.0	1057	57	1.4	0.9
138	21.8	185.0	45.0	30.4	3.0	192	0.16	2.2040	0.0990	0.17650	0.00790	0.9158	0.0910	0.0019	1176.0	31.0	1045.0	43.0	1447	40	11.1	4.2
143	21.6	76.9	5.2	86.4	4.8	97	1.12	1.8470	0.0490	0.17870	0.00360	0.3682	0.0730	0.0020	1061.0	17.0	1059.0	20.0	1024	55	0.2	0.1
58	21.6	23.0	2.4	15.7	1.7	27	0.68	1.8290	0.0780	0.17920	0.00480	0.2850	0.0757	0.0035	1052.0	29.0	1062.0	26.0	1089	97	-1.0	-0.3
52	15.7	57.2	2.2	24.5	0.6	63	0.43	1.8500	0.0720	0.17960	0.00390	0.2650	0.0764	0.0030	1069.0	25.0	1065.0	21.0	1109	79	0.4	0.2
273	17.7	77.6	2.1	49.9	1.0	89	0.64	1.9070	0.0570	0.18170	0.00370	0.0881	0.0758	0.0027	1086.0	20.0	1076.0	20.0	1105	67	0.9	0.5
274	21.6	96.9	5.0	45.2	1.8	108	0.47	1.9350	0.0450	0.18190	0.00360	0.2753	0.0763	0.0020	1091.0	16.0	1077.0	19.0	1114	52	1.3	0.9
45	18.0	136.0	11.0	31.2	2.0	143	0.23	1.8910	0.0700	0.18240	0.00670	0.8626	0.0756	0.0017	1076.0	24.0	1078.0	37.0	1076	45	-0.2	-0.1
28	21.6	68.1	2.4	40.6	0.9	78	0.60	1.9120	0.0580	0.18320	0.00360	0.3906	0.0759	0.0023	1089.0	20.0	1084.0	19.0	1084	65	0.5	0.3
186	16.0	151.8	8.9	69.5	2.0	168	0.46	1.9200	0.0550	0.18350	0.00440	0.3629	0.0752	0.0024	1085.0	19.0	1089.0	23.0	1065	66	-0.4	-0.2
270	21.6	114.0	5.9	28.5	1.4	121	0.25	1.9260	0.0420	0.18430	0.00290	0.3923	0.0742	0.0016	1088.0	14.0	1090.0	16.0	1041	44	-0.2	-0.1
225	21.6	120.4	5.7	58.9	1.6	134	0.49	1.9330	0.0410	0.18440	0.00290	0.3907	0.0767	0.0016	1092.0	15.0	1091.0	16.0	1111	40	0.1	0.1
50	14.6	89.4	3.5	44.5	1.3	100	0.50	1.8940	0.0510	0.18460	0.00400	0.5432	0.0746	0.0019	1077.0	18.0	1092.0	22.0	1056	49	-1.4	-0.8
44	18.7	237.0	11.0	117.1	3.4	265	0.49	1.9570	0.0450	0.18500	0.00390	0.5261	0.0772	0.0016	1101.0	16.0	1094.0	21.0	1129	45	0.6	0.4
16	18.7	162.5	7.0	65.8	1.8	178	0.40	1.9650	0.0440	0.18610	0.00370	0.3629	0.0766	0.0018	1106.0	15.0	1100.0	20.0	1107	49	0.5	0.4
285	21.6	142.8	6.3	73.3	1.6	160	0.51	1.9700	0.0440	0.18720	0.00310	0.2841	0.0764	0.0019	1105.0	15.0	1106.0	17.0	1095	51	-0.1	-0.1
231	21.6	148.4	7.3	77.0	2.6	166	0.52	1.9640	0.0390	0.18710	0.00360	0.3780	0.0773	0.0019	1105.0	14.0	1107.0	20.0	1125	48	-0.2	-0.1
282	21.6	45.5	1.3	23.7	0.5	51	0.52	1.8860	0.0710	0.18720	0.00430	0.3115	0.0738	0.0028	1082.0	25.0	1108.0	24.0	1042	71	-2.4	-1.0
126	16.0	126.5	7.0	63.3	1.7	141	0.50	1.9960	0.0510	0.18830	0.00440	0.3992	0.0763	0.0019	1114.0	17.0	1112.0	24.0	1107	50	0.2	0.1
34	19.4	157.0	11.0	61.7	2.5	171	0.39	1.9710	0.0410	0.18870	0.00410	0.3655	0.0752	0.0019	1106.0	14.0	1116.0	22.0	1067	49	-0.9	-0.7
103	21.6	216.1	9.4	61.3	2.1	231	0.28	2.0200	0.0480	0.18930	0.00510	0.6915	0.0783	0.0017	1124.0	16.0	1116.0	28.0	1157	42	0.7	0.5
253	17.7	136.5	7.0	114.7	4.5	163	0.84	2.0230	0.0530	0.18860	0.00430	0.0516	0.0781	0.0026	1120.0	18.0	1116.0	23.0	1128	64	0.4	0.2
76	17.9	93.9	3.3	48.2	1.5	105	0.51	1.9500	0.0490	0.18980	0.00360	0.2578	0.0749	0.0021	1099.0	17.0	1120.0	20.0	1052	57	-1.9	-1.2
209	19.0	248.0	11.0	75.9	2.5	266	0.31	1.9340	0.0370	0.18990	0.00370	0.3442	0.0747	0.0018	1093.0	12.0	1120.0	20.0	1067	47	-2.5	-2.3
191	17.3	76.3	3.1	48.4	1.4	88	0.63	1.9880	0.0550	0.19040	0.00370	0.3842	0.0763	0.0020	1112.0	19.0	1123.0	20.0	1103	55	-1.0	-0.6
71	21.6	101.0	11.0	51.3	2.6	113	0.51	1.9860	0.0460	0.19080	0.00380	0.2173	0.0757	0.0021	1108.0	16.0	1125.0	21.0	1089	53	-1.5	-1.1
278	18.5	72.8	1.5	39.9	1.2	82	0.55	1.9970	0.0640	0.19110	0.00440	0.4694	0.0762	0.0022	1116.0	21.0	1127.0	24.0	1083	59	-1.0	-0.5
2	13.3	225.0	10.0	90.9	2.3	246	0.40	2.0230	0.0560	0.19130	0.00520	0.5207	0.0770	0.0022	1124.0	18.0	1128.0	28.0	1117	57	-0.4	-0.2
96	21.6	91.2	4.9	62.4	2.5	106	0.68	1.9990	0.0520	0.19130	0.00400	0.4641	0.0759	0.0021	1112.0	18.0	1128.0	22.0	1092	56	-1.4	-0.9

Table 6: LA-ICP-MS Zircon Isotopic and Age Data Table: SC15-06: Scott County, KS Paleosol Sample

								Corrected Isotopic Ratios[3]							Ages (Ma)[7]							
Grain #	Signal Duration (s)	U (ppm)[1]	2σ	Th (ppm)[2]	2σ	eU (ppm)[2]	Th/U	$^{207}Pb/^{235}U$	2σ[4]	$^{206}Pb/^{238}U$	2σ[4]	Rho[5]	$^{207}Pb/^{206}Pb$[6]	2σ	$^{207}Pb/^{235}U$	2σ	$^{206}Pb/^{238}U$	2σ	$^{207}Pb/^{206}Pb$	2σ	% Disc.[8]	Uncert. Wtd. Disc.[9]
190	21.6	270.0	15.0	72.0	2.8	287	0.27	2.0430	0.0380	0.19090	0.00330	0.3703	0.0775	0.0017	1129.0	13.0	1128.0	19.0	1128	45	0.1	0.1
300	18.4	242.0	13.0	100.9	3.9	266	0.42	1.9870	0.0360	0.19150	0.00410	0.5456	0.0749	0.0017	1110.0	12.0	1129.0	22.0	1068	45	-1.7	-1.6
168	13.8	258.0	28.0	80.4	7.3	277	0.31	2.8200	0.1200	0.19210	0.00790	0.9224	0.1076	0.0023	1355.0	32.0	1131.0	42.0	1760	37	16.5	7.0
203	10.4	393.0	11.0	103.8	1.8	417	0.26	2.0370	0.0480	0.19220	0.00470	0.5520	0.0776	0.0020	1136.0	17.0	1137.0	26.0	1137	51	-0.1	-0.1
262	21.6	335.0	20.0	128.9	6.3	365	0.38	2.0520	0.0350	0.19280	0.00330	0.5666	0.0775	0.0015	1133.0	12.0	1138.0	17.0	1127	39	-0.4	-0.4
101	10.5	287.0	14.0	156.4	5.5	324	0.54	2.0730	0.0470	0.19360	0.00490	0.3568	0.0773	0.0023	1139.0	15.0	1145.0	25.0	1119	61	-0.5	-0.4
82	21.6	276.0	16.0	79.7	3.1	295	0.29	2.0900	0.0370	0.19560	0.00340	0.5645	0.0767	0.0014	1146.0	12.0	1152.0	18.0	1110	37	-0.5	-0.5
90	13.0	247.0	13.0	95.2	3.9	269	0.39	2.0740	0.0510	0.19740	0.00440	0.5117	0.0754	0.0020	1138.0	17.0	1164.0	25.0	1092	52	-2.3	-1.5
84	12.6	1204.0	51.0	128.0	17.0	1234	0.11	2.4200	0.0880	0.19980	0.00840	0.9131	0.0872	0.0018	1249.0	27.0	1172.0	45.0	1366	41	6.2	2.9
174	19.6	720.0	29.0	120.9	4.4	748	0.17	2.1820	0.0340	0.20020	0.00360	0.7107	0.0787	0.0012	1174.0	11.0	1176.0	19.0	1168	30	-0.2	-0.2
136	20.7	222.0	17.0	112.0	15.0	248	0.50	3.1800	0.1000	0.20330	0.01000	0.6852	0.1149	0.0043	1450.0	24.0	1189.0	54.0	1857	69	18.0	10.9
93	16.4	245.0	24.0	129.0	9.9	275	0.53	2.1720	0.0630	0.20370	0.00610	0.7100	0.0766	0.0017	1172.0	21.0	1194.0	33.0	1110	44	-1.9	-1.0
33	19.3	201.2	9.8	172.3	8.2	242	0.86	2.1540	0.0450	0.20370	0.00380	0.4819	0.0771	0.0017	1166.0	15.0	1195.0	21.0	1122	42	-2.5	-1.9
22	21.4	220.0	19.0	91.8	6.4	242	0.42	2.6900	0.1000	0.21380	0.00770	0.8448	0.0918	0.0020	1322.0	29.0	1246.0	41.0	1465	39	5.7	2.6
15	18.9	169.3	7.3	44.4	3.2	180	0.26	3.7100	0.1200	0.21910	0.00640	0.7087	0.1238	0.0029	1581.0	25.0	1276.0	34.0	2013	41	19.3	12.2
189	21.1	105.4	5.9	40.6	4.3	115	0.39	2.7120	0.0630	0.21980	0.00420	0.4371	0.0907	0.0021	1335.0	18.0	1280.0	22.0	1430	44	4.1	3.1
66	21.6	237.0	10.0	83.6	2.3	257	0.35	2.6380	0.0520	0.22460	0.00380	0.6090	0.0863	0.0017	1313.0	14.0	1306.0	20.0	1349	37	0.5	0.5
77	8.8	1006.0	67.0	123.1	9.4	1035	0.12	3.3070	0.0720	0.23280	0.00530	0.8701	0.1027	0.0015	1485.0	16.0	1349.0	27.0	1676	26	9.2	8.5
1	21.9	164.3	4.9	53.3	0.9	177	0.32	2.8120	0.0520	0.23490	0.00460	0.6339	0.0867	0.0016	1357.0	14.0	1360.0	24.0	1348	36	-0.2	-0.2
127	8.8	228.8	8.0	36.3	1.6	237	0.16	2.8580	0.0810	0.23500	0.00590	0.5270	0.0873	0.0026	1369.0	21.0	1360.0	31.0	1369	59	0.7	0.4
289	13.0	445.0	50.0	377.0	40.0	534	0.85	2.8450	0.0600	0.23660	0.00600	0.6355	0.0874	0.0018	1366.0	16.0	1368.0	31.0	1371	40	-0.1	-0.1
163	21.6	133.8	4.9	55.9	1.9	147	0.42	2.9080	0.0720	0.23800	0.00550	0.6712	0.0889	0.0017	1380.0	19.0	1375.0	28.0	1395	38	0.4	0.3
179	21.6	119.8	5.2	81.8	2.4	139	0.68	2.9210	0.0670	0.23810	0.00410	0.4774	0.0881	0.0022	1384.0	18.0	1376.0	21.0	1371	49	0.6	0.4
277	21.6	90.3	4.3	54.7	2.5	103	0.61	2.8800	0.0630	0.23900	0.00440	0.5068	0.0884	0.0020	1376.0	16.0	1381.0	23.0	1381	43	-0.4	-0.3
299	11.8	683.0	20.0	76.1	4.5	701	0.11	3.0030	0.0910	0.23920	0.00860	0.7345	0.0921	0.0026	1410.0	22.0	1381.0	45.0	1461	53	2.1	1.3
199	13.2	57.3	3.2	26.5	1.4	64	0.46	2.8930	0.0850	0.23920	0.00510	0.3848	0.0884	0.0024	1377.0	22.0	1382.0	26.0	1390	54	-0.4	-0.2
222	12.7	108.7	3.4	101.6	2.9	133	0.93	3.0510	0.0730	0.24200	0.00490	0.3337	0.0919	0.0023	1421.0	18.0	1397.0	26.0	1457	49	1.7	1.3
102	21.6	214.0	57.0	19.9	1.8	219	0.09	3.0000	0.1400	0.24200	0.01100	0.8654	0.0898	0.0023	1402.0	37.0	1399.0	57.0	1425	45	0.2	0.1
61	18.7	367.0	14.0	38.1	1.3	376	0.10	2.9740	0.0480	0.24410	0.00500	0.6139	0.0906	0.0017	1401.0	12.0	1407.0	26.0	1438	37	-0.4	-0.5
208	20.1	87.6	4.1	36.0	1.1	96	0.41	3.0630	0.0640	0.24410	0.00440	0.2968	0.0920	0.0022	1421.0	16.0	1407.0	23.0	1457	46	1.0	0.9
38	18.3	120.5	6.3	78.4	4.4	139	0.65	3.0890	0.0680	0.24430	0.00510	0.3902	0.0907	0.0024	1428.0	17.0	1408.0	26.0	1446	49	1.4	1.2
214	18.0	71.4	4.9	41.9	3.0	81	0.59	2.9420	0.0650	0.24440	0.00530	0.3782	0.0906	0.0023	1393.0	17.0	1408.0	28.0	1428	49	-1.1	-0.9
19	15.8	106.7	3.4	55.3	1.4	120	0.52	3.0740	0.0630	0.24410	0.00470	0.4506	0.0911	0.0020	1424.0	16.0	1411.0	24.0	1441	42	0.9	0.8
269	20.9	241.0	31.0	26.3	1.3	247	0.11	3.8800	0.1100	0.24350	0.00700	0.8401	0.1143	0.0021	1604.0	23.0	1411.0	37.0	1871	32	12.0	8.4
42	21.6	52.7	2.7	22.4	1.1	58	0.43	3.0500	0.0880	0.24680	0.00660	0.4235	0.0905	0.0026	1418.0	22.0	1420.0	34.0	1439	57	-0.1	-0.1
31	19.1	167.0	14.0	76.9	5.9	185	0.46	3.1420	0.0650	0.24670	0.00510	0.4628	0.0918	0.0021	1443.0	16.0	1421.0	26.0	1459	43	1.5	1.4
182	11.7	123.8	4.7	51.8	1.5	136	0.42	3.1730	0.0920	0.24800	0.00710	0.4602	0.0928	0.0030	1452.0	21.0	1427.0	37.0	1471	61	1.7	1.2
13	18.9	143.0	8.8	53.4	3.4	156	0.37	3.0990	0.0600	0.24800	0.00450	0.4554	0.0906	0.0020	1431.0	15.0	1428.0	23.0	1439	42	0.2	0.2
221	16.4	217.0	13.0	154.7	8.8	253	0.71	3.1410	0.0610	0.24820	0.00440	0.4676	0.0915	0.0018	1443.0	15.0	1429.0	23.0	1456	38	1.0	0.9
92	20.0	89.7	3.6	72.4	4.0	107	0.81	3.1570	0.0820	0.24850	0.00500	0.3473	0.0907	0.0024	1448.0	20.0	1430.0	26.0	1446	49	1.2	0.9
62	16.5	280.1	9.0	174.2	7.2	321	0.62	3.0400	0.0640	0.24920	0.00480	0.4060	0.0911	0.0020	1416.0	16.0	1434.0	25.0	1446	43	-1.3	-1.1

Table 6: LA-ICP-MS Zircon Isotopic and Age Data Table: SC15-06: Scott County, KS Paleosol Sample

								Corrected Isotopic Ratios[3]							Ages (Ma)[7]							
Grain #	Signal Duration (s)	U (ppm)[1]	2σ	Th (ppm)[2]	2σ	eU (ppm)[2]	Th/U	$^{207}Pb/^{235}U$	2σ[4]	$^{206}Pb/^{238}U$	2σ[4]	Rho[5]	$^{207}Pb/^{206}Pb$[6]	2σ	$^{207}Pb/^{235}U$	2σ	$^{206}Pb/^{238}U$	2σ	$^{207}Pb/^{206}Pb$	2σ	% Disc.[8]	Uncert. Wtd. Disc.[9]
129	21.6	108.9	8.4	42.4	2.1	119	0.39	3.1310	0.0600	0.24980	0.00430	0.5954	0.0914	0.0018	1440.0	14.0	1437.0	22.0	1447	37	0.2	0.2
75	21.6	118.1	6.9	60.6	3.0	132	0.51	3.0940	0.0710	0.25040	0.00420	0.6155	0.0895	0.0019	1428.0	18.0	1442.0	22.0	1410	39	-1.0	-0.8
109	21.6	373.0	22.0	111.0	4.1	399	0.30	3.1780	0.0640	0.25090	0.00540	0.6249	0.0916	0.0016	1449.0	16.0	1442.0	28.0	1467	36	0.5	0.4
48	21.6	69.4	3.6	63.6	2.5	84	0.92	3.1360	0.0770	0.25120	0.00540	0.3912	0.0906	0.0024	1442.0	20.0	1444.0	28.0	1443	47	-0.1	-0.1
207	21.6	82.8	3.9	61.1	1.9	97	0.74	3.1120	0.0710	0.25060	0.00560	0.4031	0.0922	0.0024	1437.0	18.0	1444.0	28.0	1475	50	-0.5	-0.4
244	17.1	115.0	6.0	42.5	1.8	125	0.37	3.0740	0.0750	0.25130	0.00560	0.5625	0.0904	0.0022	1428.0	18.0	1444.0	29.0	1449	43	-1.1	-0.9
297	20.2	72.0	6.8	26.1	2.2	78	0.36	3.1470	0.0800	0.25060	0.00570	0.4184	0.0905	0.0024	1441.0	20.0	1444.0	29.0	1422	52	-0.2	-0.2
246	9.3	203.5	5.4	95.6	3.7	226	0.47	3.1060	0.0660	0.25150	0.00540	0.5758	0.0904	0.0023	1440.0	14.0	1446.0	28.0	1429	49	-0.4	-0.4
281	17.6	151.0	4.9	76.5	1.6	169	0.51	3.0810	0.0610	0.25170	0.00520	0.3012	0.0898	0.0022	1426.0	15.0	1446.0	27.0	1425	43	-1.4	-1.3
275	21.6	187.8	7.4	80.8	2.4	207	0.43	3.1650	0.0600	0.25240	0.00530	0.6648	0.0900	0.0016	1446.0	15.0	1450.0	27.0	1421	35	-0.3	-0.3
193	16.9	146.0	20.0	40.5	1.3	156	0.28	3.1040	0.0750	0.25260	0.00530	0.5352	0.0887	0.0022	1436.0	18.0	1451.0	27.0	1400	46	-1.0	-0.8
283	21.6	87.9	4.6	34.2	1.4	96	0.39	3.1370	0.0660	0.25260	0.00540	0.2924	0.0907	0.0023	1441.0	17.0	1451.0	28.0	1427	48	-0.7	-0.6
67	14.5	58.5	3.3	33.5	1.4	66	0.57	3.0970	0.0990	0.25310	0.00620	0.5532	0.0902	0.0026	1428.0	25.0	1458.0	33.0	1444	54	-2.1	-1.2
155	13.7	568.0	63.0	13.2	1.3	571	0.02	3.2700	0.1400	0.25500	0.01400	0.9319	0.0906	0.0018	1472.0	34.0	1458.0	71.0	1434	38	1.0	0.4
43	16.3	227.0	16.0	23.7	3.6	233	0.10	3.1670	0.0810	0.25440	0.00610	0.6729	0.0914	0.0020	1455.0	19.0	1460.0	31.0	1454	41	-0.3	-0.3
195	18.2	67.6	4.5	46.1	3.0	78	0.68	3.2610	0.0860	0.25600	0.00490	0.3944	0.0928	0.0025	1471.0	20.0	1469.0	25.0	1492	47	0.1	0.1
198	15.0	246.0	33.0	33.2	2.1	254	0.13	3.2600	0.0700	0.25690	0.00560	0.4432	0.0919	0.0022	1470.0	17.0	1473.0	29.0	1463	48	-0.2	-0.2
139	21.6	319.0	56.0	33.4	3.3	327	0.10	3.6440	0.0990	0.25770	0.00680	0.7616	0.1024	0.0019	1554.0	21.0	1476.0	35.0	1666	34	5.0	3.7
81	21.6	128.5	6.8	38.9	0.5	138	0.30	3.2770	0.0620	0.25780	0.00470	0.5026	0.0918	0.0020	1473.0	15.0	1478.0	24.0	1462	43	-0.3	-0.3
170	13.2	89.3	5.2	19.3	1.1	94	0.22	3.8000	0.1600	0.25880	0.00940	0.8754	0.1070	0.0025	1596.0	32.0	1482.0	48.0	1749	41	7.1	3.6
118	21.6	73.8	3.8	37.5	1.6	83	0.51	3.2500	0.0840	0.25830	0.00560	0.4669	0.0908	0.0022	1465.0	20.0	1483.0	28.0	1435	47	-1.2	-0.9
162	11.3	514.0	13.0	8.2	0.4	516	0.02	3.2860	0.0810	0.26010	0.00650	0.5854	0.0919	0.0022	1476.0	19.0	1489.0	33.0	1466	47	-0.9	-0.7
21	18.5	100.5	5.3	38.5	1.2	110	0.38	3.3190	0.0770	0.26050	0.00550	0.4639	0.0917	0.0021	1487.0	18.0	1492.0	28.0	1462	45	-0.3	-0.3
104	16.6	177.7	3.3	81.8	1.7	197	0.46	3.3120	0.0630	0.26070	0.00550	0.5986	0.0908	0.0019	1487.0	15.0	1493.0	28.0	1452	41	-0.4	-0.4
80	19.6	196.2	9.1	122.4	5.8	225	0.62	3.2680	0.0630	0.26060	0.00570	0.5070	0.0899	0.0020	1471.0	15.0	1495.0	30.0	1421	41	-1.6	-1.6
217	11.8	434.0	17.0	31.9	1.1	441	0.07	3.3070	0.0930	0.26210	0.00670	0.6721	0.0905	0.0021	1480.0	22.0	1500.0	34.0	1430	44	-1.4	-0.9
87	15.6	378.0	38.0	41.5	2.4	388	0.11	3.3690	0.0660	0.26270	0.00630	0.7329	0.0927	0.0018	1498.0	15.0	1503.0	32.0	1480	37	-0.3	-0.3
177	15.6	215.0	11.0	104.6	3.3	240	0.49	3.2600	0.0720	0.26290	0.00500	0.5336	0.0912	0.0020	1472.0	17.0	1504.0	26.0	1445	41	-2.2	-1.9
100	20.4	134.1	6.6	105.7	3.7	159	0.79	3.3580	0.0710	0.26330	0.00610	0.5641	0.0934	0.0021	1497.0	17.0	1505.0	31.0	1497	43	-0.5	-0.5
242	21.2	586.0	49.0	146.0	12.0	620	0.25	3.2860	0.0490	0.26310	0.00440	0.6523	0.0914	0.0014	1476.0	12.0	1505.0	22.0	1456	28	-2.0	-2.4
201	13.9	60.7	3.2	23.6	1.3	66	0.39	3.0620	0.0850	0.26360	0.00820	0.6248	0.0854	0.0024	1420.0	21.0	1507.0	42.0	1329	55	-6.1	-4.1
55	16.3	57.1	6.5	30.4	3.0	64	0.53	3.2300	0.1100	0.26480	0.00680	0.6173	0.0897	0.0025	1459.0	27.0	1518.0	34.0	1414	51	-4.0	-2.2
125	19.3	191.0	37.0	58.5	9.5	205	0.31	3.2900	0.0780	0.26640	0.00540	0.5774	0.0899	0.0021	1476.0	18.0	1522.0	28.0	1429	43	-3.1	-2.6
234	21.6	108.0	2.3	34.7	1.3	116	0.32	3.5310	0.0700	0.26770	0.00520	0.3143	0.0971	0.0023	1538.0	16.0	1528.0	26.0	1559	44	0.7	0.6
85	21.5	478.0	42.0	10.1	0.3	480	0.02	3.8350	0.0660	0.27080	0.00560	0.7256	0.1014	0.0017	1601.0	14.0	1544.0	29.0	1652	31	3.6	4.1
134	18.8	246.0	11.0	100.4	6.6	270	0.41	3.6900	0.1900	0.27400	0.01300	0.9514	0.0988	0.0019	1568.0	42.0	1567.0	65.0	1597	37	0.1	0.0
215	21.6	574.0	61.0	463.0	48.0	683	0.81	3.3380	0.0580	0.27570	0.00570	0.7415	0.0893	0.0015	1490.0	14.0	1569.0	29.0	1406	31	-5.3	-5.6
51	16.6	397.0	20.0	121.0	11.0	425	0.30	3.7140	0.0950	0.27650	0.00650	0.6431	0.0976	0.0020	1574.0	21.0	1577.0	32.0	1577	40	-0.2	-0.1
95	20.1	213.0	21.0	71.9	5.4	230	0.34	3.5010	0.0720	0.28250	0.00640	0.7571	0.0907	0.0016	1525.0	16.0	1603.0	32.0	1438	33	-5.1	-4.9
254	22.6	51.8	5.3	70.6	7.9	68	1.36	3.5260	0.0880	0.28280	0.00710	0.3993	0.0916	0.0024	1534.0	21.0	1603.0	36.0	1458	53	-4.5	-3.3
47	21.6	403.1	9.8	190.0	13.0	448	0.47	3.9170	0.0780	0.28330	0.00570	0.6793	0.1000	0.0018	1615.0	16.0	1607.0	29.0	1618	33	0.5	0.5

Table 6: LA-ICP-MS Zircon Isotopic and Age Data Table: SC15-06: Scott County, KS Paleosol Sample

								Corrected Isotopic Ratios[3]							Ages (Ma)[7]							
Grain #	Signal Duration (s)	U (ppm)[1]	2σ	Th (ppm)[1]	2σ	eU (ppm)[2]	Th/U	$^{207}Pb/^{235}U$	2σ[4]	$^{206}Pb/^{238}U$	2σ[4]	Rho[5]	$^{207}Pb/^{206}Pb$[6]	2σ	$^{207}Pb/^{235}U$	2σ	$^{206}Pb/^{238}U$	2σ	$^{207}Pb/^{206}Pb$	2σ	% Disc.[8]	Uncert. Wtd. Disc.[9]
248	21.6	90.3	5.1	27.0	1.2	97	0.30	3.9100	0.0780	0.28570	0.00520	0.3214	0.0989	0.0022	1621.0	17.0	1619.0	26.0	1603	42	0.1	0.1
86	16.8	157.0	16.0	36.4	2.7	166	0.23	4.0600	0.1200	0.28750	0.00780	0.8071	0.1025	0.0021	1647.0	26.0	1627.0	39.0	1664	37	1.2	0.8
172	20.2	534.0	97.0	229.0	28.0	588	0.43	4.0590	0.0480	0.28810	0.00480	0.6381	0.1024	0.0016	1645.2	9.6	1631.0	24.0	1668	30	0.9	1.5
226	14.4	436.0	52.0	15.1	3.6	440	0.03	4.1200	0.1300	0.28990	0.00770	0.8175	0.1027	0.0019	1653.0	26.0	1640.0	38.0	1669	35	0.8	0.5
65	21.6	252.3	7.9	42.6	2.8	262	0.17	4.1010	0.0940	0.29360	0.00630	0.7947	0.1027	0.0017	1653.0	18.0	1658.0	32.0	1679	31	-0.3	-0.3
63	21.6	123.4	4.9	28.8	0.8	130	0.23	4.2070	0.0690	0.29520	0.00510	0.3997	0.1051	0.0022	1673.0	14.0	1667.0	25.0	1717	38	0.4	0.4
232	21.6	106.0	5.8	55.9	5.0	119	0.53	4.2220	0.0980	0.29720	0.00660	0.5766	0.1047	0.0023	1677.0	19.0	1676.0	33.0	1701	40	0.1	0.1
233	21.6	182.5	7.9	41.2	1.3	192	0.23	4.3040	0.0720	0.29920	0.00580	0.6683	0.1050	0.0019	1696.0	14.0	1686.0	29.0	1714	32	0.6	0.7
135	21.6	337.0	25.0	97.0	13.0	360	0.29	4.2320	0.0900	0.29870	0.00500	0.7685	0.1039	0.0019	1687.0	17.0	1687.0	24.0	1696	33	0.0	0.0
7	21.6	55.0	3.1	14.3	0.3	58	0.26	4.3200	0.1300	0.30020	0.00730	0.5652	0.1035	0.0026	1691.0	25.0	1691.0	36.0	1688	45	0.0	0.0
295	21.6	181.0	11.0	147.0	13.0	216	0.81	4.3490	0.0800	0.30060	0.00600	0.6149	0.1051	0.0020	1702.0	15.0	1693.0	30.0	1713	35	0.5	0.6
196	21.6	59.8	3.2	19.1	0.5	64	0.32	4.2810	0.0820	0.30070	0.00630	0.3388	0.1045	0.0025	1689.0	15.0	1694.0	31.0	1694	44	-0.3	-0.3
245	12.6	318.0	11.0	31.8	1.1	325	0.10	4.2200	0.1000	0.30110	0.00790	0.6600	0.1040	0.0022	1676.0	20.0	1696.0	39.0	1692	40	-1.2	-1.0
251	18.0	148.0	13.0	110.1	8.2	174	0.74	4.3400	0.1100	0.30120	0.00670	0.6227	0.1047	0.0024	1701.0	21.0	1696.0	33.0	1711	44	0.3	0.2
130	21.6	54.5	2.8	45.7	1.7	65	0.84	4.3420	0.0880	0.30210	0.00560	0.3516	0.1048	0.0022	1701.0	16.0	1701.0	28.0	1713	37	0.0	0.0
89	11.6	396.0	53.0	88.0	12.0	417	0.22	4.4100	0.1600	0.30400	0.01300	0.8126	0.1050	0.0027	1710.0	29.0	1706.0	62.0	1708	48	0.2	0.1
184	16.6	109.8	3.3	46.5	3.5	121	0.42	4.4510	0.0870	0.30340	0.00580	0.5456	0.1042	0.0024	1720.0	16.0	1708.0	29.0	1698	43	0.7	0.8
229	20.8	252.7	7.2	53.6	2.8	265	0.21	4.4330	0.0680	0.30460	0.00510	0.5091	0.1061	0.0018	1717.0	13.0	1714.0	25.0	1730	31	0.2	0.2
117	18.7	50.6	3.9	58.4	3.1	64	1.15	4.2700	0.1000	0.30500	0.00660	0.4288	0.1020	0.0027	1685.0	19.0	1715.0	33.0	1654	49	-1.8	-1.6
223	18.7	96.4	5.9	36.9	1.1	105	0.38	4.3020	0.0770	0.30440	0.00560	0.4602	0.1029	0.0020	1692.0	15.0	1715.0	27.0	1676	37	-1.4	-1.5
144	21.6	117.0	11.0	92.1	4.7	139	0.79	4.4110	0.0790	0.30590	0.00510	0.3993	0.1038	0.0022	1712.0	15.0	1720.0	25.0	1694	38	-0.5	-0.5
210	20.8	280.0	11.0	104.0	2.5	304	0.37	4.3950	0.0770	0.30610	0.00660	0.6030	0.1048	0.0020	1715.0	15.0	1720.0	33.0	1709	35	-0.3	-0.3
27	16.7	276.0	31.0	201.0	29.0	323	0.73	4.4880	0.0650	0.30640	0.00590	0.6291	0.1068	0.0019	1728.0	12.0	1722.0	29.0	1741	32	0.3	0.5
158	13.9	227.0	18.0	95.0	10.0	249	0.42	4.5600	0.2100	0.30800	0.01500	0.9301	0.1069	0.0021	1732.0	39.0	1727.0	74.0	1748	35	0.3	0.1
216	11.7	267.0	16.0	12.0	0.7	270	0.04	4.4460	0.0730	0.30790	0.00600	0.3493	0.1055	0.0023	1720.0	14.0	1730.0	30.0	1724	39	-0.6	-0.7
148	15.6	281.0	21.0	78.9	6.6	300	0.28	4.4810	0.0910	0.30870	0.00580	0.6274	0.1040	0.0020	1725.0	17.0	1734.0	29.0	1697	34	-0.5	-0.5
60	13.1	204.6	9.0	42.9	1.1	215	0.21	4.3830	0.0870	0.30900	0.00720	0.5143	0.1058	0.0022	1708.0	16.0	1735.0	35.0	1724	38	-1.6	-1.7
212	9.9	503.0	27.0	1.8	0.1	503	0.00	4.5300	0.1400	0.30910	0.00970	0.8545	0.1064	0.0019	1733.0	25.0	1735.0	48.0	1737	33	-0.1	-0.1
145	13.6	96.1	5.2	54.6	2.8	109	0.57	4.5900	0.1700	0.31000	0.01100	0.8239	0.1053	0.0024	1741.0	30.0	1736.0	54.0	1714	41	0.3	0.2
171	14.2	93.4	5.0	50.3	2.2	105	0.54	4.4900	0.2000	0.31000	0.01300	0.8874	0.1041	0.0024	1730.0	37.0	1736.0	65.0	1703	44	-0.3	-0.2
107	12.4	67.1	1.6	22.6	0.8	72	0.34	4.3900	0.1400	0.30950	0.00840	0.3796	0.1015	0.0033	1711.0	25.0	1737.0	41.0	1660	60	-1.5	-1.0
286	10.9	266.2	5.5	87.5	2.4	287	0.33	4.4600	0.1000	0.30930	0.00680	0.3495	0.1058	0.0025	1726.0	19.0	1737.0	34.0	1723	43	-0.6	-0.6
288	19.3	151.4	6.3	40.9	1.4	161	0.27	4.5100	0.0880	0.30970	0.00640	0.5671	0.1049	0.0020	1730.0	16.0	1742.0	32.0	1707	36	-0.7	-0.8
112	14.2	110.0	13.0	66.3	8.5	126	0.60	4.6100	0.1900	0.31100	0.01200	0.8176	0.1066	0.0027	1750.0	35.0	1743.0	59.0	1748	48	0.4	0.2
41	15.8	576.0	23.0	146.1	3.4	610	0.25	4.5700	0.1100	0.31030	0.00780	0.6360	0.1066	0.0024	1741.0	21.0	1746.0	40.0	1741	40	-0.3	-0.2
206	9.5	267.4	7.9	64.1	1.7	282	0.24	4.4100	0.1000	0.31010	0.00840	0.6000	0.1047	0.0025	1713.0	19.0	1747.0	39.0	1704	46	-2.0	-1.8
197	17.5	181.5	3.4	62.0	1.0	196	0.34	4.5950	0.0640	0.31160	0.00550	0.6244	0.1067	0.0018	1747.0	12.0	1748.0	27.0	1741	30	-0.1	-0.1
180	12.2	402.0	15.0	219.4	5.3	454	0.55	4.5500	0.1000	0.31250	0.00950	0.7251	0.1054	0.0025	1747.0	19.0	1751.0	47.0	1716	43	-0.2	-0.2
224	18.9	486.0	13.0	100.7	2.1	510	0.21	4.5690	0.0590	0.31250	0.00500	0.6982	0.1056	0.0015	1743.0	11.0	1756.0	24.0	1726	26	-0.7	-1.2
160	13.1	254.0	17.0	95.1	4.3	276	0.37	4.5440	0.0690	0.31340	0.00560	0.5842	0.1043	0.0019	1738.0	13.0	1757.0	27.0	1698	34	-1.1	-1.5
105	8.0	354.0	19.0	75.2	3.5	372	0.21	4.6400	0.1200	0.32000	0.01200	0.6491	0.1041	0.0033	1755.0	22.0	1790.0	59.0	1700	59	-2.0	-1.6

Table 6: LA-ICP-MS Zircon Isotopic and Age Data Table: SC15-06: Scott County, KS Paleosol Sample

								Corrected Isotopic Ratios[3]							Ages (Ma)[7]							
Grain #	Signal Duration (s)	U (ppm)[1]	2σ	Th (ppm)[1]	2σ	eU (ppm)[2]	Th/U	$^{207}Pb/^{235}U$	2σ[4]	$^{206}Pb/^{238}U$	2σ[4]	Rho[5]	$^{207}Pb/^{206}Pb$[6]	2σ	$^{207}Pb/^{235}U$	2σ	$^{206}Pb/^{238}U$	2σ	$^{207}Pb/^{206}Pb$	2σ	% Disc.[8]	Uncert. Wtd. Disc.[9]
30	20.4	321.0	34.0	94.0	15.0	343	0.29	4.6920	0.0840	0.32130	0.00590	0.6314	0.1047	0.0019	1764.0	15.0	1795.0	29.0	1714	34	-1.8	-2.1
123	15.6	347.0	29.0	39.6	1.8	356	0.11	4.9100	0.1400	0.32300	0.01200	0.8934	0.1108	0.0022	1804.0	26.0	1800.0	59.0	1816	37	0.2	0.2
227	22.3	120.6	7.7	36.7	7.9	129	0.30	4.7610	0.0680	0.32470	0.00610	0.6419	0.1056	0.0018	1782.0	12.0	1811.0	30.0	1721	31	-1.6	-2.4
276	18.8	243.0	11.0	57.8	2.2	257	0.24	4.9010	0.0950	0.32640	0.00710	0.6725	0.1103	0.0020	1802.0	16.0	1819.0	35.0	1803	34	-0.9	-1.1
204	14.8	329.0	14.0	158.6	4.0	366	0.48	4.6850	0.0960	0.32700	0.00800	0.5208	0.1052	0.0024	1762.0	17.0	1822.0	39.0	1717	43	-3.4	-3.5
157	14.4	91.4	4.9	69.4	3.6	108	0.76	8.7300	0.3600	0.32600	0.01200	0.8799	0.1916	0.0041	2310.0	39.0	1825.0	62.0	2756	36	21.0	12.4
128	21.6	174.0	37.0	32.5	3.1	182	0.19	4.7200	0.1300	0.32830	0.00930	0.8434	0.1042	0.0019	1765.0	24.0	1827.0	45.0	1698	35	-3.5	-2.6
240	16.9	151.6	8.2	77.7	2.0	170	0.51	4.6460	0.0850	0.32770	0.00580	0.4517	0.1051	0.0022	1756.0	15.0	1830.0	29.0	1718	41	-4.2	-4.9
124	20.1	270.0	19.0	47.0	4.2	281	0.17	4.8000	0.0880	0.32880	0.00680	0.6924	0.1057	0.0017	1783.0	15.0	1831.0	33.0	1727	30	-2.7	-3.2
259	21.4	497.0	36.0	147.3	8.2	532	0.30	4.7530	0.0630	0.33050	0.00580	0.5947	0.1041	0.0018	1780.0	11.0	1840.0	28.0	1697	32	-3.4	-5.5
154	10.3	297.0	17.0	88.7	2.7	318	0.30	4.7800	0.1100	0.33230	0.00830	0.6623	0.1055	0.0024	1784.0	21.0	1849.0	40.0	1719	42	-3.6	-3.1
279	19.0	267.0	26.0	86.3	7.2	287	0.32	4.9800	0.1000	0.35300	0.00780	0.6225	0.1040	0.0023	1813.0	18.0	1947.0	37.0	1688	42	-7.4	-7.4
108	21.7	255.0	31.0	82.5	7.7	274	0.32	5.4600	0.1100	0.36800	0.00830	0.7497	0.1072	0.0019	1891.0	18.0	2027.0	39.0	1751	33	-7.2	-7.6
254	21.1	45.3	3.5	28.6	0.8	52	0.63	12.4200	0.3200	0.48520	0.00910	0.6193	0.1860	0.0035	2637.0	24.0	2548.0	40.0	2710	32	3.4	3.7

[1]U and Th have been concentrations and the Th/U ratios are calculated relative to the GJ-1 standard value using 287 ± 76 ppm for U and 8.4 ± 2.6 ppm for Th (Jackson et al., 2004)

[2]Equivalent U defined by the equation: eU = U ppm + 0.235*Th ppm

[3]Corrected for U-Pb fractionation and background and normalized to the GJ-1 standard value: $^{207}Pb/^{235}U$ =0.8093 ± 0.0009 and $^{206}Pb/^{238}U$ = 0.09761 ± 0.00011 (Jackson et al., 2004)

[4]Propagated uncertainty of internal uncertainties (2SE) and within run reproducibility of GJ-1 (2SE)

[5]Uncertainty correlation between $^{206}Pb/^{238}U$ and $^{207}Pb/^{235}U$ uncertainties

[6]Corrected for background and Pb isotopic fractionation using the GJ-1 standard value: $^{207}Pb/^{206}Pb$ = 0.06014 ± 0.00001 (Jackson et al., 2004)

[7]U-Pb ages calculated relative to the GJ-1 standard

[8]Discordance defined as (($^{207}Pb/^{235}U$age - $^{206}Pb/^{238}U$age)/($^{207}Pb/^{235}U$ age))*100

[9]Uncertainty weighted age difference defined as ($^{207}Pb/^{235}U$ age - $^{206}Pb/^{238}U$ age)/($^{207}Pb/^{235}U$ age uncertainty)

Rows highlighted in grey were not used in interpretations or calculations based on discordance or short analysis times

Table 7: LA-ICP-MS Zircon Isotopic and Age Data Table: SC15-03: Scott County, KS Paleosol Sample

								Corrected Isotopic Ratios[3]							Ages (Ma)[7]							
Grain #	Signal Duration (s)	U (ppm)[1]	2σ	Th (ppm)[1]	2σ	eU (ppm)[2]	Th/U	$^{207}Pb/^{235}U$	2σ[4]	$^{206}Pb/^{238}U$	2σ[4]	Rho[5]	$^{207}Pb/^{206}Pb$[6]	2σ	$^{207}Pb/^{235}U$	2σ	$^{206}Pb/^{238}U$	2σ	$^{207}Pb/^{206}Pb$	2σ	% Disc.[8]	Uncert. Wtd. Disc.[9]
15	21.1	99.9	3.4	54.2	1.8	113	0.54	0.0082	0.0041	0.00127	0.00012	0.0130	0.0590	0.0250	8.1	4.2	8.2	0.8	-20	610	-1.2	0.0
156	17.5	105.0	7.0	67.8	5.3	121	0.65	0.0056	0.0059	0.00138	0.00010	0.2580	0.0520	0.0400	5.4	5.9	8.9	0.7	-670	900	-64.3	-0.6
175	19.6	87.6	3.6	43.3	1.5	98	0.49	0.0110	0.0074	0.00147	0.00016	0.1551	0.0620	0.0440	10.6	7.4	9.5	1.0	-700	970	10.4	0.1
54	9.3	112.5	4.5	67.9	7.2	128	0.60	0.0158	0.0076	0.00150	0.00019	0.5469	0.0790	0.0380	15.6	7.6	9.6	1.3	630	900	38.5	0.8
39	9.9	81.9	5.4	50.0	4.8	94	0.61	0.0125	0.0094	0.00152	0.00023	0.2466	0.0560	0.0470	12.2	9.4	9.8	1.5	-500	1100	19.7	0.3
111	22.6	603.0	58.0	319.0	33.0	678	0.53	0.0108	0.0013	0.00155	0.00006	0.1607	0.0521	0.0066	10.9	1.3	10.0	0.4	290	220	8.5	0.7
34	12.1	695.0	40.0	692.0	40.0	858	1.00	0.0328	0.0026	0.00455	0.00010	0.2239	0.0520	0.0046	32.8	2.6	29.3	0.7	240	170	10.8	1.4
179	19.3	333.0	14.0	142.0	5.0	366	0.43	0.0279	0.0023	0.00459	0.00013	0.1196	0.0451	0.0037	27.9	2.3	29.5	0.9	0	140	-5.9	-0.7
126	8.3	167.0	22.0	67.0	17.0	183	0.40	0.0643	0.0093	0.00464	0.00021	0.3036	0.0990	0.0130	63.0	8.9	29.8	1.4	1590	280	52.7	3.7
261	22.3	182.6	8.9	77.8	3.1	201	0.43	0.0277	0.0038	0.00476	0.00013	0.1114	0.0438	0.0061	27.6	3.8	30.6	0.8	-90	220	-10.8	-0.8
87	21.6	145.0	14.0	85.0	6.8	165	0.59	0.0298	0.0045	0.00481	0.00019	0.1403	0.0451	0.0070	29.6	4.5	31.0	1.2	-30	250	-4.7	-0.3
165	22.3	234.0	21.0	90.8	8.2	255	0.39	0.0349	0.0032	0.00505	0.00016	0.0978	0.0528	0.0052	35.1	3.1	32.5	1.0	290	180	7.4	0.8
248	22.3	219.0	12.0	129.9	8.1	250	0.59	0.0345	0.0037	0.00512	0.00013	0.0708	0.0498	0.0056	34.3	3.6	32.9	0.9	110	200	4.1	0.4
108	16.7	81.2	2.8	95.9	7.1	104	1.18	0.0311	0.0071	0.00521	0.00025	0.0287	0.0419	0.0098	30.7	7.0	33.5	1.6	-110	350	-9.1	-0.4
262	22.3	932.0	42.0	326.0	14.0	1009	0.35	0.0337	0.0015	0.00524	0.00008	0.3375	0.0468	0.0020	33.6	1.5	33.7	0.5	75	85	-0.2	-0.1
286	14.1	432.0	21.0	249.0	11.0	491	0.58	0.0327	0.0029	0.00530	0.00014	0.0759	0.0444	0.0042	32.6	2.8	34.1	0.9	-50	160	-4.5	-0.5
81	22.3	374.0	25.0	266.0	15.0	437	0.71	0.0355	0.0029	0.00530	0.00016	0.3252	0.0485	0.0038	35.3	2.9	34.1	1.0	120	140	3.4	0.4
265	20.6	50.6	1.9	75.5	1.8	68	1.49	0.0380	0.0100	0.00532	0.00022	0.1302	0.0490	0.0140	38.0	10.0	34.2	1.4	170	430	10.0	0.4
287	22.4	203.8	9.5	144.0	7.3	238	0.71	0.0343	0.0041	0.00537	0.00014	0.0458	0.0460	0.0057	34.1	4.0	34.6	0.9	-10	200	-1.3	-0.1
27	19.6	471.0	31.0	386.0	29.0	562	0.82	0.0367	0.0026	0.00538	0.00012	0.0483	0.0495	0.0038	36.5	2.6	34.6	0.8	190	140	5.3	0.7
298	22.3	410.0	28.0	457.0	33.0	517	1.11	0.0336	0.0025	0.00539	0.00014	0.2956	0.0442	0.0031	33.5	2.5	34.7	0.9	-30	120	-3.5	-0.5
3	22.4	830.0	79.0	1043.0	89.0	1075	1.26	0.0343	0.0013	0.00540	0.00007	0.2698	0.0461	0.0021	34.2	1.3	34.7	0.5	23	85	-1.6	-0.4
131	10.4	564.0	18.0	329.0	20.0	641	0.58	0.0380	0.0029	0.00541	0.00014	0.3935	0.0509	0.0036	37.8	2.8	34.8	0.9	220	140	8.0	1.1
117	18.0	102.4	6.2	97.2	5.7	125	0.95	0.0404	0.0064	0.00545	0.00023	0.0667	0.0555	0.0083	40.6	6.4	35.0	1.5	330	270	13.8	0.9
199	19.4	80.9	3.5	72.1	2.7	98	0.89	0.0331	0.0078	0.00545	0.00019	0.0931	0.0430	0.0110	32.5	7.6	35.1	1.2	-100	360	-8.0	-0.3
205	15.1	286.8	5.5	183.9	9.9	330	0.64	0.0379	0.0036	0.00551	0.00013	0.0137	0.0502	0.0050	37.7	3.5	35.4	0.8	210	190	6.1	0.7
260	8.3	323.0	19.0	226.0	13.0	376	0.70	0.0630	0.0100	0.00551	0.00020	0.4977	0.0810	0.0120	62.1	9.5	35.4	1.3	1210	260	43.0	2.8
53	17.0	112.0	10.0	115.0	13.0	139	1.03	0.0407	0.0059	0.00561	0.00028	0.0316	0.0540	0.0080	40.2	5.7	36.0	1.8	250	270	10.4	0.7
55	14.0	265.0	12.0	58.2	1.3	279	0.22	0.0399	0.0054	0.00559	0.00019	0.1745	0.0530	0.0074	40.3	5.1	36.0	1.2	310	250	10.7	0.8
47	22.3	520.0	60.0	233.0	18.0	575	0.45	0.0383	0.0025	0.00561	0.00010	0.0241	0.0487	0.0033	38.4	2.4	36.1	0.6	160	130	6.1	1.0
33	17.0	90.8	3.3	149.0	4.5	126	1.64	0.0388	0.0084	0.00563	0.00018	0.0113	0.0520	0.0110	38.2	8.1	36.2	1.2	110	350	5.2	0.2
268	22.3	339.0	11.0	94.7	2.2	361	0.28	0.0346	0.0024	0.00571	0.00012	0.0197	0.0433	0.0034	34.5	2.4	36.7	0.8	-50	130	-6.3	-0.9
124	15.4	47.4	2.6	23.0	1.7	53	0.49	0.0440	0.0100	0.00571	0.00027	0.0038	0.0490	0.0140	42.7	10.0	36.7	1.7	210	420	14.1	0.6
290	22.4	650.0	130.0	252.0	16.0	709	0.39	0.0372	0.0028	0.00572	0.00014	0.3830	0.0463	0.0033	37.3	2.8	36.7	0.9	60	130	1.5	0.2
177	22.4	417.0	14.0	270.2	9.7	480	0.65	0.0366	0.0019	0.00572	0.00012	0.2225	0.0464	0.0024	36.7	1.9	36.8	0.8	39	95	-0.2	0.0
193	13.6	137.6	8.7	153.0	11.0	174	1.11	0.0418	0.0076	0.00577	0.00023	0.0502	0.0544	0.0099	41.2	7.4	37.1	1.5	240	330	10.0	0.6
232	22.4	95.5	3.9	107.5	8.0	121	1.13	0.0423	0.0062	0.00581	0.00018	0.1943	0.0530	0.0091	41.7	6.0	37.4	1.2	310	280	10.3	0.7
109	22.2	322.0	15.0	81.9	4.3	341	0.25	0.0363	0.0033	0.00587	0.00014	0.0104	0.0460	0.0042	36.1	3.2	37.7	0.9	10	160	-4.5	-0.5
5	20.9	118.6	2.2	85.6	1.5	139	0.72	0.0428	0.0055	0.00587	0.00018	0.1134	0.0537	0.0071	42.2	5.4	37.8	1.1	250	240	10.4	0.8
12	9.4	305.0	17.0	192.0	20.0	350	0.63	0.0367	0.0037	0.00596	0.00024	0.1110	0.0472	0.0056	36.5	3.7	38.3	1.6	60	220	-4.9	-0.5
123	22.3	392.0	10.0	328.0	13.0	469	0.84	0.0400	0.0026	0.00599	0.00014	0.2169	0.0496	0.0032	39.7	2.5	38.5	0.9	170	130	3.0	0.5

Table 7: LA-ICP-MS Zircon Isotopic and Age Data Table: SC15-03: Scott County, KS Paleosol Sample

								Corrected Isotopic Ratios[3]							Ages (Ma)[7]							
Grain #	Signal Duration (s)	U (ppm)[1]	2σ	Th (ppm)[1]	2σ	eU (ppm)[2]	Th/U	$^{207}Pb/^{235}U$	2σ[4]	$^{206}Pb/^{238}U$	2σ[4]	Rho[5]	$^{207}Pb/^{206}Pb$[6]	2σ	$^{207}Pb/^{235}U$	2σ	$^{206}Pb/^{238}U$	2σ	$^{207}Pb/^{206}Pb$	2σ	% Disc.[8]	Uncert. Wtd. Disc.[9]
185	22.4	388.0	12.0	574.0	12.0	523	1.48	0.0378	0.0026	0.00600	0.00017	0.1006	0.0464	0.0034	37.6	2.5	38.5	1.1	50	130	-2.4	-0.4
40	22.3	262.0	10.0	140.7	3.3	295	0.54	0.0390	0.0029	0.00600	0.00012	0.1140	0.0481	0.0036	38.8	2.8	38.5	0.8	110	140	0.7	0.1
90	17.5	258.4	9.3	288.4	9.4	326	1.12	0.0411	0.0033	0.00605	0.00019	0.0349	0.0488	0.0040	40.8	3.2	38.9	1.2	150	150	4.7	0.6
198	22.7	111.6	9.1	62.6	4.8	126	0.56	0.0390	0.0062	0.00624	0.00029	0.0792	0.0494	0.0085	38.5	6.1	40.1	1.8	110	270	-4.2	-0.3
180	22.4	459.0	26.0	229.0	15.0	513	0.50	0.0409	0.0028	0.00637	0.00016	0.2348	0.0464	0.0033	40.6	2.8	40.9	1.1	70	130	-0.7	-0.1
269	22.3	327.0	14.0	197.4	7.6	373	0.60	0.0427	0.0026	0.00640	0.00013	0.1247	0.0481	0.0029	42.4	2.5	41.1	0.9	160	120	3.1	0.5
263	22.4	481.0	16.0	417.0	29.0	579	0.87	0.0434	0.0025	0.00643	0.00015	0.0877	0.0489	0.0028	43.1	2.4	41.3	1.0	140	110	4.1	0.7
300	13.6	335.0	38.0	77.0	13.0	353	0.23	0.0450	0.0042	0.00645	0.00016	0.0771	0.0513	0.0046	45.3	4.2	41.4	1.0	270	170	8.6	0.9
80	21.7	405.0	13.0	128.1	2.4	435	0.32	0.0411	0.0029	0.00656	0.00016	0.1813	0.0469	0.0033	40.8	2.8	42.2	1.0	50	130	-3.4	-0.5
230	22.3	271.0	17.0	312.0	22.0	344	1.15	0.0414	0.0035	0.00657	0.00012	0.0627	0.0444	0.0037	41.5	3.5	42.2	0.7	0	150	-1.8	-0.2
167	22.3	476.0	23.0	174.0	21.0	517	0.37	0.0423	0.0026	0.00658	0.00014	0.2044	0.0462	0.0028	42.0	2.6	42.3	0.9	30	110	-0.6	-0.1
112	21.3	438.0	17.0	118.0	2.1	466	0.27	0.0435	0.0022	0.00667	0.00011	0.0811	0.0478	0.0024	43.2	2.2	42.9	0.7	131	99	0.8	0.2
173	22.4	1219.0	55.0	739.0	27.0	1393	0.61	0.0444	0.0015	0.00681	0.00011	0.1058	0.0465	0.0017	44.1	1.4	43.7	0.7	43	71	0.9	0.3
4	22.6	212.0	6.6	79.6	4.5	231	0.38	0.0438	0.0035	0.00685	0.00014	0.0562	0.0460	0.0037	43.4	3.4	44.0	0.9	30	140	-1.4	-0.2
25	22.4	1687.0	52.0	1486.0	40.0	2036	0.88	0.0463	0.0012	0.00698	0.00010	0.0809	0.0481	0.0013	46.0	1.2	44.9	0.6	106	59	2.5	1.0
189	22.3	547.0	32.0	171.0	11.0	587	0.31	0.0472	0.0024	0.00700	0.00017	0.0921	0.0486	0.0025	46.7	2.3	44.9	1.1	140	100	3.9	0.8
278	22.4	670.0	31.0	181.0	11.0	713	0.27	0.0564	0.0024	0.00889	0.00016	0.0270	0.0464	0.0021	55.6	2.3	57.1	1.0	50	89	-2.7	-0.7
78	21.5	244.0	22.0	57.3	4.5	257	0.23	0.0572	0.0044	0.00926	0.00031	0.0511	0.0473	0.0041	56.3	4.2	59.4	2.0	50	160	-5.5	-0.7
136	20.1	616.0	25.0	110.1	3.4	642	0.18	0.0568	0.0026	0.00948	0.00013	0.1146	0.0446	0.0021	56.1	2.5	60.8	0.8	-35	86	-8.4	-1.9
128	22.3	117.1	7.5	52.9	3.1	130	0.45	0.0575	0.0063	0.00959	0.00028	0.1391	0.0458	0.0048	57.2	6.0	61.5	1.8	-10	180	-7.5	-0.7
134	22.4	530.7	8.2	93.0	6.2	553	0.18	0.0653	0.0025	0.00975	0.00012	0.1550	0.0487	0.0019	64.2	2.4	62.6	0.8	134	80	2.6	0.7
37	22.3	309.0	31.0	33.4	2.1	317	0.11	0.0659	0.0040	0.00977	0.00019	0.0711	0.0482	0.0029	64.6	3.8	62.7	1.2	120	110	2.9	0.5
245	22.3	232.0	14.0	204.7	6.7	280	0.88	0.0662	0.0040	0.00977	0.00019	0.0150	0.0506	0.0033	64.9	3.8	62.7	1.2	190	130	3.4	0.6
11	22.4	101.6	4.6	114.1	6.3	128	1.12	0.0684	0.0066	0.00992	0.00028	0.0428	0.0511	0.0053	66.8	6.3	63.7	1.8	220	190	4.6	0.5
29	21.0	171.0	14.0	116.6	8.8	198	0.68	0.0702	0.0051	0.00995	0.00023	0.0188	0.0525	0.0040	68.7	4.9	63.8	1.5	270	150	7.1	1.0
172	22.3	58.9	2.9	39.3	1.6	68	0.67	0.0730	0.0120	0.00995	0.00037	0.0995	0.0551	0.0093	72.0	11.0	63.8	2.4	310	290	11.4	0.7
152	22.3	95.2	4.9	42.4	1.8	105	0.45	0.0721	0.0083	0.01001	0.00026	0.0033	0.0524	0.0063	70.0	7.9	64.2	1.7	260	220	8.3	0.7
51	18.0	87.5	4.5	42.0	1.7	97	0.48	0.0708	0.0070	0.01008	0.00032	0.3739	0.0512	0.0049	69.1	6.6	64.6	2.0	250	190	6.5	0.7
75	22.4	121.6	7.2	34.9	2.1	130	0.29	0.0693	0.0067	0.01008	0.00031	0.0836	0.0507	0.0052	67.6	6.4	64.6	2.0	160	180	4.4	0.5
145	17.0	119.1	2.7	59.0	1.2	133	0.50	0.0613	0.0079	0.01007	0.00026	0.1343	0.0447	0.0059	60.0	7.5	64.6	1.7	-40	220	-7.7	-0.6
139	22.4	107.4	6.6	55.9	2.5	121	0.52	0.0684	0.0062	0.01010	0.00029	0.0141	0.0490	0.0049	66.9	5.9	64.7	1.9	150	170	3.3	0.4
299	16.0	32.1	1.0	20.9	1.0	37	0.65	0.0740	0.0200	0.01012	0.00055	0.3131	0.0600	0.0160	70.0	19.0	64.9	3.5	250	430	7.3	0.3
295	22.4	243.2	5.8	184.4	2.5	287	0.76	0.0632	0.0040	0.01018	0.00022	0.0350	0.0447	0.0028	62.5	3.7	65.3	1.4	-30	110	-4.5	-0.8
249	22.3	162.5	6.9	58.2	2.5	176	0.36	0.0618	0.0050	0.01021	0.00021	0.0399	0.0448	0.0038	61.2	4.7	65.5	1.3	0	150	-7.0	-0.9
73	22.4	250.0	9.0	40.9	1.3	260	0.16	0.0659	0.0040	0.01023	0.00025	0.2848	0.0468	0.0028	65.2	3.8	65.6	1.6	80	110	-0.6	-0.1
178	22.3	150.5	7.3	103.6	5.0	175	0.69	0.0700	0.0059	0.01024	0.00032	0.3246	0.0507	0.0037	68.4	5.6	65.7	2.1	200	140	3.9	0.5
274	22.3	67.2	4.2	33.6	2.2	75	0.50	0.0697	0.0091	0.01026	0.00031	0.0437	0.0495	0.0065	68.8	8.8	65.8	2.0	110	230	4.4	0.3
219	22.4	136.0	11.0	137.0	10.0	168	1.01	0.0696	0.0064	0.01032	0.00026	0.0669	0.0515	0.0050	68.0	6.1	66.2	1.6	180	180	2.6	0.3
209	22.4	96.3	3.1	52.0	1.5	109	0.54	0.0665	0.0081	0.01035	0.00029	0.0073	0.0490	0.0061	64.8	7.7	66.3	1.9	100	220	-2.3	-0.2
118	22.3	190.8	6.0	101.9	2.8	215	0.53	0.0662	0.0046	0.01035	0.00023	0.0703	0.0460	0.0033	64.9	4.3	66.4	1.5	60	130	-2.3	-0.3
1	22.4	155.5	2.8	60.0	0.9	170	0.39	0.0656	0.0048	0.01037	0.00020	0.0329	0.0468	0.0036	64.4	4.6	66.5	1.3	50	140	-3.3	-0.5

Table 7: LA-ICP-MS Zircon Isotopic and Age Data Table: SC15-03: Scott County, KS Paleosol Sample

								Corrected Isotopic Ratios[3]							Ages (Ma)[7]							
Grain #	Signal Duration (s)	U (ppm)[1]	2σ	Th (ppm)[1]	2σ	eU (ppm)[2]	Th/U	$^{207}Pb/^{235}U$	$2\sigma^4$	$^{206}Pb/^{238}U$	$2\sigma^4$	Rho[5]	$^{207}Pb/^{206}Pb$[6]	2σ	$^{207}Pb/^{235}U$	2σ	$^{206}Pb/^{238}U$	2σ	$^{207}Pb/^{206}Pb$	2σ	% Disc.[8]	Uncert. Wtd. Disc.[9]
194	22.4	188.0	12.0	146.8	9.5	222	0.78	0.0699	0.0050	0.01039	0.00025	0.0110	0.0485	0.0035	68.4	4.7	66.6	1.6	130	130	2.6	0.4
19	22.3	333.0	21.0	108.6	4.4	359	0.33	0.0703	0.0039	0.01040	0.00018	0.2364	0.0493	0.0027	68.8	3.7	66.7	1.2	160	110	3.1	0.6
237	13.9	45.9	3.1	77.2	5.0	64	1.68	0.0740	0.0180	0.01041	0.00052	0.1066	0.0520	0.0140	71.0	17.0	66.7	3.3	300	400	6.1	0.3
244	22.3	80.2	2.8	29.9	1.6	87	0.37	0.0664	0.0081	0.01040	0.00031	0.1354	0.0448	0.0055	64.7	7.7	66.7	2.0	10	210	-3.1	-0.3
293	22.3	155.0	11.0	49.2	3.1	167	0.32	0.0666	0.0052	0.01041	0.00025	0.1884	0.0446	0.0037	65.9	4.8	66.8	1.6	30	150	-1.4	-0.2
114	15.7	35.8	2.0	39.4	2.3	45	1.10	0.0690	0.0180	0.01035	0.00059	0.1031	0.0520	0.0130	68.0	17.0	66.9	3.9	90	410	1.6	0.1
79	22.2	50.5	3.7	28.6	1.2	57	0.57	0.0760	0.0130	0.01045	0.00046	0.0755	0.0569	0.0093	79.0	12.0	67.0	3.0	330	290	15.2	1.0
231	22.4	145.7	7.8	80.2	2.7	165	0.55	0.0654	0.0051	0.01050	0.00024	0.1027	0.0458	0.0036	64.1	4.8	67.4	1.6	40	140	-5.1	-0.7
18	22.1	403.0	14.0	166.0	5.3	442	0.41	0.0719	0.0036	0.01053	0.00016	0.0905	0.0503	0.0027	70.4	3.4	67.5	1.0	190	110	4.1	0.9
68	22.3	255.5	7.0	84.4	4.6	275	0.33	0.0715	0.0047	0.01052	0.00022	0.3368	0.0490	0.0029	70.4	4.4	67.5	1.4	160	110	4.1	0.7
151	22.3	155.7	9.4	87.2	4.7	176	0.56	0.0746	0.0062	0.01054	0.00023	0.0553	0.0516	0.0045	72.7	5.8	67.6	1.5	300	160	7.0	0.9
196	22.4	123.4	4.9	44.1	2.1	134	0.36	0.0687	0.0065	0.01056	0.00026	0.0698	0.0481	0.0046	67.9	6.3	67.7	1.6	110	170	0.3	0.0
84	22.4	77.7	1.6	28.4	1.2	84	0.37	0.0731	0.0076	0.01057	0.00037	0.1433	0.0493	0.0053	71.1	7.1	67.8	2.3	110	190	4.6	0.5
158	22.3	290.0	16.0	73.1	3.3	307	0.25	0.0725	0.0045	0.01060	0.00022	0.3096	0.0501	0.0031	70.9	4.2	67.9	1.4	200	120	4.2	0.7
279	22.4	172.7	9.1	115.8	3.1	200	0.67	0.0733	0.0053	0.01061	0.00024	0.1457	0.0504	0.0039	71.6	5.0	68.0	1.5	170	150	5.0	0.7
138	22.3	468.0	26.0	255.0	12.0	528	0.54	0.0678	0.0027	0.01069	0.00016	0.0687	0.0461	0.0018	66.6	2.6	68.5	1.0	36	78	-2.9	-0.7
153	20.7	56.8	1.2	43.9	1.4	67	0.77	0.0900	0.0130	0.01073	0.00038	0.0789	0.0617	0.0092	86.0	12.0	68.8	2.4	520	270	20.0	1.4
235	14.5	35.2	1.1	52.6	1.2	48	1.49	0.0760	0.0200	0.01074	0.00049	0.0196	0.0540	0.0140	75.0	19.0	68.8	3.1	250	430	8.3	0.3
45	22.3	161.0	12.0	57.5	6.7	175	0.36	0.0688	0.0054	0.01077	0.00022	0.0646	0.0461	0.0038	67.3	5.1	69.1	1.4	50	140	-2.7	-0.4
277	19.2	446.0	12.0	241.0	5.3	503	0.54	0.0734	0.0034	0.01084	0.00014	0.2693	0.0489	0.0021	72.2	3.2	69.5	0.9	163	91	3.8	0.8
91	22.4	168.3	4.1	44.9	2.2	179	0.27	0.0687	0.0049	0.01085	0.00030	0.0626	0.0460	0.0033	67.3	4.6	69.5	1.9	50	130	-3.3	-0.5
217	22.4	78.4	9.3	49.4	5.5	90	0.63	0.0720	0.0110	0.01084	0.00046	0.1391	0.0457	0.0080	69.0	11.0	69.5	3.0	60	240	-0.7	0.0
22	22.4	277.0	11.0	68.8	3.2	293	0.25	0.0688	0.0044	0.01085	0.00022	0.1703	0.0461	0.0030	67.4	4.1	69.6	1.4	30	120	-3.3	-0.5
251	22.3	161.7	6.2	57.0	2.5	175	0.35	0.0774	0.0083	0.01088	0.00025	0.1611	0.0528	0.0057	75.0	7.7	69.7	1.6	200	180	7.1	0.7
59	22.4	425.0	18.0	126.9	3.9	455	0.30	0.0720	0.0038	0.01089	0.00019	0.2096	0.0475	0.0022	70.5	3.6	69.8	1.2	99	94	1.0	0.2
8	22.5	48.6	1.8	47.9	2.1	60	0.99	0.0820	0.0110	0.01095	0.00039	0.0178	0.0564	0.0080	81.0	10.0	70.2	2.5	330	260	13.3	1.1
105	9.6	74.6	2.5	69.4	3.2	91	0.93	0.0840	0.0160	0.01096	0.00051	0.3098	0.0570	0.0110	81.0	15.0	70.3	3.3	460	350	13.2	0.7
234	22.3	126.6	7.5	28.8	2.0	133	0.23	0.0738	0.0071	0.01103	0.00025	0.1693	0.0482	0.0049	71.9	6.7	70.7	1.6	160	190	1.7	0.2
270	21.3	80.1	2.8	16.1	0.5	84	0.20	0.0731	0.0072	0.01102	0.00031	0.2014	0.0473	0.0049	71.2	6.9	70.7	2.0	120	190	0.7	0.1
220	7.4	509.0	51.0	141.4	5.1	542	0.28	0.0760	0.0160	0.01110	0.00120	0.9278	0.0508	0.0059	74.0	15.0	71.1	7.7	190	220	3.9	0.2
257	20.7	34.2	1.3	21.1	0.7	39	0.62	0.0660	0.0180	0.01110	0.00039	0.0946	0.0460	0.0130	62.0	17.0	71.1	2.5	-180	380	-14.7	-0.5
241	22.4	67.2	1.5	29.7	1.0	74	0.44	0.0711	0.0086	0.01117	0.00035	0.1772	0.0478	0.0057	70.1	8.3	71.6	2.2	160	200	-2.1	-0.2
273	22.4	94.6	7.1	56.2	5.1	108	0.59	0.0793	0.0083	0.01121	0.00037	0.0559	0.0519	0.0056	76.9	7.8	71.9	2.4	260	200	6.5	0.6
6	20.7	65.4	4.1	38.2	1.8	74	0.58	0.0820	0.0095	0.01123	0.00039	0.1556	0.0564	0.0066	79.3	8.9	72.0	2.5	390	220	9.2	0.8
203	22.3	96.1	5.1	55.9	3.0	109	0.58	0.0781	0.0096	0.01126	0.00037	0.0276	0.0524	0.0068	75.5	9.0	72.2	2.4	160	230	4.4	0.4
30	22.4	247.0	17.0	146.0	13.0	281	0.59	0.0743	0.0049	0.01128	0.00023	0.1653	0.0473	0.0030	72.5	4.6	72.3	1.5	90	120	0.3	0.0
42	12.3	174.1	9.7	32.6	2.9	182	0.19	0.0802	0.0064	0.01128	0.00032	0.2150	0.0513	0.0040	78.2	6.0	72.3	2.0	220	160	7.5	1.0
236	22.3	30.8	3.2	19.2	2.0	35	0.62	0.0750	0.0200	0.01127	0.00052	0.0627	0.0520	0.0140	70.0	19.0	72.3	3.3	60	390	-3.3	-0.1
26	12.3	120.8	7.6	125.9	6.2	150	1.04	0.0808	0.0070	0.01130	0.00031	0.0028	0.0521	0.0048	78.7	6.6	72.4	2.0	340	180	8.0	1.0
164	22.3	78.9	2.7	55.4	1.5	92	0.70	0.0810	0.0110	0.01130	0.00035	0.0668	0.0519	0.0072	78.0	10.0	72.4	2.2	190	240	7.2	0.6
24	22.3	96.1	2.9	33.9	1.6	104	0.35	0.0774	0.0074	0.01131	0.00030	0.0785	0.0501	0.0048	75.2	7.0	72.5	1.9	150	170	3.6	0.4

Table 7: LA-ICP-MS Zircon Isotopic and Age Data Table: SC15-03: Scott County, KS Paleosol Sample

								Corrected Isotopic Ratios[3]							Ages (Ma)[7]							
Grain #	Signal Duration (s)	U (ppm)[1]	2σ	Th (ppm)[1]	2σ	eU (ppm)[2]	Th/U	$^{207}Pb/^{235}U$	2σ[4]	$^{206}Pb/^{238}U$	2σ[4]	Rho[5]	$^{207}Pb/^{206}Pb$[6]	2σ	$^{207}Pb/^{235}U$	2σ	$^{206}Pb/^{238}U$	2σ	$^{207}Pb/^{206}Pb$	2σ	% Disc.[8]	Uncert. Wtd. Disc.[9]
20	22.3	196.9	7.8	113.3	4.3	224	0.58	0.0778	0.0050	0.01133	0.00024	0.1577	0.0492	0.0032	75.9	4.7	72.7	1.6	180	130	4.2	0.7
77	15.9	74.4	4.6	47.2	2.8	85	0.63	0.0860	0.0110	0.01140	0.00056	0.0031	0.0575	0.0081	83.0	10.0	73.1	3.5	440	250	11.9	1.0
233	22.4	61.8	3.2	19.0	1.1	66	0.31	0.0758	0.0094	0.01140	0.00040	0.0703	0.0469	0.0058	75.6	8.8	73.4	2.5	160	220	2.9	0.2
146	20.6	139.9	5.8	42.4	1.1	150	0.30	0.0661	0.0055	0.01148	0.00025	0.1057	0.0424	0.0037	64.7	5.3	73.6	1.6	-130	140	-13.8	-1.7
247	22.4	126.7	5.8	50.0	3.4	138	0.39	0.0746	0.0059	0.01151	0.00029	0.0420	0.0476	0.0038	72.8	5.6	73.8	1.8	110	140	-1.4	-0.2
296	15.6	106.9	7.9	65.8	4.1	122	0.62	0.0828	0.0088	0.01155	0.00035	0.1245	0.0518	0.0058	81.6	8.0	74.0	2.2	280	200	9.3	0.9
238	19.6	204.0	28.0	97.0	22.0	227	0.48	0.0699	0.0067	0.01157	0.00026	0.0568	0.0448	0.0044	68.2	6.3	74.1	1.7	0	170	-8.7	-0.9
200	22.3	111.3	8.3	70.0	4.7	128	0.63	0.0796	0.0076	0.01165	0.00029	0.1995	0.0504	0.0047	77.2	7.2	74.7	1.9	180	170	3.2	0.3
210	22.4	259.6	9.9	86.2	2.0	280	0.33	0.0785	0.0050	0.01164	0.00023	0.2478	0.0486	0.0030	76.5	4.7	74.8	1.4	140	120	2.2	0.4
74	22.4	86.9	5.3	48.3	5.8	98	0.56	0.0696	0.0083	0.01171	0.00044	0.0850	0.0460	0.0057	68.8	8.1	75.0	2.8	20	210	-9.0	-0.8
95	22.4	94.9	3.2	35.1	1.7	103	0.37	0.0827	0.0076	0.01173	0.00034	0.1518	0.0511	0.0047	80.2	7.1	75.2	2.2	280	180	6.2	0.7
169	22.3	109.5	1.7	39.3	1.5	119	0.36	0.0704	0.0075	0.01174	0.00025	0.1232	0.0437	0.0046	69.5	7.3	75.2	1.6	-10	180	-8.2	-0.8
259	22.4	212.0	19.0	46.1	4.4	223	0.22	0.0812	0.0048	0.01174	0.00026	0.0806	0.0485	0.0029	79.0	4.5	75.2	1.7	180	120	4.8	0.8
252	15.4	61.5	2.8	28.5	1.7	68	0.46	0.0860	0.0120	0.01177	0.00040	0.0712	0.0516	0.0074	83.0	11.0	75.4	2.6	320	270	9.2	0.7
48	8.3	80.3	2.8	51.1	1.4	92	0.64	0.0760	0.0140	0.01177	0.00051	0.0520	0.0471	0.0095	74.0	14.0	75.5	3.2	20	340	-2.0	-0.1
121	18.8	51.4	4.4	33.1	2.8	59	0.64	0.0740	0.0130	0.01179	0.00043	0.1146	0.0482	0.0085	71.0	13.0	75.6	2.7	60	280	-6.5	-0.4
163	22.4	49.6	2.5	9.9	0.5	52	0.20	0.0830	0.0120	0.01180	0.00048	0.0969	0.0519	0.0088	82.0	12.0	75.6	3.1	110	280	7.8	0.5
224	22.3	61.1	2.2	20.2	0.8	66	0.33	0.0820	0.0120	0.01180	0.00036	0.0227	0.0519	0.0076	80.0	12.0	75.6	2.3	230	250	5.5	0.4
76	22.4	83.6	6.9	32.1	2.6	91	0.38	0.0747	0.0087	0.01183	0.00038	0.1138	0.0453	0.0052	72.5	8.2	75.8	2.4	10	200	-4.6	-0.4
294	8.3	63.3	2.0	30.8	1.3	71	0.49	0.0930	0.0190	0.01184	0.00092	0.4021	0.0520	0.0110	89.0	18.0	75.8	5.9	380	350	14.8	0.7
2	22.4	121.0	6.2	97.9	3.8	144	0.81	0.0766	0.0067	0.01184	0.00026	0.0155	0.0475	0.0042	74.5	6.3	75.9	1.6	90	160	-1.9	-0.2
66	22.4	78.1	3.3	30.2	1.0	85	0.39	0.0830	0.0100	0.01184	0.00030	0.1201	0.0501	0.0061	80.1	9.5	75.9	1.9	170	220	5.2	0.4
104	22.3	287.0	17.0	43.7	2.8	297	0.15	0.0773	0.0043	0.01185	0.00022	0.2763	0.0478	0.0026	75.5	4.0	76.0	1.4	120	100	-0.7	-0.1
127	21.5	179.9	9.8	34.0	2.1	188	0.19	0.0820	0.0053	0.01186	0.00026	0.0332	0.0507	0.0036	79.8	5.0	76.0	1.7	190	140	4.8	0.8
7	22.4	193.0	17.0	86.8	8.5	213	0.45	0.0763	0.0054	0.01187	0.00027	0.2026	0.0463	0.0030	74.4	5.1	76.1	1.7	50	120	-2.3	-0.3
46	22.3	93.8	2.8	41.8	1.4	104	0.45	0.0842	0.0070	0.01187	0.00031	0.1590	0.0523	0.0042	81.6	6.6	76.1	1.9	240	150	6.7	0.8
281	22.4	37.7	3.4	20.7	2.2	43	0.55	0.0790	0.0160	0.01190	0.00047	0.1146	0.0488	0.0099	75.0	15.0	76.2	3.0	50	310	-1.6	-0.1
101	22.3	111.0	10.0	75.2	6.1	129	0.68	0.0733	0.0075	0.01194	0.00032	0.1226	0.0448	0.0046	71.3	7.0	76.5	2.0	-10	180	-7.3	-0.7
272	22.4	86.8	5.3	30.0	3.2	94	0.35	0.0757	0.0088	0.01195	0.00038	0.0271	0.0458	0.0054	73.4	8.3	76.6	2.4	20	200	-4.4	-0.4
255	22.4	185.2	5.5	17.4	0.6	189	0.09	0.0798	0.0052	0.01201	0.00029	0.0829	0.0472	0.0034	77.7	4.9	76.9	1.8	60	130	1.0	0.2
166	22.3	227.9	9.6	126.7	5.1	258	0.56	0.0761	0.0049	0.01202	0.00027	0.2125	0.0468	0.0030	74.2	4.6	77.0	1.7	80	120	-3.8	-0.6
9	11.8	152.8	5.7	155.3	7.3	189	1.02	0.0855	0.0084	0.01206	0.00042	0.1030	0.0534	0.0056	83.0	7.8	77.3	2.6	300	210	6.9	0.7
50	22.4	206.7	4.5	114.8	5.8	234	0.56	0.0820	0.0048	0.01206	0.00022	0.0966	0.0498	0.0029	80.3	4.4	77.3	1.4	190	120	3.7	0.7
107	22.3	163.0	10.0	26.3	3.4	169	0.16	0.0801	0.0049	0.01206	0.00029	0.1449	0.0478	0.0032	78.6	4.7	77.3	1.8	100	130	1.7	0.3
93	22.3	65.5	1.9	58.7	1.8	79	0.90	0.0810	0.0120	0.01209	0.00043	0.3401	0.0496	0.0068	79.0	11.0	77.5	2.7	230	230	1.9	0.1
195	10.5	211.0	12.0	75.7	5.8	229	0.36	0.0775	0.0074	0.01209	0.00037	0.2943	0.0481	0.0050	75.6	7.0	77.5	2.3	90	190	-2.5	-0.3
149	22.4	273.3	6.9	186.8	9.4	317	0.68	0.0799	0.0041	0.01211	0.00021	0.0182	0.0471	0.0024	77.9	3.9	77.6	1.3	80	99	0.4	0.1
253	22.3	400.0	31.0	235.0	22.0	455	0.59	0.0801	0.0033	0.01220	0.00020	0.0205	0.0470	0.0022	78.2	3.1	78.2	1.2	81	91	0.0	0.0
85	17.1	63.4	3.9	30.9	1.8	71	0.49	0.0761	0.0090	0.01222	0.00049	0.0335	0.0455	0.0056	74.0	8.4	78.3	3.1	-10	210	-5.8	-0.5
183	15.7	631.0	17.0	217.0	12.0	682	0.34	0.0794	0.0037	0.01222	0.00043	0.4283	0.0470	0.0019	77.5	3.5	78.3	2.7	64	81	-1.0	-0.2
141	22.4	65.6	6.4	16.0	0.8	69	0.24	0.0820	0.0110	0.01228	0.00039	0.1183	0.0465	0.0070	80.0	11.0	78.6	2.5	170	250	1.8	0.1

Table 7: LA-ICP-MS Zircon Isotopic and Age Data Table: SC15-03: Scott County, KS Paleosol Sample

								Corrected Isotopic Ratios[3]							Ages (Ma)[7]							
Grain #	Signal Duration (s)	U (ppm)[1]	2σ	Th (ppm)[1]	2σ	eU (ppm)[2]	Th/U	$^{207}Pb/^{235}U$	$2\sigma^4$	$^{206}Pb/^{238}U$	$2\sigma^4$	Rho[5]	$^{207}Pb/^{206}Pb$[6]	2σ	$^{207}Pb/^{235}U$	2σ	$^{206}Pb/^{238}U$	2σ	$^{207}Pb/^{206}Pb$	2σ	% Disc.[8]	Uncert. Wtd. Disc.[9]
31	22.4	448.0	26.0	394.0	21.0	541	0.88	0.0800	0.0037	0.01238	0.00022	0.3465	0.0466	0.0020	78.4	3.4	79.3	1.4	57	85	-1.1	-0.3
148	21.5	60.5	6.1	39.7	4.6	70	0.66	0.0810	0.0130	0.01240	0.00046	0.1269	0.0479	0.0083	79.0	12.0	79.5	2.9	220	230	-0.6	0.0
63	20.7	371.0	28.0	530.0	27.0	496	1.43	0.0903	0.0043	0.01242	0.00023	0.0557	0.0537	0.0028	87.7	4.0	79.6	1.5	320	110	9.2	2.0
102	19.1	100.1	8.4	37.9	3.0	109	0.38	0.0783	0.0081	0.01273	0.00042	0.0749	0.0457	0.0048	77.2	7.8	81.5	2.7	10	180	-5.6	-0.6
240	22.3	147.5	7.5	37.5	1.1	156	0.25	0.0849	0.0063	0.01306	0.00033	0.2532	0.0479	0.0034	83.1	5.8	83.6	2.1	120	140	-0.6	-0.1
103	22.4	451.0	49.0	312.0	46.0	524	0.69	0.0858	0.0035	0.01311	0.00022	0.2136	0.0472	0.0018	83.5	3.2	84.0	1.4	69	75	-0.6	-0.2
256	22.3	96.4	8.1	100.3	7.5	120	1.04	0.0905	0.0095	0.01328	0.00039	0.0378	0.0497	0.0055	88.4	8.6	85.0	2.5	220	190	3.8	0.4
280	22.4	393.0	24.0	150.8	9.6	428	0.38	0.0887	0.0036	0.01345	0.00020	0.0630	0.0469	0.0019	86.6	3.2	86.1	1.3	55	77	0.6	0.2
115	15.0	368.0	44.0	116.0	8.1	395	0.32	0.0879	0.0040	0.01387	0.00028	0.3073	0.0453	0.0019	85.4	3.7	88.8	1.8	-11	79	-4.0	-0.9
216	22.4	238.0	12.0	117.2	6.8	266	0.49	0.0968	0.0052	0.01449	0.00024	0.0096	0.0489	0.0028	93.6	4.8	92.7	1.5	140	110	1.0	0.2
223	10.7	469.0	35.0	529.0	29.0	593	1.13	0.1590	0.0130	0.01451	0.00055	0.1539	0.0795	0.0068	149.0	12.0	92.9	3.5	1130	170	37.7	4.7
137	22.4	328.0	33.0	184.0	21.0	371	0.56	0.0943	0.0051	0.01473	0.00023	0.2970	0.0463	0.0024	91.3	4.7	94.3	1.4	46	100	-3.3	-0.6
60	22.4	763.0	43.0	419.0	83.0	861	0.55	0.0962	0.0032	0.01481	0.00026	0.5141	0.0465	0.0013	93.2	3.0	94.8	1.6	40	56	-1.7	-0.5
161	22.3	447.0	35.0	139.2	9.9	480	0.31	0.0950	0.0041	0.01482	0.00025	0.3125	0.0466	0.0019	92.0	3.8	94.8	1.6	50	78	-3.0	-0.7
275	22.3	400.0	11.0	115.8	1.8	427	0.29	0.1022	0.0040	0.01524	0.00022	0.0022	0.0484	0.0019	99.1	3.7	97.5	1.4	153	84	1.6	0.4
171	15.5	570.0	18.0	203.4	7.5	618	0.36	0.1030	0.0040	0.01544	0.00030	0.1244	0.0484	0.0020	99.5	3.6	98.7	1.9	146	89	0.8	0.2
72	22.4	94.2	7.4	25.3	2.9	100	0.27	0.1075	0.0092	0.01550	0.00040	0.2382	0.0509	0.0042	103.0	8.4	99.2	2.6	220	150	3.7	0.5
243	22.3	124.0	11.0	41.0	3.1	134	0.33	0.1003	0.0100	0.01551	0.00041	0.4939	0.0469	0.0045	94.0	7.9	99.2	2.6	20	160	-5.5	-0.7
181	22.4	1101.0	37.0	299.2	7.2	1171	0.27	0.0999	0.0035	0.01553	0.00040	0.5125	0.0481	0.0015	97.0	3.3	99.3	2.5	107	65	-2.4	-0.7
168	22.4	617.0	33.0	244.0	13.0	674	0.40	0.1011	0.0037	0.01553	0.00024	0.3073	0.0485	0.0018	97.7	3.4	99.4	1.5	135	76	-1.7	-0.5
69	14.8	163.4	4.9	89.4	3.4	184	0.55	0.0982	0.0078	0.01586	0.00038	0.2902	0.0457	0.0035	94.7	7.2	101.5	2.4	0	140	-7.2	-0.9
116	17.1	101.3	9.6	34.1	3.1	109	0.34	0.1070	0.0100	0.01586	0.00043	0.1333	0.0503	0.0048	102.7	9.2	101.5	2.8	220	180	1.2	0.1
254	20.7	68.0	4.3	24.8	1.7	74	0.36	0.1050	0.0095	0.01677	0.00048	0.0994	0.0458	0.0043	100.7	8.8	107.2	3.1	0	170	-6.5	-0.7
182	14.5	672.0	27.0	166.5	5.4	711	0.25	0.1190	0.0050	0.01751	0.00051	0.4112	0.0491	0.0019	114.0	4.5	111.9	3.2	150	82	1.8	0.5
119	22.4	139.0	14.0	215.0	15.0	190	1.55	0.1589	0.0098	0.02356	0.00032	0.0532	0.0498	0.0029	151.9	8.5	150.1	2.0	190	110	1.2	0.2
125	21.1	276.0	24.0	237.0	28.0	332	0.86	0.1584	0.0051	0.02360	0.00034	0.1112	0.0487	0.0017	149.1	4.4	150.6	2.1	143	71	-1.0	-0.3
147	8.3	594.0	16.0	394.7	9.5	687	0.66	0.1937	0.0069	0.02624	0.00040	0.2449	0.0538	0.0020	179.7	5.8	167.0	2.5	348	83	7.1	2.2
16	21.9	566.0	22.0	450.0	16.0	672	0.80	0.1935	0.0059	0.02759	0.00045	0.3932	0.0502	0.0014	179.4	5.0	175.4	2.8	212	61	2.2	0.8
157	22.3	932.0	37.0	857.0	21.0	1133	0.92	0.1934	0.0052	0.02817	0.00037	0.5242	0.0499	0.0011	179.4	4.4	179.1	2.3	184	49	0.2	0.1
21	19.1	285.3	8.5	54.7	2.7	298	0.19	0.2118	0.0073	0.03036	0.00055	0.2947	0.0507	0.0017	194.8	6.1	192.8	3.5	227	73	1.0	0.3
291	22.3	65.8	6.4	30.0	3.9	73	0.46	0.2190	0.0130	0.03172	0.00068	0.2241	0.0502	0.0028	200.0	11.0	201.3	4.2	200	110	-0.6	-0.1
188	8.1	459.0	28.0	579.0	31.0	595	1.26	0.2510	0.0290	0.03220	0.00130	0.4599	0.0565	0.0063	225.0	22.0	204.4	8.2	400	180	9.2	0.9
284	22.4	154.0	11.0	107.0	6.0	179	0.69	0.2350	0.0110	0.03378	0.00045	0.2262	0.0498	0.0022	213.7	9.0	214.1	2.8	185	91	-0.2	0.0
225	22.4	159.4	2.8	66.5	1.7	175	0.42	0.2501	0.0100	0.03560	0.00047	0.2016	0.0514	0.0021	226.0	8.5	225.5	2.9	264	86	0.2	0.1
23	9.1	639.0	18.0	82.7	5.4	658	0.13	0.3020	0.0160	0.04150	0.00100	0.8571	0.0532	0.0022	268.0	12.0	262.4	6.4	319	91	2.1	0.5
97	22.4	219.0	12.0	69.3	3.1	235	0.32	0.3097	0.0095	0.04317	0.00061	0.2986	0.0519	0.0015	273.5	7.4	272.4	3.8	267	64	0.4	0.1
271	22.4	174.7	8.3	158.0	11.0	212	0.90	0.3670	0.0120	0.05091	0.00072	0.2399	0.0521	0.0016	319.0	8.7	320.0	4.4	274	67	-0.3	-0.1
120	19.8	271.0	19.0	130.7	5.4	302	0.48	0.4660	0.0120	0.06272	0.00070	0.2929	0.0539	0.0014	388.1	8.3	392.1	4.2	361	56	-1.0	-0.5
190	22.3	451.0	38.0	30.4	0.9	458	0.07	0.5210	0.0140	0.06970	0.00140	0.6949	0.0552	0.0012	426.2	9.7	434.2	8.4	425	48	-1.9	-0.8
150	22.3	247.9	7.8	75.0	1.6	266	0.30	0.5800	0.0170	0.07470	0.00160	0.6163	0.0566	0.0013	466.0	10.0	464.2	9.8	468	53	0.4	0.2
282	22.3	110.5	7.0	113.6	2.1	137	1.03	0.7430	0.0240	0.09190	0.00130	0.3368	0.0590	0.0017	562.0	14.0	567.4	7.7	567	64	-1.0	-0.4

Table 7: LA-ICP-MS Zircon Isotopic and Age Data Table: SC15-03: Scott County, KS Paleosol Sample

								Corrected Isotopic Ratios[5]							Ages (Ma)[7]							
Grain #	Signal Duration (s)	U (ppm)[1]	2σ	Th (ppm)[1]	2σ	eU (ppm)[2]	Th/U	$^{207}Pb/^{235}U$	2σ[4]	$^{206}Pb/^{238}U$	2σ[4]	Rho[8]	$^{207}Pb/^{206}Pb$[6]	2σ	$^{207}Pb/^{235}U$	2σ	$^{206}Pb/^{238}U$	2σ	$^{207}Pb/^{206}Pb$	2σ	% Disc.[9]	Uncert. Wtd. Disc.[9]
28	21.2	455.0	35.0	149.0	11.0	490	0.33	1.6700	0.1100	0.11920	0.00770	0.9777	0.1026	0.0019	993.0	44.0	723.0	44.0	1670	34	27.2	6.1
226	21.7	287.0	27.0	243.0	20.0	344	0.85	2.1010	0.0910	0.12030	0.00490	0.9148	0.1282	0.0028	1148.0	30.0	731.0	28.0	2073	39	36.3	13.9
13	22.3	467.0	38.0	238.0	18.0	523	0.51	1.7380	0.0590	0.15360	0.00500	0.8996	0.0827	0.0014	1021.0	22.0	920.0	28.0	1260	34	9.9	4.6
276	22.3	192.4	7.6	19.4	0.7	197	0.10	1.7960	0.0450	0.17490	0.00270	0.5700	0.0744	0.0014	1044.0	17.0	1039.0	15.0	1053	39	0.5	0.3
174	22.4	146.0	10.0	188.4	7.7	190	1.29	1.8260	0.0420	0.17780	0.00280	0.4379	0.0737	0.0017	1053.0	15.0	1055.0	15.0	1035	48	-0.2	-0.1
246	21.6	361.0	34.0	247.0	21.0	419	0.68	2.5760	0.0980	0.17810	0.00640	0.9045	0.1048	0.0020	1300.0	27.0	1055.0	35.0	1706	34	18.8	9.1
283	22.4	113.2	7.5	86.9	5.1	134	0.77	1.9150	0.0430	0.18150	0.00220	0.2438	0.0761	0.0017	1085.0	15.0	1075.0	12.0	1092	43	0.9	0.7
292	18.2	30.2	2.0	26.6	1.5	36	0.88	1.9040	0.0700	0.18100	0.00340	0.2336	0.0761	0.0028	1088.0	24.0	1075.0	18.0	1107	81	1.2	0.5
92	22.4	24.9	1.6	11.7	0.5	28	0.47	2.0220	0.0850	0.19050	0.00520	0.4135	0.0765	0.0031	1119.0	28.0	1123.0	28.0	1082	85	-0.4	-0.1
89	20.9	407.9	8.8	110.5	8.9	434	0.27	2.5000	0.2000	0.19800	0.01300	0.9836	0.0917	0.0023	1260.0	59.0	1157.0	71.0	1449	50	8.2	1.7
170	21.0	341.0	34.0	16.9	2.2	345	0.05	3.2040	0.1000	0.21290	0.00670	0.9234	0.1100	0.0019	1459.0	26.0	1242.0	35.0	1798	31	14.9	8.3
83	12.3	418.0	26.0	100.0	14.0	442	0.24	3.0630	0.0880	0.21810	0.00430	0.7747	0.1016	0.0021	1425.0	23.0	1271.0	23.0	1650	38	10.8	6.7
229	23.8	893.0	60.0	34.3	1.6	901	0.04	3.1230	0.0770	0.23170	0.00440	0.9222	0.0989	0.0015	1438.0	18.0	1346.0	22.0	1601	28	6.4	5.1
65	21.1	103.7	3.8	54.1	1.8	116	0.52	2.8240	0.0620	0.23250	0.00330	0.4958	0.0877	0.0018	1362.0	17.0	1347.0	17.0	1373	41	1.1	0.9
266	18.4	38.3	4.3	16.8	1.1	42	0.44	2.8370	0.0880	0.23210	0.00400	0.2225	0.0890	0.0033	1362.0	23.0	1347.0	20.0	1395	71	1.1	0.7
228	21.5	34.1	0.7	32.3	1.8	42	0.95	2.8360	0.0750	0.23280	0.00300	0.2096	0.0892	0.0023	1362.0	20.0	1349.0	15.0	1403	48	1.0	0.7
197	22.3	38.1	1.0	24.9	0.5	44	0.65	2.7380	0.0800	0.23290	0.00360	0.0714	0.0861	0.0026	1342.0	21.0	1351.0	19.0	1334	59	-0.7	-0.4
289	22.4	54.3	4.3	26.1	1.1	60	0.48	2.8590	0.0730	0.23550	0.00370	0.4958	0.0879	0.0019	1372.0	19.0	1365.0	19.0	1377	42	0.5	0.4
94	22.3	99.1	3.3	31.9	2.0	107	0.32	2.8810	0.0670	0.23810	0.00340	0.4073	0.0883	0.0018	1375.0	17.0	1376.0	18.0	1394	40	-0.1	-0.1
67	22.3	102.7	7.8	63.6	4.8	118	0.62	3.0180	0.0700	0.24270	0.00340	0.5047	0.0908	0.0018	1414.0	18.0	1402.0	17.0	1444	37	0.8	0.7
96	22.0	68.0	10.0	45.8	3.8	79	0.67	3.4340	0.1100	0.24340	0.00380	0.5086	0.1022	0.0027	1507.0	24.0	1404.0	19.0	1663	47	6.8	4.3
41	17.8	62.8	2.8	53.0	1.6	75	0.84	3.0470	0.0810	0.24380	0.00290	0.3946	0.0909	0.0021	1419.0	20.0	1406.0	15.0	1447	44	0.9	0.7
133	22.4	165.0	10.0	38.1	3.2	174	0.23	2.9960	0.0580	0.24400	0.00230	0.5290	0.0900	0.0015	1405.0	15.0	1407.0	12.0	1424	32	-0.1	-0.1
32	22.4	59.2	1.3	33.4	0.9	67	0.56	3.0480	0.0710	0.24420	0.00270	0.1681	0.0903	0.0020	1421.0	18.0	1408.0	14.0	1432	41	0.9	0.7
35	22.3	148.6	7.1	100.1	4.4	172	0.67	3.0450	0.0570	0.24530	0.00220	0.3418	0.0902	0.0015	1418.2	14.0	1414.0	12.0	1427	31	0.3	0.3
242	18.0	157.0	15.0	41.3	3.2	167	0.26	3.0270	0.0610	0.24580	0.00350	0.4538	0.0899	0.0018	1415.0	15.0	1416.0	18.0	1426	38	-0.1	-0.1
70	22.4	80.7	2.9	65.0	1.1	96	0.81	3.0720	0.0810	0.24710	0.00400	0.5032	0.0902	0.0021	1423.0	20.0	1425.0	21.0	1435	43	-0.1	-0.1
10	22.3	53.5	2.1	44.6	1.7	64	0.83	3.0820	0.0740	0.24780	0.00310	0.3697	0.0900	0.0022	1426.0	18.0	1426.0	16.0	1419	46	0.0	0.0
44	21.3	149.4	8.8	45.6	2.3	160	0.31	3.1240	0.0630	0.24810	0.00260	0.3660	0.0918	0.0019	1437.0	16.0	1428.0	14.0	1457	38	0.6	0.6
297	22.4	171.0	15.0	175.5	2.1	212	1.03	3.1030	0.0630	0.24820	0.00290	0.5863	0.0900	0.0015	1432.0	15.0	1431.0	15.0	1424	33	0.1	0.1
222	22.4	97.2	3.5	52.8	0.7	110	0.54	3.1070	0.0630	0.24930	0.00280	0.4161	0.0911	0.0017	1434.0	16.0	1434.0	15.0	1446	36	0.0	0.0
160	22.3	56.1	4.1	33.5	2.0	64	0.60	3.0660	0.0790	0.24950	0.00310	0.3809	0.0902	0.0021	1428.0	20.0	1435.0	16.0	1425	44	-0.5	-0.4
71	22.3	124.1	5.4	49.7	1.7	136	0.40	3.1080	0.0790	0.24980	0.00550	0.6974	0.0900	0.0018	1432.0	20.0	1436.0	28.0	1427	39	-0.3	-0.2
213	22.4	53.9	3.3	24.2	1.4	60	0.45	3.1460	0.0800	0.24990	0.00370	0.4889	0.0912	0.0020	1443.0	20.0	1437.0	19.0	1443	42	0.4	0.3
214	21.9	97.0	6.0	35.8	1.9	105	0.37	3.0720	0.0630	0.24980	0.00250	0.4301	0.0902	0.0017	1424.0	16.0	1437.0	13.0	1431	35	-0.9	-0.8
122	19.3	105.0	4.0	57.7	1.5	119	0.55	3.0890	0.0620	0.25000	0.00290	0.3218	0.0908	0.0017	1429.0	15.0	1438.0	15.0	1445	35	-0.6	-0.6
206	17.1	184.4	6.0	194.6	9.4	230	1.06	3.1700	0.0840	0.25110	0.00550	0.8502	0.0929	0.0017	1450.0	21.0	1443.0	28.0	1483	34	0.5	0.3
211	15.8	595.0	93.0	125.0	18.0	624	0.21	3.7160	0.0930	0.25180	0.00530	0.8752	0.1067	0.0017	1575.0	20.0	1447.0	27.0	1748	29	8.1	6.4
36	22.4	83.0	2.5	48.9	1.1	94	0.59	3.1510	0.0640	0.25240	0.00220	0.2990	0.0912	0.0017	1445.0	15.0	1452.0	11.0	1448	35	-0.5	-0.5
98	19.8	108.6	5.4	45.6	1.1	119	0.42	3.1650	0.0660	0.25300	0.00350	0.6053	0.0911	0.0017	1447.0	16.0	1453.0	18.0	1447	35	-0.4	-0.4
144	22.3	134.5	4.2	51.3	1.7	147	0.38	3.1670	0.0680	0.25310	0.00290	0.5556	0.0910	0.0017	1448.0	16.0	1454.0	15.0	1452	35	-0.4	-0.4

Table 7: LA-ICP-MS Zircon Isotopic and Age Data Table: SC15-03: Scott County, KS Paleosol Sample

								Corrected Isotopic Ratios[3]							Ages (Ma)[7]							
Grain #	Signal Duration (s)	U (ppm)[1]	2σ	Th (ppm)[1]	2σ	eU (ppm)[2]	Th/U	$^{207}Pb/^{235}U$	2σ[4]	$^{206}Pb/^{238}U$	2σ[4]	Rho[5]	$^{207}Pb/^{206}Pb$[6]	2σ	$^{207}Pb/^{235}U$	2σ	$^{206}Pb/^{238}U$	2σ	$^{207}Pb/^{206}Pb$	2σ	% Disc.[8]	Uncert. Wtd. Disc.[9]
52	14.8	214.0	10.0	82.9	3.4	233	0.39	3.1450	0.0710	0.25320	0.00390	0.5959	0.0903	0.0018	1443.0	18.0	1455.0	20.0	1437	36	-0.8	-0.7
162	22.3	152.9	8.1	66.8	3.2	169	0.44	3.1620	0.0630	0.25400	0.00340	0.5515	0.0908	0.0015	1447.0	15.0	1459.0	17.0	1444	33	-0.8	-0.8
218	12.4	299.0	16.0	219.0	18.0	350	0.73	3.3230	0.0790	0.25440	0.00440	0.7474	0.0950	0.0018	1488.0	19.0	1461.0	23.0	1526	35	1.8	1.4
143	19.6	183.0	11.0	54.8	1.7	196	0.30	3.1740	0.0590	0.25490	0.00310	0.4908	0.0908	0.0016	1450.0	14.0	1463.0	16.0	1439	33	-0.9	-0.9
201	12.7	179.1	5.9	70.4	1.8	196	0.39	3.1830	0.0720	0.25520	0.00430	0.5104	0.0899	0.0018	1454.0	18.0	1465.0	22.0	1426	37	-0.8	-0.6
155	18.0	208.9	6.3	149.0	18.0	244	0.71	3.2660	0.0810	0.25650	0.00550	0.8232	0.0920	0.0016	1471.0	20.0	1471.0	28.0	1467	35	0.0	0.0
187	22.3	91.6	5.0	48.2	2.1	103	0.53	3.1500	0.0750	0.25610	0.00570	0.6803	0.0906	0.0019	1447.0	18.0	1472.0	29.0	1431	39	-1.7	-1.4
207	21.5	99.7	6.0	47.3	2.0	111	0.47	3.1230	0.0640	0.25650	0.00360	0.4595	0.0888	0.0018	1439.0	16.0	1474.0	19.0	1405	37	-2.4	-2.2
192	22.3	294.0	20.0	255.4	5.2	354	0.87	3.2500	0.0730	0.26050	0.00540	0.7553	0.0919	0.0017	1471.0	17.0	1491.0	28.0	1460	35	-1.4	-1.2
264	21.9	189.0	22.0	104.0	11.0	213	0.55	3.3080	0.0690	0.26130	0.00330	0.7385	0.0917	0.0015	1483.0	16.0	1496.0	17.0	1461	30	-0.9	-0.8
221	22.7	158.0	6.0	43.7	2.8	168	0.28	3.3370	0.0710	0.26470	0.00410	0.7107	0.0920	0.0015	1491.0	17.0	1513.0	21.0	1467	33	-1.5	-1.3
154	22.4	780.0	100.0	6.1	0.4	781	0.01	3.7520	0.0680	0.26600	0.00290	0.7814	0.1029	0.0014	1581.6	15.0	1520.0	15.0	1676	26	3.9	4.1
227	22.8	273.0	34.0	121.0	12.0	301	0.44	3.4300	0.0910	0.27330	0.00660	0.9038	0.0922	0.0014	1508.0	21.0	1556.0	33.0	1470	29	-3.2	-2.3
14	22.2	369.0	22.0	98.4	5.9	392	0.27	4.0480	0.1000	0.27310	0.00600	0.8596	0.1069	0.0017	1643.0	20.0	1559.0	31.0	1746	30	5.1	4.2
58	21.9	399.0	23.0	73.7	2.9	416	0.18	3.9230	0.0720	0.27400	0.00340	0.7997	0.1041	0.0015	1620.0	15.0	1560.0	17.0	1698	26	3.7	4.0
285	15.1	270.1	9.6	15.3	0.7	274	0.06	3.7860	0.0730	0.27760	0.00370	0.6530	0.0981	0.0016	1589.0	15.0	1579.0	19.0	1586	31	0.6	0.7
110	10.9	486.0	11.0	4.4	1.1	487	0.01	3.8990	0.0990	0.28260	0.00450	0.7915	0.1005	0.0018	1612.0	20.0	1608.0	23.0	1632	34	0.2	0.2
38	17.9	170.0	25.0	15.3	1.2	174	0.09	3.8700	0.1300	0.28400	0.00750	0.9077	0.0976	0.0019	1606.0	27.0	1610.0	38.0	1579	36	-0.2	-0.1
106	21.8	891.0	39.0	231.7	5.6	945	0.26	4.2140	0.0760	0.28460	0.00340	0.8436	0.1080	0.0015	1677.2	15.0	1614.0	17.0	1765	26	3.8	4.2
86	22.4	114.1	7.5	57.3	1.3	128	0.50	4.0450	0.0980	0.28650	0.00540	0.6246	0.1026	0.0022	1642.0	20.0	1623.0	27.0	1668	39	1.2	1.0
258	8.2	531.0	91.0	51.0	7.6	543	0.10	3.9700	0.2400	0.28800	0.01500	0.9727	0.1023	0.0018	1639.0	47.0	1630.0	77.0	1665	32	0.5	0.2
62	22.3	132.1	4.5	43.8	1.6	142	0.33	4.0560	0.0870	0.29060	0.00370	0.5510	0.1019	0.0019	1645.0	18.0	1644.0	18.0	1660	33	0.1	0.1
88	22.9	729.0	44.0	376.0	20.0	817	0.52	4.1110	0.1100	0.29140	0.00700	0.8742	0.1040	0.0017	1662.0	22.0	1646.0	35.0	1696	30	1.0	0.7
17	11.1	64.2	1.6	19.1	0.5	69	0.30	4.2700	0.1200	0.29400	0.00500	0.3085	0.1058	0.0028	1689.0	23.0	1661.0	25.0	1728	50	1.7	1.2
204	18.2	510.0	54.0	60.0	2.9	524	0.12	4.1220	0.1000	0.29280	0.00610	0.8579	0.1015	0.0017	1656.0	20.0	1662.0	29.0	1652	30	-0.4	-0.3
49	22.4	50.5	4.1	39.3	2.9	60	0.78	4.1840	0.0880	0.29390	0.00350	0.2758	0.1037	0.0021	1673.0	18.0	1663.0	18.0	1684	39	0.6	0.6
267	14.8	42.6	0.9	17.6	0.5	47	0.41	4.2990	0.1100	0.29550	0.00440	0.3693	0.1047	0.0026	1697.0	21.0	1668.0	22.0	1708	45	1.7	1.4
208	15.1	355.0	23.0	39.0	2.3	364	0.11	4.2730	0.0990	0.29640	0.00490	0.7872	0.1043	0.0018	1687.0	19.0	1673.0	24.0	1703	32	0.8	0.7
61	16.8	589.0	51.0	220.0	13.0	641	0.37	4.2260	0.0820	0.29730	0.00410	0.7070	0.1041	0.0017	1678.0	16.0	1680.0	21.0	1698	29	-0.1	-0.1
288	22.4	133.8	6.8	87.4	3.3	154	0.65	4.2800	0.0890	0.29830	0.00430	0.6394	0.1037	0.0018	1688.0	17.0	1685.0	21.0	1689	33	0.2	0.2
250	22.3	80.0	14.0	21.2	2.2	85	0.27	4.2770	0.1100	0.30020	0.00500	0.5349	0.1048	0.0022	1686.0	21.0	1691.0	25.0	1707	40	-0.3	-0.2
132	21.3	104.9	7.6	60.4	4.7	119	0.58	4.2160	0.0770	0.30040	0.00330	0.3884	0.1033	0.0018	1676.4	15.0	1695.0	17.0	1686	33	-1.1	-1.2
82	22.3	114.9	4.7	39.5	0.9	124	0.34	4.3610	0.1100	0.30180	0.00660	0.6620	0.1041	0.0022	1702.0	21.0	1703.0	33.0	1697	39	-0.1	0.0
64	19.1	442.0	12.0	32.6	1.2	450	0.07	4.3370	0.0840	0.30320	0.00390	0.6559	0.1040	0.0016	1701.0	16.0	1706.0	19.0	1694	29	-0.3	-0.3
135	12.3	604.0	14.0	87.8	3.3	625	0.15	4.2810	0.0760	0.30330	0.00380	0.7017	0.1034	0.0016	1689.3	15.0	1707.0	19.0	1685	28	-1.0	-1.2
159	17.5	642.0	29.0	198.1	6.9	689	0.31	4.4180	0.0910	0.30410	0.00480	0.8391	0.1063	0.0016	1715.0	17.0	1711.0	24.0	1738	27	0.2	0.2
57	13.7	277.0	13.0	48.9	1.4	288	0.18	4.3430	0.0950	0.30340	0.00550	0.6680	0.1028	0.0019	1702.0	18.0	1717.0	27.0	1672	33	-0.9	-0.8
142	17.9	131.1	4.8	35.0	0.9	139	0.27	4.3060	0.0920	0.30560	0.00410	0.5621	0.1029	0.0018	1695.0	18.0	1718.0	20.0	1682	32	-1.4	-1.3
176	22.3	125.1	4.5	13.6	2.2	128	0.11	4.4280	0.0960	0.30700	0.00620	0.5903	0.1042	0.0021	1719.0	18.0	1725.0	31.0	1710	37	-0.3	-0.3
100	11.4	144.2	5.3	76.2	3.6	162	0.53	4.4200	0.1400	0.30590	0.00660	0.8422	0.1040	0.0019	1713.0	26.0	1726.0	34.0	1694	34	-0.8	-0.5
212	20.4	838.0	27.0	143.0	3.6	872	0.17	4.5350	0.1100	0.30720	0.00520	0.9103	0.1076	0.0015	1735.0	21.0	1726.0	26.0	1758	26	0.5	0.4

Table 7: LA-ICP-MS Zircon Isotopic and Age Data Table: SC15-03: Scott County, KS Paleosol Sample

								Corrected Isotopic Ratios[3]							Ages (Ma)[7]							
Grain #	Signal Duration (s)	U (ppm)[1]	2σ	Th (ppm)[1]	2σ	eU (ppm)[2]	Th/U	$^{207}Pb/^{235}U$	2σ[4]	$^{206}Pb/^{238}U$	2σ[4]	Rho[5]	$^{207}Pb/^{206}Pb$[6]	2σ	$^{207}Pb/^{235}U$	2σ	$^{206}Pb/^{238}U$	2σ	$^{207}Pb/^{206}Pb$	2σ	% Disc.[8]	Uncert. Wtd. Disc.[9]
56	22.4	183.6	5.6	34.7	1.6	192	0.19	4.4400	0.0850	0.30750	0.00430	0.5812	0.1057	0.0018	1720.0	16.0	1728.0	21.0	1725	31	-0.5	-0.5
43	22.3	141.2	4.3	36.0	0.8	150	0.25	4.5130	0.0870	0.30870	0.00310	0.4561	0.1060	0.0018	1734.0	16.0	1734.0	15.0	1728	31	0.0	0.0
113	22.0	312.0	11.0	144.2	3.6	346	0.46	4.4420	0.0820	0.30890	0.00280	0.5884	0.1055	0.0016	1719.1	15.0	1735.0	14.0	1720	27	-0.9	-1.1
239	19.6	105.2	3.3	22.6	0.5	110	0.21	4.5050	0.0990	0.31090	0.00420	0.6834	0.1060	0.0018	1732.0	18.0	1744.0	20.0	1731	32	-0.7	-0.7
129	20.8	143.6	3.3	44.2	1.4	154	0.31	4.5210	0.0870	0.31590	0.00330	0.5861	0.1044	0.0017	1737.0	16.0	1771.0	16.0	1701	29	-2.0	-2.1
130	8.9	28.9	2.1	12.7	1.1	32	0.44	4.6000	0.1700	0.31710	0.00720	0.0777	0.1061	0.0045	1752.0	33.0	1775.0	35.0	1719	80	-1.3	-0.7
99	22.9	274.0	28.0	39.3	3.9	283	0.14	4.7140	0.1200	0.31790	0.00650	0.9027	0.1088	0.0017	1776.0	23.0	1778.0	32.0	1777	28	-0.1	-0.1
202	10.5	296.0	19.0	120.4	9.1	324	0.41	4.7100	0.1300	0.32010	0.00810	0.7730	0.1080	0.0023	1767.0	23.0	1789.0	40.0	1763	38	-1.2	-1.0
215	21.8	97.3	7.3	15.2	0.8	101	0.16	4.6580	0.0970	0.32040	0.00380	0.4815	0.1070	0.0020	1761.0	17.0	1791.0	19.0	1745	34	-1.7	-1.8
186	21.4	188.6	9.4	47.1	1.7	200	0.25	4.6970	0.1100	0.32240	0.00810	0.7837	0.1046	0.0020	1768.0	21.0	1799.0	39.0	1705	36	-1.8	-1.5
184	21.9	195.0	14.0	33.5	1.2	203	0.17	4.7090	0.1200	0.33270	0.00680	0.6829	0.1035	0.0021	1766.0	21.0	1850.0	33.0	1684	39	-4.8	-4.0
140	22.1	128.0	11.0	40.6	1.2	138	0.32	4.7810	0.1100	0.33550	0.00470	0.7421	0.1041	0.0017	1785.0	20.0	1864.0	23.0	1704	28	-4.4	-4.0
191	21.4	129.0	13.0	24.9	3.8	135	0.19	5.1600	0.1700	0.34270	0.00850	0.7010	0.1091	0.0024	1841.0	28.0	1903.0	40.0	1775	37	-3.4	-2.2

[1]U and Th have been concentrations and the Th/U ratios are calculated relative to the GJ-1 standard value using 287 ± 76 ppm for U and 8.4 ± 2.6 ppm for Th (Jackson et al., 2004)

[2]Equivalent U defined by the equation: eU = U ppm + 0.235*Th ppm

[3]Corrected for U-Pb fractionation and background and normalized to the GJ-1 standard value: $^{207}Pb/^{235}U$ =0.8093 ± 0.0009 and $^{206}Pb/^{238}U$ = 0.09761 ± 0.00011 (Jackson et al., 2004)

[4]Propagated uncertainty of internal uncertanties (2SE) and within run reproducibility of GJ-1 (2SE)

[5]Uncertainty correlation between $^{206}Pb/^{238}U$ and $^{207}Pb/^{235}U$ uncertainties

[6]Corrected for background and Pb isotopicfractionation using the GJ-1 standard value: $^{207}Pb/^{206}Pb$ = 0.06014 ± 0.00001 (Jackson et al., 2004)

[7]U-Pb ages calculated relative to the GJ-1 standard

[8]Discordance defined as (($^{207}Pb/^{235}U$age - $^{206}Pb/^{238}U$age)/($^{207}Pb/^{235}U$ age))*100

[9]Uncertainty weighted age difference defined as ($^{207}Pb/^{235}U$ age - $^{206}Pb/^{238}U$ age)/($^{207}Pb/^{235}U$ age uncertainty)

Rows highlighted in grey were not used in interpretations or calculations based on discordance or short analysis times

Table 8: LA-ICP-MS Zircon Isotopic and Age Data Table: SC15-16: Scott County, KS Calcrete Sample

								Corrected Isotopic Ratios[3]							Ages (Ma)[7]							
Grain #	Signal Duration (s)	U (ppm)[1]	2σ	Th (ppm)[1]	2σ	eU (ppm)[2]	Th/U	$^{207}Pb/^{235}U$	2σ[4]	$^{206}Pb/^{238}U$	2σ[4]	Rho[5]	$^{207}Pb/^{206}Pb$[6]	2σ	$^{207}Pb/^{235}U$	2σ	$^{206}Pb/^{238}U$	2σ	$^{207}Pb/^{206}Pb$	2σ	% Disc.[8]	Uncert. Wtd. Disc.[9]
215	12.0	241.0	13.0	177.5	7.3	283	0.74	0.0238	0.0042	0.00301	0.00015	0.1902	0.0553	0.0098	23.8	4.2	19.4	0.9	380	330	18.5	1.0
97	7.7	74.9	3.5	128.4	7.3	105	1.71	0.0360	0.0110	0.00439	0.00034	0.1659	0.0620	0.0180	36.0	11.0	28.3	2.2	340	560	21.4	0.7
158	21.4	88.8	6.9	46.0	5.3	100	0.52	0.0289	0.0055	0.00445	0.00018	0.0064	0.0462	0.0098	28.6	5.5	28.6	1.2	120	310	0.0	0.0
66	22.5	211.0	13.0	123.1	5.8	240	0.58	0.0304	0.0033	0.00479	0.00014	0.0507	0.0477	0.0053	30.3	3.2	30.8	0.9	40	190	-1.7	-0.2
205	22.4	112.0	7.9	109.6	5.6	138	0.98	0.0323	0.0061	0.00490	0.00017	0.0377	0.0480	0.0097	32.0	6.1	31.5	1.1	70	320	1.6	0.1
123	20.4	556.0	28.0	378.0	22.0	645	0.68	0.0316	0.0026	0.00492	0.00031	0.3080	0.0469	0.0034	31.5	2.5	31.6	2.0	50	130	-0.3	0.0
144	21.6	70.1	2.5	79.1	2.8	89	1.13	0.0319	0.0070	0.00491	0.00021	0.0009	0.0480	0.0110	31.4	6.8	31.6	1.3	-50	350	-0.6	0.0
32	8.2	56.9	2.9	74.4	4.7	74	1.31	0.0440	0.0140	0.00497	0.00043	0.1406	0.0700	0.0230	43.0	13.0	32.0	2.8	690	580	25.6	0.8
165	15.6	294.0	13.0	133.0	6.4	325	0.45	0.0357	0.0030	0.00497	0.00020	0.2203	0.0495	0.0045	35.6	2.9	32.0	1.3	220	170	10.1	1.2
174	10.9	138.8	5.4	204.4	5.2	187	1.47	0.0384	0.0061	0.00553	0.00031	0.0757	0.0501	0.0089	38.0	6.0	35.6	2.0	180	310	6.3	0.4
49	22.4	236.0	22.0	188.0	30.0	280	0.80	0.0387	0.0035	0.00564	0.00016	0.0069	0.0495	0.0046	38.4	3.4	36.3	1.0	170	170	5.6	0.6
133	19.5	383.0	16.0	263.7	6.0	445	0.69	0.0349	0.0023	0.00574	0.00014	0.1714	0.0444	0.0029	34.7	2.2	36.9	0.9	-40	120	-6.4	-1.0
298	8.9	79.1	2.6	82.7	5.8	99	1.05	0.0380	0.0120	0.00575	0.00035	0.0364	0.0520	0.0160	38.0	12.0	37.0	2.3	190	480	2.6	0.1
124	21.2	118.4	9.4	126.0	14.0	148	1.06	0.0410	0.0051	0.00582	0.00030	0.3191	0.0511	0.0060	41.1	4.8	37.4	1.9	220	210	9.0	0.8
200	19.7	164.4	7.9	59.4	4.3	178	0.36	0.0373	0.0043	0.00586	0.00020	0.0977	0.0470	0.0056	37.7	4.3	37.6	1.3	70	210	0.3	0.0
172	21.3	750.0	120.0	580.0	100.0	886	0.77	0.0405	0.0028	0.00598	0.00019	0.2850	0.0493	0.0032	40.5	2.7	38.4	1.2	190	120	5.2	0.8
242	12.8	246.0	25.0	193.0	19.0	291	0.78	0.0434	0.0054	0.00613	0.00021	0.0753	0.0496	0.0062	43.9	5.0	39.4	1.4	210	220	10.3	0.9
29	21.2	133.6	8.4	116.7	8.9	161	0.87	0.0517	0.0048	0.00621	0.00025	0.1269	0.0618	0.0059	50.9	4.7	39.9	1.6	540	190	21.6	2.3
117	22.4	471.0	16.0	166.0	17.0	510	0.35	0.0438	0.0025	0.00665	0.00015	0.2632	0.0478	0.0026	43.5	2.4	42.7	1.0	100	110	1.8	0.3
12	21.6	325.0	15.0	54.0	3.1	338	0.17	0.0419	0.0030	0.00668	0.00019	0.0218	0.0448	0.0033	41.6	2.9	42.9	1.2	-30	130	-3.1	-0.4
221	22.4	516.0	65.0	617.0	55.0	661	1.20	0.0420	0.0025	0.00678	0.00025	0.3023	0.0447	0.0026	41.7	2.4	43.6	1.6	-30	100	-4.6	-0.8
51	21.3	168.7	9.0	77.1	3.9	187	0.46	0.0440	0.0039	0.00720	0.00019	0.0740	0.0446	0.0040	44.0	3.7	46.2	1.2	-50	150	-5.0	-0.6
251	22.2	251.0	26.0	271.0	30.0	315	1.08	0.0499	0.0040	0.00738	0.00021	0.0963	0.0489	0.0038	49.3	3.9	47.4	1.3	180	140	3.9	0.5
227	22.4	552.0	31.0	106.0	3.4	577	0.19	0.0603	0.0025	0.00905	0.00017	0.1451	0.0482	0.0020	59.6	2.4	58.1	1.1	110	84	2.5	0.6
92	22.5	230.0	13.0	210.0	13.0	279	0.91	0.0590	0.0040	0.00917	0.00021	0.0451	0.0467	0.0032	58.1	3.9	58.8	1.3	50	130	-1.2	-0.2
261	23.0	797.0	80.0	66.9	6.2	813	0.08	0.0619	0.0024	0.00940	0.00021	0.3222	0.0486	0.0018	60.9	2.3	60.3	1.3	130	77	1.0	0.3
106	22.5	81.0	13.0	40.1	7.0	90	0.50	0.0700	0.0120	0.01000	0.00038	0.0368	0.0501	0.0089	69.0	11.0	64.1	2.4	270	290	7.1	0.4
73	15.3	419.0	14.0	151.7	5.4	455	0.36	0.0694	0.0038	0.01001	0.00024	0.2219	0.0509	0.0027	68.1	3.6	64.2	1.5	220	110	5.7	1.1
292	18.8	213.0	25.0	35.8	5.0	221	0.17	0.0646	0.0054	0.01007	0.00032	0.0464	0.0456	0.0044	63.4	5.2	64.6	2.1	-10	160	-1.9	-0.2
7	21.1	80.9	3.5	42.4	2.0	91	0.52	0.0775	0.0074	0.01017	0.00031	0.0345	0.0558	0.0060	75.3	7.0	65.3	2.0	430	200	13.3	1.4
38	22.4	379.0	22.0	51.5	2.1	391	0.14	0.0681	0.0036	0.01018	0.00022	0.1020	0.0483	0.0025	66.8	3.5	65.3	1.4	117	100	2.2	0.4
253	11.2	371.0	18.0	181.6	3.7	414	0.49	0.0701	0.0049	0.01019	0.00024	0.3159	0.0490	0.0031	68.7	4.6	65.3	1.5	150	130	4.9	0.7
90	22.4	188.0	11.0	92.2	2.9	210	0.49	0.0658	0.0054	0.01019	0.00024	0.0090	0.0470	0.0040	64.4	5.1	65.4	1.5	60	150	-1.6	-0.2
177	18.9	1064.0	45.0	476.1	9.2	1176	0.45	0.0652	0.0026	0.01020	0.00023	0.4787	0.0465	0.0015	64.4	2.4	65.4	1.5	32	66	-1.6	-0.4
126	22.4	391.0	24.0	146.9	9.3	426	0.38	0.0682	0.0043	0.01024	0.00045	0.4846	0.0477	0.0025	67.4	4.1	65.7	2.9	100	96	2.5	0.4
70	22.5	126.9	2.2	45.0	1.4	137	0.35	0.0681	0.0060	0.01030	0.00028	0.1046	0.0481	0.0043	66.5	5.7	66.0	1.8	90	160	0.8	0.1
17	12.3	347.0	20.0	151.0	13.0	382	0.44	0.0689	0.0045	0.01036	0.00026	0.2249	0.0486	0.0032	67.6	4.3	66.4	1.6	120	130	1.8	0.3
81	22.4	137.0	11.0	87.4	5.3	158	0.64	0.0705	0.0054	0.01047	0.00030	0.1964	0.0489	0.0036	68.9	5.1	67.1	1.9	150	140	2.6	0.4
249	22.4	42.5	1.7	43.1	1.8	53	1.01	0.0740	0.0130	0.01048	0.00047	0.1469	0.0512	0.0087	71.0	12.0	67.2	3.0	220	280	5.4	0.3
35	22.2	219.0	18.0	114.0	11.0	246	0.52	0.0714	0.0046	0.01052	0.00023	0.1827	0.0495	0.0033	69.8	4.4	67.5	1.5	170	130	3.3	0.5
196	17.9	102.9	8.2	45.2	4.0	114	0.44	0.0739	0.0079	0.01055	0.00031	0.0302	0.0506	0.0056	73.1	7.7	67.7	2.0	230	210	7.4	0.7

Table 8: LA-ICP-MS Zircon Isotopic and Age Data Table: SC15-16: Scott County, KS Calcrete Sample

								Corrected Isotopic Ratios[3]							Ages (Ma)[7]							
Grain #	Signal Duration (s)	U (ppm)[1]	2σ	Th (ppm)[1]	2σ	eU (ppm)[2]	Th/U	$^{207}Pb/^{235}U$	2σ[4]	$^{206}Pb/^{238}U$	2σ[4]	Rho[5]	$^{207}Pb/^{206}Pb$[6]	2σ	$^{207}Pb/^{235}U$	2σ	$^{206}Pb/^{238}U$	2σ	$^{207}Pb/^{206}Pb$	2σ	% Disc.[8]	Uncert. Wtd. Disc.[9]
21	22.4	203.7	7.0	100.9	4.0	227	0.50	0.0710	0.0045	0.01061	0.00028	0.1901	0.0485	0.0030	69.5	4.3	68.0	1.8	110	120	2.2	0.3
182	22.4	162.0	11.0	54.7	3.3	175	0.34	0.0752	0.0052	0.01064	0.00027	0.1055	0.0511	0.0035	74.0	5.0	68.2	1.7	260	130	7.8	1.2
34	22.4	346.0	17.0	83.1	2.0	366	0.24	0.0701	0.0033	0.01070	0.00026	0.2094	0.0473	0.0021	68.7	3.1	68.6	1.7	76	87	0.1	0.0
294	22.5	141.0	6.1	116.4	2.5	168	0.83	0.0754	0.0057	0.01079	0.00024	0.0253	0.0508	0.0040	73.5	5.4	69.2	1.5	220	150	5.9	0.8
248	22.5	153.4	8.4	52.5	4.5	166	0.34	0.0714	0.0059	0.01082	0.00033	0.0343	0.0474	0.0040	69.7	5.6	69.4	2.1	80	150	0.4	0.1
86	22.4	175.6	7.5	71.0	3.1	192	0.40	0.0687	0.0047	0.01083	0.00025	0.2254	0.0460	0.0035	67.8	4.6	69.5	1.6	30	130	-2.5	-0.4
142	21.7	272.0	17.0	65.9	2.4	287	0.24	0.0743	0.0043	0.01084	0.00025	0.1377	0.0497	0.0029	72.6	4.1	69.5	1.6	190	110	4.3	0.8
119	5.3	107.5	3.6	21.7	0.6	113	0.20	0.0750	0.0160	0.01088	0.00058	0.0159	0.0510	0.0120	73.0	15.0	69.8	3.7	250	430	4.4	0.2
272	21.3	68.2	3.4	59.7	1.3	82	0.88	0.0805	0.0095	0.01092	0.00042	0.1337	0.0555	0.0072	79.0	9.2	70.0	2.7	370	240	11.4	1.0
56	22.1	26.3	2.8	50.8	4.8	38	1.93	0.0600	0.0200	0.01102	0.00058	0.0760	0.0360	0.0150	57.0	19.0	70.7	3.7	-390	450	-24.0	-0.7
125	22.4	282.0	37.0	218.0	32.0	333	0.77	0.0747	0.0040	0.01098	0.00037	0.1601	0.0495	0.0026	73.0	3.7	70.7	2.3	160	100	3.2	0.6
282	22.4	169.3	4.7	87.9	5.5	190	0.52	0.0712	0.0053	0.01102	0.00034	0.0040	0.0466	0.0036	69.6	5.0	70.7	2.1	50	140	-1.6	-0.2
77	22.4	156.9	8.8	46.5	3.8	168	0.30	0.0716	0.0064	0.01105	0.00031	0.1110	0.0470	0.0043	69.8	6.0	70.8	1.9	70	160	-1.4	-0.2
269	16.9	100.8	3.1	13.2	1.1	104	0.13	0.0787	0.0074	0.01104	0.00039	0.1687	0.0517	0.0049	76.5	7.0	70.8	2.5	270	180	7.5	0.8
254	13.8	220.0	20.0	126.0	13.0	250	0.57	0.0734	0.0072	0.01106	0.00031	0.1259	0.0486	0.0049	71.6	6.8	70.9	2.0	90	170	1.0	0.1
65	22.4	136.3	6.5	46.5	4.5	147	0.34	0.0713	0.0059	0.01111	0.00034	0.1478	0.0459	0.0038	69.6	5.6	71.2	2.2	40	150	-2.3	-0.3
247	11.5	123.1	3.5	54.6	1.8	136	0.44	0.0755	0.0075	0.01117	0.00038	0.0433	0.0502	0.0052	73.6	7.1	71.6	2.4	170	190	2.7	0.3
274	16.4	185.0	38.0	112.0	28.0	211	0.61	0.0801	0.0077	0.01118	0.00032	0.1827	0.0518	0.0048	77.9	7.3	71.7	2.0	240	180	8.0	0.8
16	19.0	122.8	5.1	46.3	1.8	134	0.38	0.0705	0.0063	0.01126	0.00035	0.0102	0.0465	0.0044	69.8	6.2	72.1	2.2	30	170	-3.3	-0.4
102	7.0	169.0	10.0	39.3	3.4	178	0.23	0.1020	0.0120	0.01127	0.00048	0.2594	0.0647	0.0087	98.0	11.0	72.2	3.1	730	290	26.3	2.3
116	22.4	89.0	10.0	36.3	3.9	98	0.41	0.0764	0.0091	0.01132	0.00028	0.1003	0.0491	0.0061	75.0	8.4	72.5	1.8	170	210	3.3	0.3
178	21.9	251.0	21.0	53.4	4.8	264	0.21	0.0779	0.0047	0.01132	0.00028	0.3094	0.0507	0.0030	76.0	4.5	72.6	1.8	210	120	4.5	0.8
226	22.4	95.5	6.3	44.5	1.5	106	0.47	0.0725	0.0070	0.01135	0.00037	0.0111	0.0477	0.0049	71.4	6.5	72.8	2.4	90	170	-2.0	-0.2
107	12.8	357.0	32.0	204.0	22.0	405	0.57	0.0800	0.0065	0.01138	0.00033	0.1657	0.0505	0.0040	77.9	6.1	72.9	2.1	220	160	6.4	0.8
211	22.4	85.6	5.0	45.5	1.2	96	0.53	0.0749	0.0085	0.01138	0.00033	0.2465	0.0476	0.0052	72.7	8.0	72.9	2.1	70	190	-0.3	0.0
161	22.5	131.6	8.0	133.0	10.0	163	1.01	0.0754	0.0067	0.01139	0.00035	0.1933	0.0490	0.0043	73.4	6.3	73.0	2.2	140	160	0.5	0.1
170	8.2	63.0	3.2	25.8	1.5	69	0.41	0.0790	0.0160	0.01140	0.00074	0.2287	0.0520	0.0120	76.0	15.0	73.0	4.7	220	400	3.9	0.2
250	10.0	80.1	8.6	51.5	4.5	92	0.64	0.0680	0.0140	0.01140	0.00053	0.0121	0.0435	0.0088	66.0	13.0	73.1	3.4	-50	310	-10.8	-0.5
237	22.5	266.0	11.0	125.7	9.1	296	0.47	0.0737	0.0044	0.01142	0.00032	0.2904	0.0473	0.0027	72.0	4.1	73.2	2.0	70	110	-1.7	-0.3
55	22.5	55.8	5.1	38.8	2.9	65	0.70	0.0770	0.0110	0.01145	0.00043	0.0408	0.0505	0.0078	75.0	10.0	73.3	2.7	190	260	2.3	0.2
179	22.4	209.0	10.0	99.6	5.5	232	0.48	0.0771	0.0048	0.01144	0.00027	0.1080	0.0477	0.0029	75.2	4.5	73.3	1.7	80	110	2.5	0.4
23	21.4	103.5	5.6	61.9	2.4	118	0.60	0.0828	0.0069	0.01146	0.00029	0.2317	0.0524	0.0043	80.3	6.4	73.4	1.8	240	160	8.6	1.1
64	22.4	69.5	1.3	20.4	0.4	74	0.29	0.0710	0.0110	0.01147	0.00039	0.1112	0.0457	0.0073	68.0	10.0	73.5	2.5	-10	260	-8.1	-0.6
122	21.8	78.1	8.8	42.2	3.3	88	0.54	0.0812	0.0100	0.01148	0.00039	0.0656	0.0535	0.0070	78.4	9.4	73.6	2.5	310	220	6.1	0.5
186	22.4	44.5	1.7	16.7	1.3	48	0.38	0.0780	0.0150	0.01148	0.00045	0.0319	0.0503	0.0096	76.0	14.0	73.6	2.9	90	320	3.2	0.2
105	22.5	43.8	1.6	30.1	1.2	51	0.69	0.0760	0.0130	0.01150	0.00040	0.1019	0.0477	0.0078	76.0	12.0	73.7	2.5	80	270	3.0	0.2
153	10.4	135.0	11.0	101.0	10.0	159	0.75	0.0840	0.0100	0.01152	0.00054	0.2054	0.0511	0.0058	81.1	9.7	73.8	3.5	290	210	9.0	0.8
257	9.8	109.7	4.2	81.4	2.5	129	0.74	0.0832	0.0093	0.01155	0.00044	0.0785	0.0524	0.0059	82.3	8.4	74.0	2.8	370	220	10.1	1.0
78	22.4	139.2	9.0	101.1	5.1	163	0.73	0.0768	0.0061	0.01157	0.00029	0.0326	0.0483	0.0041	77.0	5.4	74.2	1.8	170	150	3.6	0.5
234	22.4	101.9	9.9	162.0	14.0	140	1.59	0.0812	0.0086	0.01157	0.00036	0.2021	0.0514	0.0054	78.6	8.0	74.2	2.3	180	190	5.6	0.5
197	8.8	97.5	6.8	97.4	7.2	120	1.00	0.1190	0.0170	0.01159	0.00069	0.1291	0.0760	0.0110	114.0	15.0	74.3	4.4	1000	270	34.8	2.6

Table 8: LA-ICP-MS Zircon Isotopic and Age Data Table: SC15-16: Scott County, KS Calcrete Sample

								Corrected Isotopic Ratios[3]							Ages (Ma)[7]							
Grain #	Signal Duration (s)	U (ppm)[1]	2σ	Th (ppm)[1]	2σ	eU (ppm)[2]	Th/U	$^{207}Pb/^{235}U$	2σ[4]	$^{206}Pb/^{238}U$	2σ[4]	Rho[5]	$^{207}Pb/^{206}Pb$[6]	2σ	$^{207}Pb/^{235}U$	2σ	$^{206}Pb/^{238}U$	2σ	$^{207}Pb/^{206}Pb$	2σ	% Disc.[8]	Uncert. Wtd. Disc.[9]
37	22.5	28.6	1.3	20.5	1.2	33	0.72	0.0860	0.0170	0.01165	0.00047	0.0594	0.0490	0.0110	81.0	16.0	74.7	3.0	200	340	7.8	0.4
104	22.4	160.3	8.0	89.5	4.0	181	0.56	0.0770	0.0058	0.01167	0.00027	0.0134	0.0495	0.0040	75.8	5.6	74.8	1.7	150	150	1.3	0.2
225	22.4	115.0	2.2	180.4	6.7	157	1.57	0.0783	0.0072	0.01169	0.00033	0.4134	0.0496	0.0043	76.1	6.8	74.9	2.1	130	160	1.6	0.2
61	22.8	172.0	10.0	103.9	2.4	196	0.60	0.0788	0.0050	0.01171	0.00027	0.0693	0.0504	0.0034	76.8	4.7	75.0	1.7	180	130	2.3	0.4
262	22.4	69.0	3.8	20.8	2.1	74	0.30	0.0724	0.0091	0.01170	0.00041	0.1193	0.0489	0.0067	70.3	8.6	75.0	2.6	60	230	-6.7	-0.5
87	12.9	55.6	2.7	48.4	2.6	67	0.87	0.0790	0.0110	0.01174	0.00045	0.1967	0.0540	0.0070	78.2	9.4	75.2	2.9	300	230	3.8	0.3
8	20.2	61.0	1.3	40.5	1.3	71	0.66	0.0704	0.0092	0.01176	0.00041	0.1034	0.0446	0.0059	69.6	8.5	75.3	2.6	30	210	-8.2	-0.7
33	21.8	40.3	1.9	18.6	0.4	45	0.46	0.0860	0.0120	0.01175	0.00042	0.0626	0.0559	0.0087	84.0	11.0	75.3	2.6	460	270	10.4	0.8
103	22.4	156.0	16.0	74.5	8.1	174	0.48	0.0733	0.0067	0.01183	0.00027	0.0159	0.0445	0.0041	71.5	6.4	75.8	1.7	-30	160	-6.0	-0.7
149	22.5	768.0	56.0	145.9	6.7	802	0.19	0.0774	0.0029	0.01180	0.00027	0.3245	0.0479	0.0017	75.6	2.8	75.8	1.7	98	74	-0.3	-0.1
285	7.1	294.0	10.0	78.2	2.0	312	0.27	0.0848	0.0074	0.01188	0.00044	0.0046	0.0529	0.0054	82.5	6.9	76.1	2.8	270	200	7.8	0.9
44	16.4	78.4	2.0	34.6	2.3	87	0.44	0.0861	0.0096	0.01189	0.00042	0.2828	0.0529	0.0059	85.9	9.5	76.2	2.7	320	210	11.3	1.0
75	22.4	174.9	8.5	159.8	6.3	212	0.91	0.0785	0.0051	0.01189	0.00029	0.1442	0.0488	0.0033	76.5	4.8	76.2	1.9	140	130	0.4	0.1
100	15.7	28.9	1.3	20.2	0.8	34	0.70	0.0900	0.0220	0.01182	0.00054	0.2430	0.0580	0.0140	92.0	22.0	76.2	3.6	370	410	17.2	0.7
72	22.5	144.0	11.0	66.3	5.5	160	0.46	0.0794	0.0061	0.01191	0.00032	0.0930	0.0482	0.0039	77.2	5.7	76.3	2.1	100	140	1.2	0.2
113	22.5	126.1	6.8	94.6	5.2	148	0.75	0.0752	0.0067	0.01190	0.00028	0.1838	0.0465	0.0041	73.2	6.3	76.3	1.8	80	160	-4.2	-0.5
59	15.9	289.0	18.0	206.7	9.6	338	0.72	0.0799	0.0051	0.01196	0.00038	0.2326	0.0496	0.0030	78.5	4.7	76.6	2.4	170	120	2.4	0.4
88	22.4	95.3	2.7	78.0	1.8	114	0.82	0.0749	0.0065	0.01195	0.00038	0.0637	0.0446	0.0040	73.0	6.1	76.6	2.4	-20	150	-4.9	-0.6
18	22.8	283.0	17.0	278.0	21.0	348	0.98	0.0773	0.0036	0.01199	0.00026	0.0940	0.0472	0.0023	75.5	3.4	76.8	1.7	79	96	-1.7	-0.4
82	22.4	140.0	11.0	30.6	3.3	147	0.22	0.0787	0.0067	0.01201	0.00030	0.1314	0.0472	0.0040	76.6	6.2	76.9	1.9	80	150	-0.4	0.0
132	16.2	90.0	10.0	109.0	24.0	116	1.21	0.0845	0.0098	0.01201	0.00037	0.0466	0.0508	0.0065	81.8	9.1	77.0	2.3	210	220	5.9	0.5
229	8.2	235.0	13.0	152.6	6.8	271	0.65	0.0776	0.0072	0.01203	0.00035	0.0147	0.0474	0.0045	77.0	7.0	77.1	2.2	70	180	-0.1	0.0
293	10.7	115.4	4.3	115.0	6.0	142	1.00	0.0920	0.0110	0.01204	0.00034	0.2598	0.0525	0.0063	89.0	11.0	77.1	2.2	380	240	13.4	1.1
231	9.3	278.6	9.7	74.8	2.9	296	0.27	0.0820	0.0087	0.01204	0.00063	0.4624	0.0488	0.0051	79.7	8.1	77.2	4.0	160	200	3.1	0.3
185	22.4	481.0	14.0	280.8	6.2	547	0.58	0.0813	0.0036	0.01207	0.00029	0.3413	0.0487	0.0020	79.2	3.4	77.4	1.9	131	83	2.3	0.5
2	22.8	242.0	14.0	88.2	6.8	263	0.36	0.0786	0.0051	0.01215	0.00054	0.5745	0.0473	0.0026	77.2	4.6	77.8	3.4	70	110	-0.8	-0.1
217	22.4	204.0	13.0	70.8	8.4	221	0.35	0.0760	0.0041	0.01214	0.00032	0.1536	0.0461	0.0027	74.2	3.8	77.8	2.0	20	110	-4.9	-0.9
115	16.1	117.1	6.3	65.3	3.6	132	0.56	0.0836	0.0079	0.01216	0.00043	0.0333	0.0505	0.0050	81.1	7.3	77.9	2.7	180	190	3.9	0.4
47	22.4	572.0	69.0	475.0	56.0	684	0.83	0.0847	0.0037	0.01217	0.00029	0.2443	0.0507	0.0022	82.4	3.5	78.0	1.8	222	91	5.3	1.3
118	22.6	50.8	4.3	37.5	3.6	60	0.74	0.0730	0.0120	0.01218	0.00046	0.2320	0.0402	0.0062	73.0	10.0	78.1	3.0	-70	230	-7.0	-0.5
131	22.5	105.5	2.7	88.7	3.3	126	0.84	0.0808	0.0067	0.01221	0.00037	0.2197	0.0499	0.0043	78.5	6.3	78.2	2.4	190	150	0.4	0.0
189	12.0	37.6	4.2	20.8	2.8	42	0.55	0.0940	0.0190	0.01220	0.00070	0.0723	0.0560	0.0120	90.0	17.0	78.2	4.5	460	390	13.1	0.7
204	22.5	109.8	8.5	51.6	4.0	122	0.47	0.0842	0.0058	0.01220	0.00029	0.1138	0.0503	0.0037	83.2	5.2	78.2	1.9	210	130	6.0	1.0
284	22.4	893.0	39.0	601.0	26.0	1034	0.67	0.0805	0.0024	0.01221	0.00023	0.1430	0.0478	0.0017	78.8	2.4	78.2	1.5	96	70	0.8	0.2
266	22.5	203.0	27.0	55.2	6.9	216	0.27	0.0825	0.0066	0.01229	0.00044	0.2051	0.0495	0.0039	80.1	6.2	78.7	2.8	220	150	1.7	0.2
71	22.4	715.0	68.0	49.9	5.3	727	0.07	0.0818	0.0031	0.01230	0.00030	0.5771	0.0488	0.0015	79.8	2.9	78.8	1.9	136	63	1.3	0.3
143	21.7	76.8	4.8	94.2	5.1	99	1.23	0.1270	0.0160	0.01232	0.00038	0.2810	0.0765	0.0096	120.0	14.0	78.9	2.4	890	260	34.3	2.9
31	22.5	90.4	5.7	22.5	1.6	96	0.25	0.0873	0.0081	0.01234	0.00037	0.0044	0.0521	0.0052	84.4	7.6	79.0	2.3	240	190	6.4	0.7
147	21.3	158.2	3.2	141.4	6.6	191	0.89	0.0892	0.0051	0.01234	0.00031	0.0882	0.0518	0.0032	86.5	4.8	79.0	2.0	270	120	8.7	1.6
39	11.6	40.5	3.8	12.5	1.3	43	0.31	0.0740	0.0220	0.01236	0.00070	0.0540	0.0380	0.0120	73.0	20.0	79.2	4.4	-80	440	-8.5	-0.3
166	22.4	133.0	18.0	154.0	24.0	169	1.16	0.0847	0.0076	0.01236	0.00034	0.0564	0.0487	0.0048	82.9	7.2	79.2	2.2	150	170	4.5	0.5

Table 8: LA-ICP-MS Zircon Isotopic and Age Data Table: SC15-16: Scott County, KS Calcrete Sample

								Corrected Isotopic Ratios[3]							Ages (Ma)[7]							
Grain #	Signal Duration (s)	U (ppm)[1]	2σ	Th (ppm)[1]	2σ	eU (ppm)[2]	Th/U	$^{207}Pb/^{235}U$	2σ[4]	$^{206}Pb/^{238}U$	2σ[4]	Rho[5]	$^{207}Pb/^{206}Pb$[6]	2σ	$^{207}Pb/^{235}U$	2σ	$^{206}Pb/^{238}U$	2σ	$^{207}Pb/^{206}Pb$	2σ	% Disc.[8]	Uncert. Wtd. Disc.[9]
19	19.0	93.2	6.4	79.0	5.1	112	0.85	0.0881	0.0087	0.01238	0.00037	0.1174	0.0501	0.0049	85.2	8.1	79.3	2.3	200	190	6.9	0.7
213	21.0	173.6	9.3	139.0	12.0	206	0.80	0.0836	0.0058	0.01242	0.00049	0.3449	0.0501	0.0036	82.0	5.3	79.5	3.1	200	140	3.0	0.5
89	22.5	281.0	17.0	284.0	21.0	348	1.01	0.0821	0.0041	0.01243	0.00033	0.2954	0.0485	0.0024	80.0	3.8	79.6	2.1	124	98	0.5	0.1
154	22.5	227.5	8.9	50.7	2.1	239	0.22	0.0840	0.0051	0.01242	0.00030	0.1094	0.0502	0.0032	81.6	4.8	79.6	1.9	210	130	2.5	0.4
287	22.4	108.7	7.7	70.1	7.3	125	0.64	0.0852	0.0073	0.01243	0.00039	0.0093	0.0512	0.0050	83.5	6.6	79.6	2.5	240	170	4.7	0.6
198	11.2	146.0	11.0	98.9	8.4	169	0.68	0.0870	0.0083	0.01252	0.00040	0.2076	0.0505	0.0048	85.6	7.5	80.2	2.5	190	180	6.3	0.7
148	22.4	266.0	26.0	372.0	30.0	353	1.40	0.0858	0.0053	0.01259	0.00028	0.1352	0.0497	0.0032	84.0	5.1	80.6	1.8	170	120	4.0	0.7
156	22.5	61.3	4.6	49.3	2.9	73	0.80	0.0860	0.0120	0.01260	0.00049	0.0940	0.0496	0.0073	87.0	11.0	80.7	3.1	200	230	7.2	0.6
192	21.4	43.6	4.1	18.3	1.8	48	0.42	0.0830	0.0150	0.01260	0.00060	0.0124	0.0482	0.0086	81.0	14.0	80.7	3.8	110	290	0.4	0.0
183	19.5	23.0	1.0	17.8	0.6	27	0.77	0.0660	0.0210	0.01265	0.00063	0.0280	0.0350	0.0130	61.0	20.0	81.0	4.0	-360	420	-32.8	-1.0
60	22.4	108.0	10.0	178.0	18.0	150	1.65	0.0827	0.0085	0.01270	0.00039	0.1356	0.0465	0.0047	81.9	8.0	81.4	2.5	30	170	0.6	0.1
136	22.4	78.0	7.0	67.6	6.0	94	0.87	0.0807	0.0088	0.01278	0.00040	0.1106	0.0469	0.0051	79.2	8.1	81.9	2.5	100	190	-3.4	-0.3
238	22.5	198.0	12.0	170.0	13.0	238	0.86	0.0886	0.0052	0.01292	0.00034	0.1529	0.0488	0.0030	85.9	4.8	82.7	2.1	150	120	3.7	0.7
173	22.4	81.4	2.9	50.7	2.3	93	0.62	0.0827	0.0091	0.01298	0.00051	0.4229	0.0465	0.0048	80.9	8.4	83.1	3.3	90	180	-2.7	-0.3
41	20.5	35.8	4.1	51.4	5.0	48	1.44	0.1100	0.0170	0.01305	0.00054	0.0176	0.0630	0.0100	104.0	15.0	83.6	3.4	590	290	19.6	1.4
265	22.4	94.5	5.3	70.7	4.6	111	0.75	0.0893	0.0086	0.01308	0.00043	0.0420	0.0496	0.0047	87.2	7.9	83.8	2.8	190	180	3.9	0.4
146	22.4	423.0	35.0	231.0	14.0	477	0.55	0.0824	0.0037	0.01310	0.00032	0.2915	0.0466	0.0021	80.3	3.5	83.9	2.1	45	88	-4.5	-1.0
9	19.2	419.0	36.0	265.0	26.0	481	0.63	0.0839	0.0033	0.01328	0.00035	0.1138	0.0462	0.0019	81.8	3.1	85.0	2.2	12	83	-3.9	-1.0
11	20.4	109.2	2.6	176.8	7.8	151	1.62	0.0942	0.0074	0.01329	0.00040	0.1270	0.0517	0.0045	91.0	6.9	85.1	2.5	210	160	6.5	0.9
297	17.2	386.0	16.0	370.0	15.0	473	0.96	0.1026	0.0057	0.01338	0.00049	0.2198	0.0539	0.0031	99.0	5.3	85.7	3.1	340	120	13.4	2.5
264	22.4	134.2	7.6	39.7	2.6	144	0.30	0.0891	0.0066	0.01351	0.00039	0.1644	0.0473	0.0037	86.3	6.1	86.5	2.5	100	140	-0.2	0.0
163	21.1	14.8	0.7	10.8	0.6	17	0.73	0.1140	0.0330	0.01354	0.00086	0.0399	0.0620	0.0180	102.0	29.0	86.7	5.4	330	470	15.0	0.5
141	12.3	248.0	12.0	171.0	12.0	288	0.69	0.0880	0.0072	0.01356	0.00047	0.4859	0.0468	0.0035	85.4	6.7	86.8	3.0	80	140	-1.6	-0.2
138	22.4	412.0	44.0	178.0	13.0	454	0.43	0.0908	0.0047	0.01362	0.00032	0.1510	0.0487	0.0023	88.1	4.4	87.2	2.0	146	96	1.0	0.2
290	22.5	326.0	15.0	140.0	11.0	359	0.43	0.0915	0.0040	0.01371	0.00034	0.1681	0.0480	0.0022	88.7	3.7	87.8	2.2	114	92	1.0	0.2
202	10.4	167.3	4.4	65.1	4.3	183	0.39	0.0912	0.0076	0.01373	0.00048	0.0061	0.0490	0.0039	89.7	6.7	87.9	3.1	140	150	2.0	0.3
291	18.2	101.0	15.0	137.0	17.0	133	1.36	0.0952	0.0098	0.01380	0.00051	0.0349	0.0512	0.0052	93.0	8.8	88.3	3.3	210	190	5.1	0.5
63	22.4	726.0	65.0	466.0	42.0	836	0.64	0.0913	0.0033	0.01381	0.00034	0.5152	0.0475	0.0016	88.7	3.1	88.4	2.2	89	68	0.3	0.1
80	22.4	353.0	13.0	179.3	8.1	395	0.51	0.1026	0.0090	0.01390	0.00031	0.4467	0.0523	0.0039	98.5	8.0	89.0	2.0	250	140	9.6	1.2
36	21.4	245.0	28.0	92.5	9.4	267	0.38	0.0907	0.0059	0.01410	0.00046	0.5107	0.0460	0.0028	87.9	5.5	90.2	2.9	30	110	-2.6	-0.4
112	22.4	146.1	9.5	69.1	6.2	162	0.47	0.0903	0.0054	0.01461	0.00042	0.2345	0.0446	0.0026	87.6	5.0	93.5	2.7	-10	110	-6.7	-1.2
111	22.4	117.1	8.5	104.6	9.6	142	0.89	0.0974	0.0079	0.01471	0.00052	0.3458	0.0476	0.0036	93.8	7.3	94.1	3.3	80	140	-0.3	0.0
181	22.5	584.0	50.0	170.7	8.8	624	0.29	0.1008	0.0038	0.01527	0.00035	0.3970	0.0479	0.0016	97.4	3.5	97.7	2.2	108	69	-0.3	-0.1
1	20.6	300.0	18.0	117.2	6.8	328	0.39	0.1025	0.0067	0.01547	0.00090	0.5377	0.0504	0.0031	98.7	6.1	98.9	5.7	210	120	-0.2	0.0
270	22.4	141.0	9.1	47.5	3.1	152	0.34	0.1057	0.0076	0.01572	0.00045	0.3599	0.0495	0.0031	101.6	6.9	100.5	2.9	160	120	1.1	0.2
108	21.0	64.7	4.4	108.9	7.5	90	1.68	0.1270	0.0120	0.01600	0.00050	0.0448	0.0592	0.0059	121.0	11.0	102.3	3.2	480	190	15.5	1.7
54	22.2	329.0	18.0	218.1	9.0	380	0.66	0.1073	0.0041	0.01606	0.00030	0.0730	0.0483	0.0019	103.4	3.7	102.7	1.9	126	80	0.7	0.2
53	22.4	389.0	29.0	305.0	20.0	461	0.78	0.1101	0.0055	0.01616	0.00060	0.6278	0.0478	0.0020	106.3	5.1	103.3	3.8	109	84	2.8	0.6
187	22.4	168.1	4.7	57.6	1.9	182	0.34	0.1059	0.0062	0.01624	0.00039	0.3498	0.0475	0.0025	101.9	5.7	103.9	2.5	96	100	-2.0	-0.4
175	22.4	454.0	37.0	278.0	31.0	519	0.61	0.1093	0.0046	0.01628	0.00034	0.2733	0.0488	0.0020	105.1	4.2	104.1	2.2	139	82	1.0	0.2
94	22.4	216.0	13.0	176.0	11.0	257	0.81	0.1088	0.0050	0.01665	0.00038	0.1586	0.0472	0.0022	104.7	4.5	106.4	2.4	69	88	-1.6	-0.4

Table 8: LA-ICP-MS Zircon Isotopic and Age Data Table: SC15-16: Scott County, KS Calcrete Sample

								Corrected Isotopic Ratios[3]							Ages (Ma)[7]							
Grain #	Signal Duration (s)	U (ppm)[1]	2σ	Th (ppm)[1]	2σ	eU (ppm)[2]	Th/U	$^{207}Pb/^{235}U$	2σ[4]	$^{206}Pb/^{238}U$	2σ[4]	Rho[5]	$^{207}Pb/^{206}Pb$[6]	2σ	$^{207}Pb/^{235}U$	2σ	$^{206}Pb/^{238}U$	2σ	$^{207}Pb/^{206}Pb$	2σ	% Disc.[8]	Uncert. Wtd. Disc.[9]
68	22.4	175.7	8.7	281.0	18.0	242	1.60	0.1199	0.0062	0.01792	0.00044	0.1316	0.0483	0.0025	114.6	5.7	114.5	2.8	111	99	0.1	0.0
76	21.8	54.3	2.9	43.5	2.4	65	0.80	0.1370	0.0140	0.01861	0.00071	0.1434	0.0526	0.0054	129.0	13.0	118.8	4.5	260	200	7.9	0.8
137	21.4	1026.0	79.0	334.0	21.0	1104	0.33	0.9610	0.0490	0.02077	0.00070	0.8681	0.3410	0.0110	686.0	27.0	132.5	4.4	3652	52	80.7	20.5
289	23.0	48.2	3.5	82.9	5.4	68	1.72	1.1840	0.0710	0.02079	0.00087	0.6139	0.3940	0.0200	786.0	34.0	133.2	5.4	3870	83	83.1	19.2
245	22.4	125.8	9.3	88.4	6.1	147	0.70	0.1674	0.0085	0.02405	0.00055	0.2243	0.0517	0.0026	159.6	7.6	153.2	3.5	260	110	4.0	0.8
206	22.4	321.0	16.0	240.5	7.3	378	0.75	0.1569	0.0064	0.02418	0.00044	0.1290	0.0471	0.0019	147.7	5.6	154.0	2.8	65	79	-4.3	-1.1
220	22.5	142.0	17.0	123.0	15.0	171	0.87	0.1800	0.0120	0.02559	0.00088	0.1914	0.0513	0.0032	167.4	10.0	162.9	5.5	220	120	2.7	0.5
145	21.8	101.0	19.0	106.0	23.0	126	1.05	0.1720	0.0110	0.02562	0.00055	0.0820	0.0495	0.0032	163.0	9.8	163.4	3.4	190	130	-0.2	0.0
256	21.1	31.5	1.9	37.2	1.5	40	1.18	0.1950	0.0230	0.02576	0.00085	0.2445	0.0564	0.0065	182.0	19.0	164.5	5.3	380	220	9.6	0.9
300	19.0	126.0	11.0	67.4	5.4	142	0.53	0.1860	0.0110	0.02611	0.00059	0.2825	0.0516	0.0030	172.6	9.5	166.1	3.7	250	120	3.8	0.7
246	22.5	382.0	19.0	302.5	6.2	453	0.79	0.1813	0.0058	0.02636	0.00045	0.1830	0.0504	0.0017	169.5	4.9	167.7	2.8	202	71	1.1	0.4
268	22.4	161.0	16.0	86.1	7.6	181	0.53	0.1785	0.0083	0.02674	0.00066	0.0539	0.0478	0.0025	167.1	7.0	170.1	4.2	90	100	-1.8	-0.4
168	22.4	387.3	8.6	671.0	44.0	545	1.73	0.2052	0.0065	0.03017	0.00069	0.4439	0.0496	0.0015	189.3	5.5	191.6	4.3	179	65	-1.2	-0.4
159	22.1	59.0	4.6	29.1	2.9	66	0.49	0.2320	0.0180	0.03104	0.00087	0.1045	0.0522	0.0038	210.0	14.0	197.0	5.4	310	150	6.2	0.9
74	22.5	224.0	13.0	173.3	6.1	265	0.77	0.2145	0.0096	0.03185	0.00069	0.3312	0.0493	0.0021	196.8	8.0	202.1	4.3	157	89	-2.7	-0.7
128	22.2	2560.0	210.0	3400.0	250.0	3359	1.33	0.5530	0.0200	0.04020	0.00160	0.8763	0.1011	0.0026	445.0	13.0	253.8	9.7	1638	47	43.0	14.7
93	22.4	187.0	12.0	122.7	8.2	216	0.66	0.2823	0.0100	0.04018	0.00081	0.2587	0.0516	0.0019	251.9	8.2	253.9	5.0	248	79	-0.8	-0.2
263	6.6	490.0	30.0	153.6	6.8	526	0.31	0.2900	0.0140	0.04120	0.00160	0.6948	0.0510	0.0018	259.0	11.0	260.5	9.7	236	81	-0.6	-0.1
201	22.5	291.0	23.0	105.0	5.7	316	0.36	0.2981	0.0098	0.04153	0.00083	0.2181	0.0515	0.0017	264.5	7.7	262.8	5.0	261	71	0.6	0.2
155	21.4	655.0	25.0	94.9	8.8	677	0.14	0.3003	0.0083	0.04229	0.00089	0.6034	0.0517	0.0013	266.4	6.4	267.0	5.5	271	57	-0.2	-0.1
255	22.4	262.0	11.0	62.3	5.8	277	0.24	0.2989	0.0099	0.04247	0.00084	0.1803	0.0515	0.0017	265.8	7.6	268.1	5.2	251	73	-0.9	-0.3
45	21.3	118.8	6.2	51.4	2.2	131	0.43	0.3090	0.0140	0.04324	0.00088	0.0925	0.0510	0.0023	273.8	10.0	272.9	5.5	222	94	0.3	0.1
22	22.4	145.0	8.8	183.0	16.0	188	1.26	0.3520	0.0130	0.04842	0.00091	0.2896	0.0522	0.0018	305.2	9.5	304.8	5.6	281	76	0.1	0.0
85	9.3	150.8	5.9	122.5	4.1	180	0.81	0.3910	0.0170	0.05168	0.00110	0.3091	0.0546	0.0022	335.0	12.0	324.8	6.9	378	92	3.0	0.8
273	21.9	430.0	110.0	76.0	17.0	448	0.18	1.7730	0.0540	0.05850	0.00160	0.7500	0.2216	0.0051	1035.0	20.0	366.2	9.7	2991	37	64.6	33.4
236	21.9	318.2	7.1	183.2	5.6	361	0.58	0.4280	0.0120	0.05905	0.00120	0.2385	0.0528	0.0015	361.5	8.7	369.8	7.1	306	64	-2.3	-1.0
278	22.5	385.0	13.0	29.9	1.6	392	0.08	0.4463	0.0120	0.05920	0.00110	0.2820	0.0545	0.0014	374.3	8.1	370.7	6.6	391	58	1.0	0.4
15	16.7	138.0	19.0	30.7	2.5	145	0.22	0.4820	0.0250	0.06190	0.00140	0.1563	0.0566	0.0031	397.0	16.0	387.0	8.4	430	100	2.5	0.6
180	13.4	546.0	54.0	83.0	18.0	566	0.15	0.4780	0.0180	0.06170	0.00230	0.6567	0.0563	0.0018	396.0	12.0	388.0	15.0	471	77	2.0	0.7
96	22.4	146.0	11.0	40.0	1.1	155	0.27	0.4700	0.0170	0.06215	0.00120	0.2791	0.0553	0.0020	391.0	11.0	388.6	7.4	404	80	0.6	0.2
130	23.4	348.0	18.0	49.0	5.5	360	0.14	0.4950	0.0140	0.06550	0.00150	0.5041	0.0559	0.0015	408.4	9.5	408.7	8.8	434	59	-0.1	0.0
110	22.4	247.0	14.0	41.3	1.6	257	0.17	0.5070	0.0140	0.06653	0.00110	0.3964	0.0554	0.0015	416.0	9.3	415.2	6.9	416	59	0.2	0.1
25	13.8	420.0	34.0	108.9	6.8	446	0.26	0.5250	0.0160	0.06760	0.00130	0.5622	0.0562	0.0015	429.3	11.0	421.8	8.0	466	61	1.7	0.7
69	22.5	131.0	10.0	30.1	2.1	138	0.23	0.5080	0.0180	0.06760	0.00150	0.2879	0.0544	0.0019	416.0	12.0	421.8	9.1	377	73	-1.4	-0.5
194	22.4	216.0	11.0	67.5	1.9	232	0.31	0.5250	0.0170	0.06950	0.00150	0.2482	0.0552	0.0017	428.8	11.0	432.8	8.9	427	71	-0.9	-0.4
62	22.4	257.0	44.0	550.0	110.0	386	2.14	0.5640	0.0210	0.07210	0.00220	0.6444	0.0560	0.0018	452.0	14.0	449.0	13.0	440	70	0.7	0.2
151	22.5	273.0	22.0	169.0	17.0	313	0.62	0.5780	0.0180	0.07360	0.00170	0.5626	0.0568	0.0016	462.2	11.0	457.4	10.0	488	59	1.0	0.4
277	22.4	247.0	15.0	69.1	3.2	263	0.28	0.6070	0.0170	0.07800	0.00150	0.3964	0.0564	0.0015	481.8	11.0	484.4	8.8	461	58	-0.5	-0.2
42	21.3	108.1	2.7	60.1	1.4	122	0.56	0.7580	0.0260	0.09230	0.00210	0.3686	0.0583	0.0018	576.0	15.0	569.0	12.0	536	69	1.2	0.5
283	22.5	90.9	3.7	49.2	1.8	102	0.54	0.8050	0.0280	0.09800	0.00240	0.5105	0.0590	0.0018	601.0	15.0	603.0	14.0	554	67	-0.3	-0.1
184	22.4	173.3	9.8	99.7	8.1	197	0.58	0.8280	0.0250	0.09900	0.00220	0.5179	0.0600	0.0017	614.0	14.0	609.0	13.0	605	58	0.8	0.4

Table 8: LA-ICP-MS Zircon Isotopic and Age Data Table: SC15-16: Scott County, KS Calcrete Sample

								Corrected Isotopic Ratios[3]							Ages (Ma)[7]							
Grain #	Signal Duration (s)	U (ppm)[1]	2σ	Th (ppm)[1]	2σ	eU (ppm)[2]	Th/U	$^{207}Pb/^{235}U$	2σ[4]	$^{206}Pb/^{238}U$	2σ[4]	Rho[5]	$^{207}Pb/^{206}Pb$[6]	2σ	$^{207}Pb/^{235}U$	2σ	$^{206}Pb/^{238}U$	2σ	$^{207}Pb/^{206}Pb$	2σ	% Disc.[8]	Uncert. Wtd. Disc.[9]
101	21.0	284.0	13.0	110.0	3.8	310	0.39	0.8390	0.0210	0.10150	0.00190	0.4807	0.0596	0.0013	617.9	11.0	622.9	11.0	586	48	-0.8	-0.5
218	21.7	2120.0	150.0	268.0	14.0	2183	0.13	1.1420	0.0540	0.10490	0.00460	0.9537	0.0799	0.0018	791.0	26.0	642.0	27.0	1188	44	18.8	5.7
20	21.2	463.0	41.0	227.0	15.0	516	0.49	1.6310	0.0770	0.11860	0.00530	0.9760	0.0989	0.0020	975.0	29.0	721.0	30.0	1599	38	26.1	8.8
207	15.4	111.2	6.7	67.5	3.5	127	0.61	1.6230	0.0620	0.13630	0.00420	0.7822	0.0854	0.0024	976.0	24.0	823.0	24.0	1315	55	15.7	6.4
114	21.2	293.0	24.0	112.6	7.2	319	0.38	3.4500	0.1500	0.16500	0.01600	0.8371	0.1585	0.0100	1512.0	33.0	975.0	85.0	2420	110	35.5	16.3
95	20.2	373.0	23.0	256.0	11.0	433	0.69	2.4570	0.0970	0.16630	0.00650	0.9434	0.1071	0.0022	1253.0	28.0	990.0	36.0	1751	36	21.0	9.4
127	22.2	244.0	12.0	134.8	3.5	276	0.55	1.6870	0.0580	0.16750	0.00690	0.8302	0.0740	0.0020	1006.0	22.0	996.0	38.0	1030	54	1.0	0.5
57	22.1	113.1	7.4	76.3	3.4	131	0.67	1.9570	0.0470	0.18580	0.00380	0.4692	0.0764	0.0019	1099.0	16.0	1098.0	21.0	1099	50	0.1	0.1
286	22.4	41.1	3.9	29.7	1.2	48	0.72	2.0080	0.0680	0.19310	0.00410	0.4368	0.0762	0.0024	1117.0	23.0	1137.0	22.0	1102	65	-1.8	-0.9
288	22.9	1350.0	240.0	312.0	47.0	1423	0.23	2.8840	0.0660	0.19680	0.00430	0.8872	0.1062	0.0019	1376.0	17.0	1157.0	23.0	1733	34	15.9	12.9
209	21.6	153.0	18.0	88.7	8.2	174	0.58	2.5720	0.0850	0.19950	0.00650	0.8451	0.0936	0.0023	1288.0	24.0	1171.0	35.0	1499	46	9.1	4.9
140	21.4	242.0	16.0	317.0	12.0	316	1.31	2.4410	0.0990	0.21140	0.00800	0.9354	0.0838	0.0017	1250.0	29.0	1234.0	42.0	1285	39	1.3	0.6
281	21.4	520.0	59.0	329.0	26.0	597	0.63	3.4000	0.1200	0.22530	0.00660	0.7233	0.1083	0.0029	1505.0	27.0	1312.0	34.0	1765	50	12.8	7.1
199	14.5	96.2	3.8	41.8	0.9	106	0.43	2.8170	0.0860	0.23290	0.00590	0.6678	0.0874	0.0022	1361.0	22.0	1349.0	31.0	1389	48	0.9	0.5
83	22.4	54.0	2.9	31.8	1.7	61	0.59	2.8040	0.0700	0.23320	0.00530	0.4164	0.0867	0.0023	1358.0	19.0	1350.0	28.0	1354	50	0.6	0.4
3	21.0	104.0	7.5	50.1	3.0	116	0.48	2.7650	0.0860	0.23370	0.00900	0.7126	0.0874	0.0026	1345.0	23.0	1351.0	47.0	1379	56	-0.4	-0.3
244	22.5	168.0	23.0	5.0	0.7	169	0.03	2.7820	0.0670	0.23580	0.00460	0.4462	0.0864	0.0021	1349.0	18.0	1364.0	24.0	1338	47	-1.1	-0.8
135	22.4	79.8	3.5	30.8	1.2	87	0.39	2.8650	0.0700	0.23660	0.00440	0.5068	0.0883	0.0020	1373.0	18.0	1368.0	23.0	1392	43	0.4	0.3
120	22.8	320.0	19.0	30.5	2.2	327	0.10	2.9430	0.0630	0.23870	0.00430	0.5593	0.0882	0.0019	1392.0	16.0	1380.0	22.0	1389	39	0.9	0.8
160	21.6	16.8	0.8	17.4	0.7	21	1.03	2.8320	0.1100	0.23910	0.00600	0.1920	0.0868	0.0033	1358.0	28.0	1381.0	31.0	1357	72	-1.7	-0.8
14	18.6	89.4	6.7	22.2	1.3	95	0.25	3.4400	0.1500	0.24100	0.01100	0.9169	0.1038	0.0025	1512.0	36.0	1386.0	55.0	1695	44	8.3	3.5
188	22.4	44.6	1.4	15.9	0.4	48	0.36	2.8740	0.0850	0.24180	0.00500	0.2456	0.0882	0.0026	1374.0	22.0	1395.0	26.0	1377	59	-1.5	-1.0
280	20.3	72.1	3.2	34.7	1.3	80	0.48	2.8930	0.0880	0.24230	0.00580	0.5908	0.0870	0.0024	1379.0	23.0	1397.0	30.0	1354	54	-1.3	-0.8
270	22.7	90.7	3.0	42.1	1.3	101	0.46	3.1010	0.0860	0.24420	0.00580	0.5656	0.0922	0.0025	1432.0	22.0	1407.0	30.0	1469	53	1.7	1.1
216	22.1	110.1	3.0	67.6	1.8	126	0.61	3.2220	0.0750	0.24470	0.00520	0.6334	0.0957	0.0021	1461.0	18.0	1410.0	27.0	1548	40	3.5	2.8
98	22.4	77.0	2.3	47.0	2.4	88	0.61	2.9560	0.0700	0.24420	0.00420	0.4113	0.0879	0.0021	1398.0	18.0	1412.0	22.0	1380	46	-1.0	-0.8
224	22.5	37.2	2.0	3.7	0.3	38	0.10	3.6460	0.1000	0.24570	0.00540	0.6411	0.1073	0.0026	1556.0	23.0	1415.0	28.0	1746	46	9.1	6.1
28	22.4	104.0	12.0	40.4	2.2	113	0.39	3.0960	0.0770	0.24830	0.00510	0.7489	0.0898	0.0019	1430.0	19.0	1429.0	26.0	1416	41	0.1	0.1
129	22.4	79.9	4.5	91.8	4.1	101	1.15	3.1040	0.0990	0.24900	0.00680	0.5536	0.0898	0.0025	1429.0	24.0	1432.0	35.0	1426	50	-0.2	-0.1
152	21.6	95.5	7.0	136.0	15.0	127	1.42	3.1640	0.0740	0.24920	0.00500	0.5494	0.0913	0.0021	1447.0	18.0	1434.0	26.0	1450	42	0.9	0.7
212	20.7	91.7	7.8	66.3	2.8	107	0.72	3.2240	0.0750	0.25030	0.00490	0.3844	0.0942	0.0023	1463.0	17.0	1439.0	25.0	1504	46	1.6	1.4
6	22.4	126.7	9.6	58.6	2.9	140	0.46	3.1710	0.0790	0.25160	0.00540	0.6477	0.0907	0.0020	1448.0	19.0	1446.0	28.0	1446	44	0.1	0.1
275	19.8	92.3	8.9	64.7	6.0	108	0.70	3.1640	0.0860	0.25180	0.00530	0.5998	0.0900	0.0022	1446.0	21.0	1447.0	27.0	1417	48	-0.1	0.0
157	21.4	113.8	5.6	81.7	6.0	133	0.72	3.1660	0.0820	0.25220	0.00550	0.6630	0.0904	0.0020	1447.0	20.0	1449.0	28.0	1431	44	-0.1	-0.1
26	11.1	109.9	5.1	100.4	3.9	133	0.91	3.1870	0.0900	0.25290	0.00470	0.6297	0.0907	0.0022	1452.0	22.0	1453.0	24.0	1443	48	-0.1	0.0
260	13.9	207.3	8.8	101.5	3.6	231	0.49	3.1760	0.0920	0.25300	0.00530	0.5985	0.0916	0.0023	1449.0	22.0	1453.0	27.0	1453	48	-0.3	-0.2
230	22.4	51.1	2.3	67.4	5.7	67	1.32	3.2800	0.1200	0.25320	0.00440	0.5015	0.0930	0.0030	1469.0	28.0	1455.0	23.0	1494	52	1.0	0.5
169	22.4	179.0	12.0	61.6	1.8	193	0.34	3.1900	0.0720	0.25310	0.00500	0.5977	0.0921	0.0020	1456.0	18.0	1456.0	25.0	1468	42	0.0	0.0
162	21.9	106.0	25.0	27.7	0.8	113	0.26	3.1150	0.0870	0.25400	0.00520	0.4082	0.0888	0.0024	1433.0	22.0	1458.0	27.0	1388	54	-1.7	-1.1
233	20.7	278.9	8.7	118.4	2.6	307	0.42	3.1380	0.0670	0.25420	0.00530	0.7005	0.0896	0.0019	1441.0	17.0	1459.0	27.0	1416	41	-1.2	-1.1
58	22.4	63.7	3.0	42.2	2.3	74	0.66	3.2320	0.0850	0.25500	0.00510	0.4706	0.0914	0.0024	1464.0	20.0	1464.0	26.0	1453	52	0.0	0.0

Table 8: LA-ICP-MS Zircon Isotopic and Age Data Table: SC15-16: Scott County, KS Calcrete Sample

								Corrected Isotopic Ratios[3]							Ages (Ma)[7]							
Grain #	Signal Duration (s)	U (ppm)[1]	2σ	Th (ppm)[1]	2σ	eU (ppm)[2]	Th/U	$^{207}Pb/^{235}U$	2σ[4]	$^{206}Pb/^{238}U$	2σ[4]	Rho[5]	$^{207}Pb/^{206}Pb$[6]	2σ	$^{207}Pb/^{235}U$	2σ	$^{206}Pb/^{238}U$	2σ	$^{207}Pb/^{206}Pb$	2σ	% Disc.[8]	Uncert. Wtd. Disc.[9]
191	20.9	97.0	12.0	37.0	2.2	106	0.38	3.1850	0.0800	0.25400	0.00560	0.5553	0.0910	0.0022	1453.0	20.0	1464.0	29.0	1443	46	-0.8	-0.6
210	15.4	351.0	34.0	177.6	7.6	393	0.51	3.2300	0.1300	0.25810	0.00980	0.9320	0.0909	0.0019	1460.0	31.0	1478.0	50.0	1445	42	-1.2	-0.6
267	22.4	48.5	2.3	26.9	0.7	55	0.55	3.2050	0.0940	0.25810	0.00510	0.5507	0.0907	0.0023	1457.0	22.0	1480.0	26.0	1446	48	-1.6	-1.0
240	15.4	89.6	5.3	35.1	2.2	98	0.39	3.2510	0.0950	0.25820	0.00600	0.5667	0.0909	0.0023	1470.0	23.0	1484.0	30.0	1438	49	-1.0	-0.6
52	21.7	3.3	0.1	5.6	0.2	5	1.69	6.2900	0.3700	0.26020	0.00980	0.4686	0.1782	0.0100	2027.0	51.0	1487.0	50.0	2621	97	26.6	10.6
223	22.6	533.0	68.0	43.7	5.4	543	0.08	3.5400	0.1600	0.26050	0.00800	0.9310	0.0963	0.0021	1532.0	35.0	1490.0	40.0	1549	40	2.7	1.2
5	14.8	56.5	3.4	70.7	5.6	73	1.25	3.3900	0.2000	0.26000	0.01800	0.8522	0.0953	0.0038	1489.0	46.0	1494.0	95.0	1532	78	-0.3	-0.1
171	20.7	209.0	14.0	87.5	5.4	230	0.42	3.3030	0.0700	0.26410	0.00550	0.6208	0.0907	0.0019	1481.0	16.0	1513.0	27.0	1437	39	-2.2	-2.0
164	14.5	118.5	6.2	19.7	0.9	123	0.17	3.4770	0.1100	0.26840	0.00820	0.7412	0.0933	0.0023	1525.0	24.0	1531.0	41.0	1488	48	-0.4	-0.3
276	7.8	55.0	3.1	25.5	1.6	61	0.46	3.4400	0.1400	0.26980	0.00950	0.6536	0.0923	0.0037	1511.0	33.0	1539.0	48.0	1474	73	-1.9	-0.8
4	21.1	38.5	1.3	13.2	1.6	42	0.34	3.6500	0.1700	0.27400	0.01000	0.7837	0.0972	0.0029	1557.0	36.0	1563.0	54.0	1587	54	-0.4	-0.2
134	21.7	78.4	3.1	28.6	1.0	85	0.36	3.7110	0.1000	0.27450	0.00540	0.6149	0.0978	0.0023	1575.0	21.0	1568.0	27.0	1592	44	0.4	0.3
48	22.2	250.0	19.0	22.1	1.0	255	0.09	3.9380	0.0890	0.27930	0.00530	0.7673	0.1028	0.0020	1622.0	19.0	1587.0	27.0	1677	38	2.2	1.8
150	9.7	622.0	25.0	74.9	3.8	640	0.12	3.8130	0.0880	0.28000	0.00560	0.4822	0.0994	0.0019	1595.0	19.0	1591.0	28.0	1611	36	0.3	0.2
299	22.2	402.0	40.0	242.0	18.0	459	0.60	4.3400	0.1500	0.28300	0.00940	0.9351	0.1106	0.0021	1698.0	28.0	1603.0	48.0	1809	35	5.6	3.4
43	20.9	402.0	36.0	87.8	5.1	423	0.22	4.0820	0.0960	0.28410	0.00610	0.7516	0.1013	0.0021	1651.0	19.0	1611.0	31.0	1648	39	2.4	2.1
99	22.4	109.7	3.5	55.3	3.0	123	0.50	4.1580	0.0950	0.29210	0.00570	0.6771	0.1032	0.0021	1666.0	19.0	1651.0	29.0	1678	38	0.9	0.8
235	22.4	151.0	11.0	20.4	2.7	156	0.14	4.0780	0.1000	0.29250	0.00560	0.6827	0.1010	0.0021	1651.0	20.0	1653.0	28.0	1645	39	-0.1	-0.1
190	22.1	53.8	5.4	39.4	2.5	63	0.73	4.1790	0.1100	0.29480	0.00530	0.4422	0.1033	0.0026	1673.0	21.0	1665.0	26.0	1683	48	0.5	0.4
30	22.4	73.6	4.6	20.1	1.3	78	0.27	4.2310	0.1000	0.29510	0.00550	0.5622	0.1045	0.0023	1678.0	20.0	1666.0	27.0	1705	40	0.7	0.6
195	21.3	72.2	4.2	30.0	1.8	79	0.42	4.1930	0.1100	0.29490	0.00610	0.5009	0.1024	0.0024	1671.0	22.0	1668.0	30.0	1669	43	0.2	0.1
109	15.0	353.0	12.0	24.2	1.5	359	0.07	4.1800	0.1500	0.29650	0.00970	0.8897	0.1031	0.0023	1668.0	31.0	1672.0	48.0	1680	40	-0.2	-0.1
193	6.7	136.4	8.2	72.1	3.8	153	0.53	4.2400	0.1300	0.29700	0.01100	0.8137	0.1037	0.0027	1687.0	24.0	1676.0	56.0	1689	48	0.7	0.5
239	22.5	60.2	4.2	49.8	1.4	72	0.83	4.2960	0.1100	0.29610	0.00580	0.5175	0.1044	0.0024	1692.0	21.0	1677.0	29.0	1697	43	0.9	0.7
176	22.4	204.0	19.0	98.0	14.0	227	0.48	4.3000	0.1400	0.29940	0.00820	0.8591	0.1033	0.0022	1688.0	26.0	1686.0	41.0	1680	38	0.1	0.1
67	22.2	330.0	21.0	19.1	1.2	334	0.06	4.3710	0.0940	0.29950	0.00560	0.7251	0.1045	0.0020	1706.0	18.0	1688.0	28.0	1703	35	1.1	1.0
13	21.2	130.4	5.7	53.1	1.8	143	0.41	4.3150	0.0880	0.30010	0.00550	0.4167	0.1053	0.0023	1696.6	16.0	1691.0	27.0	1718	40	0.3	0.3
222	22.5	358.0	27.0	141.8	6.2	391	0.40	4.3300	0.1500	0.30200	0.01100	0.8558	0.1049	0.0025	1699.0	29.0	1694.0	55.0	1716	44	0.3	0.2
91	22.4	226.0	17.0	131.6	9.4	257	0.58	4.3090	0.0880	0.30030	0.00550	0.6049	0.1043	0.0021	1694.1	17.0	1695.0	28.0	1701	36	-0.1	-0.1
208	22.5	451.0	36.0	72.9	9.7	468	0.16	4.3570	0.1100	0.30260	0.00620	0.8081	0.1046	0.0020	1704.0	21.0	1706.0	30.0	1705	35	-0.1	-0.1
252	22.5	349.0	27.0	97.0	6.1	372	0.28	4.3650	0.0880	0.30360	0.00540	0.6930	0.1049	0.0020	1706.0	16.0	1708.0	27.0	1713	34	-0.1	-0.1
24	19.1	100.1	5.8	30.4	2.1	107	0.30	4.3340	0.1000	0.30460	0.00570	0.6191	0.1032	0.0022	1700.0	19.0	1713.0	28.0	1681	39	-0.8	-0.7
40	22.4	70.3	3.0	14.5	1.1	74	0.21	4.4300	0.1100	0.30550	0.00590	0.5347	0.1045	0.0025	1717.0	21.0	1718.0	29.0	1709	43	-0.1	0.0
214	22.4	85.0	8.4	41.8	4.7	95	0.49	4.3310	0.1100	0.30500	0.00600	0.4931	0.1034	0.0025	1699.0	20.0	1718.0	29.0	1689	45	-1.1	-1.0
259	22.2	228.0	18.0	31.7	1.6	235	0.14	4.3910	0.1100	0.30610	0.00610	0.7822	0.1048	0.0021	1708.0	20.0	1721.0	30.0	1710	38	-0.8	-0.7
219	22.4	302.0	12.0	156.1	3.6	339	0.52	4.4920	0.1100	0.30740	0.00680	0.6707	0.1075	0.0023	1731.0	19.0	1727.0	33.0	1756	39	0.2	0.2
121	22.6	205.0	6.9	42.9	2.1	215	0.21	4.3520	0.0930	0.30770	0.00530	0.5466	0.1022	0.0020	1702.0	18.0	1729.0	26.0	1661	37	-1.6	-1.5
241	21.4	124.6	4.9	45.3	1.1	135	0.36	4.3550	0.1000	0.30810	0.00620	0.6241	0.1018	0.0022	1704.0	19.0	1730.0	30.0	1663	40	-1.5	-1.4
46	22.4	439.0	12.0	81.9	6.9	458	0.19	4.4770	0.1100	0.30880	0.00530	0.6848	0.1051	0.0021	1728.0	20.0	1734.0	26.0	1713	37	-0.3	-0.3
232	22.4	250.0	18.0	22.8	0.6	255	0.09	4.4170	0.1100	0.30830	0.00660	0.7321	0.1048	0.0022	1717.0	20.0	1735.0	32.0	1708	39	-1.0	-0.9
10	21.8	76.4	8.5	25.5	2.6	82	0.33	4.3780	0.1000	0.30930	0.00650	0.4852	0.1033	0.0026	1710.0	21.0	1736.0	32.0	1688	45	-1.5	-1.2

Table 8: LA-ICP-MS Zircon Isotopic and Age Data Table: SC15-16: Scott County, KS Calcrete Sample

								Corrected Isotopic Ratios[3]							Ages (Ma)[7]							
Grain #	Signal Duration (s)	U (ppm)[1]	2σ	Th (ppm)[1]	2σ	eU (ppm)[2]	Th/U	$^{207}Pb/^{235}U$	2σ[4]	$^{206}Pb/^{238}U$	2σ[4]	Rho[5]	$^{207}Pb/^{206}Pb$[6]	2σ	$^{207}Pb/^{235}U$	2σ	$^{206}Pb/^{238}U$	2σ	$^{207}Pb/^{206}Pb$	2σ	% Disc.[8]	Uncert. Wtd. Disc.[9]
79	22.4	78.4	5.6	30.5	1.5	86	0.39	4.4230	0.1100	0.30770	0.00610	0.5514	0.1043	0.0024	1714.0	20.0	1738.0	31.0	1703	43	-1.4	-1.2
139	21.3	113.0	11.0	80.2	8.3	132	0.71	4.4790	0.1100	0.31300	0.00670	0.7749	0.1034	0.0021	1729.0	20.0	1758.0	32.0	1688	37	-1.7	-1.5
203	13.7	631.0	39.0	110.0	2.3	657	0.17	4.7110	0.1100	0.31640	0.00550	0.7143	0.1079	0.0022	1768.0	20.0	1772.0	27.0	1762	36	-0.2	-0.2
84	21.8	729.0	42.0	37.7	2.2	738	0.05	4.5670	0.1100	0.31730	0.00700	0.8814	0.1036	0.0020	1744.0	21.0	1775.0	34.0	1688	35	-1.8	-1.5
50	22.4	46.9	2.0	14.3	0.4	50	0.31	4.6840	0.1200	0.31770	0.00640	0.5077	0.1071	0.0025	1762.0	21.0	1777.0	31.0	1749	43	-0.9	-0.7
228	8.5	496.0	46.0	246.0	29.0	554	0.50	4.6300	0.1200	0.31880	0.00880	0.8634	0.1065	0.0022	1761.0	22.0	1783.0	43.0	1743	39	-1.2	-1.0
279	20.9	248.0	19.0	95.2	5.5	270	0.38	4.6180	0.1100	0.32350	0.00670	0.7348	0.1040	0.0021	1752.0	21.0	1806.0	33.0	1693	37	-3.1	-2.6
243	15.7	183.3	8.1	51.2	2.0	195	0.28	4.8200	0.1300	0.32550	0.00740	0.7749	0.1072	0.0023	1791.0	23.0	1815.0	36.0	1749	40	-1.3	-1.0
27	22.0	353.0	35.0	66.7	7.2	369	0.19	5.0900	0.1300	0.34690	0.00760	0.8764	0.1065	0.0020	1835.0	22.0	1918.0	36.0	1741	33	-4.5	-3.8
295	19.0	144.2	7.8	66.7	4.4	160	0.46	9.8200	0.3200	0.39100	0.01200	0.8987	0.1837	0.0038	2415.0	29.0	2132.0	55.0	2689	34	11.7	9.8
258	11.6	93.5	5.3	55.7	2.5	107	0.60	12.6400	0.3300	0.50250	0.01100	0.6463	0.1822	0.0044	2652.0	25.0	2623.0	47.0	2669	40	1.1	1.2
167	22.4	43.8	1.2	17.4	0.8	48	0.40	12.4400	0.3500	0.50340	0.01200	0.7879	0.1798	0.0038	2638.0	27.0	2631.0	50.0	2656	36	0.3	0.3
296	13.4	0.6	0.0	0.6	0.1	1	0.91	54.5000	9.4000	0.65900	0.08400	0.7407	0.6120	0.0800	4070.0	190.0	3270.0	330.0	4510	210	19.7	4.2

[1]U and Th have been concentrations and the Th/U ratios are calculated relative to the GJ-1 standard value using 287 ± 76 ppm for U and 8.4 ± 2.6 ppm for Th (Jackson et al., 2004)

[2]Equivalent U defined by the equation: eU = U ppm + 0.235*Th ppm

[3]Corrected for U-Pb fractionation and background and normalized to the GJ-1 standard value: $^{207}Pb/^{235}U = 0.8093 \pm 0.0009$ and $^{206}Pb/^{238}U = 0.09761 \pm 0.00011$ (Jackson et al., 2004)

[4]Propagated uncertainty of internal uncertainties (2SE) and within run reproducibility of GJ-1 (2SE)

[5]Uncertainty correlation between $^{206}Pb/^{238}U$ and $^{207}Pb/^{235}U$ uncertainties

[6]Corrected for background and Pb isotopicfractionation using the GJ-1 standard value: $^{207}Pb/^{206}Pb = 0.06014 \pm 0.00001$ (Jackson et al., 2004)

[7]U-Pb ages calculated relative to the GJ-1 standard

[8]Discordance defined as (($^{207}Pb/^{235}U$age - $^{206}Pb/^{238}U$age))/($^{207}Pb/^{235}U$ age))*100

[9]Uncertainty weighted age difference defined as ($^{207}Pb/^{235}U$ age - $^{206}Pb/^{238}U$ age))/($^{207}Pb/^{235}U$ age uncertainty)

Rows highlighted in grey were not used in interpretations or calculations based on discordance or short analysis times

Table 9: LA-ICP-MS Zircon Isotopic and Age Data Table: SC15-10: Scott County, KS Conglomerate Sample

								Corrected Isotopic Ratios[3]							Ages (Ma)[7]							
Grain #	Signal Duration (s)	U (ppm)[1]	2σ	Th (ppm)[1]	2σ	eU (ppm)[2]	Th/U	$^{207}Pb/^{235}U$	2σ[4]	$^{206}Pb/^{238}U$	2σ[4]	Rho[5]	$^{207}Pb/^{206}Pb$[6]	2σ	$^{207}Pb/^{235}U$	2σ	$^{206}Pb/^{238}U$	2σ	$^{207}Pb/^{206}Pb$	2σ	% Disc.[8]	Uncert. Wtd. Disc.[9]
78	21.7	402.0	14.0	135.6	3.0	434	0.34	0.0285	0.0030	0.00430	0.00020	0.0922	0.0474	0.0047	28.4	2.9	27.7	1.3	70	180	2.5	0.2
183	21.6	455.0	28.0	386.0	18.0	546	0.85	0.0286	0.0027	0.00514	0.00021	0.1860	0.0413	0.0037	28.6	2.6	33.1	1.3	-170	140	-15.6	-1.7
45	21.7	955.0	79.0	428.0	27.0	1056	0.45	0.0322	0.0021	0.00517	0.00019	0.0823	0.0454	0.0027	32.4	2.1	33.3	1.2	40	110	-2.6	-0.4
148	21.7	452.0	14.0	417.8	8.9	550	0.92	0.0334	0.0029	0.00533	0.00020	0.1569	0.0468	0.0041	33.3	2.8	34.2	1.3	50	150	-2.8	-0.3
39	21.7	195.7	8.0	139.3	2.9	228	0.71	0.0338	0.0048	0.00534	0.00023	0.1597	0.0470	0.0064	33.6	4.7	34.3	1.5	50	240	-2.1	-0.1
256	21.6	218.4	9.2	246.6	7.7	276	1.13	0.0370	0.0047	0.00537	0.00022	0.1511	0.0514	0.0067	36.7	4.6	34.5	1.4	160	220	5.9	0.5
102	8.0	408.0	26.0	328.0	18.0	485	0.80	0.0415	0.0066	0.00538	0.00025	0.0316	0.0583	0.0094	41.1	6.4	34.6	1.6	390	310	15.8	1.0
51	17.8	384.0	27.0	96.8	6.7	407	0.25	0.0387	0.0042	0.00541	0.00023	0.0122	0.0503	0.0053	38.5	4.1	34.8	1.5	250	200	9.6	0.9
138	14.3	473.0	15.0	250.7	6.2	532	0.53	0.0394	0.0041	0.00550	0.00024	0.0607	0.0527	0.0054	39.8	3.9	35.4	1.5	310	190	11.1	1.1
159	18.3	48.9	2.3	45.7	1.6	60	0.93	0.0410	0.0130	0.00574	0.00046	0.0888	0.0570	0.0200	39.0	13.0	36.9	2.9	230	530	5.4	0.2
38	14.0	414.0	34.0	260.0	21.0	475	0.63	0.0407	0.0044	0.00575	0.00026	0.1058	0.0532	0.0060	40.4	4.3	37.0	1.6	280	210	8.4	0.8
269	21.6	61.8	5.0	36.4	2.9	70	0.59	0.1240	0.0260	0.00591	0.00044	0.0063	0.1680	0.0360	110.0	20.0	38.0	2.8	1700	370	65.5	3.6
90	21.7	451.0	13.0	67.6	2.2	467	0.15	0.0615	0.0045	0.00930	0.00033	0.0186	0.0473	0.0030	60.9	4.2	59.7	2.1	100	120	2.0	0.3
224	21.6	264.8	8.8	127.9	4.5	295	0.48	0.0663	0.0053	0.00982	0.00038	0.2109	0.0493	0.0037	65.0	5.0	63.0	2.4	150	140	3.1	0.4
87	4.9	100.9	7.1	52.9	4.4	113	0.52	0.0680	0.0210	0.00987	0.00096	0.2483	0.0420	0.0130	65.0	20.0	63.3	6.1	80	440	2.6	0.1
177	21.6	158.0	10.0	69.6	8.2	174	0.44	0.0752	0.0070	0.00988	0.00046	0.0140	0.0543	0.0053	74.1	6.5	63.4	2.9	330	180	14.4	1.6
107	21.7	90.3	4.4	43.0	1.7	100	0.48	0.0634	0.0100	0.00999	0.00045	0.0786	0.0477	0.0078	61.5	9.6	64.1	2.8	180	260	-4.2	-0.3
176	21.6	153.2	7.4	83.3	3.3	173	0.54	0.0720	0.0076	0.00999	0.00045	0.1219	0.0515	0.0057	70.1	7.2	64.1	2.9	270	200	8.6	0.8
236	21.6	69.2	4.3	22.2	1.2	74	0.32	0.0770	0.0120	0.01016	0.00052	0.1525	0.0543	0.0085	77.0	11.0	65.2	3.3	380	270	15.3	1.1
64	7.0	212.0	22.0	57.0	13.0	225	0.27	0.0721	0.0094	0.01034	0.00058	0.1453	0.0520	0.0073	70.4	8.9	66.3	3.7	220	260	5.8	0.5
143	19.5	45.3	2.5	27.6	1.6	52	0.61	0.0770	0.0190	0.01047	0.00059	0.0808	0.0570	0.0140	73.0	17.0	67.1	3.8	230	400	8.1	0.3
238	21.6	36.4	3.6	24.7	2.1	42	0.68	0.0780	0.0210	0.01056	0.00070	0.0369	0.0570	0.0160	72.0	20.0	67.7	4.4	120	450	6.0	0.2
254	21.6	230.1	6.9	111.4	4.8	256	0.48	0.0753	0.0066	0.01058	0.00040	0.0578	0.0495	0.0042	73.4	6.2	67.9	2.6	220	160	7.5	0.9
196	21.6	54.7	1.3	34.5	1.2	63	0.63	0.0950	0.0170	0.01062	0.00053	0.0642	0.0710	0.0130	89.0	16.0	68.1	3.4	560	350	23.5	1.3
240	21.6	164.5	4.2	58.1	3.4	178	0.35	0.0730	0.0081	0.01063	0.00046	0.1723	0.0505	0.0054	71.0	7.7	68.1	2.9	190	200	4.1	0.4
259	21.6	194.0	19.0	34.9	3.4	202	0.18	0.0890	0.0180	0.01063	0.00049	0.0492	0.0600	0.0110	84.0	14.0	68.1	3.1	350	200	18.9	1.1
89	19.3	136.0	10.0	30.5	2.0	143	0.22	0.0752	0.0085	0.01065	0.00045	0.0059	0.0481	0.0056	73.1	8.0	68.3	2.9	140	200	6.6	0.6
66	11.6	150.0	16.0	106.0	12.0	175	0.71	0.0780	0.0120	0.01081	0.00060	0.2843	0.0510	0.0069	77.0	12.0	69.3	3.8	250	250	10.0	0.6
96	12.2	336.0	10.0	182.2	4.4	379	0.54	0.0698	0.0057	0.01081	0.00046	0.1004	0.0458	0.0035	68.4	5.4	69.3	3.0	30	140	-1.3	-0.2
125	21.7	59.8	1.7	23.9	0.6	65	0.40	0.0730	0.0140	0.01083	0.00059	0.0556	0.0527	0.0098	70.0	13.0	69.4	3.8	60	300	0.9	0.0
216	21.6	65.3	3.2	15.0	0.6	69	0.23	0.0760	0.0120	0.01082	0.00055	0.1473	0.0530	0.0083	75.0	12.0	69.4	3.5	160	270	7.5	0.5
181	21.6	182.0	14.0	161.0	10.0	220	0.88	0.0844	0.0075	0.01086	0.00046	0.2004	0.0552	0.0045	81.9	7.0	69.6	2.9	390	160	15.0	1.8
204	21.6	72.7	5.3	37.9	1.9	82	0.52	0.0740	0.0140	0.01093	0.00059	0.1495	0.0460	0.0083	71.0	13.0	70.1	3.7	-30	280	1.3	0.1
222	21.6	245.0	11.0	33.0	1.8	253	0.13	0.0694	0.0053	0.01095	0.00046	0.2438	0.0452	0.0031	67.9	5.0	70.2	2.9	20	130	-3.4	-0.5
73	21.2	39.9	2.2	22.0	0.9	45	0.55	0.0860	0.0180	0.01099	0.00071	0.0053	0.0560	0.0120	85.0	17.0	70.4	4.5	320	360	17.2	0.9
146	21.7	77.3	4.2	37.9	1.7	86	0.49	0.0740	0.0110	0.01099	0.00053	0.0752	0.0502	0.0072	74.0	10.0	70.4	3.4	190	250	4.9	0.4
186	21.6	247.0	14.0	41.3	2.2	257	0.17	0.0804	0.0064	0.01098	0.00044	0.0174	0.0538	0.0042	78.2	6.0	70.4	2.8	310	150	10.0	1.3
24	21.7	147.9	9.4	60.5	4.0	162	0.41	0.0747	0.0067	0.01099	0.00045	0.1477	0.0505	0.0044	72.8	6.3	70.5	2.9	160	160	3.2	0.4
223	21.6	62.5	4.7	15.9	1.0	66	0.25	0.0930	0.0160	0.01101	0.00065	0.0830	0.0620	0.0110	90.0	15.0	70.5	4.2	470	310	21.7	1.3
74	21.7	144.0	11.0	33.6	2.4	152	0.23	0.0801	0.0090	0.01102	0.00046	0.1963	0.0521	0.0053	79.5	8.1	70.6	2.9	320	190	11.2	1.1
206	21.6	83.5	3.6	61.6	2.0	98	0.74	0.0740	0.0110	0.01101	0.00056	0.1789	0.0538	0.0082	71.0	11.0	70.6	3.5	240	260	0.6	0.0

Table 9: LA-ICP-MS Zircon Isotopic and Age Data Table: SC15-10: Scott County, KS Conglomerate Sample

								Corrected Isotopic Ratios[3]							Ages (Ma)[7]							
Grain #	Signal Duration (s)	U (ppm)[1]	2σ	Th (ppm)[1]	2σ	eU (ppm)[2]	Th/U	$^{207}Pb/^{235}U$	2σ[4]	$^{206}Pb/^{238}U$	2σ[4]	Rho[5]	$^{207}Pb/^{206}Pb$[6]	2σ	$^{207}Pb/^{235}U$	2σ	$^{206}Pb/^{238}U$	2σ	$^{207}Pb/^{206}Pb$	2σ	% Disc.[8]	Uncert. Wtd. Disc.[9]
207	21.6	369.0	44.0	235.0	29.0	424	0.64	0.0757	0.0061	0.01101	0.00043	0.0698	0.0495	0.0037	73.8	5.7	70.6	2.7	160	140	4.3	0.6
231	21.6	174.3	7.9	20.4	0.6	179	0.12	0.0782	0.0076	0.01102	0.00051	0.0604	0.0518	0.0049	76.0	7.1	70.6	3.3	300	180	7.1	0.8
246	21.6	130.0	10.0	36.3	2.5	139	0.28	0.0870	0.0110	0.01101	0.00047	0.0053	0.0590	0.0074	83.9	10.0	70.6	3.0	360	220	15.9	1.3
251	21.6	88.5	5.7	57.3	4.5	102	0.65	0.0758	0.0100	0.01101	0.00053	0.0453	0.0489	0.0069	76.0	9.4	70.6	3.4	210	220	7.1	0.6
65	21.7	96.6	5.1	26.6	0.5	103	0.28	0.0726	0.0096	0.01103	0.00049	0.2015	0.0498	0.0062	70.4	9.1	70.7	3.1	120	220	-0.4	0.0
93	21.7	66.5	4.3	24.1	2.0	72	0.36	0.0760	0.0110	0.01102	0.00060	0.0153	0.0520	0.0073	76.0	10.0	70.7	3.8	190	240	7.0	0.5
227	21.6	151.2	5.3	33.0	2.3	159	0.22	0.0792	0.0099	0.01105	0.00049	0.2916	0.0508	0.0058	76.6	9.2	70.8	3.1	210	210	7.6	0.6
63	21.7	296.0	21.0	68.7	4.3	312	0.23	0.0743	0.0052	0.01106	0.00042	0.2817	0.0486	0.0030	72.6	4.9	70.9	2.7	160	120	2.3	0.3
214	21.6	96.5	4.8	24.6	1.7	102	0.25	0.0960	0.0130	0.01108	0.00049	0.0760	0.0638	0.0082	93.0	11.0	71.0	3.1	590	260	23.7	2.0
10	21.7	118.8	6.3	45.6	2.3	130	0.38	0.0719	0.0100	0.01110	0.00051	0.0049	0.0461	0.0062	70.9	9.6	71.1	3.3	30	230	-0.3	0.0
185	21.6	100.6	6.2	41.3	4.4	110	0.41	0.0860	0.0110	0.01109	0.00053	0.2481	0.0557	0.0071	83.0	11.0	71.1	3.4	360	220	14.3	1.1
50	11.8	121.0	16.0	42.6	6.1	131	0.35	0.0880	0.0150	0.01112	0.00051	0.1302	0.0570	0.0100	84.0	14.0	71.3	3.2	350	320	15.1	0.9
195	21.6	107.5	7.1	36.2	2.2	116	0.34	0.0809	0.0093	0.01112	0.00053	0.2257	0.0530	0.0060	78.3	8.8	71.3	3.4	230	210	8.9	0.8
60	21.7	91.0	8.8	80.9	9.1	110	0.89	0.0751	0.0099	0.01113	0.00053	0.1532	0.0466	0.0062	72.7	9.3	71.4	3.4	30	210	1.8	0.1
197	21.6	195.0	13.0	83.8	4.4	215	0.43	0.0839	0.0071	0.01113	0.00045	0.0066	0.0533	0.0043	81.5	6.6	71.4	2.9	330	160	12.4	1.5
44	11.9	45.9	1.9	30.8	1.1	53	0.67	0.0920	0.0230	0.01115	0.00068	0.0076	0.0600	0.0160	87.0	21.0	71.5	4.3	410	460	17.8	0.7
37	21.7	94.5	4.8	72.9	2.9	112	0.77	0.0790	0.0100	0.01119	0.00047	0.1421	0.0501	0.0069	76.2	9.7	71.7	3.0	110	230	5.9	0.5
94	21.7	252.0	12.0	191.1	7.8	297	0.76	0.0777	0.0063	0.01120	0.00046	0.0372	0.0486	0.0038	75.7	5.9	71.8	2.9	140	140	5.2	0.7
255	21.6	88.2	4.0	73.4	2.1	105	0.83	0.0770	0.0110	0.01126	0.00059	0.1173	0.0522	0.0080	75.9	10.0	72.1	3.7	250	260	5.0	0.4
42	15.1	343.0	12.0	263.7	5.0	405	0.77	0.0795	0.0067	0.01127	0.00043	0.2628	0.0525	0.0041	77.4	6.3	72.2	2.8	280	150	6.7	0.8
82	13.6	251.6	9.3	134.3	3.1	283	0.53	0.0749	0.0087	0.01127	0.00057	0.3485	0.0470	0.0050	73.0	8.3	72.2	3.6	130	200	1.1	0.1
208	21.6	319.0	15.0	169.3	6.3	359	0.53	0.0754	0.0061	0.01135	0.00042	0.0955	0.0488	0.0038	73.5	5.7	72.7	2.7	110	140	1.1	0.1
249	21.6	83.5	5.6	55.5	3.3	97	0.66	0.0940	0.0110	0.01135	0.00053	0.0133	0.0587	0.0069	90.2	10.0	72.7	3.4	470	220	19.4	1.8
257	21.6	300.0	25.0	151.0	12.0	335	0.50	0.0747	0.0056	0.01134	0.00044	0.1682	0.0492	0.0030	72.9	5.3	72.7	2.8	150	120	0.3	0.0
258	21.6	373.1	7.8	59.6	1.2	387	0.16	0.0729	0.0050	0.01135	0.00042	0.2019	0.0465	0.0028	71.3	4.7	72.7	2.7	30	110	-2.0	-0.3
175	21.6	137.7	6.4	27.2	1.0	144	0.20	0.0883	0.0091	0.01137	0.00051	0.0145	0.0592	0.0065	86.2	8.6	72.9	3.2	420	210	15.4	1.5
20	17.5	136.7	8.6	33.4	2.9	145	0.24	0.0820	0.0110	0.01138	0.00048	0.2227	0.0524	0.0066	79.0	10.0	73.0	3.0	250	220	7.6	0.6
52	21.7	46.7	2.9	42.9	2.3	57	0.92	0.0860	0.0140	0.01139	0.00064	0.0116	0.0558	0.0094	84.0	14.0	73.0	4.1	410	300	13.1	0.8
2	21.7	108.7	3.3	23.0	0.5	114	0.21	0.0741	0.0090	0.01141	0.00052	0.1940	0.0462	0.0054	71.9	8.5	73.1	3.3	60	200	-1.7	-0.1
9	13.1	237.0	10.0	140.2	2.9	270	0.59	0.0815	0.0087	0.01143	0.00050	0.2894	0.0529	0.0050	79.2	8.2	73.2	3.2	270	190	7.6	0.7
49	14.8	93.3	3.9	19.4	1.3	98	0.21	0.0910	0.0150	0.01143	0.00059	0.1423	0.0595	0.0098	87.0	14.0	73.3	3.7	360	300	15.7	1.0
193	21.6	43.8	2.7	13.9	0.9	47	0.32	0.1030	0.0210	0.01143	0.00069	0.0859	0.0610	0.0130	95.0	19.0	73.3	4.4	420	370	22.8	1.1
25	20.2	182.6	4.3	98.0	3.5	206	0.54	0.0793	0.0071	0.01146	0.00046	0.0139	0.0495	0.0043	77.1	6.6	73.4	2.9	210	170	4.8	0.6
48	21.7	74.6	3.4	45.2	1.3	85	0.61	0.0736	0.0100	0.01145	0.00056	0.0710	0.0490	0.0071	72.5	9.4	73.4	3.5	70	230	-1.2	-0.1
92	21.7	458.0	14.0	81.4	1.9	477	0.18	0.0772	0.0049	0.01145	0.00043	0.0637	0.0479	0.0028	75.4	4.6	73.4	2.7	120	110	2.7	0.4
91	21.7	86.3	1.9	28.1	0.6	93	0.33	0.0750	0.0110	0.01147	0.00053	0.0921	0.0480	0.0070	74.0	10.0	73.5	3.4	90	250	0.7	0.1
205	21.6	156.3	6.0	63.9	1.2	171	0.41	0.0865	0.0085	0.01146	0.00048	0.0328	0.0528	0.0051	83.7	7.9	73.5	3.1	280	180	12.2	1.3
243	21.6	398.0	21.0	58.5	3.2	412	0.15	0.0745	0.0055	0.01147	0.00042	0.2812	0.0466	0.0030	72.7	5.2	73.5	2.7	40	120	-1.1	-0.2
43	17.9	23.1	0.7	13.7	0.4	26	0.59	0.1010	0.0300	0.01150	0.00090	0.1834	0.0650	0.0190	94.0	29.0	73.7	5.7	250	540	21.6	0.7
188	21.6	33.0	2.6	41.4	3.1	43	1.25	0.0910	0.0270	0.01151	0.00085	0.0076	0.0660	0.0190	82.0	25.0	73.7	5.4	150	470	10.1	0.3
229	21.6	340.0	15.0	51.4	1.4	352	0.15	0.0819	0.0058	0.01150	0.00043	0.5096	0.0508	0.0034	79.7	5.4	73.7	2.7	220	130	7.5	1.1

Table 9: LA-ICP-MS Zircon Isotopic and Age Data Table: SC15-10: Scott County, KS Conglomerate Sample

								Corrected Isotopic Ratios[3]							Ages (Ma)[7]							
Grain #	Signal Duration (s)	U (ppm)[1]	2σ	Th (ppm)[1]	2σ	eU (ppm)[2]	Th/U	$^{207}Pb/^{235}U$	2σ[4]	$^{206}Pb/^{238}U$	2σ[4]	Rho[5]	$^{207}Pb/^{206}Pb$[6]	2σ	$^{207}Pb/^{235}U$	2σ	$^{206}Pb/^{238}U$	2σ	$^{207}Pb/^{206}Pb$	2σ	% Disc.[8]	Uncert. Wtd. Disc.[9]
62	21.7	111.6	7.6	74.8	4.2	129	0.67	0.0801	0.0083	0.01153	0.00051	0.0427	0.0507	0.0052	77.7	7.7	73.9	3.3	210	180	4.9	0.5
105	21.7	340.0	13.0	74.4	2.3	357	0.22	0.0761	0.0052	0.01153	0.00042	0.0753	0.0477	0.0029	74.8	4.8	73.9	2.7	140	120	1.2	0.2
253	21.6	71.4	5.0	59.0	4.7	85	0.83	0.0700	0.0120	0.01154	0.00058	0.2697	0.0466	0.0080	67.0	12.0	74.0	3.7	0	260	-10.4	-0.6
57	21.7	120.5	9.1	31.9	1.7	128	0.26	0.0840	0.0110	0.01157	0.00049	0.1175	0.0516	0.0065	80.6	10.0	74.2	3.1	280	240	7.9	0.6
110	21.7	86.9	3.2	50.5	1.8	99	0.58	0.0847	0.0100	0.01157	0.00056	0.1724	0.0527	0.0068	81.7	9.7	74.2	3.5	290	230	9.2	0.8
213	21.6	112.0	12.0	46.4	4.9	123	0.41	0.1590	0.0160	0.01160	0.00056	0.3296	0.1004	0.0095	148.0	14.0	74.3	3.6	1590	170	49.8	5.3
221	21.6	65.2	8.2	19.9	2.6	70	0.31	0.0700	0.0170	0.01161	0.00068	0.0565	0.0460	0.0100	74.0	15.0	74.4	4.3	10	330	-0.5	0.0
70	11.0	92.0	12.0	47.1	5.8	103	0.51	0.0820	0.0130	0.01163	0.00075	0.2539	0.0538	0.0091	79.0	12.0	74.5	4.8	280	320	5.7	0.4
184	21.6	52.6	4.7	66.9	5.9	68	1.27	0.0700	0.0160	0.01162	0.00065	0.0774	0.0480	0.0100	75.0	16.0	74.5	4.2	170	320	0.7	0.0
36	21.7	141.4	4.3	70.7	3.9	158	0.50	0.0789	0.0090	0.01161	0.00048	0.0346	0.0491	0.0055	76.5	8.4	74.7	3.1	110	200	2.4	0.2
162	21.6	122.7	3.1	26.5	0.8	129	0.22	0.0770	0.0086	0.01165	0.00056	0.1337	0.0502	0.0053	75.8	7.9	74.7	3.6	180	200	1.5	0.1
212	21.6	255.0	22.0	66.1	4.9	271	0.26	0.1106	0.0080	0.01166	0.00045	0.0399	0.0705	0.0047	106.9	7.1	74.7	2.9	860	140	30.1	4.5
112	21.7	63.2	3.6	20.7	0.9	68	0.33	0.0820	0.0150	0.01168	0.00062	0.1665	0.0540	0.0110	81.0	14.0	74.8	4.0	130	320	7.7	0.4
147	21.4	93.4	6.8	19.4	1.7	98	0.21	0.0740	0.0120	0.01167	0.00050	0.0094	0.0503	0.0083	72.0	11.0	74.8	3.2	50	260	-3.9	-0.3
274	21.6	142.0	20.0	71.1	6.2	159	0.50	0.0819	0.0096	0.01168	0.00049	0.2142	0.0511	0.0060	77.7	8.5	74.8	3.1	200	200	3.7	0.3
179	21.6	238.4	9.3	42.5	2.0	248	0.18	0.0785	0.0064	0.01168	0.00048	0.0435	0.0476	0.0040	76.5	6.0	74.9	3.0	120	140	2.1	0.3
235	21.6	134.1	9.9	21.2	3.1	139	0.16	0.0837	0.0093	0.01169	0.00054	0.0596	0.0521	0.0056	82.0	8.5	74.9	3.4	240	200	8.7	0.8
171	21.6	113.2	7.5	28.3	1.7	120	0.25	0.0811	0.0097	0.01170	0.00053	0.0205	0.0500	0.0062	79.4	9.2	75.0	3.4	200	230	5.5	0.5
67	17.1	816.0	28.0	553.0	11.0	946	0.68	0.0775	0.0044	0.01174	0.00042	0.2065	0.0472	0.0020	75.7	4.1	75.3	2.7	69	85	0.5	0.1
113	21.7	169.9	8.1	72.2	3.4	187	0.42	0.0779	0.0074	0.01179	0.00044	0.1450	0.0488	0.0045	76.6	6.8	75.5	2.8	140	160	1.4	0.2
260	21.6	67.8	8.0	58.7	8.0	82	0.87	0.0990	0.0150	0.01178	0.00065	0.0688	0.0630	0.0100	97.0	14.0	75.5	4.1	520	290	22.2	1.5
264	22.0	40.1	2.4	39.2	3.0	49	0.98	0.0960	0.0210	0.01181	0.00068	0.1219	0.0600	0.0130	90.0	19.0	75.6	4.3	410	360	16.0	0.8
133	21.3	164.3	5.2	46.7	1.2	175	0.28	0.0821	0.0078	0.01187	0.00051	0.0365	0.0495	0.0048	79.7	7.3	76.0	3.2	170	170	4.6	0.5
100	4.8	625.0	58.0	167.0	21.0	664	0.27	0.0737	0.0095	0.01188	0.00076	0.7114	0.0471	0.0060	72.0	9.0	76.1	4.8	60	230	-5.7	-0.5
104	21.7	610.0	52.0	351.0	12.0	692	0.58	0.0799	0.0049	0.01188	0.00042	0.0728	0.0488	0.0026	77.9	4.6	76.1	2.7	111	89	2.3	0.4
79	21.7	515.0	36.0	113.6	5.0	542	0.22	0.0804	0.0046	0.01189	0.00046	0.2312	0.0486	0.0024	78.4	4.3	76.2	2.9	141	98	2.8	0.5
234	21.6	84.3	8.1	18.0	2.1	89	0.21	0.0930	0.0120	0.01193	0.00055	0.1864	0.0551	0.0066	89.0	11.0	76.4	3.5	340	230	14.2	1.1
13	16.5	27.9	0.7	8.9	0.3	30	0.32	0.0960	0.0260	0.01195	0.00091	0.0963	0.0610	0.0180	89.0	24.0	76.5	5.8	310	490	14.0	0.5
117	21.6	74.3	7.5	38.6	4.0	83	0.52	0.0870	0.0140	0.01199	0.00058	0.1227	0.0551	0.0086	84.0	13.0	76.8	3.7	310	270	8.6	0.6
168	21.6	158.9	7.0	65.7	2.8	174	0.41	0.0847	0.0087	0.01200	0.00052	0.2393	0.0530	0.0052	82.9	8.3	76.9	3.3	300	180	7.2	0.7
22	21.7	170.0	13.0	82.6	5.4	189	0.49	0.0824	0.0080	0.01202	0.00047	0.0148	0.0490	0.0046	80.7	7.4	77.0	3.0	190	170	4.6	0.5
209	21.6	440.0	15.0	156.6	5.0	477	0.36	0.0828	0.0057	0.01202	0.00042	0.0609	0.0501	0.0031	81.1	5.2	77.0	2.6	180	120	5.1	0.8
7	12.8	47.7	4.1	28.1	2.9	54	0.59	0.1010	0.0240	0.01203	0.00079	0.1100	0.0600	0.0150	98.0	21.0	77.1	5.0	660	400	21.3	1.0
28	21.7	240.6	7.4	163.5	4.0	279	0.68	0.0804	0.0060	0.01205	0.00049	0.1808	0.0485	0.0038	78.3	5.7	77.4	3.1	140	150	1.1	0.2
18	21.7	351.0	9.8	91.3	7.3	372	0.26	0.0843	0.0061	0.01214	0.00044	0.1757	0.0510	0.0033	82.0	5.7	77.8	2.8	220	130	5.1	0.7
1	21.7	650.0	36.0	64.1	4.0	665	0.10	0.0813	0.0050	0.01219	0.00043	0.3403	0.0485	0.0024	79.3	4.7	78.1	2.8	133	98	1.5	0.3
114	21.6	319.0	30.0	87.8	9.7	340	0.28	0.0798	0.0059	0.01221	0.00047	0.0302	0.0495	0.0036	77.7	5.5	78.2	3.0	150	130	-0.6	-0.1
8	16.1	102.1	4.7	69.1	1.8	118	0.68	0.0743	0.0100	0.01236	0.00062	0.0669	0.0439	0.0063	72.2	9.5	79.2	4.0	-100	230	-9.7	-0.7
80	21.7	430.0	18.0	252.1	6.1	489	0.59	0.0839	0.0055	0.01243	0.00054	0.3842	0.0473	0.0026	81.6	5.2	79.6	3.4	70	110	2.5	0.4
278	21.6	139.0	14.0	83.7	9.5	159	0.60	0.0981	0.0098	0.01253	0.00063	0.0933	0.0575	0.0062	94.3	9.0	80.2	4.0	480	210	15.0	1.6
71	21.7	73.0	3.6	29.3	0.8	80	0.40	0.0830	0.0120	0.01255	0.00061	0.0380	0.0472	0.0067	84.0	11.0	80.4	3.9	80	230	4.3	0.3

Table 9: LA-ICP-MS Zircon Isotopic and Age Data Table: SC15-10: Scott County, KS Conglomerate Sample

								Corrected Isotopic Ratios[3]							Ages (Ma)[7]							
Grain #	Signal Duration (s)	U (ppm)[1]	2σ	Th (ppm)[1]	2σ	eU (ppm)[2]	Th/U	$^{207}Pb/^{235}U$	2σ[4]	$^{206}Pb/^{238}U$	2σ[4]	Rho[5]	$^{207}Pb/^{206}Pb$[6]	2σ	$^{207}Pb/^{235}U$	2σ	$^{206}Pb/^{238}U$	2σ	$^{207}Pb/^{206}Pb$	2σ	% Disc.[8]	Uncert. Wtd. Disc.[9]
56	21.7	119.4	4.9	100.2	3.4	143	0.84	0.0903	0.0096	0.01274	0.00051	0.1311	0.0523	0.0052	87.1	8.9	81.6	3.2	260	190	6.3	0.6
237	21.6	59.7	6.2	25.8	1.9	66	0.43	0.0940	0.0160	0.01311	0.00085	0.2574	0.0550	0.0092	91.0	15.0	83.9	5.4	240	290	7.8	0.5
275	21.6	92.6	7.7	14.5	1.0	96	0.16	0.3180	0.0340	0.01329	0.00062	0.4949	0.1670	0.0160	277.0	26.0	85.1	4.0	2520	160	69.3	7.4
261	21.6	187.0	17.0	17.0	1.9	191	0.09	0.0897	0.0098	0.01333	0.00082	0.4606	0.0474	0.0044	89.0	9.6	85.3	5.2	50	160	4.2	0.4
128	18.2	789.0	46.0	270.0	27.0	852	0.34	0.0854	0.0049	0.01365	0.00050	0.1555	0.0470	0.0022	83.1	4.6	87.4	3.2	62	92	-5.2	-0.9
247	21.6	373.0	21.0	121.7	8.3	402	0.33	0.0948	0.0060	0.01399	0.00049	0.1176	0.0486	0.0026	91.8	5.5	89.6	3.1	139	100	2.4	0.4
23	21.7	701.0	14.0	268.2	4.7	764	0.38	0.0942	0.0052	0.01440	0.00049	0.1257	0.0475	0.0021	91.3	4.8	92.2	3.1	73	89	-1.0	-0.2
136	14.5	335.0	18.0	328.0	18.0	412	0.98	0.0974	0.0083	0.01488	0.00054	0.2556	0.0478	0.0036	95.1	7.4	95.2	3.4	130	140	-0.1	0.0
150	14.8	292.0	47.0	129.0	20.0	322	0.44	0.1070	0.0110	0.01567	0.00076	0.3499	0.0483	0.0044	104.0	9.8	100.2	4.9	120	170	3.7	0.4
178	21.6	635.0	65.0	413.0	46.0	732	0.65	0.1061	0.0061	0.01584	0.00057	0.2064	0.0494	0.0023	102.8	5.5	101.3	3.6	159	93	1.5	0.3
279	21.6	68.9	8.8	38.8	4.4	78	0.56	0.1590	0.0530	0.01640	0.00350	0.9895	0.0624	0.0090	135.0	35.0	104.0	21.0	460	280	23.0	0.9
198	21.6	114.5	8.4	111.5	7.8	141	0.97	0.1089	0.0100	0.01631	0.00072	0.0780	0.0499	0.0044	105.4	9.0	104.3	4.6	160	160	1.0	0.1
156	13.4	233.0	11.0	83.1	4.1	253	0.36	0.1221	0.0093	0.01718	0.00071	0.1436	0.0531	0.0039	116.6	8.5	109.8	4.5	320	140	5.8	0.8
267	20.6	3.4	0.4	1.2	0.1	4	0.35	0.5900	0.2300	0.01770	0.00320	0.1658	0.3600	0.1400	360.0	180.0	112.0	20.0	400	1900	68.9	1.4
61	21.7	21.2	0.9	13.7	0.4	24	0.65	0.1250	0.0290	0.01800	0.00120	0.0646	0.0510	0.0120	116.0	27.0	114.9	7.6	100	390	0.9	0.0
121	11.8	297.0	15.0	75.5	2.4	315	0.25	0.1660	0.0130	0.02414	0.00092	0.2730	0.0510	0.0032	155.3	11.0	153.8	5.8	220	130	1.0	0.1
244	21.6	92.1	4.0	58.6	1.9	106	0.64	0.1710	0.0140	0.02428	0.00100	0.1883	0.0508	0.0039	159.0	12.0	154.6	6.3	210	150	2.8	0.4
108	19.7	41.1	0.8	69.0	1.6	57	1.68	0.1860	0.0270	0.02459	0.00110	0.0432	0.0544	0.0078	175.0	22.0	156.6	7.0	310	250	10.5	0.8
276	21.6	91.6	4.5	94.8	2.5	114	1.03	0.1760	0.0160	0.02484	0.00110	0.1246	0.0514	0.0045	165.0	13.0	158.2	7.0	310	160	4.1	0.5
99	21.7	516.0	15.0	328.0	5.4	593	0.64	0.1736	0.0084	0.02506	0.00085	0.2222	0.0502	0.0018	162.3	7.2	159.6	5.3	191	74	1.7	0.4
271	21.6	385.0	29.0	263.0	24.0	447	0.68	0.1769	0.0095	0.02507	0.00088	0.1253	0.0506	0.0023	165.0	8.2	159.6	5.5	239	99	3.3	0.7
33	21.7	111.2	4.5	163.0	5.2	150	1.47	0.1690	0.0120	0.02509	0.00093	0.2379	0.0485	0.0030	159.3	11.0	159.7	5.8	130	110	-0.3	0.0
34	17.8	250.0	16.0	168.2	8.6	290	0.67	0.1798	0.0110	0.02569	0.00096	0.1587	0.0505	0.0026	168.5	9.2	163.5	6.0	240	110	3.0	0.5
165	21.6	763.0	16.0	651.0	37.0	916	0.85	0.1848	0.0093	0.02658	0.00096	0.3334	0.0505	0.0017	171.8	7.9	169.1	6.0	211	72	1.6	0.3
68	21.7	211.0	14.0	110.7	3.2	237	0.52	0.1943	0.0120	0.02688	0.00097	0.1400	0.0513	0.0026	179.6	9.9	171.0	6.1	230	100	4.8	0.9
17	21.7	710.0	41.0	466.0	18.0	820	0.66	0.1892	0.0087	0.02740	0.00095	0.3364	0.0490	0.0015	175.7	7.5	174.2	6.0	143	64	0.9	0.2
228	21.6	372.0	36.0	113.5	3.5	399	0.31	0.1928	0.0120	0.02850	0.00110	0.4237	0.0496	0.0023	178.4	9.9	181.1	7.0	167	91	-1.5	-0.3
106	16.2	387.0	27.0	189.0	15.0	431	0.49	0.2112	0.0120	0.02938	0.00100	0.0227	0.0530	0.0028	194.1	9.9	186.7	6.6	330	110	3.8	0.7
201	21.6	234.1	9.3	35.7	1.2	242	0.15	0.2009	0.0120	0.02941	0.00100	0.2020	0.0496	0.0025	185.2	10.0	186.8	6.5	182	98	-0.9	-0.2
226	21.6	150.5	9.3	74.8	3.6	168	0.50	0.2130	0.0140	0.03053	0.00110	0.0375	0.0510	0.0032	196.0	12.0	193.8	7.0	240	120	1.1	0.2
141	21.7	160.0	11.0	103.8	5.9	184	0.65	0.2050	0.0130	0.03080	0.00110	0.0747	0.0482	0.0029	189.9	11.0	195.5	7.0	140	120	-2.9	-0.5
233	21.6	269.0	12.0	71.4	4.0	286	0.27	0.2360	0.0120	0.03351	0.00120	0.2287	0.0509	0.0024	214.0	11.0	212.5	7.7	218	96	0.7	0.1
4	21.7	367.0	23.0	117.8	4.8	395	0.32	0.2437	0.0130	0.03425	0.00120	0.2547	0.0519	0.0023	221.7	11.0	217.0	7.6	269	90	2.1	0.4
124	21.7	113.3	6.5	34.5	1.1	121	0.30	0.2470	0.0200	0.03542	0.00130	0.1108	0.0508	0.0037	226.0	16.0	224.4	8.2	220	140	0.7	0.1
262	21.6	304.0	31.0	138.0	15.0	336	0.45	0.3080	0.0190	0.03910	0.00190	0.6717	0.0556	0.0022	271.0	15.0	248.2	11.0	411	89	8.4	1.5
41	21.7	236.0	35.0	66.0	11.0	252	0.28	0.2680	0.0160	0.03927	0.00140	0.0939	0.0488	0.0024	240.0	13.0	248.3	8.5	158	100	-3.5	-0.6
252	21.6	360.0	18.0	50.4	1.1	372	0.14	0.2818	0.0140	0.03985	0.00140	0.1997	0.0509	0.0019	251.5	11.0	251.9	8.4	223	80	-0.2	0.0
55	21.7	246.0	18.0	77.4	2.8	264	0.31	0.3080	0.0160	0.04204	0.00140	0.2389	0.0532	0.0022	271.9	12.0	265.5	8.6	322	87	2.4	0.5
167	21.6	179.0	14.0	64.4	4.5	194	0.36	0.5100	0.1200	0.04610	0.00990	0.9773	0.0694	0.0054	370.0	77.0	285.0	60.0	810	170	23.0	1.1
154	21.7	60.2	3.6	18.3	2.3	65	0.30	0.7020	0.0410	0.08520	0.00320	0.2396	0.0599	0.0031	536.0	24.0	527.0	19.0	550	110	1.7	0.4
118	21.7	110.7	6.0	38.8	2.1	120	0.35	0.6760	0.0330	0.08560	0.00310	0.2809	0.0585	0.0023	525.0	21.0	529.4	18.0	543	86	-0.8	-0.2

Table 9: LA-ICP-MS Zircon Isotopic and Age Data Table: SC15-10: Scott County, KS Conglomerate Sample

								Corrected Isotopic Ratios[3]							Ages (Ma)[7]							
Grain #	Signal Duration (s)	U (ppm)[1]	2σ	Th (ppm)[2]	2σ	eU (ppm)[2]	Th/U	$^{207}Pb/^{235}U$	2σ[4]	$^{206}Pb/^{238}U$	2σ[4]	Rho[5]	$^{207}Pb/^{206}Pb$[6]	2σ	$^{207}Pb/^{235}U$	2σ	$^{206}Pb/^{238}U$	2σ	$^{207}Pb/^{206}Pb$	2σ	% Disc.[8]	Uncert. Wtd. Disc.[9]
158	21.7	346.0	28.0	77.8	5.8	364	0.22	0.7280	0.0320	0.08970	0.00320	0.4581	0.0595	0.0015	554.0	19.0	556.0	19.0	587	53	-0.4	-0.1
157	20.7	302.0	26.0	88.9	6.0	323	0.29	0.7670	0.0340	0.09250	0.00330	0.4731	0.0607	0.0017	578.0	20.0	570.0	20.0	647	61	1.4	0.4
98	21.6	247.4	8.9	38.2	0.8	256	0.15	0.7950	0.0350	0.09562	0.00310	0.3657	0.0600	0.0017	593.0	20.0	589.5	19.0	593	60	0.6	0.2
31	21.7	335.0	20.0	128.6	5.3	365	0.38	0.8670	0.0380	0.10400	0.00390	0.6610	0.0607	0.0016	639.0	22.0	638.0	22.0	633	56	0.2	0.0
83	18.7	339.0	63.0	133.0	25.0	370	0.39	1.8100	0.1200	0.11690	0.00830	0.9476	0.1110	0.0027	1046.0	46.0	710.0	48.0	1818	47	32.1	7.3
76	18.7	105.9	8.6	19.3	1.9	110	0.18	1.4630	0.1000	0.12020	0.00790	0.9331	0.0876	0.0028	909.0	45.0	730.0	46.0	1374	67	19.7	4.0
126	15.1	108.3	6.2	40.3	1.9	118	0.37	1.3830	0.0660	0.12110	0.00540	0.3500	0.0829	0.0035	879.0	28.0	736.0	31.0	1274	79	16.3	5.1
6	22.4	75.4	4.6	62.2	1.6	90	0.82	1.8300	0.2300	0.12800	0.01400	0.9592	0.1006	0.0043	1017.0	87.0	775.0	84.0	1615	82	23.8	2.8
285	21.6	375.0	37.0	13.7	1.2	378	0.04	1.7020	0.0910	0.13330	0.00640	0.8638	0.0917	0.0022	1006.0	35.0	815.0	36.0	1457	48	19.0	5.5
239	21.6	226.0	16.0	135.6	7.6	258	0.60	2.2100	0.1900	0.13700	0.01300	0.9660	0.1148	0.0032	1168.0	58.0	832.0	71.0	1875	51	28.8	5.8
270	21.6	202.0	12.0	93.4	6.1	224	0.46	1.6890	0.0710	0.16770	0.00570	0.6033	0.0724	0.0018	1004.0	26.0	999.0	31.0	992	48	0.5	0.2
85	22.1	122.2	8.3	39.0	2.4	131	0.32	1.9280	0.0840	0.17780	0.00640	0.2464	0.0772	0.0023	1092.0	28.0	1059.0	35.0	1122	58	3.0	1.2
189	21.6	63.9	3.1	41.4	1.3	74	0.65	1.8710	0.0860	0.17880	0.00620	0.0350	0.0756	0.0029	1068.0	30.0	1060.0	34.0	1107	76	0.7	0.3
40	21.7	173.0	13.0	115.6	5.3	200	0.67	1.8380	0.0760	0.17910	0.00610	0.6010	0.0740	0.0016	1057.0	27.0	1062.0	33.0	1040	45	-0.5	-0.2
135	21.7	149.0	11.0	45.4	2.5	160	0.30	1.8600	0.0810	0.18080	0.00610	0.3268	0.0751	0.0023	1071.0	27.0	1071.0	34.0	1058	62	0.0	0.0
132	21.7	66.8	4.2	30.8	1.7	74	0.46	1.9220	0.0850	0.18520	0.00650	0.4122	0.0753	0.0022	1086.0	29.0	1097.0	35.0	1079	59	-1.0	-0.4
134	20.0	124.9	7.7	68.5	3.3	141	0.55	1.9520	0.0840	0.18990	0.00650	0.4491	0.0750	0.0020	1101.0	29.0	1122.0	35.0	1061	54	-1.9	-0.7
54	21.6	186.0	11.0	64.8	2.5	201	0.35	2.0270	0.0810	0.19100	0.00630	0.3939	0.0772	0.0018	1123.0	27.0	1127.0	34.0	1127	47	-0.4	-0.1
203	21.6	330.0	37.0	27.0	2.7	336	0.08	2.8800	0.1600	0.20700	0.01100	0.9377	0.0996	0.0021	1373.0	42.0	1220.0	58.0	1617	38	11.1	3.6
137	10.9	374.0	21.0	38.6	2.3	383	0.10	2.9640	0.1300	0.21040	0.00790	0.7730	0.1037	0.0025	1400.0	34.0	1236.0	38.0	1688	44	11.7	4.8
32	22.5	952.0	84.0	447.0	50.0	1057	0.47	2.7830	0.1100	0.22280	0.00740	0.7512	0.0905	0.0016	1350.1	28.0	1296.0	39.0	1433	35	4.0	1.9
53	21.7	107.7	7.2	48.8	2.1	119	0.45	2.6850	0.1200	0.22540	0.00740	0.4958	0.0877	0.0024	1321.0	33.0	1310.0	39.0	1374	51	0.8	0.3
215	21.6	110.2	5.2	32.9	2.7	118	0.30	2.7520	0.1200	0.22640	0.00750	0.4567	0.0870	0.0022	1342.0	32.0	1315.0	39.0	1361	47	2.0	0.8
103	21.7	146.3	7.0	78.9	3.3	165	0.54	2.7310	0.1100	0.22780	0.00740	0.2819	0.0874	0.0021	1338.0	30.0	1323.0	39.0	1362	46	1.1	0.5
109	21.7	57.6	4.3	27.4	2.1	64	0.48	2.6810	0.1200	0.22780	0.00770	0.4280	0.0859	0.0024	1324.0	33.0	1323.0	41.0	1344	55	0.1	0.0
202	21.6	183.3	7.4	42.1	1.6	193	0.23	2.7380	0.1100	0.22890	0.00760	0.4937	0.0856	0.0019	1337.0	30.0	1329.0	40.0	1323	44	0.6	0.3
287	21.6	114.0	11.0	30.5	2.0	121	0.27	2.7280	0.1100	0.22920	0.00800	0.3217	0.0873	0.0024	1338.0	29.0	1330.0	42.0	1366	50	0.6	0.3
144	20.4	81.6	2.7	59.0	1.5	95	0.72	2.8830	0.1300	0.23220	0.00760	0.3630	0.0896	0.0026	1376.0	34.0	1346.0	40.0	1428	53	2.2	0.9
115	14.7	110.3	5.3	61.2	3.0	125	0.55	2.8000	0.1400	0.23290	0.01100	0.7554	0.0880	0.0026	1353.0	39.0	1347.0	59.0	1379	58	0.4	0.2
3	21.7	55.8	2.4	22.7	0.5	61	0.41	2.7940	0.1300	0.23340	0.00810	0.3172	0.0858	0.0029	1351.0	35.0	1352.0	42.0	1325	64	-0.1	0.0
219	21.6	620.0	100.0	69.0	12.0	636	0.11	2.9850	0.1200	0.23570	0.00820	0.6303	0.0908	0.0020	1403.0	30.0	1364.0	43.0	1443	40	2.8	1.3
263	21.6	678.0	47.0	39.3	4.2	687	0.06	3.1700	0.1700	0.23700	0.01300	0.9478	0.0976	0.0022	1444.0	41.0	1365.0	67.0	1579	40	5.5	1.9
15	13.3	76.4	7.9	44.5	4.3	87	0.58	2.9700	0.1400	0.23770	0.00840	0.3328	0.0893	0.0030	1404.0	37.0	1375.0	44.0	1405	67	2.1	0.8
187	21.6	258.0	12.0	19.5	1.1	263	0.08	3.0310	0.1200	0.23990	0.00800	0.5708	0.0915	0.0019	1417.0	31.0	1388.0	41.0	1455	40	2.0	0.9
211	21.6	167.5	6.9	88.6	4.3	188	0.53	2.9600	0.1200	0.23980	0.00810	0.5840	0.0898	0.0020	1395.0	31.0	1388.0	41.0	1427	44	0.5	0.2
119	13.1	265.0	13.0	157.4	3.7	302	0.59	2.9420	0.1200	0.24140	0.00860	0.5389	0.0883	0.0022	1394.0	33.0	1393.0	45.0	1382	49	0.1	0.0
69	21.8	106.9	4.1	57.2	2.5	120	0.54	3.0300	0.1200	0.24190	0.00820	0.4672	0.0893	0.0021	1415.0	30.0	1396.0	42.0	1409	44	1.3	0.6
81	21.6	80.4	6.1	54.5	4.0	93	0.68	3.1430	0.1300	0.24170	0.00910	0.3602	0.0934	0.0025	1443.0	32.0	1398.0	46.0	1501	50	3.1	1.4
200	21.6	84.0	5.4	52.8	3.7	96	0.63	2.9610	0.1300	0.24260	0.00810	0.3927	0.0889	0.0024	1397.0	32.0	1400.0	42.0	1396	52	-0.2	-0.1
191	21.6	109.5	9.8	51.4	4.6	122	0.47	3.0380	0.1200	0.24380	0.00830	0.5609	0.0907	0.0020	1419.0	31.0	1406.0	43.0	1439	42	0.9	0.4
122	21.7	118.0	16.0	103.5	8.9	142	0.88	2.9180	0.1300	0.24420	0.00830	0.4384	0.0889	0.0025	1390.0	33.0	1408.0	43.0	1404	54	-1.3	-0.5

Table 9: LA-ICP-MS Zircon Isotopic and Age Data Table: SC15-10: Scott County, KS Conglomerate Sample

								Corrected Isotopic Ratios[3]							Ages (Ma)[7]							
Grain #	Signal Duration (s)	U (ppm)[1]	2σ	Th (ppm)[1]	2σ	eU (ppm)[2]	Th/U	$^{207}Pb/^{235}U$	2σ[4]	$^{206}Pb/^{238}U$	2σ[4]	Rho[5]	$^{207}Pb/^{206}Pb$[6]	2σ	$^{207}Pb/^{235}U$	2σ	$^{206}Pb/^{238}U$	2σ	$^{207}Pb/^{206}Pb$	2σ	% Disc.[8]	Uncert. Wtd. Disc.[9]
272	21.6	158.0	30.0	42.2	2.2	168	0.27	3.0800	0.1300	0.24410	0.00810	0.1988	0.0903	0.0025	1424.0	33.0	1408.0	42.0	1441	50	1.1	0.5
21	14.3	241.2	7.0	114.4	2.8	268	0.47	3.0770	0.1200	0.24520	0.00790	0.5229	0.0907	0.0019	1428.0	31.0	1413.0	41.0	1444	40	1.1	0.5
172	21.6	107.0	10.0	38.9	2.1	116	0.36	3.0570	0.1300	0.24600	0.00860	0.2429	0.0906	0.0028	1421.0	34.0	1417.0	44.0	1445	56	0.3	0.1
155	21.7	113.6	9.8	36.5	2.1	122	0.32	3.0140	0.1200	0.24630	0.00840	0.3853	0.0893	0.0022	1409.0	31.0	1419.0	43.0	1405	49	-0.7	-0.3
241	21.6	288.0	25.0	327.0	23.0	365	1.14	3.0960	0.1200	0.24690	0.00830	0.5961	0.0908	0.0019	1431.0	31.0	1424.0	42.0	1440	40	0.5	0.2
16	22.4	795.0	43.0	7.9	0.6	797	0.01	3.3360	0.1300	0.24750	0.00810	0.7507	0.0971	0.0018	1492.0	31.0	1425.0	42.0	1568	35	4.5	2.2
225	21.6	120.7	5.7	80.0	3.1	140	0.66	3.1620	0.1300	0.24750	0.00880	0.4107	0.0925	0.0023	1450.0	32.0	1425.0	45.0	1482	46	1.7	0.8
14	21.7	185.5	6.9	82.1	2.7	205	0.44	3.0990	0.1200	0.24800	0.00840	0.5020	0.0903	0.0019	1431.0	30.0	1427.0	44.0	1430	42	0.3	0.1
166	21.6	97.3	2.6	48.5	0.9	109	0.50	3.0990	0.1300	0.24840	0.00850	0.4381	0.0912	0.0023	1434.0	31.0	1430.0	44.0	1462	48	0.3	0.1
218	21.6	138.0	12.0	55.4	2.1	151	0.40	3.1260	0.1300	0.24850	0.00870	0.4765	0.0910	0.0023	1438.0	32.0	1430.0	45.0	1446	49	0.6	0.3
265	21.6	358.0	20.0	43.5	5.3	368	0.12	3.4000	0.2000	0.24900	0.01100	0.9374	0.0976	0.0022	1491.0	45.0	1430.0	59.0	1576	42	4.1	1.4
161	21.6	649.0	86.0	34.6	5.2	657	0.05	3.0570	0.1200	0.24880	0.00850	0.6882	0.0900	0.0019	1422.0	31.0	1432.0	44.0	1425	40	-0.7	-0.3
129	21.7	250.7	5.7	89.7	3.5	272	0.36	3.1150	0.1200	0.25030	0.00820	0.5907	0.0919	0.0018	1436.0	31.0	1439.0	42.0	1462	37	-0.2	-0.1
169	21.6	134.8	9.8	73.9	3.1	152	0.55	3.1030	0.1300	0.25020	0.00920	0.5732	0.0904	0.0023	1437.0	33.0	1439.0	47.0	1439	46	-0.1	-0.1
140	21.7	143.9	7.8	72.0	1.9	161	0.50	3.0180	0.1200	0.25040	0.00860	0.4689	0.0884	0.0021	1412.0	31.0	1442.0	44.0	1384	45	-2.1	-1.0
220	21.6	258.0	33.0	60.2	4.3	272	0.23	3.2450	0.1300	0.25370	0.00870	0.6124	0.0916	0.0020	1468.0	32.0	1457.0	44.0	1454	41	0.7	0.3
174	21.6	185.0	11.0	92.2	4.6	207	0.50	3.1870	0.1300	0.25380	0.00880	0.5372	0.0916	0.0021	1452.0	32.0	1460.0	46.0	1465	45	-0.6	-0.3
180	21.6	273.0	20.0	156.5	8.8	310	0.57	3.1970	0.1300	0.25640	0.00890	0.5636	0.0913	0.0020	1456.0	31.0	1471.0	46.0	1451	43	-1.0	-0.5
277	21.6	127.0	28.0	35.5	5.3	135	0.28	3.2120	0.1400	0.25590	0.00920	0.5415	0.0909	0.0023	1458.0	34.0	1471.0	46.0	1440	46	-0.9	-0.4
26	12.3	476.0	81.0	95.0	15.0	498	0.20	3.2700	0.1700	0.25740	0.01200	0.8846	0.0913	0.0023	1469.0	41.0	1475.0	62.0	1448	47	-0.4	-0.1
11	11.6	431.0	21.0	59.6	3.4	445	0.14	3.2930	0.1300	0.25910	0.00920	0.5786	0.0917	0.0022	1478.0	32.0	1485.0	47.0	1469	45	-0.5	-0.2
273	21.6	315.0	15.0	12.8	0.8	318	0.04	3.3330	0.1400	0.26190	0.00930	0.8298	0.0918	0.0018	1486.0	32.0	1502.0	48.0	1464	37	-1.1	-0.5
164	21.6	69.2	2.6	39.3	1.8	78	0.57	3.6250	0.1600	0.26660	0.00950	0.5018	0.0997	0.0029	1553.0	37.0	1522.0	48.0	1625	53	2.0	0.8
266	21.6	122.5	4.2	0.8	0.1	123	0.01	3.3400	0.1400	0.26620	0.00920	0.4233	0.0900	0.0022	1492.0	32.0	1524.0	46.0	1429	49	-2.1	-1.0
280	21.6	724.0	49.0	23.5	2.8	730	0.03	3.7700	0.2000	0.27280	0.01100	0.9318	0.0983	0.0023	1577.0	43.0	1553.0	54.0	1588	46	1.5	0.6
286	21.6	119.0	15.0	49.5	6.0	131	0.42	3.5200	0.1700	0.27410	0.01300	0.7693	0.0932	0.0026	1524.0	39.0	1558.0	64.0	1489	52	-2.2	-0.9
101	13.4	796.0	37.0	50.0	15.0	808	0.06	3.7800	0.1900	0.27710	0.01000	0.9156	0.0991	0.0024	1587.0	41.0	1576.0	53.0	1608	44	0.7	0.3
199	21.6	219.4	6.7	76.5	1.9	237	0.35	4.0470	0.1600	0.27980	0.01000	0.7523	0.1040	0.0021	1644.0	31.0	1589.0	50.0	1695	37	3.3	1.8
84	21.7	270.0	15.0	56.7	5.0	283	0.21	4.1070	0.1600	0.28040	0.00960	0.5214	0.1043	0.0021	1656.0	32.0	1593.0	48.0	1704	39	3.8	2.0
194	21.6	152.7	6.1	12.5	0.5	156	0.08	4.0480	0.1600	0.28380	0.00910	0.4317	0.1038	0.0021	1644.0	33.0	1610.0	46.0	1692	39	2.1	1.0
281	21.6	313.0	42.0	76.8	8.4	331	0.25	4.0400	0.2800	0.28700	0.02000	0.9685	0.1023	0.0023	1638.0	58.0	1613.0	100.0	1660	41	1.5	0.4
86	22.0	205.2	6.6	62.1	2.4	220	0.30	4.2230	0.1700	0.28740	0.00970	0.6579	0.1043	0.0022	1676.0	33.0	1628.0	48.0	1705	36	2.9	1.5
12	21.2	130.9	4.9	77.8	1.7	149	0.59	4.0920	0.1600	0.28870	0.00980	0.3236	0.1025	0.0025	1656.0	34.0	1634.0	49.0	1662	46	1.3	0.6
75	17.3	189.0	20.0	75.6	6.5	207	0.40	4.0960	0.1700	0.28870	0.01100	0.7106	0.1003	0.0023	1654.0	35.0	1638.0	56.0	1628	44	1.0	0.5
173	21.6	93.3	4.1	41.4	4.2	103	0.44	4.1320	0.1700	0.29010	0.01000	0.4481	0.1038	0.0027	1664.0	34.0	1641.0	51.0	1692	48	1.4	0.7
192	21.6	233.0	11.0	108.4	3.8	258	0.47	4.1610	0.1600	0.29040	0.00930	0.5194	0.1037	0.0020	1665.0	31.0	1643.0	47.0	1691	36	1.3	0.7
97	21.7	158.0	11.0	70.7	3.6	175	0.45	4.1660	0.1600	0.29190	0.00980	0.5101	0.1030	0.0022	1666.0	32.0	1650.0	49.0	1678	40	1.0	0.5
190	21.6	141.2	7.6	71.4	2.1	158	0.51	4.3430	0.1700	0.29290	0.00980	0.5588	0.1061	0.0023	1700.0	32.0	1655.0	49.0	1728	40	2.6	1.4
77	13.7	100.2	5.2	59.2	1.9	114	0.59	4.1200	0.1900	0.29310	0.01100	0.5315	0.1009	0.0030	1659.0	36.0	1656.0	56.0	1644	52	0.2	0.1
217	21.6	36.1	1.9	12.6	0.4	39	0.35	4.1500	0.2000	0.29350	0.01100	0.3779	0.1008	0.0035	1670.0	37.0	1658.0	53.0	1636	65	0.7	0.3
30	14.2	397.0	54.0	58.3	5.3	411	0.15	4.1000	0.1800	0.29270	0.01200	0.8462	0.1014	0.0022	1651.0	37.0	1659.0	61.0	1654	40	-0.5	-0.2

Table 9: LA-ICP-MS Zircon Isotopic and Age Data Table: SC15-10: Scott County, KS Conglomerate Sample

								Corrected Isotopic Ratios[3]							Ages (Ma)[7]							
Grain #	Signal Duration (s)	U (ppm)[1]	2σ	Th (ppm)[1]	2σ	eU (ppm)[2]	Th/U	$^{207}Pb/^{235}U$	2σ[4]	$^{206}Pb/^{238}U$	2σ[4]	Rho[5]	$^{207}Pb/^{206}Pb$[6]	2σ	$^{207}Pb/^{235}U$	2σ	$^{206}Pb/^{238}U$	2σ	$^{207}Pb/^{206}Pb$	2σ	% Disc.[8]	Uncert. Wtd. Disc.[9]
160	21.7	99.4	6.2	5.5	0.6	101	0.06	4.2000	0.1800	0.29280	0.01100	0.5738	0.1037	0.0029	1671.0	36.0	1659.0	55.0	1685	52	0.7	0.3
250	21.6	79.1	4.3	29.3	1.2	86	0.37	4.2250	0.1700	0.29470	0.01000	0.4858	0.1044	0.0024	1677.0	33.0	1664.0	50.0	1701	43	0.8	0.4
152	21.7	172.0	28.0	73.2	9.6	189	0.43	4.1170	0.1700	0.29500	0.01000	0.4429	0.1021	0.0025	1657.0	33.0	1669.0	49.0	1659	45	-0.7	-0.4
111	19.6	86.1	6.0	21.0	1.1	91	0.24	4.2630	0.1800	0.29610	0.01000	0.5354	0.1058	0.0026	1684.0	34.0	1671.0	51.0	1721	45	0.8	0.4
145	14.7	154.0	17.0	49.1	7.8	166	0.32	4.2020	0.1700	0.29640	0.01000	0.4504	0.1046	0.0027	1673.0	34.0	1673.0	50.0	1700	47	0.0	0.0
35	22.8	241.0	12.0	80.9	2.9	260	0.34	4.3200	0.1700	0.29750	0.00980	0.5954	0.1054	0.0021	1697.0	31.0	1678.0	49.0	1721	37	1.1	0.6
127	20.5	128.4	5.1	14.9	0.9	132	0.12	4.3000	0.1900	0.29680	0.01100	0.7063	0.1068	0.0025	1690.0	36.0	1678.0	54.0	1743	44	0.7	0.3
245	21.6	402.0	84.0	162.0	25.0	440	0.40	4.1400	0.1800	0.29780	0.01100	0.7751	0.1014	0.0022	1661.0	37.0	1679.0	53.0	1645	41	-1.1	-0.5
116	15.7	171.0	68.0	53.4	4.8	184	0.31	4.1900	0.1900	0.29800	0.01200	0.6493	0.1016	0.0028	1672.0	37.0	1680.0	59.0	1651	52	-0.5	-0.2
232	21.6	262.2	9.2	73.9	1.5	280	0.28	4.3320	0.1700	0.29840	0.01000	0.6842	0.1046	0.0021	1699.0	32.0	1683.0	51.0	1709	38	0.9	0.5
131	17.9	95.0	13.0	57.3	4.3	108	0.60	4.3330	0.1800	0.29920	0.01100	0.4432	0.1054	0.0028	1699.0	36.0	1687.0	52.0	1723	50	0.7	0.3
149	17.3	307.0	10.0	100.4	4.0	331	0.33	4.2130	0.1600	0.29970	0.00970	0.6881	0.1046	0.0021	1675.0	32.0	1689.0	48.0	1704	36	-0.8	-0.4
59	11.5	677.0	81.0	48.2	4.5	688	0.07	4.2290	0.1800	0.30100	0.01100	0.7797	0.1038	0.0022	1678.0	35.0	1696.0	54.0	1696	37	-1.1	-0.5
151	21.7	218.0	18.0	59.9	4.3	232	0.27	4.3300	0.2000	0.30060	0.01200	0.8498	0.1042	0.0023	1700.0	38.0	1696.0	56.0	1703	41	0.2	0.1
19	15.2	459.0	25.0	47.4	3.2	470	0.10	4.3870	0.1700	0.30140	0.01000	0.5408	0.1055	0.0022	1709.0	31.0	1698.0	50.0	1719	38	0.6	0.4
163	21.6	222.0	18.0	71.7	2.5	239	0.32	4.1060	0.1700	0.30110	0.01000	0.7434	0.1004	0.0021	1653.0	34.0	1699.0	51.0	1630	41	-2.8	-1.4
282	21.6	120.0	13.0	27.8	2.5	127	0.23	4.3700	0.1900	0.30340	0.01200	0.8205	0.1041	0.0023	1708.0	36.0	1706.0	58.0	1700	42	0.1	0.1
27	10.9	155.5	3.0	93.4	2.2	177	0.60	4.4440	0.1800	0.30380	0.01000	0.2606	0.1068	0.0026	1720.0	33.0	1710.0	49.0	1741	44	0.6	0.3
46	22.2	210.5	9.9	68.1	2.5	227	0.32	4.3190	0.1700	0.30380	0.00980	0.5227	0.1039	0.0021	1697.0	33.0	1710.0	48.0	1692	37	-0.8	-0.4
210	21.6	157.6	7.6	73.3	1.6	175	0.47	4.3760	0.1700	0.30380	0.01000	0.3487	0.1046	0.0022	1707.0	32.0	1710.0	49.0	1701	40	-0.2	-0.1
29	17.0	320.6	7.6	95.2	2.2	343	0.30	4.3700	0.1800	0.30450	0.01100	0.8812	0.1044	0.0020	1707.0	34.0	1712.0	55.0	1705	35	-0.3	-0.1
283	21.6	660.0	53.0	103.9	4.3	684	0.16	4.3530	0.1600	0.30430	0.01000	0.6113	0.1035	0.0019	1702.6	31.0	1714.0	50.0	1690	36	-0.7	-0.4
130	17.8	137.0	12.0	58.6	5.6	151	0.43	4.3000	0.1800	0.30500	0.01000	0.4911	0.1047	0.0025	1696.0	34.0	1715.0	52.0	1708	43	-1.1	-0.6
95	8.4	121.5	7.3	39.2	3.7	131	0.32	4.3400	0.2100	0.30540	0.01200	0.5012	0.1040	0.0035	1698.0	41.0	1717.0	62.0	1699	66	-1.1	-0.5
47	21.4	188.4	9.4	120.4	4.8	217	0.64	4.4330	0.1700	0.30850	0.01000	0.5521	0.1045	0.0021	1717.0	32.0	1733.0	50.0	1704	38	-0.9	-0.5
182	21.6	96.0	15.0	18.2	0.8	100	0.19	4.3900	0.1900	0.30890	0.01100	0.4372	0.1038	0.0030	1708.0	37.0	1734.0	54.0	1684	55	-1.5	-0.7
230	21.6	66.0	3.3	46.5	1.8	77	0.70	4.8300	0.2000	0.30880	0.01100	0.4588	0.1122	0.0029	1787.0	35.0	1734.0	53.0	1833	50	3.0	1.5
58	21.7	99.2	2.3	46.3	1.2	110	0.47	4.4340	0.1800	0.30910	0.01000	0.1992	0.1042	0.0026	1719.0	32.0	1736.0	49.0	1692	46	-1.0	-0.5
72	21.8	222.0	12.0	36.1	2.2	230	0.16	4.4570	0.1800	0.30860	0.01100	0.6686	0.1031	0.0022	1725.0	33.0	1736.0	56.0	1676	40	-0.6	-0.3
120	18.0	255.0	36.0	51.0	5.7	267	0.20	4.4800	0.2400	0.30800	0.01500	0.9348	0.1069	0.0023	1729.0	46.0	1738.0	75.0	1747	39	-0.5	-0.2
153	21.0	241.0	17.0	47.7	1.2	252	0.20	4.3820	0.1700	0.31120	0.01100	0.5679	0.1043	0.0023	1707.0	33.0	1746.0	52.0	1699	42	-2.3	-1.2
284	21.6	141.7	9.5	39.1	1.9	151	0.28	4.6500	0.2700	0.31300	0.01700	0.9139	0.1083	0.0024	1751.0	49.0	1754.0	84.0	1774	43	-0.2	-0.1
248	21.6	180.0	22.0	63.4	5.0	195	0.35	4.6000	0.2300	0.31300	0.01500	0.8908	0.1059	0.0024	1745.0	42.0	1759.0	71.0	1731	42	-0.8	-0.3
123	11.6	185.6	9.9	38.6	2.0	195	0.21	4.5600	0.2100	0.31450	0.01400	0.7175	0.1058	0.0029	1739.0	39.0	1761.0	67.0	1729	49	-1.3	-0.6
142	7.7	432.0	60.0	102.0	14.0	456	0.24	4.7100	0.2400	0.31800	0.01400	0.6244	0.1078	0.0036	1771.0	45.0	1779.0	68.0	1756	59	-0.5	-0.2
5	22.0	269.0	17.0	98.1	4.5	292	0.36	4.6240	0.1800	0.31860	0.01100	0.6167	0.1038	0.0022	1752.0	33.0	1782.0	53.0	1696	38	-1.7	-0.9
88	17.9	461.0	26.0	131.0	11.0	492	0.28	4.6610	0.1900	0.31880	0.01100	0.5774	0.1037	0.0022	1758.0	34.0	1787.0	57.0	1688	39	-1.6	-0.9
139	21.7	370.0	24.0	254.0	15.0	430	0.69	4.6130	0.1800	0.31980	0.01100	0.6883	0.1054	0.0019	1751.0	32.0	1788.0	52.0	1723	35	-2.1	-1.2
242	21.6	182.0	21.0	119.0	11.0	210	0.65	4.7700	0.2700	0.32500	0.01600	0.9043	0.1060	0.0024	1769.0	48.0	1809.0	79.0	1725	43	-2.3	-0.8
268	21.6	85.0	12.0	19.1	2.9	89	0.22	4.8800	0.2400	0.33390	0.01400	0.8257	0.1052	0.0029	1794.0	44.0	1854.0	68.0	1712	51	-3.3	-1.4
170	21.6	264.0	26.0	101.6	9.4	288	0.38	5.0400	0.2300	0.35000	0.01600	0.8396	0.1068	0.0025	1830.0	38.0	1929.0	75.0	1746	43	-5.4	-2.6

Table 9: LA-ICP-MS Zircon Isotopic and Age Data Table: SC15-10: Scott County, KS Conglomerate Sample

								Corrected Isotopic Ratios[3]						Ages (Ma)[7]							
Grain #	Signal Duration (s)	U (ppm)[1]	2σ	Th (ppm)[1]	2σ	eU (ppm)[2]	Th/U	$^{207}Pb/^{235}U$	2σ[4]	$^{206}Pb/^{238}U$	2σ[4]	Rho[5]	$^{207}Pb/^{206}Pb$[6]	2σ	$^{207}Pb/^{235}U$	2σ	$^{206}Pb/^{238}U$	2σ	$^{207}Pb/^{206}Pb$	2σ	% Disc.[8]	Uncert. Wtd. Disc.[9]

[1]U and Th have been concentrations and the Th/U ratios are calculated relative to the GJ-1 standard value using 287 ± 76 ppm for U and 8.4 ± 2.6 ppm for Th (Jackson et al., 2004)

[2]Equivalent U defined by the equation: eU = U ppm + 0.235*Th ppm

[3]Corrected for U-Pb fractionation and background and normalized to the GJ-1 standard value: $^{207}Pb/^{235}U$ =0.8093 ± 0.0009 and $^{206}Pb/^{238}U$ = 0.09761 ± 0.00011 (Jackson et al., 2004)

[4]Propagated uncertainty of internal uncertanties (2SE) and within run reproducibility of GJ-1 (2SE)

[5]Uncertainty correlation between $^{206}Pb/^{238}U$ and $^{207}Pb/^{235}U$ uncertainties

[6]Corrected for background and Pb isotopicfractionation using the GJ-1 standard value: $^{207}Pb/^{206}Pb$ = 0.06014 ± 0.00001 (Jackson et al., 2004)

[7]U-Pb ages calculated relative to the GJ-1 standard

[8]Discordance defined as (($^{207}Pb/^{235}U$age - $^{206}Pb/^{238}U$age)/($^{207}Pb/^{235}U$ age))*100

[9]Uncertainty weighted age difference defined as ($^{207}Pb/^{235}U$ age - $^{206}Pb/^{238}U$ age)/($^{207}Pb/^{235}U$ age uncertainty)

Rows highlighted in grey were not used in interpretations or calculations based on discordance or short analysis times

Table 10: LA-ICP-MS Zircon Isotopic and Age Data Table: SC15-07: Scott County, KS Paleosol Sample

								Corrected Isotopic Ratios[3]							Ages (Ma)[7]							
Grain #	Signal Duration (s)	U (ppm)[1]	2σ	Th (ppm)[1]	2σ	eU (ppm)[2]	Th/U	$^{207}Pb/^{235}U$	2σ[4]	$^{206}Pb/^{238}U$	2σ[4]	Rho[6]	$^{207}Pb/^{206}Pb$[5]	2σ	$^{207}Pb/^{235}U$	2σ	$^{206}Pb/^{238}U$	2σ	$^{207}Pb/^{206}Pb$	2σ	% Disc.[8]	Uncert. Wtd. Disc.[9]
122	21.0	98.2	4.4	62.2	2.1	113	0.63	0.0226	0.0086	0.00412	0.00026	0.1059	0.0390	0.0160	22.0	8.5	26.5	1.7	-390	490	-20.5	-0.5
212	22.0	175.5	8.2	78.4	1.9	194	0.45	0.0347	0.0056	0.00485	0.00021	0.0234	0.0551	0.0083	35.1	5.4	31.2	1.4	360	270	11.1	0.7
267	17.7	123.3	7.7	128.0	11.0	153	1.04	0.0280	0.0080	0.00507	0.00023	0.0240	0.0380	0.0120	27.5	7.9	32.6	1.5	-130	400	-18.5	-0.6
194	22.6	1050.0	200.0	469.0	80.0	1160	0.45	0.0335	0.0024	0.00525	0.00015	0.2063	0.0463	0.0034	33.4	2.4	33.8	1.0	60	140	-1.0	-0.1
105	21.6	746.0	42.0	355.0	10.0	829	0.48	0.0369	0.0025	0.00540	0.00014	0.1641	0.0488	0.0032	36.7	2.4	34.7	0.9	180	120	5.4	0.8
119	21.7	1156.0	44.0	695.0	23.0	1319	0.60	0.0337	0.0020	0.00546	0.00014	0.0241	0.0446	0.0026	33.7	1.9	35.1	0.9	-30	110	-4.2	-0.8
130	21.7	1147.0	42.0	609.0	17.0	1290	0.53	0.0352	0.0018	0.00548	0.00013	0.1890	0.0473	0.0026	35.1	1.8	35.2	0.9	90	110	-0.3	-0.1
170	21.7	129.9	3.8	140.6	4.8	163	1.08	0.0395	0.0072	0.00552	0.00027	0.0031	0.0527	0.0096	40.6	7.3	35.5	1.7	290	300	12.6	0.7
202	21.7	186.8	5.3	169.4	4.1	227	0.91	0.0359	0.0062	0.00564	0.00023	0.0734	0.0502	0.0086	35.5	6.0	36.2	1.5	80	290	-2.0	-0.1
73	21.7	422.0	20.0	184.4	6.1	465	0.44	0.0398	0.0034	0.00568	0.00015	0.0449	0.0517	0.0046	40.0	3.3	36.5	1.0	260	170	8.7	1.1
240	18.9	752.0	55.0	659.0	54.0	907	0.88	0.0367	0.0030	0.00572	0.00018	0.1137	0.0458	0.0037	36.6	3.0	36.8	1.2	30	150	-0.5	-0.1
252	21.5	56.0	3.9	48.3	1.6	67	0.86	0.0350	0.0150	0.00575	0.00044	0.0087	0.0490	0.0220	33.0	14.0	36.9	2.8	-290	560	-11.8	-0.3
84	21.5	100.3	5.4	103.1	4.4	125	1.03	0.0450	0.0092	0.00577	0.00032	0.0781	0.0560	0.0120	43.9	8.9	37.1	2.1	250	370	15.5	0.8
108	22.5	348.0	14.0	537.9	9.5	474	1.55	0.0388	0.0032	0.00624	0.00018	0.2157	0.0464	0.0037	38.5	3.1	40.1	1.1	60	140	-4.2	-0.5
283	7.8	105.3	4.5	91.3	5.9	127	0.87	0.0540	0.0150	0.00665	0.00081	0.0441	0.0590	0.0180	56.0	14.0	42.7	5.2	540	520	23.8	1.0
95	21.8	316.0	25.0	378.0	19.0	405	1.20	0.1306	0.0092	0.00672	0.00022	0.1878	0.1384	0.0099	124.0	8.2	43.2	1.4	2200	130	65.2	9.9
280	5.7	14.3	0.7	5.1	0.5	15	0.36	0.1340	0.0790	0.00830	0.00140	0.4426	0.1350	0.0740	131.0	69.0	53.2	9.1	800	1400	59.4	1.1
161	21.7	93.8	5.8	53.0	2.7	106	0.57	0.0720	0.0120	0.00985	0.00040	0.0215	0.0541	0.0091	72.0	11.0	63.2	2.5	270	290	12.2	0.8
220	11.3	90.1	5.6	71.1	4.7	107	0.79	0.0540	0.0160	0.00989	0.00066	0.1902	0.0360	0.0120	52.0	16.0	63.5	4.2	-220	450	-22.1	-0.7
257	22.3	131.6	6.1	140.5	6.0	165	1.07	0.0605	0.0092	0.00991	0.00039	0.1110	0.0466	0.0073	58.9	8.6	63.6	2.5	-40	240	-8.0	-0.5
293	20.5	63.9	6.5	55.6	7.0	77	0.87	0.0730	0.0190	0.00996	0.00047	0.3674	0.0510	0.0120	69.0	17.0	63.9	3.0	90	350	7.4	0.3
182	21.6	226.7	6.9	106.3	1.9	252	0.47	0.0700	0.0058	0.01009	0.00029	0.0148	0.0502	0.0044	68.4	5.5	64.7	1.9	250	170	5.4	0.7
100	10.0	65.3	2.8	31.4	1.5	73	0.48	0.0820	0.0230	0.01012	0.00052	0.0071	0.0590	0.0170	78.0	21.0	64.9	3.3	240	500	16.8	0.6
288	12.2	119.1	8.2	133.1	6.4	150	1.12	0.0700	0.0130	0.01013	0.00044	0.2108	0.0442	0.0086	68.0	12.0	65.0	2.8	120	330	4.4	0.3
234	21.8	130.3	8.0	66.6	3.2	146	0.51	0.0741	0.0092	0.01019	0.00037	0.0846	0.0521	0.0067	71.8	8.6	65.3	2.3	290	230	9.1	0.8
256	21.6	201.9	8.6	122.0	2.3	231	0.60	0.0666	0.0061	0.01028	0.00031	0.1632	0.0468	0.0044	65.1	5.8	65.9	2.0	80	170	-1.2	-0.1
56	18.1	114.2	7.4	37.3	2.0	123	0.33	0.0800	0.0110	0.01039	0.00045	0.1436	0.0585	0.0087	77.0	11.0	66.6	2.8	440	270	13.5	0.9
209	8.9	183.6	5.4	101.7	2.7	207	0.55	0.0790	0.0130	0.01039	0.00047	0.1064	0.0557	0.0094	79.0	13.0	66.6	3.0	370	330	15.7	1.0
260	21.6	369.0	30.0	323.0	20.0	445	0.88	0.0689	0.0048	0.01060	0.00029	0.3448	0.0471	0.0032	67.5	4.6	68.0	1.9	90	130	-0.7	-0.1
250	21.6	193.4	9.0	91.5	2.7	215	0.47	0.0733	0.0078	0.01071	0.00038	0.0016	0.0517	0.0057	71.3	7.3	68.6	2.4	250	200	3.8	0.4
273	11.0	42.8	1.4	26.1	1.0	49	0.61	0.1020	0.0320	0.01075	0.00089	0.0880	0.0700	0.0220	95.0	29.0	68.9	5.7	540	550	27.5	0.9
86	21.7	66.5	3.7	62.2	2.4	81	0.94	0.0720	0.0120	0.01078	0.00052	0.2220	0.0494	0.0084	70.0	12.0	69.1	3.3	150	290	1.3	0.1
186	16.9	151.0	9.4	29.9	1.6	158	0.20	0.0790	0.0100	0.01094	0.00043	0.0658	0.0523	0.0070	76.8	9.6	70.1	2.7	240	250	8.7	0.7
245	21.7	54.1	5.6	42.6	3.4	64	0.79	0.0670	0.0170	0.01093	0.00048	0.0232	0.0440	0.0110	68.0	16.0	70.1	3.1	110	370	-3.1	-0.1
244	22.3	187.0	25.0	178.0	23.0	229	0.95	0.0795	0.0093	0.01097	0.00043	0.0557	0.0529	0.0065	76.9	8.6	70.3	2.7	280	230	8.6	0.8
181	21.7	71.4	5.3	37.6	2.9	80	0.53	0.0750	0.0140	0.01100	0.00046	0.0014	0.0530	0.0100	75.0	13.0	70.5	2.9	190	310	6.0	0.3
134	21.7	253.6	7.6	130.0	11.0	284	0.51	0.0707	0.0055	0.01102	0.00028	0.1614	0.0471	0.0036	70.3	5.3	70.6	1.8	90	140	-0.4	-0.1
163	20.6	80.7	9.2	46.1	4.4	92	0.57	0.0870	0.0150	0.01108	0.00057	0.0822	0.0600	0.0120	82.0	14.0	71.0	3.6	440	340	13.4	0.8
82	21.7	41.7	2.7	23.0	1.1	47	0.55	0.0730	0.0200	0.01116	0.00065	0.0027	0.0470	0.0130	70.0	19.0	71.5	4.2	40	400	-2.1	-0.1
255	21.2	115.8	9.1	56.4	4.2	129	0.49	0.0800	0.0110	0.01117	0.00045	0.1388	0.0549	0.0076	77.0	10.0	71.6	2.9	260	240	7.0	0.5
43	20.4	215.3	9.7	108.1	3.9	241	0.50	0.0802	0.0069	0.01120	0.00031	0.1107	0.0502	0.0045	78.0	6.5	71.8	2.0	170	160	7.9	1.0

Table 10: LA-ICP-MS Zircon Isotopic and Age Data Table: SC15-07: Scott County, KS Paleosol Sample

								Corrected Isotopic Ratios[3]							Ages (Ma)[7]							
Grain #	Signal Duration (s)	U (ppm)[1]	2σ	Th (ppm)[1]	2σ	eU (ppm)[2]	Th/U	$^{207}Pb/^{235}U$	2σ[4]	$^{206}Pb/^{238}U$	2σ[4]	Rho[5]	$^{207}Pb/^{206}Pb$[6]	2σ	$^{207}Pb/^{235}U$	2σ	$^{206}Pb/^{238}U$	2σ	$^{207}Pb/^{206}Pb$	2σ	% Disc.[8]	Uncert. Wtd. Disc.[9]
221	18.2	184.0	18.0	35.8	2.7	192	0.19	0.0813	0.0094	0.01123	0.00042	0.1404	0.0515	0.0059	78.8	8.8	72.0	2.7	230	210	8.6	0.8
20	17.2	108.4	6.6	118.1	6.4	136	1.09	0.0840	0.0120	0.01131	0.00042	0.1005	0.0559	0.0081	81.0	11.0	72.5	2.7	360	270	10.5	0.8
165	21.6	50.0	6.2	26.3	3.1	56	0.53	0.0750	0.0190	0.01131	0.00065	0.0016	0.0510	0.0130	70.0	18.0	72.5	4.1	190	390	-3.6	-0.1
225	20.5	139.9	5.9	40.4	2.6	149	0.29	0.0745	0.0089	0.01133	0.00041	0.0844	0.0493	0.0059	73.4	8.6	72.6	2.6	90	210	1.1	0.1
68	21.7	329.0	22.0	113.5	5.2	356	0.34	0.0787	0.0061	0.01135	0.00031	0.1395	0.0494	0.0039	77.4	5.6	72.7	2.0	190	150	6.1	0.8
140	7.9	377.0	18.0	74.8	2.6	395	0.20	0.0715	0.0080	0.01135	0.00038	0.0010	0.0456	0.0051	69.9	7.6	72.7	2.4	0	200	-4.0	-0.4
107	14.7	164.0	11.0	31.7	1.9	171	0.19	0.0831	0.0099	0.01137	0.00048	0.2694	0.0557	0.0064	82.0	9.7	72.9	3.0	380	220	11.1	0.9
226	21.7	197.0	23.0	112.0	14.0	223	0.57	0.0742	0.0086	0.01137	0.00038	0.0659	0.0475	0.0055	73.1	8.2	72.9	2.4	170	200	0.3	0.0
232	21.6	145.0	13.0	58.8	2.8	159	0.41	0.0747	0.0077	0.01140	0.00034	0.0863	0.0505	0.0055	74.9	7.7	73.0	2.2	180	200	2.5	0.2
242	21.7	209.0	30.0	162.0	25.0	247	0.78	0.0801	0.0096	0.01139	0.00058	0.3090	0.0505	0.0063	77.4	9.0	73.0	3.7	240	210	5.7	0.5
178	21.6	248.2	7.9	116.9	2.4	276	0.47	0.0736	0.0061	0.01140	0.00033	0.0882	0.0475	0.0040	71.8	5.8	73.1	2.1	80	150	-1.8	-0.2
184	14.3	121.1	4.5	46.2	1.4	132	0.38	0.0700	0.0120	0.01140	0.00055	0.1002	0.0449	0.0081	68.0	11.0	73.1	3.5	-40	290	-7.5	-0.5
248	21.6	347.0	16.0	154.3	6.5	383	0.44	0.0718	0.0063	0.01142	0.00032	0.1388	0.0462	0.0039	70.1	6.0	73.2	2.1	30	150	-4.4	-0.5
87	18.8	132.9	6.2	86.2	3.2	153	0.65	0.0850	0.0110	0.01145	0.00048	0.1162	0.0523	0.0071	83.0	10.0	73.4	3.1	360	230	11.6	1.0
207	21.6	376.0	35.0	173.0	17.0	417	0.46	0.0780	0.0062	0.01147	0.00033	0.0101	0.0474	0.0036	75.9	5.8	73.5	2.1	70	140	3.2	0.4
126	21.9	202.0	28.0	88.0	12.0	223	0.44	0.1620	0.0150	0.01149	0.00051	0.0392	0.1034	0.0099	152.0	13.0	73.6	3.3	1630	180	51.6	6.0
66	21.7	125.5	9.4	36.2	2.8	134	0.29	0.0780	0.0100	0.01150	0.00038	0.0621	0.0488	0.0061	75.4	9.3	73.7	2.4	100	220	2.3	0.2
93	21.7	160.6	4.3	89.0	1.9	182	0.55	0.0745	0.0080	0.01150	0.00037	0.0058	0.0483	0.0058	72.4	7.6	73.7	2.3	100	190	-1.8	-0.2
154	22.0	81.4	6.8	31.6	2.5	89	0.39	0.0880	0.0140	0.01151	0.00054	0.0457	0.0578	0.0095	84.0	13.0	73.8	3.4	230	270	12.1	0.8
158	21.6	297.0	17.0	49.5	2.8	309	0.17	0.0763	0.0056	0.01151	0.00029	0.1821	0.0480	0.0039	74.4	5.3	73.8	1.9	120	150	0.8	0.1
44	21.4	374.0	12.0	57.1	1.6	387	0.15	0.0790	0.0050	0.01153	0.00032	0.1778	0.0490	0.0030	77.0	4.7	73.9	2.0	150	120	4.0	0.7
150	21.7	148.9	8.5	157.8	2.8	186	1.06	0.0822	0.0084	0.01158	0.00042	0.0473	0.0519	0.0055	79.6	7.8	74.2	2.7	230	200	6.8	0.7
262	21.7	1054.0	35.0	277.4	6.1	1119	0.26	0.0741	0.0032	0.01158	0.00025	0.1213	0.0469	0.0021	72.5	3.0	74.2	1.6	56	86	-2.3	-0.6
30	21.7	222.0	14.0	134.6	4.9	254	0.61	0.0821	0.0072	0.01159	0.00028	0.1855	0.0502	0.0041	79.6	6.7	74.3	1.8	180	150	6.7	0.8
253	21.7	536.0	35.0	183.0	14.0	579	0.34	0.0794	0.0051	0.01162	0.00030	0.2173	0.0495	0.0031	77.9	4.8	74.4	1.9	170	120	4.5	0.7
143	21.7	635.0	35.0	420.0	26.0	734	0.66	0.0731	0.0042	0.01163	0.00027	0.2096	0.0454	0.0025	71.4	4.0	74.5	1.7	21	100	-4.3	-0.8
174	16.4	839.0	35.0	607.0	16.0	982	0.72	0.0726	0.0043	0.01163	0.00028	0.1775	0.0455	0.0027	71.0	4.1	74.6	1.8	0	110	-5.1	-0.9
160	21.6	604.0	20.0	179.2	3.6	646	0.30	0.0779	0.0039	0.01165	0.00025	0.1284	0.0492	0.0026	76.0	3.7	74.7	1.6	146	100	1.7	0.4
282	10.6	18.5	1.0	21.9	1.0	24	1.19	0.1310	0.0530	0.01170	0.00130	0.2565	0.0910	0.0360	116.0	45.0	74.8	8.5	640	760	35.5	0.9
42	18.3	172.0	11.0	64.0	3.6	187	0.37	0.0834	0.0084	0.01169	0.00045	0.1660	0.0504	0.0056	81.8	7.7	74.9	2.9	210	200	8.4	0.9
78	21.7	267.0	36.0	19.5	2.4	272	0.07	0.0785	0.0076	0.01168	0.00034	0.3586	0.0486	0.0041	77.3	6.9	74.9	2.2	120	160	3.1	0.3
164	19.6	114.5	9.2	40.6	8.0	124	0.35	0.0890	0.0120	0.01169	0.00060	0.1419	0.0572	0.0078	85.0	11.0	74.9	3.8	440	240	11.9	0.9
156	21.7	78.2	3.4	52.6	2.8	91	0.67	0.0720	0.0120	0.01172	0.00056	0.2086	0.0450	0.0071	70.0	11.0	75.1	3.6	10	240	-7.3	-0.5
243	21.8	75.8	8.6	34.0	2.9	84	0.45	0.0870	0.0150	0.01172	0.00054	0.0151	0.0539	0.0093	84.0	13.0	75.1	3.4	320	280	10.6	0.7
102	20.7	56.5	5.8	32.4	2.9	64	0.57	0.0990	0.0190	0.01174	0.00058	0.1845	0.0660	0.0120	99.0	17.0	75.2	3.7	590	330	24.0	1.4
254	20.8	72.1	4.8	59.0	2.9	86	0.82	0.0870	0.0130	0.01177	0.00054	0.0972	0.0548	0.0095	85.0	12.0	75.4	3.4	330	280	11.3	0.8
287	13.3	96.4	5.2	22.5	1.2	102	0.23	0.1230	0.0160	0.01177	0.00053	0.2185	0.0810	0.0110	119.0	14.0	75.4	3.4	1110	250	36.6	3.1
113	21.7	420.0	21.0	73.4	6.7	437	0.17	0.0757	0.0050	0.01178	0.00028	0.1289	0.0461	0.0030	73.9	4.7	75.5	1.8	50	120	-2.2	-0.3
45	21.7	95.0	12.0	8.2	1.0	97	0.09	0.0810	0.0120	0.01182	0.00056	0.0066	0.0504	0.0078	78.0	11.0	75.7	3.6	150	270	2.9	0.2
15	19.1	284.0	12.0	168.2	4.8	324	0.59	0.0832	0.0052	0.01183	0.00038	0.2203	0.0510	0.0040	80.9	4.9	75.8	2.4	220	150	6.3	1.0
92	21.6	159.0	12.0	97.4	5.8	182	0.61	0.0711	0.0079	0.01186	0.00038	0.0804	0.0445	0.0050	70.2	7.3	76.0	2.4	-20	190	-8.3	-0.8

Table 10: LA-ICP-MS Zircon Isotopic and Age Data Table: SC15-07: Scott County, KS Paleosol Sample

								Corrected Isotopic Ratios[3]							Ages (Ma)[7]							
Grain #	Signal Duration (s)	U (ppm)[1]	2σ	Th (ppm)[2]	2σ	eU (ppm)[2]	Th/U	$^{207}Pb/^{235}U$	2σ[4]	$^{206}Pb/^{238}U$	2σ[4]	Rho[5]	$^{207}Pb/^{206}Pb$[6]	2σ	$^{207}Pb/^{235}U$	2σ	$^{206}Pb/^{238}U$	2σ	$^{207}Pb/^{206}Pb$	2σ	% Disc.[8]	Uncert. Wtd. Disc.[9]
136	12.2	164.6	5.2	21.7	0.5	170	0.13	0.0726	0.0089	0.01187	0.00048	0.0734	0.0441	0.0057	70.8	8.5	76.1	3.1	-30	230	-7.5	-0.6
26	21.7	139.4	4.8	86.4	2.6	160	0.62	0.0849	0.0085	0.01189	0.00041	0.0620	0.0510	0.0050	83.0	7.7	76.2	2.6	260	180	8.2	0.9
142	11.9	114.9	7.1	105.3	6.3	140	0.92	0.0910	0.0140	0.01179	0.00065	0.0993	0.0536	0.0091	88.0	13.0	76.2	4.3	410	310	13.4	0.9
211	15.2	420.0	38.0	118.0	10.0	448	0.28	0.0850	0.0073	0.01189	0.00044	0.2563	0.0503	0.0039	82.5	6.8	76.2	2.8	220	150	7.6	0.9
249	21.7	131.0	14.0	87.5	7.6	152	0.67	0.0870	0.0100	0.01189	0.00052	0.0273	0.0547	0.0070	84.0	9.5	76.2	3.3	290	220	9.3	0.8
11	21.7	95.8	2.3	56.3	3.8	109	0.59	0.0870	0.0100	0.01191	0.00038	0.0856	0.0525	0.0064	85.2	9.4	76.3	2.4	320	210	10.4	0.9
125	21.7	437.0	39.0	184.0	28.0	480	0.42	0.0766	0.0044	0.01192	0.00039	0.2309	0.0463	0.0027	74.8	4.2	76.3	2.5	50	110	-2.0	-0.4
279	19.7	72.5	8.0	49.0	5.0	84	0.68	0.0960	0.0150	0.01191	0.00065	0.2858	0.0610	0.0110	91.0	14.0	76.3	4.2	420	310	16.2	1.1
52	21.2	644.0	65.0	152.0	17.0	680	0.24	0.0764	0.0039	0.01192	0.00037	0.2415	0.0469	0.0025	75.2	3.6	76.4	2.4	71	98	-1.6	-0.3
246	20.9	120.0	5.7	55.2	1.3	133	0.46	0.0900	0.0110	0.01194	0.00050	0.0575	0.0536	0.0063	87.0	10.0	76.5	3.2	330	230	12.1	1.1
4	17.2	172.5	7.6	159.0	4.6	210	0.92	0.0855	0.0088	0.01196	0.00037	0.1638	0.0507	0.0053	82.7	8.3	76.6	2.4	180	190	7.4	0.7
204	21.7	67.9	4.2	56.0	1.7	81	0.82	0.0870	0.0150	0.01197	0.00054	0.0450	0.0557	0.0099	85.0	14.0	76.7	3.4	280	310	9.8	0.6
7	21.6	133.0	8.2	90.1	5.5	154	0.68	0.0847	0.0099	0.01198	0.00038	0.0420	0.0508	0.0064	81.7	9.2	76.8	2.4	200	210	6.0	0.5
91	21.7	185.0	13.0	117.8	7.1	213	0.64	0.0818	0.0085	0.01198	0.00038	0.0455	0.0481	0.0048	79.2	7.9	76.8	2.4	90	180	3.0	0.3
121	21.7	710.0	23.0	175.0	3.3	751	0.25	0.0804	0.0035	0.01198	0.00028	0.1263	0.0487	0.0022	78.4	3.3	76.8	1.8	131	91	2.0	0.5
27	21.4	208.0	16.0	47.8	4.2	219	0.23	0.0759	0.0071	0.01200	0.00037	0.0215	0.0466	0.0048	76.4	7.1	76.9	2.4	50	180	-0.7	-0.1
13	21.7	192.2	8.3	16.2	1.4	196	0.08	0.0855	0.0075	0.01201	0.00036	0.1053	0.0494	0.0045	82.8	7.0	77.0	2.3	220	170	7.0	0.8
22	21.4	123.9	4.3	35.9	0.9	132	0.29	0.0867	0.0100	0.01206	0.00042	0.1102	0.0535	0.0061	83.5	9.3	77.3	2.7	330	210	7.4	0.7
51	21.7	114.0	14.0	41.6	5.1	124	0.36	0.0820	0.0110	0.01207	0.00059	0.1181	0.0471	0.0073	80.0	11.0	77.3	3.8	70	240	3.4	0.2
171	21.7	88.0	18.0	50.6	9.7	100	0.58	0.0830	0.0140	0.01207	0.00057	0.3178	0.0518	0.0076	85.0	12.0	77.3	3.6	280	260	9.1	0.6
176	21.7	173.0	11.0	179.4	9.0	215	1.04	0.0784	0.0077	0.01206	0.00038	0.0240	0.0467	0.0047	76.2	7.2	77.3	2.4	80	180	-1.4	-0.2
28	21.7	26.2	2.6	9.6	0.7	28	0.37	0.0950	0.0310	0.01208	0.00077	0.0770	0.0620	0.0200	87.0	30.0	77.4	4.9	220	500	11.0	0.3
55	21.6	232.0	10.0	181.2	9.9	275	0.78	0.0838	0.0068	0.01208	0.00034	0.0472	0.0507	0.0042	81.3	6.3	77.4	2.2	190	160	4.8	0.6
297	20.6	31.4	4.7	21.4	2.8	36	0.68	0.1050	0.0320	0.01210	0.00088	0.0266	0.0690	0.0240	107.0	29.0	77.5	5.6	400	530	27.6	1.0
53	18.5	95.2	3.2	80.9	2.3	114	0.85	0.0910	0.0110	0.01211	0.00044	0.0652	0.0538	0.0067	87.0	10.0	77.6	2.8	330	230	10.8	0.9
222	21.7	105.0	11.0	7.2	0.7	107	0.07	0.0760	0.0110	0.01211	0.00046	0.0211	0.0436	0.0070	74.0	10.0	77.6	2.9	-10	250	-4.9	-0.4
47	21.7	25.1	1.5	15.0	1.5	29	0.60	0.1090	0.0330	0.01213	0.00082	0.1055	0.0950	0.0460	96.0	29.0	77.7	5.2	150	540	19.1	0.6
167	21.7	78.7	4.1	22.7	0.7	84	0.29	0.0740	0.0120	0.01214	0.00052	0.0467	0.0467	0.0075	76.0	11.0	77.8	3.3	100	250	-2.4	-0.2
235	21.6	166.0	13.0	70.9	3.3	183	0.43	0.0745	0.0086	0.01215	0.00044	0.0077	0.0453	0.0055	72.3	8.1	77.8	2.8	30	210	-7.6	-0.7
85	21.7	703.0	45.0	304.0	17.0	774	0.43	0.0767	0.0036	0.01215	0.00026	0.0650	0.0460	0.0024	74.9	3.4	77.9	1.7	21	95	-4.0	-0.9
49	21.7	194.0	11.0	106.0	3.7	219	0.55	0.0796	0.0084	0.01217	0.00037	0.0262	0.0478	0.0050	77.1	7.9	78.0	2.4	120	180	-1.2	-0.1
261	13.3	1105.0	38.0	858.0	21.0	1307	0.78	0.0807	0.0040	0.01218	0.00029	0.2487	0.0481	0.0021	78.8	3.8	78.0	1.9	106	90	1.0	0.2
62	16.1	132.0	6.7	78.1	3.9	150	0.59	0.0900	0.0110	0.01219	0.00054	0.0466	0.0542	0.0067	87.0	10.0	78.1	3.4	290	240	10.2	0.9
141	21.7	497.0	35.0	94.9	8.0	519	0.19	0.0802	0.0043	0.01219	0.00032	0.0529	0.0479	0.0027	78.2	4.0	78.1	2.0	110	110	0.1	0.0
173	19.7	89.6	4.8	76.4	2.5	108	0.85	0.0880	0.0100	0.01219	0.00048	0.1814	0.0549	0.0072	85.0	9.6	78.1	3.1	330	250	8.1	0.7
298	21.8	189.0	17.0	155.0	13.0	225	0.82	0.1027	0.0100	0.01219	0.00036	0.0751	0.0623	0.0062	98.4	9.2	78.1	2.3	690	200	20.6	2.2
3	21.6	167.0	17.0	118.0	11.0	195	0.71	0.0840	0.0085	0.01221	0.00037	0.1019	0.0517	0.0053	81.3	7.9	78.2	2.4	300	190	3.8	0.4
109	9.7	81.9	6.1	32.0	3.2	89	0.39	0.0950	0.0210	0.01220	0.00065	0.0741	0.0570	0.0130	90.0	20.0	78.2	4.1	240	420	13.1	0.6
237	22.6	1790.0	220.0	750.0	69.0	1966	0.42	0.1088	0.0051	0.01224	0.00038	0.3821	0.0639	0.0029	104.7	4.7	78.4	2.4	705	94	25.1	5.6
118	20.6	87.0	10.0	39.3	5.1	96	0.45	0.0910	0.0140	0.01228	0.00055	0.0033	0.0592	0.0099	89.0	13.0	78.7	3.5	390	270	11.6	0.8
103	21.7	256.0	28.0	115.7	5.7	283	0.45	0.0849	0.0072	0.01231	0.00037	0.0448	0.0511	0.0046	82.3	6.7	78.9	2.4	200	170	4.1	0.5

Table 10: LA-ICP-MS Zircon Isotopic and Age Data Table: SC15-07: Scott County, KS Paleosol Sample

								Corrected Isotopic Ratios[3]							Ages (Ma)[7]							
Grain #	Signal Duration (s)	U (ppm)[1]	2σ	Th (ppm)[1]	2σ	eU (ppm)[2]	Th/U	$^{207}Pb/^{235}U$	2σ[4]	$^{206}Pb/^{238}U$	2σ[4]	Rho[5]	$^{207}Pb/^{206}Pb$[6]	2σ	$^{207}Pb/^{235}U$	2σ	$^{206}Pb/^{238}U$	2σ	$^{207}Pb/^{206}Pb$	2σ	% Disc.[8]	Uncert. Wtd. Disc.[9]
76	21.7	183.0	16.0	114.9	9.0	210	0.63	0.0877	0.0089	0.01233	0.00036	0.0550	0.0514	0.0053	84.7	8.2	79.0	2.3	260	190	6.7	0.7
217	21.7	78.3	3.7	65.8	2.3	94	0.84	0.0880	0.0130	0.01234	0.00054	0.0714	0.0546	0.0083	84.0	12.0	79.0	3.4	280	270	6.0	0.4
74	21.7	83.5	7.3	27.3	1.9	90	0.33	0.0880	0.0130	0.01234	0.00051	0.0253	0.0560	0.0091	87.0	11.0	79.1	3.2	330	280	9.1	0.7
123	21.7	185.5	8.7	79.4	2.5	204	0.43	0.0820	0.0095	0.01234	0.00041	0.1815	0.0464	0.0055	80.2	8.7	79.1	2.6	90	200	1.4	0.1
127	21.7	479.0	22.0	209.7	7.6	528	0.44	0.0814	0.0052	0.01235	0.00036	0.2779	0.0469	0.0027	79.2	4.9	79.1	2.3	90	110	0.1	0.0
199	21.6	106.4	5.0	49.1	1.8	118	0.46	0.0820	0.0100	0.01238	0.00058	0.1227	0.0484	0.0067	78.8	9.7	79.3	3.7	180	230	-0.6	-0.1
75	21.6	145.0	11.0	66.9	3.7	161	0.46	0.0832	0.0098	0.01240	0.00042	0.0118	0.0500	0.0060	81.5	8.9	79.4	2.7	160	210	2.6	0.2
229	21.1	49.9	5.1	20.5	1.3	55	0.41	0.1020	0.0210	0.01240	0.00074	0.1683	0.0630	0.0150	95.0	19.0	79.4	4.7	490	370	16.4	0.8
296	13.8	63.8	6.6	43.6	6.4	74	0.68	0.1000	0.0250	0.01240	0.00072	0.1590	0.0610	0.0160	97.0	22.0	79.5	4.6	320	430	18.0	0.8
157	21.7	162.8	8.3	163.0	4.2	201	1.00	0.0762	0.0077	0.01244	0.00039	0.0251	0.0462	0.0050	75.0	7.1	79.7	2.5	30	180	-6.3	-0.7
175	16.8	455.0	33.0	280.0	18.0	521	0.62	0.0862	0.0057	0.01246	0.00033	0.2021	0.0503	0.0030	83.7	5.4	79.8	2.1	210	120	4.7	0.7
185	21.6	196.6	7.3	102.0	3.2	221	0.52	0.0882	0.0073	0.01248	0.00046	0.2486	0.0514	0.0041	85.4	6.8	79.9	3.0	220	160	6.4	0.8
104	21.7	399.0	19.0	243.0	9.3	456	0.61	0.0799	0.0051	0.01253	0.00034	0.2641	0.0465	0.0029	78.3	4.7	80.3	2.1	60	120	-2.6	-0.4
223	14.6	163.0	13.0	159.7	9.5	201	0.98	0.0830	0.0110	0.01255	0.00045	0.2833	0.0496	0.0066	80.0	11.0	80.4	2.9	120	240	-0.5	0.0
144	20.4	41.1	1.0	41.3	2.4	51	1.00	0.0650	0.0190	0.01259	0.00065	0.0755	0.0380	0.0110	61.0	18.0	80.6	4.1	-270	390	-32.1	-1.1
131	19.3	99.5	4.2	79.4	1.9	118	0.80	0.0940	0.0130	0.01263	0.00048	0.2769	0.0566	0.0076	93.0	12.0	80.9	3.0	340	250	13.0	1.0
266	20.6	37.0	4.1	14.4	2.0	40	0.39	0.0970	0.0250	0.01268	0.00087	0.1079	0.0570	0.0150	95.0	22.0	81.2	5.5	240	420	14.5	0.6
41	19.3	104.0	13.0	74.0	9.5	121	0.71	0.0990	0.0160	0.01280	0.00059	0.0644	0.0580	0.0100	94.0	15.0	82.0	3.8	340	290	12.8	0.8
128	19.5	144.0	12.0	53.6	2.7	157	0.37	0.0920	0.0110	0.01285	0.00047	0.0322	0.0532	0.0066	89.0	10.0	82.3	3.0	240	220	7.5	0.7
268	21.7	74.8	8.5	35.6	3.8	83	0.48	0.0790	0.0130	0.01287	0.00058	0.1311	0.0471	0.0081	80.0	11.0	82.4	3.7	140	260	-3.0	-0.2
291	6.3	202.0	12.0	49.8	5.2	214	0.25	0.0880	0.0160	0.01290	0.00084	0.6868	0.0495	0.0089	85.0	15.0	82.6	5.4	270	320	2.8	0.2
120	21.7	229.0	12.0	294.7	6.3	298	1.29	0.0803	0.0070	0.01294	0.00040	0.0377	0.0466	0.0043	78.0	6.5	82.9	2.6	20	160	-6.3	-0.8
200	21.7	246.0	24.0	72.7	7.6	263	0.30	0.0867	0.0055	0.01289	0.00052	0.0292	0.0522	0.0042	85.1	5.4	82.9	3.2	300	150	2.6	0.4
264	15.6	152.0	10.0	99.4	6.4	175	0.65	0.0940	0.0120	0.01296	0.00055	0.1410	0.0525	0.0062	92.0	11.0	83.0	3.5	280	200	9.8	0.8
145	19.0	40.6	2.8	33.3	2.3	48	0.82	0.1010	0.0240	0.01300	0.00072	0.0640	0.0640	0.0150	108.0	22.0	83.2	4.6	470	400	23.0	1.1
101	12.6	101.6	4.2	42.2	2.0	112	0.42	0.0920	0.0130	0.01301	0.00074	0.0390	0.0501	0.0072	88.0	12.0	83.3	4.7	270	270	5.3	0.4
77	18.1	773.0	41.0	107.0	11.0	798	0.14	0.0860	0.0039	0.01311	0.00034	0.0733	0.0491	0.0024	83.7	3.7	84.0	2.2	159	99	-0.4	-0.1
238	21.8	140.0	13.0	100.2	8.5	164	0.72	0.0924	0.0095	0.01315	0.00050	0.2372	0.0498	0.0048	88.9	8.8	84.2	3.2	130	180	5.3	0.5
162	21.6	135.0	14.0	52.7	4.7	147	0.39	0.0932	0.0094	0.01318	0.00052	0.0539	0.0532	0.0058	89.8	8.6	84.4	3.3	220	190	6.0	0.6
289	16.9	38.5	5.1	14.0	1.8	42	0.36	0.0750	0.0260	0.01322	0.00097	0.0125	0.0480	0.0180	76.0	23.0	84.6	6.2	-40	480	-11.3	-0.4
285	21.7	56.8	6.1	33.5	3.3	65	0.59	0.0940	0.0180	0.01327	0.00063	0.0879	0.0548	0.0094	95.0	15.0	85.0	4.0	250	290	10.5	0.7
251	21.7	250.0	25.0	167.0	16.0	289	0.67	0.0909	0.0076	0.01328	0.00048	0.2033	0.0504	0.0043	88.8	6.9	85.1	3.0	180	150	4.2	0.5
270	17.9	43.1	5.2	37.5	4.8	52	0.87	0.1030	0.0210	0.01319	0.00076	0.0051	0.0580	0.0110	99.0	19.0	85.1	4.7	290	370	14.0	0.7
67	21.7	378.0	24.0	288.0	18.0	446	0.76	0.0832	0.0047	0.01330	0.00036	0.2223	0.0465	0.0026	81.0	4.4	85.2	2.3	50	110	-5.2	-1.0
284	21.7	31.8	2.9	20.9	1.9	37	0.66	0.1140	0.0310	0.01330	0.00075	0.1348	0.0720	0.0220	105.0	27.0	85.2	4.8	330	480	18.9	0.7
265	16.6	42.8	2.7	8.3	0.5	45	0.19	0.1000	0.0210	0.01336	0.00083	0.0700	0.0540	0.0120	97.0	19.0	85.5	5.3	370	370	11.9	0.6
2	22.7	325.0	35.0	166.0	18.0	364	0.51	0.0908	0.0066	0.01352	0.00063	0.5474	0.0495	0.0033	87.9	6.1	86.6	4.0	190	130	1.5	0.2
276	21.6	64.0	6.7	21.1	1.6	69	0.33	0.0900	0.0180	0.01356	0.00068	0.1139	0.0560	0.0120	93.0	17.0	86.8	4.3	240	340	6.7	0.4
275	15.1	28.1	2.9	24.3	2.6	34	0.86	0.1280	0.0370	0.01370	0.00100	0.0736	0.0820	0.0210	136.0	34.0	87.6	6.4	710	510	35.6	1.4
169	21.7	164.0	9.0	19.0	1.1	168	0.12	0.0831	0.0084	0.01372	0.00043	0.0080	0.0445	0.0046	80.5	7.9	87.8	2.7	20	190	-9.1	-0.9
201	16.6	96.4	4.1	63.8	1.8	111	0.66	0.1000	0.0120	0.01388	0.00062	0.0610	0.0532	0.0063	96.0	11.0	88.8	3.9	340	220	7.5	0.7

Table 10: LA-ICP-MS Zircon Isotopic and Age Data Table: SC15-07: Scott County, KS Paleosol Sample

								Corrected Isotopic Ratios[3]							Ages (Ma)[7]							
Grain #	Signal Duration (s)	U (ppm)[1]	2σ	Th (ppm)[2]	2σ	eU (ppm)[2]	Th/U	$^{207}Pb/^{235}U$	2σ[4]	$^{206}Pb/^{238}U$	2σ[4]	Rho[5]	$^{207}Pb/^{206}Pb$[6]	2σ	$^{207}Pb/^{235}U$	2σ	$^{206}Pb/^{238}U$	2σ	$^{207}Pb/^{206}Pb$	2σ	% Disc.[8]	Uncert. Wtd. Disc.[9]
19	21.7	24.3	2.0	20.5	1.7	29	0.84	0.0990	0.0360	0.01390	0.00100	0.0221	0.0550	0.0190	99.0	31.0	89.0	6.6	180	520	10.1	0.3
269	21.7	187.0	17.0	91.5	4.7	209	0.49	0.0963	0.0080	0.01397	0.00041	0.0307	0.0504	0.0045	92.8	7.4	89.4	2.6	240	170	3.7	0.5
281	19.0	28.0	3.5	26.0	3.1	34	0.93	0.1960	0.0360	0.01410	0.00092	0.0605	0.1070	0.0200	183.0	28.0	90.2	5.9	1340	370	50.7	3.3
117	21.7	310.0	29.0	240.0	23.0	366	0.77	0.0967	0.0058	0.01449	0.00046	0.3122	0.0480	0.0030	93.5	5.3	92.7	2.9	120	120	0.9	0.2
224	10.2	64.1	2.7	68.8	2.5	80	1.07	0.1040	0.0180	0.01477	0.00080	0.3986	0.0524	0.0090	99.0	16.0	94.5	5.1	160	290	4.5	0.3
146	21.9	107.6	6.4	58.7	2.4	121	0.55	0.2110	0.0140	0.01498	0.00061	0.2430	0.1030	0.0064	195.0	12.0	95.8	3.9	1660	120	50.9	8.3
124	21.8	375.0	31.0	261.0	20.0	436	0.70	0.1019	0.0045	0.01508	0.00042	0.0407	0.0500	0.0026	98.4	4.1	96.4	2.7	191	100	2.0	0.5
54	21.2	470.0	18.0	136.4	4.6	502	0.29	0.1245	0.0073	0.01510	0.00035	0.2618	0.0612	0.0037	118.7	6.5	96.6	2.3	580	120	18.6	3.4
110	11.9	252.4	9.5	128.1	2.9	283	0.51	0.1079	0.0095	0.01531	0.00057	0.2384	0.0515	0.0045	103.6	8.7	97.9	3.6	220	170	5.5	0.7
139	15.5	358.0	43.0	102.0	10.0	382	0.28	0.1039	0.0089	0.01550	0.00077	0.5510	0.0497	0.0036	99.9	8.2	99.1	4.9	160	140	0.8	0.1
25	21.7	92.2	4.0	48.5	1.3	104	0.53	0.0940	0.0110	0.01584	0.00060	0.0104	0.0433	0.0053	90.0	10.0	101.3	3.8	-40	200	-12.6	-1.1
129	21.1	455.0	32.0	174.0	21.0	496	0.38	0.1115	0.0064	0.01610	0.00043	0.1813	0.0501	0.0027	108.4	5.8	102.9	2.8	190	110	5.1	0.9
271	21.1	56.4	8.8	20.0	3.1	61	0.35	0.1000	0.0240	0.01613	0.00091	0.0854	0.0430	0.0110	92.0	22.0	103.1	5.8	-20	370	-12.1	-0.5
6	21.7	678.0	53.0	534.0	39.0	803	0.79	0.1076	0.0039	0.01635	0.00036	0.2550	0.0475	0.0017	103.7	3.6	104.5	2.3	80	70	-0.8	-0.2
18	21.7	46.0	3.7	23.0	2.3	51	0.50	0.1210	0.0220	0.01668	0.00083	0.2124	0.0550	0.0100	117.0	20.0	106.6	5.2	200	320	8.9	0.5
88	21.7	493.0	26.0	207.0	10.0	542	0.42	0.1094	0.0052	0.01670	0.00043	0.3487	0.0496	0.0021	105.8	4.7	106.8	2.7	169	84	-0.9	-0.2
205	21.7	851.0	83.0	364.0	35.0	937	0.43	0.1157	0.0049	0.01673	0.00044	0.2518	0.0496	0.0021	111.0	4.5	106.9	2.8	183	89	3.7	0.9
16	21.4	397.0	33.0	185.0	11.0	440	0.47	0.1159	0.0058	0.01692	0.00040	0.2369	0.0498	0.0024	111.1	5.2	108.1	2.5	181	94	2.7	0.6
231	12.0	466.0	10.0	168.4	4.5	506	0.36	0.1206	0.0070	0.01725	0.00052	0.1406	0.0501	0.0031	115.4	6.4	110.2	3.3	190	130	4.5	0.8
292	19.6	40.9	3.9	13.9	1.2	44	0.34	0.2470	0.0340	0.01820	0.00100	0.4192	0.0970	0.0120	224.0	27.0	115.9	6.5	1390	280	48.3	4.0
35	21.7	759.0	20.0	272.5	5.8	823	0.36	0.1301	0.0046	0.01903	0.00037	0.3219	0.0486	0.0017	124.1	4.2	121.5	2.3	139	75	2.1	0.6
219	21.6	438.0	57.0	171.0	28.0	478	0.39	0.1340	0.0064	0.01962	0.00047	0.3781	0.0482	0.0021	127.4	5.8	125.3	3.0	123	89	1.6	0.4
137	21.6	92.2	2.4	186.5	6.7	136	2.02	0.1640	0.0150	0.02573	0.00074	0.0520	0.0461	0.0043	156.0	13.0	163.8	4.7	50	160	-5.0	-0.6
258	20.7	523.0	24.0	635.0	15.0	672	1.21	0.1815	0.0075	0.02600	0.00051	0.1141	0.0510	0.0022	170.5	6.2	165.4	3.2	235	87	3.0	0.8
9	21.4	120.7	2.2	100.1	2.0	144	0.83	0.1840	0.0140	0.02608	0.00076	0.0632	0.0505	0.0040	170.0	12.0	165.9	4.8	190	150	2.4	0.3
24	21.4	259.0	12.0	92.4	2.1	281	0.36	0.1762	0.0090	0.02641	0.00063	0.0376	0.0481	0.0026	166.1	7.8	168.0	3.9	129	100	-1.1	-0.2
115	21.7	784.0	60.0	758.0	56.0	962	0.97	0.1821	0.0066	0.02669	0.00051	0.3742	0.0499	0.0015	169.6	5.7	169.8	3.2	190	66	-0.1	0.0
12	20.6	229.0	14.0	103.8	4.5	253	0.44	0.2210	0.0130	0.02709	0.00065	0.2118	0.0590	0.0033	202.0	11.0	172.3	4.1	550	130	14.7	2.7
166	21.7	374.0	18.0	149.1	4.2	409	0.40	0.1797	0.0078	0.02744	0.00065	0.0230	0.0478	0.0022	167.4	6.7	174.5	4.1	90	89	-4.2	-1.1
89	21.6	493.0	28.0	307.0	13.0	565	0.62	0.1895	0.0074	0.02755	0.00066	0.3527	0.0497	0.0020	175.8	6.3	175.6	4.2	174	81	0.1	0.0
48	21.7	158.0	14.0	196.0	14.0	204	1.24	0.1840	0.0140	0.02781	0.00091	0.1237	0.0481	0.0036	170.0	12.0	176.8	5.7	130	140	-4.0	-0.6
83	12.3	349.0	41.0	106.6	7.2	374	0.31	0.1870	0.0140	0.02788	0.00082	0.3103	0.0490	0.0032	175.0	12.0	177.2	5.2	130	130	-1.3	-0.2
64	21.7	565.0	15.0	304.1	6.0	636	0.54	0.1932	0.0070	0.02826	0.00060	0.3515	0.0484	0.0016	179.0	5.9	179.6	3.7	119	66	-0.3	-0.1
172	21.7	1019.0	36.0	487.0	8.8	1133	0.48	0.1907	0.0056	0.02836	0.00057	0.2745	0.0481	0.0014	177.1	4.7	180.3	3.6	107	60	-1.8	-0.7
111	21.7	592.0	18.0	235.9	4.4	647	0.40	0.2024	0.0073	0.02979	0.00055	0.5050	0.0493	0.0015	186.8	6.2	189.2	3.4	162	66	-1.3	-0.4
33	21.7	162.7	7.0	72.5	2.3	180	0.45	0.2030	0.0110	0.03101	0.00070	0.0786	0.0477	0.0027	187.0	9.6	196.8	4.4	90	110	-5.2	-1.0
29	15.4	647.0	12.0	129.7	4.8	677	0.20	0.2939	0.0085	0.04100	0.00081	0.1405	0.0526	0.0017	261.4	6.7	259.0	5.0	296	71	0.9	0.4
132	21.6	608.0	26.0	252.0	4.2	667	0.41	0.2952	0.0093	0.04120	0.00088	0.1502	0.0527	0.0017	263.8	7.3	260.3	5.5	312	72	1.3	0.5
299	10.3	694.0	36.0	199.0	12.0	741	0.29	0.3410	0.0110	0.04510	0.00120	0.2500	0.0553	0.0021	299.1	8.8	284.5	7.2	409	84	4.9	1.7
133	21.7	92.3	8.8	25.5	2.1	98	0.28	0.5000	0.0280	0.06470	0.00160	0.2670	0.0553	0.0030	408.0	18.0	404.0	9.5	410	120	1.0	0.2
39	12.7	219.0	12.0	53.1	2.8	231	0.24	1.2210	0.0530	0.07250	0.00290	0.5750	0.1212	0.0042	811.0	24.0	451.0	17.0	1992	60	44.4	15.0

Table 10: LA-ICP-MS Zircon Isotopic and Age Data Table: SC15-07: Scott County, KS Paleosol Sample

								Corrected Isotopic Ratios[3]							Ages (Ma)[7]							
Grain #	Signal Duration (s)	U (ppm)[1]	2σ	Th (ppm)[1]	2σ	eU (ppm)[2]	Th/U	$^{207}Pb/^{235}U$	2σ[4]	$^{206}Pb/^{238}U$	2σ[4]	Rho[5]	$^{207}Pb/^{206}Pb$[6]	2σ	$^{207}Pb/^{235}U$	2σ	$^{206}Pb/^{238}U$	2σ	$^{207}Pb/^{206}Pb$	2σ	% Disc.[8]	Uncert. Wtd. Disc.[9]
38	21.4	593.0	27.0	13.6	1.0	596	0.02	0.8480	0.0210	0.10140	0.00220	0.4141	0.0604	0.0014	623.0	11.0	623.0	13.0	607	52	0.0	0.0
10	14.8	367.0	15.0	44.4	1.8	377	0.12	0.8390	0.0270	0.10220	0.00270	0.4874	0.0593	0.0018	619.0	15.0	627.0	16.0	571	67	-1.3	-0.5
214	22.1	460.0	14.0	97.0	3.6	483	0.21	1.5930	0.0890	0.11060	0.00550	0.9429	0.1040	0.0023	959.0	35.0	674.0	32.0	1693	42	29.7	8.1
192	21.9	446.0	38.0	156.0	17.0	483	0.35	2.0400	0.1800	0.12900	0.01700	0.9622	0.1272	0.0065	1099.0	60.0	766.0	96.0	2038	89	30.3	5.6
189	21.9	378.6	9.3	11.2	1.0	381	0.03	1.8700	0.1700	0.13900	0.01400	0.9772	0.0929	0.0022	1056.0	64.0	855.0	78.0	1483	48	19.0	3.1
152	14.3	175.0	11.0	160.7	7.6	213	0.92	2.3960	0.0860	0.15430	0.00490	0.7194	0.1141	0.0032	1242.0	27.0	924.0	28.0	1857	51	25.6	11.8
114	10.0	176.3	5.1	38.2	1.9	185	0.22	2.0170	0.0810	0.16750	0.00570	0.6083	0.0880	0.0032	1123.0	28.0	998.0	32.0	1370	69	11.1	4.5
14	20.6	103.4	2.5	65.0	1.2	119	0.63	2.0870	0.0970	0.17470	0.00640	0.8119	0.0875	0.0026	1151.0	33.0	1036.0	35.0	1386	57	10.0	3.5
155	9.0	157.5	9.0	107.7	6.6	183	0.68	1.9450	0.0890	0.18410	0.00750	0.5021	0.0789	0.0038	1094.0	31.0	1089.0	41.0	1162	94	0.5	0.2
239	10.0	302.0	13.0	101.9	3.3	326	0.34	2.0700	0.0790	0.19770	0.00670	0.7109	0.0772	0.0023	1137.0	26.0	1162.0	36.0	1128	56	-2.2	-1.0
168	15.3	128.0	16.0	17.5	0.9	132	0.14	2.2250	0.0740	0.19790	0.00470	0.3968	0.0815	0.0029	1193.0	23.0	1163.0	25.0	1245	63	2.5	1.3
206	12.8	246.0	14.0	103.1	4.2	270	0.42	2.0560	0.0820	0.19690	0.00750	0.6838	0.0759	0.0024	1131.0	27.0	1163.0	39.0	1098	64	-2.8	-1.2
218	21.7	437.0	34.0	62.8	9.3	452	0.14	2.6400	0.1300	0.19920	0.00840	0.9498	0.0965	0.0019	1308.0	39.0	1168.0	45.0	1553	38	10.7	3.6
230	21.6	156.0	18.0	104.0	10.0	180	0.67	2.5900	0.1200	0.20160	0.00970	0.8594	0.0943	0.0024	1290.0	35.0	1186.0	51.0	1520	51	8.1	3.0
79	21.5	280.4	4.9	160.0	13.0	318	0.57	2.8700	0.3000	0.20900	0.01900	0.9789	0.0962	0.0026	1309.0	88.0	1210.0	100.0	1562	48	7.6	1.1
300	11.9	58.7	2.3	5.0	0.4	60	0.09	2.9400	0.1600	0.20980	0.00970	0.6579	0.1022	0.0040	1382.0	43.0	1225.0	52.0	1669	77	11.4	3.7
5	21.6	116.0	14.0	16.2	1.0	120	0.14	2.8100	0.1500	0.21180	0.00740	0.8348	0.0977	0.0031	1353.0	41.0	1236.0	39.0	1580	60	8.6	2.9
34	20.6	196.0	15.0	9.6	0.5	198	0.05	2.4740	0.0610	0.21200	0.00380	0.1331	0.0849	0.0021	1264.0	18.0	1239.0	20.0	1320	46	2.0	1.4
191	21.4	143.0	19.0	35.5	4.4	151	0.25	3.2100	0.1900	0.22400	0.01200	0.9049	0.1055	0.0026	1461.0	46.0	1295.0	62.0	1717	46	11.4	3.6
69	21.8	101.7	3.5	40.0	1.3	111	0.39	2.8290	0.0810	0.23170	0.00450	0.4557	0.0892	0.0024	1360.0	22.0	1343.0	24.0	1416	49	1.3	0.8
227	21.8	198.0	20.0	150.0	11.0	233	0.76	3.4400	0.1700	0.23400	0.01000	0.9265	0.1065	0.0022	1508.0	39.0	1365.0	53.0	1741	39	9.5	3.7
58	21.7	47.8	2.1	26.7	1.4	54	0.56	2.7590	0.0960	0.23620	0.00530	0.4212	0.0868	0.0027	1347.0	27.0	1366.0	28.0	1335	61	-1.4	-0.7
277	22.2	208.0	21.0	157.7	9.7	245	0.76	2.9400	0.1700	0.24100	0.01200	0.9675	0.0885	0.0018	1381.0	48.0	1395.0	63.0	1391	40	-1.0	-0.3
295	21.7	29.3	3.1	5.2	0.8	31	0.18	3.4800	0.2300	0.24600	0.01600	0.8203	0.1021	0.0044	1507.0	55.0	1407.0	85.0	1652	82	6.6	1.8
94	21.7	99.9	5.8	52.3	2.3	112	0.52	2.9510	0.0830	0.24460	0.00500	0.4069	0.0884	0.0022	1397.0	21.0	1410.0	26.0	1392	51	-0.9	-0.6
208	11.8	89.1	4.7	74.3	1.9	107	0.83	3.1600	0.1200	0.24790	0.00560	0.5084	0.0916	0.0029	1443.0	29.0	1427.0	29.0	1458	59	1.1	0.6
31	21.7	81.4	6.8	35.0	2.4	90	0.43	3.0600	0.0890	0.24810	0.00520	0.4276	0.0897	0.0024	1426.0	22.0	1428.0	27.0	1412	51	-0.1	-0.1
97	21.6	226.0	15.0	11.6	1.5	229	0.05	3.1630	0.0860	0.24860	0.00500	0.5776	0.0931	0.0020	1449.0	20.0	1430.0	26.0	1491	42	1.3	1.0
294	22.5	366.0	76.0	13.0	1.6	369	0.04	3.5800	0.1900	0.25000	0.01200	0.9597	0.1030	0.0020	1530.0	40.0	1430.0	62.0	1678	36	6.5	2.5
80	21.6	145.3	7.4	29.3	1.0	152	0.20	3.1010	0.0790	0.24910	0.00550	0.3766	0.0903	0.0021	1433.0	20.0	1433.0	28.0	1427	47	0.0	0.0
61	21.7	72.3	4.6	69.7	2.4	89	0.96	3.1900	0.1100	0.24940	0.00440	0.3321	0.0920	0.0028	1452.0	27.0	1435.0	23.0	1469	59	1.2	0.6
106	21.7	117.6	5.5	102.8	2.8	142	0.87	3.0950	0.0870	0.25110	0.00510	0.5496	0.0898	0.0021	1433.0	22.0	1443.0	26.0	1414	44	-0.7	-0.5
112	21.7	185.0	11.0	78.8	3.5	204	0.43	3.1880	0.0760	0.25140	0.00470	0.4022	0.0924	0.0021	1454.0	19.0	1445.0	24.0	1472	43	0.6	0.5
1	21.7	121.4	6.5	69.1	2.9	138	0.57	3.2250	0.0810	0.25150	0.00490	0.4126	0.0936	0.0023	1461.0	19.0	1446.0	25.0	1498	46	1.0	0.8
138	21.6	128.3	6.8	94.6	4.4	151	0.74	3.1700	0.0910	0.25190	0.00460	0.5004	0.0911	0.0022	1451.0	22.0	1448.0	24.0	1454	47	0.2	0.1
59	21.4	230.0	29.0	14.5	1.5	233	0.06	3.5600	0.1700	0.25500	0.01200	0.9237	0.1025	0.0022	1534.0	37.0	1457.0	60.0	1668	39	5.0	2.1
195	22.1	200.0	28.0	66.2	4.1	216	0.33	3.0280	0.0930	0.25320	0.00600	0.6814	0.0854	0.0019	1416.0	23.0	1457.0	30.0	1326	41	-2.9	-1.8
203	21.7	248.0	10.0	145.3	4.4	282	0.59	3.2360	0.0880	0.25500	0.00680	0.7174	0.0918	0.0020	1468.0	21.0	1463.0	35.0	1464	42	0.3	0.2
196	8.5	1046.0	75.0	37.1	2.5	1055	0.04	3.1900	0.1400	0.25540	0.00950	0.7852	0.0931	0.0028	1458.0	35.0	1465.0	49.0	1484	57	-0.5	-0.2
50	21.7	221.0	13.0	77.0	4.0	239	0.35	3.2190	0.0800	0.25730	0.00510	0.4687	0.0896	0.0020	1461.0	19.0	1475.0	26.0	1411	42	-1.0	-0.7
236	9.6	249.8	9.1	93.2	2.5	272	0.37	3.2800	0.1400	0.25770	0.00850	0.7326	0.0913	0.0029	1471.0	33.0	1477.0	43.0	1444	60	-0.4	-0.2

Table 10: LA-ICP-MS Zircon Isotopic and Age Data Table: SC15-07: Scott County, KS Paleosol Sample

								Corrected Isotopic Ratios[3]							Ages (Ma)[7]							
Grain #	Signal Duration (s)	U (ppm)[1]	2σ	Th (ppm)[1]	2σ	eU (ppm)[2]	Th/U	$^{207}Pb/^{235}U$	2σ[4]	$^{206}Pb/^{238}U$	2σ[4]	Rho[5]	$^{207}Pb/^{206}Pb$[6]	2σ	$^{207}Pb/^{235}U$	2σ	$^{206}Pb/^{238}U$	2σ	$^{207}Pb/^{206}Pb$	2σ	% Disc.[8]	Uncert. Wtd. Disc.[9]
17	21.6	98.5	7.1	76.1	6.0	116	0.77	3.2510	0.1000	0.25790	0.00650	0.5539	0.0915	0.0026	1468.0	25.0	1478.0	34.0	1454	54	-0.7	-0.4
135	16.1	65.9	2.7	0.5	0.1	66	0.01	3.2440	0.1100	0.25540	0.00680	0.4863	0.0924	0.0028	1470.0	25.0	1480.0	38.0	1471	56	-0.7	-0.4
8	21.6	113.0	12.0	36.6	2.8	122	0.32	3.3200	0.0890	0.25990	0.00570	0.2872	0.0930	0.0025	1489.0	20.0	1488.0	29.0	1480	51	0.1	0.1
215	19.2	131.6	9.1	75.1	4.4	149	0.57	3.2700	0.0880	0.26160	0.00590	0.4383	0.0897	0.0022	1473.0	21.0	1497.0	30.0	1415	49	-1.6	-1.1
98	21.6	41.5	2.4	9.3	0.4	44	0.23	3.3000	0.1200	0.26350	0.00660	0.4898	0.0910	0.0028	1475.0	28.0	1510.0	34.0	1435	58	-2.4	-1.3
149	17.0	411.0	22.0	100.0	14.0	435	0.24	3.8340	0.1100	0.28000	0.00700	0.6693	0.0994	0.0023	1603.0	21.0	1590.0	35.0	1612	42	0.8	0.6
213	21.7	841.0	38.0	16.7	0.7	845	0.02	3.9190	0.0820	0.28430	0.00520	0.6961	0.1009	0.0018	1618.0	17.0	1612.0	26.0	1639	32	0.4	0.4
247	22.1	1043.0	53.0	30.6	3.0	1050	0.03	4.2100	0.1000	0.28890	0.00630	0.6375	0.1051	0.0021	1675.0	20.0	1635.0	31.0	1714	38	2.4	2.0
179	17.7	450.0	22.0	38.1	1.4	459	0.08	4.1360	0.1000	0.29130	0.00530	0.5175	0.1046	0.0021	1662.0	19.0	1648.0	26.0	1708	38	0.8	0.7
37	22.0	389.0	31.0	13.1	2.5	392	0.03	4.2000	0.2000	0.29100	0.01500	0.9319	0.1053	0.0024	1668.0	40.0	1649.0	75.0	1716	41	1.1	0.5
32	4.2	392.0	24.0	307.0	19.0	464	0.78	4.1400	0.1800	0.29300	0.01200	0.8132	0.1042	0.0024	1661.0	35.0	1655.0	58.0	1700	42	0.4	0.2
46	21.7	86.4	4.8	47.3	2.3	98	0.55	4.1800	0.1400	0.29230	0.00800	0.7102	0.1033	0.0026	1670.0	28.0	1660.0	40.0	1674	46	0.6	0.4
71	12.5	385.0	26.0	262.0	21.0	447	0.68	4.2100	0.1300	0.29460	0.00810	0.7769	0.1046	0.0023	1674.0	25.0	1663.0	41.0	1713	40	0.7	0.4
36	21.7	86.9	2.7	41.8	0.8	97	0.48	4.1930	0.1100	0.29490	0.00570	0.3540	0.1039	0.0025	1676.0	20.0	1665.0	28.0	1686	45	0.7	0.6
40	20.1	410.0	36.0	60.7	5.2	424	0.15	4.3050	0.1200	0.29500	0.00710	0.7549	0.1047	0.0022	1691.0	23.0	1665.0	35.0	1710	37	1.5	1.1
193	20.5	123.9	5.6	51.8	3.8	136	0.42	4.2200	0.1400	0.29440	0.00720	0.5943	0.1024	0.0027	1672.0	27.0	1666.0	37.0	1668	49	0.4	0.2
180	19.6	179.4	6.7	70.3	2.2	196	0.39	4.2630	0.1100	0.29530	0.00580	0.5903	0.1040	0.0023	1684.0	21.0	1667.0	29.0	1699	42	1.0	0.8
228	19.8	268.0	13.0	117.1	4.6	296	0.44	4.2100	0.0870	0.29900	0.00520	0.5793	0.1029	0.0019	1675.0	17.0	1686.0	26.0	1677	34	-0.7	-0.6
96	21.7	86.1	9.1	55.6	5.2	99	0.65	4.1600	0.1600	0.29990	0.01000	0.7960	0.1014	0.0025	1668.0	32.0	1687.0	52.0	1645	47	-1.1	-0.6
216	10.4	728.0	49.0	24.4	0.6	734	0.03	4.2500	0.1400	0.30260	0.00950	0.7757	0.1016	0.0021	1686.0	28.0	1702.0	47.0	1650	38	-0.9	-0.6
188	15.1	494.0	14.0	120.4	2.7	522	0.24	4.4110	0.1100	0.30270	0.00650	0.6826	0.1055	0.0021	1713.0	20.0	1704.0	32.0	1719	37	0.5	0.5
116	21.6	339.0	15.0	50.8	5.6	351	0.15	4.3790	0.1500	0.30130	0.00850	0.9047	0.1046	0.0019	1699.0	29.0	1709.0	42.0	1703	34	-0.6	-0.3
198	21.7	167.0	11.0	26.3	1.1	173	0.16	4.3580	0.1200	0.30450	0.00770	0.6513	0.1038	0.0024	1704.0	23.0	1712.0	38.0	1694	42	-0.5	-0.3
147	21.6	181.0	14.0	107.5	6.8	206	0.59	4.3800	0.1200	0.30510	0.00650	0.5463	0.1036	0.0026	1711.0	23.0	1716.0	32.0	1683	46	-0.3	-0.2
263	14.5	138.0	16.0	26.3	2.5	144	0.19	4.4400	0.1300	0.30520	0.00820	0.7989	0.1054	0.0022	1717.0	25.0	1716.0	41.0	1717	38	0.1	0.0
60	16.1	75.0	3.5	31.3	0.8	82	0.42	4.3200	0.1300	0.30540	0.00690	0.4793	0.1036	0.0029	1694.0	25.0	1717.0	34.0	1697	51	-1.4	-0.9
274	16.0	502.0	89.0	9.3	1.2	504	0.02	4.4900	0.2900	0.30500	0.02000	0.9760	0.1073	0.0021	1716.0	53.0	1717.0	99.0	1751	36	-0.1	0.0
148	21.9	498.0	49.0	18.3	2.0	502	0.04	4.0300	0.1500	0.30500	0.00790	0.7930	0.0960	0.0024	1636.0	29.0	1719.0	38.0	1537	47	-5.1	-2.9
259	10.7	265.0	24.0	66.2	2.5	281	0.25	4.4000	0.1300	0.30600	0.00790	0.7230	0.1043	0.0023	1709.0	24.0	1720.0	39.0	1704	41	-0.6	-0.5
187	21.6	331.4	6.3	38.2	1.0	340	0.12	4.4140	0.1000	0.30620	0.00620	0.5802	0.1046	0.0021	1715.0	19.0	1721.0	31.0	1709	38	-0.3	-0.3
57	21.7	165.0	15.0	93.1	8.9	187	0.56	4.3370	0.1000	0.30700	0.00610	0.5372	0.1026	0.0021	1702.0	19.0	1725.0	30.0	1666	38	-1.4	-1.2
65	21.7	39.1	2.4	34.0	1.4	47	0.87	4.3900	0.1500	0.30700	0.00700	0.5081	0.1034	0.0030	1706.0	30.0	1728.0	34.0	1678	53	-1.3	-0.7
151	16.7	194.8	7.2	71.9	1.3	212	0.37	4.4070	0.1200	0.30790	0.00750	0.6193	0.1058	0.0022	1718.0	23.0	1729.0	37.0	1724	39	-0.6	-0.5
72	18.1	327.0	13.0	19.6	3.7	332	0.06	4.4400	0.1600	0.30910	0.00950	0.8335	0.1039	0.0021	1712.0	32.0	1734.0	47.0	1690	39	-1.3	-0.7
241	21.6	636.0	25.0	147.7	4.2	671	0.23	4.5380	0.1000	0.30960	0.00730	0.7777	0.1063	0.0020	1738.0	19.0	1737.0	36.0	1734	34	0.1	0.1
70	21.8	244.0	28.0	71.0	5.1	261	0.29	4.4770	0.1200	0.31040	0.00680	0.7215	0.1044	0.0021	1726.0	22.0	1742.0	34.0	1702	38	-0.9	-0.7
21	21.7	145.0	10.0	63.5	4.7	160	0.44	4.5100	0.1300	0.31000	0.00790	0.6936	0.1056	0.0025	1734.0	25.0	1743.0	38.0	1721	43	-0.5	-0.4
23	21.4	463.0	20.0	116.9	3.0	490	0.25	5.1300	0.1400	0.31030	0.00660	0.6859	0.1190	0.0026	1842.0	25.0	1744.0	32.0	1953	40	5.3	3.9
63	7.7	364.0	19.0	80.1	3.5	383	0.22	4.4000	0.1300	0.31090	0.01000	0.6980	0.1034	0.0022	1715.0	27.0	1744.0	49.0	1685	38	-1.7	-1.1
81	12.0	216.0	12.0	64.8	2.6	231	0.30	4.4500	0.1300	0.31090	0.00800	0.4192	0.1033	0.0031	1719.0	24.0	1744.0	39.0	1683	56	-1.5	-1.0
90	10.5	120.9	7.1	47.7	2.5	132	0.39	4.5500	0.1300	0.31190	0.00670	0.4307	0.1044	0.0029	1738.0	24.0	1749.0	33.0	1713	52	-0.6	-0.5

Table 10: LA-ICP-MS Zircon Isotopic and Age Data Table: SC15-07: Scott County, KS Paleosol Sample

								Corrected Isotopic Ratios[3]							Ages (Ma)[7]							
Grain #	Signal Duration (s)	U (ppm)[1]	2σ	Th (ppm)[1]	2σ	eU (ppm)[2]	Th/U	$^{207}Pb/^{235}U$	2σ[4]	$^{206}Pb/^{238}U$	2σ[4]	Rho[5]	$^{207}Pb/^{206}Pb$[6]	2σ	$^{207}Pb/^{235}U$	2σ	$^{206}Pb/^{238}U$	2σ	$^{207}Pb/^{206}Pb$	2σ	% Disc.[8]	Uncert. Wtd. Disc.[9]
197	21.6	106.0	11.0	33.5	1.1	114	0.32	4.5800	0.1300	0.31430	0.00670	0.6216	0.1046	0.0024	1745.0	23.0	1761.0	33.0	1703	42	-0.9	-0.7
272	14.3	78.8	5.4	16.6	1.1	83	0.21	4.6300	0.2400	0.31700	0.01300	0.8802	0.1059	0.0029	1769.0	41.0	1772.0	64.0	1744	49	-0.2	-0.1
210	17.7	121.0	14.0	41.8	5.7	131	0.35	4.5800	0.1300	0.31960	0.00730	0.4617	0.1037	0.0026	1742.0	23.0	1787.0	36.0	1688	48	-2.6	-2.0
153	22.2	120.0	14.0	30.0	2.3	127	0.25	4.7100	0.1300	0.32390	0.00730	0.4662	0.1051	0.0027	1771.0	23.0	1811.0	35.0	1726	47	-2.3	-1.7
183	21.6	131.8	7.5	54.7	2.9	145	0.42	4.9180	0.1200	0.32660	0.00600	0.4018	0.1096	0.0026	1805.0	21.0	1821.0	29.0	1792	43	-0.9	-0.8
99	21.8	292.0	38.0	20.2	1.3	297	0.07	4.8340	0.1200	0.33260	0.00800	0.6796	0.1059	0.0024	1792.0	22.0	1849.0	38.0	1726	41	-3.2	-2.6
177	21.0	95.5	7.5	44.0	2.9	106	0.46	4.6800	0.1400	0.33490	0.00820	0.5028	0.1020	0.0025	1765.0	23.0	1864.0	39.0	1652	45	-5.6	-4.3
190	21.7	17.5	1.5	6.3	0.5	19	0.36	5.1000	0.2400	0.33600	0.01100	0.4569	0.1090	0.0044	1836.0	38.0	1864.0	53.0	1783	78	-1.5	-0.7
290	22.6	423.0	35.0	51.7	2.7	435	0.12	4.8800	0.1500	0.33850	0.00940	0.9350	0.1042	0.0018	1796.0	27.0	1877.0	46.0	1698	32	-4.5	-3.0
233	22.2	356.0	31.0	236.0	20.0	411	0.66	5.3800	0.1900	0.34170	0.01100	0.8886	0.1128	0.0023	1874.0	31.0	1897.0	53.0	1851	34	-1.2	-0.7
278	22.0	51.3	5.7	7.0	0.7	53	0.14	4.8400	0.1800	0.34700	0.00930	0.6476	0.1018	0.0030	1794.0	32.0	1918.0	44.0	1665	54	-6.9	-3.9
286	21.9	50.1	5.1	28.7	2.2	57	0.57	5.5100	0.1800	0.34710	0.00870	0.5295	0.1130	0.0030	1901.0	27.0	1928.0	42.0	1837	49	-1.4	-1.0
159	22.2	148.0	15.0	100.3	7.1	172	0.68	4.9900	0.1600	0.35010	0.00960	0.8231	0.1029	0.0021	1815.0	27.0	1932.0	46.0	1678	37	-6.4	-4.3

[1]U and Th have been concentrations and the Th/U ratios are calculated relative to the GJ-1 standard value using 287 ± 76 ppm for U and 8.4 ± 2.6 ppm for Th (Jackson et al., 2004)

[2]Equivalent U defined by the equation: eU = U ppm + 0.235*Th ppm

[3]Corrected for U-Pb fractionation and background and normalized to the GJ-1 standard value: $^{207}Pb/^{235}U$ =0.8093 ± 0.0009 and $^{206}Pb/^{238}U$ = 0.09761 ± 0.00011 (Jackson et al., 2004)

[4]Propagated uncertainty of internal uncertainties (2SE) and within run reproducibility of GJ-1 (2SE)

[5]Uncertainty correlation between $^{206}Pb/^{238}U$ and $^{207}Pb/^{235}U$ uncertainties

[6]Corrected for background and Pb isotopicfractionation using the GJ-1 standard value: $^{207}Pb/^{206}Pb$ = 0.06014 ± 0.00001 (Jackson et al., 2004)

[7]U-Pb ages calculated relative to the GJ-1 standard

[8]Discordance defined as (($^{207}Pb/^{235}U$age - $^{206}Pb/^{238}U$age)/($^{207}Pb/^{235}U$ age))*100

[9]Uncertainty weighted age difference defined as ($^{207}Pb/^{235}U$ age - $^{206}Pb/^{238}U$ age)/($^{207}Pb/^{235}U$ age uncertainty)

Rows highlighted in grey were not used in interpretations or calculations based on discordance or short analysis times

Table 11: LA-ICP-MS Zircon Isotopic and Age Data Table: SC15-11: Scott County, KS Paleosol Sample

								Corrected Isotopic Ratios[3]							Ages (Ma)[7]							
Grain #	Signal Duration (s)	U (ppm)[1]	2σ	Th (ppm)[1]	2σ	eU (ppm)[2]	Th/U	$^{207}Pb/^{235}U$	2σ[4]	$^{206}Pb/^{238}U$	2σ[4]	Rho[5]	$^{207}Pb/^{206}Pb$[6]	2σ	$^{207}Pb/^{235}U$	2σ	$^{206}Pb/^{238}U$	2σ	$^{207}Pb/^{206}Pb$	2σ	% Disc.[8]	Uncert. Wtd. Disc.[9]
117	22.2	206.2	6.9	97.6	8.0	229	0.47	0.0294	0.0040	0.00436	0.00015	0.0449	0.0498	0.0070	29.7	3.9	28.1	1.0	150	240	5.6	0.4
181	10.8	126.8	6.9	116.5	8.4	154	0.92	0.0318	0.0066	0.00466	0.00027	0.1759	0.0499	0.0097	31.5	6.5	30.0	1.7	130	340	4.8	0.2
164	22.2	159.0	15.0	38.9	3.3	168	0.24	0.0365	0.0043	0.00521	0.00018	0.1452	0.0504	0.0061	36.2	4.2	33.5	1.2	190	210	7.5	0.6
154	21.6	1350.0	120.0	1920.0	250.0	1801	1.42	0.0359	0.0015	0.00539	0.00011	0.1949	0.0497	0.0020	35.8	1.4	34.6	0.7	175	80	3.2	0.8
71	12.2	86.9	4.3	68.3	3.8	103	0.79	0.0423	0.0083	0.00545	0.00027	0.1932	0.0540	0.0100	41.7	8.1	35.0	1.7	360	340	16.1	0.8
86	22.2	101.5	7.5	120.5	9.9	130	1.19	0.0396	0.0051	0.00555	0.00019	0.0969	0.0527	0.0065	39.2	4.9	35.7	1.2	350	220	8.9	0.7
63	22.2	268.0	27.0	179.0	19.0	310	0.67	0.0357	0.0032	0.00558	0.00012	0.0259	0.0471	0.0042	35.5	3.2	35.9	0.8	80	160	-1.1	-0.1
93	22.2	352.0	19.0	183.3	7.1	395	0.52	0.0375	0.0024	0.00562	0.00015	0.0942	0.0497	0.0036	37.3	2.3	36.1	1.0	150	140	3.2	0.5
17	22.1	188.0	13.0	253.0	15.0	247	1.35	0.0400	0.0033	0.00617	0.00017	0.0715	0.0465	0.0038	39.7	3.2	39.6	1.1	60	150	0.3	0.0
278	22.2	329.0	23.0	115.0	11.0	356	0.35	0.0584	0.0035	0.00858	0.00028	0.1606	0.0492	0.0027	57.5	3.4	55.1	1.8	140	110	4.2	0.7
293	22.2	176.9	9.1	101.8	3.4	201	0.58	0.0658	0.0047	0.00986	0.00021	0.2342	0.0491	0.0035	64.5	4.5	63.3	1.3	130	130	1.9	0.3
137	22.2	74.3	4.1	43.7	2.0	85	0.59	0.0715	0.0081	0.00991	0.00028	0.1654	0.0535	0.0060	69.6	7.6	63.6	1.8	270	210	8.6	0.8
274	22.2	135.1	4.9	164.0	3.0	174	1.21	0.0655	0.0055	0.00993	0.00024	0.0477	0.0468	0.0039	64.2	5.2	63.7	1.5	80	150	0.8	0.1
240	22.2	26.5	1.2	22.8	0.7	32	0.86	0.0620	0.0160	0.01007	0.00048	0.0023	0.0440	0.0110	61.0	15.0	64.5	3.1	-130	380	-5.7	-0.2
136	22.2	192.0	14.0	112.4	5.2	218	0.59	0.0696	0.0044	0.01022	0.00019	0.1180	0.0497	0.0031	68.2	4.1	65.5	1.2	170	120	4.0	0.7
149	13.5	129.2	4.3	100.4	3.6	153	0.78	0.0737	0.0083	0.01026	0.00030	0.0107	0.0525	0.0061	71.8	7.9	65.8	1.9	260	230	8.4	0.8
66	18.4	119.6	7.7	88.7	6.4	140	0.74	0.0728	0.0068	0.01024	0.00029	0.2339	0.0517	0.0048	71.0	6.5	65.9	1.9	280	180	7.2	0.8
90	22.2	228.0	12.0	42.8	1.5	238	0.19	0.0683	0.0039	0.01036	0.00026	0.3247	0.0470	0.0025	67.4	3.8	66.5	1.7	80	100	1.3	0.2
275	22.2	30.4	1.9	35.2	1.9	39	1.16	0.0630	0.0150	0.01038	0.00053	0.0963	0.0460	0.0110	62.0	14.0	66.6	3.4	100	340	-7.4	-0.3
5	22.2	177.0	15.0	68.9	3.1	193	0.39	0.0694	0.0046	0.01041	0.00040	0.1700	0.0490	0.0033	67.9	4.3	66.7	2.6	160	130	1.8	0.3
43	22.2	238.0	14.0	81.6	9.9	257	0.34	0.0703	0.0043	0.01042	0.00030	0.2611	0.0489	0.0029	68.9	4.1	66.8	1.9	120	110	3.0	0.5
295	22.2	144.5	7.9	144.2	5.1	178	1.00	0.0712	0.0053	0.01048	0.00026	0.0153	0.0499	0.0039	70.2	4.9	67.2	1.7	160	150	4.3	0.6
74	22.2	408.0	24.0	103.6	4.3	432	0.25	0.0684	0.0029	0.01050	0.00017	0.0830	0.0466	0.0020	67.1	2.8	67.3	1.1	71	85	-0.3	-0.1
177	22.2	253.0	12.0	275.0	7.0	318	1.09	0.0702	0.0043	0.01053	0.00019	0.0131	0.0482	0.0030	68.7	4.1	67.6	1.2	110	120	1.6	0.3
172	22.2	300.0	7.6	48.6	1.5	311	0.16	0.0710	0.0036	0.01054	0.00017	0.1979	0.0490	0.0023	69.6	3.4	67.6	1.1	149	95	2.9	0.6
131	18.6	59.1	1.8	23.8	0.6	65	0.40	0.0741	0.0100	0.01055	0.00038	0.0267	0.0497	0.0075	71.8	9.5	67.7	2.4	200	250	5.7	0.4
50	22.2	214.0	13.0	109.0	17.0	240	0.51	0.0688	0.0040	0.01057	0.00024	0.0663	0.0489	0.0031	67.4	3.8	67.8	1.5	140	120	-0.6	-0.1
150	22.2	550.0	59.0	409.0	40.0	646	0.74	0.0722	0.0045	0.01069	0.00039	0.2697	0.0498	0.0026	70.6	4.3	68.5	2.5	158	99	3.0	0.5
125	22.2	213.0	14.0	62.6	1.7	228	0.29	0.0680	0.0047	0.01080	0.00024	0.1317	0.0470	0.0031	66.6	4.5	69.2	1.5	90	120	-3.9	-0.6
8	22.2	165.5	7.8	60.9	3.5	180	0.37	0.0731	0.0049	0.01083	0.00033	0.2342	0.0493	0.0033	71.4	4.7	69.4	2.1	160	130	2.8	0.4
121	22.2	48.4	2.3	17.5	0.6	53	0.36	0.0740	0.0110	0.01083	0.00044	0.1045	0.0470	0.0072	72.6	10.0	69.4	2.8	120	250	4.4	0.3
75	22.2	97.5	4.4	40.2	1.2	107	0.41	0.0755	0.0079	0.01087	0.00030	0.1388	0.0498	0.0051	74.3	7.3	69.7	1.9	180	180	6.2	0.6
72	21.2	73.6	8.6	29.8	4.1	81	0.40	0.0960	0.0130	0.01092	0.00034	0.0400	0.0608	0.0082	93.0	12.0	70.0	2.2	590	240	24.7	1.9
223	22.2	116.0	13.0	52.7	6.8	128	0.45	0.0772	0.0071	0.01094	0.00044	0.0203	0.0526	0.0054	75.0	6.8	70.1	2.8	310	190	6.5	0.7
114	19.7	87.4	6.3	67.9	5.7	103	0.78	0.0642	0.0080	0.01095	0.00043	0.3011	0.0430	0.0049	62.7	7.6	70.2	2.8	-110	190	-12.0	-1.0
148	22.2	92.0	4.5	97.2	3.4	115	1.06	0.0679	0.0064	0.01096	0.00026	0.0970	0.0450	0.0042	66.3	6.1	70.3	1.7	-30	160	-6.0	-0.7
118	22.2	86.4	3.4	0.4	0.0	86	0.00	0.0747	0.0062	0.01099	0.00033	0.0595	0.0492	0.0043	73.5	5.7	70.4	2.1	210	160	4.2	0.5
187	22.2	84.9	3.9	23.8	0.8	90	0.28	0.0753	0.0073	0.01099	0.00029	0.1110	0.0519	0.0051	73.3	6.9	70.5	1.9	270	180	3.8	0.4
140	22.2	124.1	4.5	70.1	2.7	141	0.56	0.0766	0.0053	0.01101	0.00026	0.0955	0.0517	0.0039	74.7	4.9	70.6	1.7	230	150	5.5	0.8
199	20.3	71.2	4.6	27.8	1.5	78	0.39	0.0799	0.0087	0.01105	0.00041	0.2329	0.0532	0.0058	77.4	8.2	70.9	2.6	280	200	8.4	0.8
183	22.2	92.7	6.9	98.4	7.5	116	1.06	0.0706	0.0082	0.01110	0.00031	0.1703	0.0448	0.0051	68.7	7.7	71.1	2.0	30	200	-3.5	-0.3

Table 11: LA-ICP-MS Zircon Isotopic and Age Data Table: SC15-11: Scott County, KS Paleosol Sample

								Corrected Isotopic Ratios[3]							Ages (Ma)[7]							
Grain #	Signal Duration (s)	U (ppm)[1]	2σ	Th (ppm)[1]	2σ	eU (ppm)[2]	Th/U	$^{207}Pb/^{235}U$	2σ[4]	$^{206}Pb/^{238}U$	2σ[4]	Rho[5]	$^{207}Pb/^{206}Pb$[6]	2σ	$^{207}Pb/^{235}U$	2σ	$^{206}Pb/^{238}U$	2σ	$^{207}Pb/^{206}Pb$	2σ	% Disc.[8]	Uncert. Wtd. Disc.[9]
158	22.2	111.8	5.4	47.6	1.2	123	0.43	0.0722	0.0060	0.01116	0.00033	0.3099	0.0473	0.0037	71.3	5.8	71.5	2.1	60	140	-0.3	0.0
203	22.2	120.4	5.2	24.8	0.8	126	0.21	0.0756	0.0071	0.01115	0.00044	0.0711	0.0490	0.0045	73.5	6.6	71.5	2.8	100	160	2.7	0.3
263	22.2	69.0	4.1	46.9	2.4	80	0.68	0.0766	0.0096	0.01115	0.00042	0.0200	0.0516	0.0069	74.2	9.0	71.5	2.7	140	220	3.6	0.3
88	22.2	48.3	4.1	13.5	1.1	51	0.28	0.0730	0.0110	0.01117	0.00043	0.1503	0.0460	0.0070	71.0	10.0	71.6	2.7	-20	250	-0.8	-0.1
2	20.1	83.1	5.2	19.8	0.9	88	0.24	0.0667	0.0078	0.01122	0.00046	0.2462	0.0444	0.0050	65.1	7.4	71.9	2.9	-60	190	-10.4	-0.9
31	22.2	40.3	2.5	39.9	1.8	50	0.99	0.0830	0.0140	0.01124	0.00041	0.2031	0.0526	0.0089	80.0	13.0	72.0	2.6	190	290	10.0	0.6
163	22.2	165.9	3.9	98.8	2.7	189	0.60	0.0753	0.0043	0.01123	0.00029	0.1627	0.0496	0.0030	73.6	4.1	72.0	1.9	160	120	2.2	0.4
78	19.9	122.9	4.9	114.8	4.1	150	0.93	0.0795	0.0076	0.01128	0.00029	0.1121	0.0522	0.0052	78.2	7.2	72.3	1.9	270	190	7.5	0.8
22	10.5	64.9	2.0	38.8	1.2	74	0.60	0.0780	0.0120	0.01131	0.00045	0.1824	0.0528	0.0089	76.0	11.0	72.5	2.9	190	290	4.6	0.3
62	22.2	29.7	1.8	43.5	1.7	40	1.46	0.0830	0.0140	0.01131	0.00051	0.0890	0.0560	0.0100	79.0	13.0	72.5	3.3	350	320	8.2	0.5
188	22.2	539.0	20.0	158.0	4.4	576	0.29	0.0749	0.0025	0.01132	0.00017	0.1045	0.0488	0.0016	73.2	2.4	72.6	1.1	138	69	0.8	0.3
81	22.2	248.7	9.7	176.8	4.2	290	0.71	0.0748	0.0041	0.01135	0.00027	0.0786	0.0486	0.0025	73.1	3.9	72.7	1.7	140	100	0.5	0.1
273	12.6	40.1	1.6	28.8	0.8	47	0.72	0.0920	0.0210	0.01134	0.00073	0.0197	0.0620	0.0130	90.0	19.0	72.7	4.7	500	420	19.2	0.9
94	17.2	205.0	11.0	133.1	4.8	236	0.65	0.0723	0.0055	0.01140	0.00025	0.2889	0.0456	0.0032	71.9	5.2	73.0	1.6	30	130	-1.5	-0.2
257	14.3	47.5	2.3	40.6	2.2	57	0.85	0.0840	0.0150	0.01139	0.00043	0.0958	0.0540	0.0100	80.0	14.0	73.0	2.8	400	320	8.8	0.5
33	22.2	146.0	13.0	93.1	9.2	168	0.64	0.0743	0.0055	0.01143	0.00024	0.1060	0.0473	0.0034	73.1	5.1	73.3	1.6	110	140	-0.3	0.0
289	11.3	278.0	11.0	126.9	6.5	308	0.46	0.0718	0.0060	0.01144	0.00060	0.6129	0.0468	0.0034	70.3	5.7	73.3	3.8	50	140	-4.3	-0.5
270	22.2	53.0	4.6	28.4	1.8	60	0.54	0.0770	0.0120	0.01145	0.00044	0.0340	0.0471	0.0072	76.0	11.0	73.4	2.8	80	260	3.4	0.2
76	22.2	84.4	4.6	87.2	2.8	105	1.03	0.0802	0.0082	0.01147	0.00029	0.0847	0.0521	0.0057	77.7	7.7	73.5	1.8	180	190	5.4	0.5
84	14.9	67.7	6.4	24.6	2.0	73	0.36	0.0820	0.0120	0.01148	0.00041	0.0676	0.0495	0.0078	79.0	12.0	73.6	2.6	190	290	6.8	0.5
124	22.2	86.0	7.2	21.3	1.6	91	0.25	0.0720	0.0078	0.01149	0.00036	0.0199	0.0463	0.0049	70.1	7.3	73.6	2.3	40	170	-5.0	-0.5
135	10.3	55.1	2.3	18.2	0.8	59	0.33	0.1010	0.0140	0.01152	0.00060	0.0299	0.0591	0.0070	97.0	12.0	73.8	3.8	460	240	23.9	1.9
287	22.2	276.0	14.0	216.0	10.0	327	0.78	0.0715	0.0043	0.01151	0.00029	0.3649	0.0453	0.0026	69.9	4.0	73.8	1.9	20	110	-5.6	-1.0
104	20.3	45.8	2.2	11.3	0.6	48	0.25	0.0840	0.0120	0.01153	0.00047	0.0719	0.0544	0.0079	81.0	11.0	73.9	3.0	220	260	8.8	0.6
160	4.1	173.0	11.0	81.8	6.0	192	0.47	0.0770	0.0130	0.01154	0.00078	0.3656	0.0495	0.0093	75.0	13.0	73.9	5.0	230	380	1.5	0.1
249	22.2	73.8	5.9	30.1	2.4	81	0.41	0.0752	0.0082	0.01153	0.00032	0.2953	0.0475	0.0051	73.0	7.7	73.9	2.1	60	190	-1.2	-0.1
142	6.7	225.0	12.0	61.4	3.2	239	0.27	0.0782	0.0083	0.01155	0.00038	0.1136	0.0493	0.0057	76.3	7.8	74.0	2.4	150	220	3.0	0.3
182	22.2	65.8	2.8	29.3	0.9	73	0.45	0.0730	0.0110	0.01154	0.00032	0.0516	0.0466	0.0074	70.0	11.0	74.0	2.0	20	260	-5.7	-0.4
282	22.2	523.0	90.0	89.0	15.0	544	0.17	0.0749	0.0036	0.01155	0.00035	0.4935	0.0472	0.0020	73.2	3.4	74.0	2.2	68	81	-1.1	-0.2
7	14.8	57.7	3.1	40.3	1.9	67	0.70	0.0830	0.0110	0.01157	0.00059	0.0003	0.0549	0.0077	80.0	10.0	74.1	3.8	300	260	7.4	0.6
139	22.2	144.5	5.8	119.3	2.9	173	0.83	0.0824	0.0054	0.01158	0.00029	0.0402	0.0518	0.0037	80.9	5.0	74.2	1.8	280	140	8.3	1.3
229	13.3	71.0	6.8	61.8	8.1	86	0.87	0.0730	0.0110	0.01159	0.00046	0.1566	0.0459	0.0067	70.0	10.0	74.3	2.9	60	230	-6.1	-0.4
292	22.2	124.1	9.3	33.8	1.8	132	0.27	0.0813	0.0075	0.01159	0.00031	0.3846	0.0502	0.0041	80.6	7.0	74.3	2.0	220	160	7.8	0.9
245	22.2	301.0	12.0	94.1	2.6	323	0.31	0.0768	0.0036	0.01162	0.00026	0.3569	0.0475	0.0019	75.0	3.4	74.5	1.7	83	78	0.7	0.1
1	22.2	119.0	10.0	77.5	7.5	137	0.65	0.0821	0.0068	0.01166	0.00037	0.1059	0.0505	0.0044	79.7	6.3	74.7	2.4	190	150	6.3	0.8
232	22.2	422.0	16.0	58.8	1.6	436	0.14	0.0781	0.0031	0.01166	0.00021	0.2831	0.0498	0.0018	76.3	3.0	74.7	1.4	186	78	2.1	0.5
157	18.1	27.7	1.2	20.6	1.7	33	0.74	0.0660	0.0180	0.01167	0.00064	0.0321	0.0410	0.0120	63.0	17.0	74.8	4.1	-120	400	-18.7	-0.7
254	22.2	390.0	21.0	261.0	13.0	451	0.67	0.0747	0.0032	0.01167	0.00022	0.1824	0.0458	0.0019	73.1	3.0	74.8	1.4	12	78	-2.3	-0.6
300	22.2	239.6	9.1	201.1	4.8	287	0.84	0.0761	0.0042	0.01167	0.00021	0.0168	0.0470	0.0026	74.4	3.9	74.8	1.3	60	100	-0.5	-0.1
53	15.1	86.8	3.1	45.3	1.3	97	0.52	0.0867	0.0089	0.01169	0.00043	0.0759	0.0547	0.0058	84.0	8.2	74.9	2.8	360	210	10.8	1.1
147	22.2	80.4	4.1	67.0	3.4	96	0.83	0.0786	0.0095	0.01169	0.00036	0.0312	0.0479	0.0057	76.0	9.0	74.9	2.3	80	200	1.4	0.1

Table 11: LA-ICP-MS Zircon Isotopic and Age Data Table: SC15-11: Scott County, KS Paleosol Sample

								Corrected Isotopic Ratios[3]							Ages (Ma)[7]							
Grain #	Signal Duration (s)	U (ppm)[1]	2σ	Th (ppm)[1]	2σ	eU (ppm)[2]	Th/U	$^{207}Pb/^{235}U$	2σ[4]	$^{206}Pb/^{238}U$	2σ[4]	Rho[5]	$^{207}Pb/^{206}Pb$[6]	2σ	$^{207}Pb/^{235}U$	2σ	$^{206}Pb/^{238}U$	2σ	$^{207}Pb/^{206}Pb$	2σ	% Disc.[8]	Uncert. Wtd. Disc.[9]
37	22.2	175.0	12.0	31.8	3.8	182	0.18	0.0801	0.0041	0.01177	0.00029	0.0598	0.0495	0.0028	78.1	3.8	75.4	1.9	170	110	3.5	0.7
106	19.6	150.5	5.9	61.9	2.6	165	0.41	0.0832	0.0060	0.01177	0.00029	0.0776	0.0511	0.0036	80.9	5.6	75.4	1.9	260	140	6.8	1.0
138	22.2	381.0	30.0	145.0	10.0	415	0.38	0.0753	0.0037	0.01176	0.00022	0.0492	0.0466	0.0024	73.6	3.5	75.4	1.4	54	97	-2.4	-0.5
217	14.7	243.0	20.0	136.0	12.0	275	0.56	0.0748	0.0053	0.01177	0.00030	0.2740	0.0470	0.0031	73.9	4.8	75.4	1.9	100	120	-2.0	-0.3
120	22.2	224.0	15.0	117.5	5.8	252	0.52	0.0788	0.0049	0.01179	0.00040	0.3273	0.0479	0.0029	76.8	4.6	75.5	2.6	100	120	1.7	0.3
244	22.2	230.0	18.0	118.0	9.0	258	0.51	0.0782	0.0048	0.01178	0.00032	0.2208	0.0489	0.0029	76.3	4.5	75.5	2.0	130	110	1.0	0.2
51	22.2	125.6	6.8	107.5	6.4	151	0.86	0.0788	0.0064	0.01179	0.00032	0.0735	0.0482	0.0040	76.6	6.1	75.6	2.0	130	150	1.3	0.2
141	22.2	143.0	12.0	159.0	10.0	180	1.11	0.0792	0.0062	0.01180	0.00029	0.1781	0.0492	0.0039	77.9	5.7	75.6	1.9	170	150	3.0	0.4
46	22.2	545.0	50.0	103.0	13.0	569	0.19	0.0777	0.0035	0.01181	0.00024	0.3280	0.0474	0.0019	75.8	3.3	75.7	1.5	78	78	0.1	0.0
89	22.2	227.0	23.0	71.0	8.5	244	0.31	0.0760	0.0049	0.01182	0.00034	0.1356	0.0471	0.0030	74.2	4.6	75.7	2.1	80	120	-2.0	-0.3
134	22.2	373.0	16.0	210.1	8.2	422	0.56	0.0763	0.0033	0.01181	0.00020	0.0791	0.0467	0.0020	74.6	3.1	75.7	1.3	70	86	-1.5	-0.4
59	22.2	116.2	6.0	50.6	2.5	128	0.44	0.0807	0.0077	0.01182	0.00030	0.0953	0.0480	0.0046	79.1	7.1	75.8	1.9	110	170	4.2	0.5
243	22.2	227.0	16.0	40.3	3.1	236	0.18	0.0753	0.0041	0.01182	0.00033	0.3546	0.0460	0.0025	73.6	3.9	75.8	2.1	30	100	-3.0	-0.6
168	22.2	141.0	16.0	81.2	7.3	160	0.58	0.0713	0.0062	0.01185	0.00029	0.1806	0.0442	0.0038	69.6	5.8	75.9	1.8	-40	150	-9.1	-1.1
284	22.2	558.0	15.0	108.6	8.7	584	0.19	0.0768	0.0033	0.01188	0.00031	0.3504	0.0463	0.0018	75.1	3.1	76.1	2.0	34	75	-1.3	-0.3
19	20.7	78.0	5.3	34.9	1.7	86	0.45	0.0720	0.0082	0.01190	0.00031	0.1764	0.0446	0.0053	70.0	7.7	76.2	2.0	-70	190	-8.9	-0.8
26	13.3	83.5	4.4	46.7	2.4	94	0.56	0.0850	0.0140	0.01189	0.00039	0.0983	0.0522	0.0093	81.0	13.0	76.2	2.5	90	270	5.9	0.4
34	22.2	47.3	3.4	25.4	2.0	53	0.54	0.0830	0.0110	0.01190	0.00050	0.0562	0.0503	0.0070	81.0	11.0	76.2	3.2	200	240	5.9	0.4
231	22.2	102.2	8.3	67.6	5.4	118	0.66	0.0748	0.0076	0.01190	0.00038	0.0655	0.0473	0.0049	72.7	7.2	76.2	2.4	80	190	-4.8	-0.5
230	22.2	109.8	9.9	73.6	5.2	127	0.67	0.0764	0.0075	0.01191	0.00032	0.0834	0.0464	0.0045	74.3	7.0	76.3	2.0	20	170	-2.7	-0.3
218	22.2	660.0	43.0	245.0	8.7	718	0.37	0.0734	0.0026	0.01192	0.00018	0.3225	0.0453	0.0014	72.1	2.5	76.4	1.1	-8	59	-6.0	-1.7
103	22.2	80.0	6.8	6.8	0.6	82	0.08	0.0847	0.0088	0.01189	0.00037	0.1254	0.0510	0.0055	81.9	8.2	76.5	2.3	240	190	6.6	0.7
129	22.2	151.7	4.8	86.8	2.4	172	0.57	0.0796	0.0054	0.01195	0.00023	0.0806	0.0482	0.0034	78.8	5.0	76.6	1.4	110	130	2.8	0.4
133	22.2	75.1	4.2	23.6	1.3	81	0.31	0.0761	0.0084	0.01197	0.00036	0.1633	0.0456	0.0054	73.9	7.9	76.7	2.3	40	200	-3.8	-0.4
212	22.2	25.2	2.0	14.2	1.2	29	0.56	0.0800	0.0210	0.01197	0.00062	0.0653	0.0460	0.0120	76.0	20.0	76.7	4.0	-110	410	-0.9	0.0
246	22.2	50.4	1.6	31.0	2.1	58	0.62	0.0720	0.0110	0.01198	0.00035	0.0276	0.0446	0.0069	69.0	10.0	76.8	2.3	-70	240	-11.3	-0.8
85	9.5	162.0	10.0	41.2	2.1	172	0.25	0.0910	0.0110	0.01201	0.00039	0.2972	0.0551	0.0058	88.1	9.9	77.0	2.5	380	200	12.6	1.1
45	22.2	205.2	5.9	101.3	2.3	229	0.49	0.0787	0.0043	0.01203	0.00037	0.2798	0.0470	0.0026	76.8	4.0	77.1	2.3	60	100	-0.4	-0.1
98	20.7	22.2	1.9	15.0	1.3	26	0.68	0.1170	0.0220	0.01206	0.00070	0.0639	0.0670	0.0140	111.0	21.0	77.2	4.5	630	370	30.5	1.6
262	22.2	101.3	4.8	68.6	2.8	117	0.68	0.0769	0.0072	0.01206	0.00030	0.0132	0.0482	0.0047	75.7	6.6	77.2	1.9	130	170	-2.0	-0.2
27	22.2	1131.0	63.0	445.0	13.0	1236	0.39	0.0793	0.0023	0.01206	0.00017	0.1518	0.0478	0.0012	77.5	2.2	77.3	1.1	81	54	0.3	0.1
122	22.4	126.0	17.0	68.0	12.0	142	0.54	0.0754	0.0066	0.01209	0.00043	0.2601	0.0466	0.0036	75.0	6.0	77.4	2.8	80	140	-3.2	-0.4
260	15.1	201.0	17.0	157.0	14.0	238	0.78	0.0853	0.0064	0.01209	0.00031	0.0891	0.0519	0.0041	82.9	6.0	77.4	2.0	280	160	6.6	0.9
225	22.2	81.0	4.2	35.6	2.6	89	0.44	0.0846	0.0085	0.01206	0.00038	0.0545	0.0514	0.0056	81.8	8.0	77.6	2.4	230	200	5.1	0.5
83	22.2	76.2	3.5	25.8	1.0	82	0.34	0.0840	0.0084	0.01213	0.00037	0.2429	0.0527	0.0053	82.4	8.0	77.7	2.4	240	190	5.7	0.6
185	22.2	232.0	13.0	139.3	9.0	265	0.60	0.0758	0.0044	0.01215	0.00026	0.2046	0.0455	0.0024	74.0	4.1	77.8	1.6	0	98	-5.1	-0.9
36	22.2	125.8	4.2	68.3	2.0	142	0.54	0.0771	0.0056	0.01218	0.00027	0.2160	0.0457	0.0030	75.2	5.2	78.0	1.7	30	120	-3.7	-0.5
259	22.2	87.4	9.1	85.8	8.9	108	0.98	0.0756	0.0079	0.01217	0.00035	0.0572	0.0460	0.0052	74.4	7.6	78.0	2.2	30	190	-4.8	-0.5
143	22.2	78.0	10.0	43.5	5.6	88	0.56	0.0833	0.0091	0.01223	0.00037	0.0022	0.0480	0.0054	80.5	8.5	78.3	2.3	180	210	2.7	0.3
39	14.4	247.0	10.0	32.5	1.3	255	0.13	0.0878	0.0059	0.01224	0.00024	0.2759	0.0516	0.0034	85.3	5.5	78.4	1.5	280	130	8.1	1.3
128	11.9	57.4	1.7	54.1	2.3	70	0.94	0.0850	0.0150	0.01226	0.00056	0.0847	0.0499	0.0091	82.0	14.0	78.5	3.6	140	310	4.3	0.3

Table 11: LA-ICP-MS Zircon Isotopic and Age Data Table: SC15-11: Scott County, KS Paleosol Sample

								Corrected Isotopic Ratios[3]							Ages (Ma)[7]							
Grain #	Signal Duration (s)	U (ppm)[1]	2σ	Th (ppm)[1]	2σ	eU (ppm)[2]	Th/U	$^{207}Pb/^{235}U$	2σ[4]	$^{206}Pb/^{238}U$	2σ[4]	Rho[5]	$^{207}Pb/^{206}Pb$[6]	2σ	$^{207}Pb/^{235}U$	2σ	$^{206}Pb/^{238}U$	2σ	$^{207}Pb/^{206}Pb$	2σ	% Disc.[8]	Uncert. Wtd. Disc.[9]
175	9.3	30.2	1.0	12.7	0.4	33	0.42	0.1300	0.0260	0.01225	0.00089	0.1459	0.0810	0.0200	122.0	23.0	78.5	5.6	820	450	35.7	1.9
219	22.2	207.0	18.0	185.0	16.0	250	0.89	0.0804	0.0052	0.01225	0.00029	0.1112	0.0489	0.0031	78.9	4.8	78.5	1.9	160	120	0.5	0.1
41	21.4	79.8	4.9	48.0	2.5	91	0.60	0.0930	0.0087	0.01229	0.00034	0.3282	0.0559	0.0051	90.7	8.2	78.7	2.2	460	160	13.2	1.5
173	19.7	86.1	6.6	38.3	2.1	95	0.44	0.0879	0.0094	0.01229	0.00035	0.3542	0.0529	0.0053	84.9	8.7	78.7	2.2	300	190	7.3	0.7
221	22.2	141.0	14.0	142.0	12.0	174	1.01	0.0771	0.0052	0.01229	0.00037	0.3843	0.0465	0.0028	75.2	4.9	78.7	2.4	40	110	-4.7	-0.7
213	14.4	617.0	35.0	130.4	7.2	648	0.21	0.0829	0.0034	0.01230	0.00021	0.3769	0.0485	0.0018	80.8	3.2	78.8	1.4	129	76	2.5	0.6
276	20.8	110.0	11.0	43.1	5.1	120	0.39	0.0854	0.0069	0.01229	0.00037	0.1152	0.0530	0.0041	84.5	6.2	78.8	2.4	340	160	6.7	0.9
12	22.2	120.0	10.0	116.0	11.0	147	0.97	0.0785	0.0068	0.01232	0.00052	0.1570	0.0463	0.0040	76.4	6.4	78.9	3.3	50	160	-3.3	-0.4
108	13.1	287.3	5.9	52.5	4.6	300	0.18	0.0811	0.0054	0.01231	0.00038	0.2456	0.0489	0.0031	79.1	5.1	78.9	2.4	160	130	0.3	0.0
291	22.2	60.2	4.6	52.6	6.1	73	0.87	0.0820	0.0120	0.01231	0.00048	0.0061	0.0481	0.0070	78.0	11.0	78.9	3.1	110	250	-1.2	-0.1
3	14.8	86.8	4.0	64.6	2.9	102	0.74	0.0789	0.0090	0.01236	0.00077	0.3187	0.0459	0.0051	77.9	8.3	79.1	4.9	110	200	-1.5	-0.1
16	22.2	125.6	6.5	55.9	4.3	139	0.45	0.0829	0.0060	0.01237	0.00028	0.0705	0.0490	0.0037	81.3	5.7	79.3	1.8	140	140	2.5	0.4
111	19.5	398.0	41.0	246.0	17.0	456	0.62	0.0840	0.0042	0.01240	0.00034	0.2525	0.0499	0.0023	81.8	3.9	79.4	2.2	180	93	2.9	0.6
207	22.2	75.2	5.1	69.2	3.9	91	0.92	0.0870	0.0100	0.01240	0.00046	0.2644	0.0485	0.0053	83.4	9.5	79.4	2.9	120	200	4.8	0.4
109	15.0	68.4	8.7	66.5	7.8	84	0.97	0.0840	0.0140	0.01241	0.00047	0.0529	0.0505	0.0085	83.0	13.0	79.5	3.0	250	270	4.2	0.3
96	16.0	46.5	7.9	50.0	8.3	58	1.08	0.0850	0.0180	0.01248	0.00064	0.2635	0.0500	0.0120	80.0	17.0	80.0	4.1	170	350	0.0	0.0
30	22.2	217.0	15.0	81.7	5.7	236	0.38	0.0805	0.0046	0.01254	0.00027	0.1045	0.0464	0.0028	78.5	4.3	80.3	1.7	50	110	-2.3	-0.4
58	22.5	523.0	22.0	214.4	8.4	573	0.41	0.0788	0.0028	0.01254	0.00021	0.1978	0.0454	0.0015	77.0	2.6	80.3	1.3	-6	61	-4.3	-1.3
13	22.2	91.0	11.0	31.2	5.0	98	0.34	0.0815	0.0086	0.01255	0.00045	0.0559	0.0468	0.0052	78.9	8.0	80.4	2.9	50	180	-1.9	-0.2
283	15.0	71.2	4.6	24.8	1.8	77	0.35	0.0846	0.0100	0.01262	0.00061	0.2698	0.0485	0.0059	81.8	9.4	80.9	3.9	170	230	1.1	0.1
151	18.3	36.4	2.2	24.4	1.2	42	0.67	0.1290	0.0210	0.01266	0.00046	0.1245	0.0770	0.0130	127.0	20.0	81.1	2.9	790	330	36.1	2.3
15	22.2	56.3	5.6	42.1	4.3	66	0.75	0.0899	0.0100	0.01270	0.00055	0.0039	0.0525	0.0061	87.9	9.1	81.3	3.5	320	220	7.5	0.7
87	22.2	278.0	34.0	106.0	13.0	303	0.38	0.0807	0.0042	0.01269	0.00035	0.1317	0.0457	0.0025	78.6	3.9	81.3	2.2	20	100	-3.4	-0.7
155	22.2	95.1	5.8	42.5	3.2	105	0.45	0.0825	0.0079	0.01269	0.00036	0.3009	0.0474	0.0044	80.0	7.4	81.3	2.3	50	160	-1.6	-0.2
162	12.9	105.3	8.0	36.1	3.6	114	0.34	0.0880	0.0100	0.01271	0.00066	0.5429	0.0517	0.0051	85.5	9.5	81.4	4.2	250	190	4.8	0.4
248	22.2	109.3	7.8	49.5	4.5	121	0.45	0.0815	0.0066	0.01274	0.00049	0.0860	0.0459	0.0036	79.2	6.1	81.6	3.1	10	140	-3.0	-0.4
40	16.4	70.4	3.7	94.9	4.8	93	1.35	0.0925	0.0095	0.01276	0.00049	0.0936	0.0514	0.0057	90.6	9.2	81.7	3.1	290	210	9.8	1.0
201	13.4	135.0	14.0	43.7	3.7	145	0.32	0.0913	0.0092	0.01269	0.00053	0.3860	0.0526	0.0045	88.2	8.6	81.8	3.5	310	180	7.3	0.7
91	16.9	47.1	7.8	21.1	3.4	52	0.45	0.0860	0.0160	0.01279	0.00075	0.2538	0.0507	0.0088	82.0	15.0	81.9	4.8	410	290	0.1	0.0
123	22.2	153.6	8.2	48.0	4.4	165	0.31	0.0847	0.0057	0.01295	0.00043	0.2545	0.0487	0.0032	82.9	5.4	82.9	2.7	140	130	0.0	0.0
296	22.2	37.5	4.0	11.3	0.9	40	0.30	0.0900	0.0160	0.01303	0.00055	0.0545	0.0480	0.0084	85.0	15.0	83.4	3.5	140	280	1.9	0.1
92	5.4	490.0	120.0	400.0	100.0	584	0.82	0.0960	0.0120	0.01313	0.00079	0.3878	0.0543	0.0058	93.0	11.0	84.1	5.1	340	200	9.6	0.8
209	15.5	23.4	0.8	38.4	1.8	32	1.64	0.1030	0.0260	0.01327	0.00094	0.1335	0.0570	0.0150	95.0	24.0	84.9	6.0	270	460	10.6	0.4
25	22.2	144.1	6.3	63.2	3.4	159	0.44	0.0888	0.0056	0.01333	0.00037	0.2834	0.0487	0.0030	86.2	5.2	85.4	2.4	120	120	0.9	0.2
146	18.0	152.0	11.0	67.6	9.9	168	0.44	0.0922	0.0065	0.01343	0.00037	0.2610	0.0511	0.0033	89.3	6.1	86.0	2.3	220	130	3.7	0.5
247	15.3	51.9	2.6	21.4	1.9	57	0.41	0.0990	0.0140	0.01353	0.00081	0.2350	0.0557	0.0078	95.0	13.0	86.6	5.1	360	250	8.8	0.6
119	22.2	111.1	6.1	39.0	2.5	120	0.35	0.0891	0.0072	0.01359	0.00059	0.4114	0.0491	0.0035	86.2	6.7	87.0	3.8	140	130	-0.9	-0.1
167	15.9	168.0	16.0	112.0	10.0	194	0.67	0.0832	0.0080	0.01387	0.00039	0.1195	0.0427	0.0040	80.8	7.5	88.8	2.5	-110	160	-9.9	-1.1
99	22.2	341.0	51.0	154.0	27.0	377	0.45	0.1007	0.0041	0.01488	0.00026	0.1613	0.0486	0.0019	97.8	3.7	95.2	1.6	129	78	2.7	0.7
55	6.2	85.5	5.7	47.8	3.3	97	0.56	0.1100	0.0390	0.01490	0.00180	0.9122	0.0550	0.0130	103.0	34.0	96.0	12.0	230	440	6.8	0.2
101	22.2	505.0	41.0	460.0	34.0	613	0.91	0.1021	0.0036	0.01502	0.00023	0.1265	0.0492	0.0017	98.6	3.3	96.1	1.5	151	73	2.5	0.8

Table 11: LA-ICP-MS Zircon Isotopic and Age Data Table: SC15-11: Scott County, KS Paleosol Sample

								Corrected Isotopic Ratios[3]							Ages (Ma)[7]							
Grain #	Signal Duration (s)	U (ppm)[1]	2σ	Th (ppm)[1]	2σ	eU (ppm)[2]	Th/U	$^{207}Pb/^{235}U$	2σ[4]	$^{206}Pb/^{238}U$	2σ[4]	Rho[5]	$^{207}Pb/^{206}Pb$[6]	2σ	$^{207}Pb/^{235}U$	2σ	$^{206}Pb/^{238}U$	2σ	$^{207}Pb/^{206}Pb$	2σ	% Disc.[8]	Uncert. Wtd. Disc.[9]
44	11.3	361.0	29.0	130.0	13.0	392	0.36	0.0981	0.0050	0.01508	0.00059	0.0780	0.0470	0.0031	95.0	4.6	96.5	3.8	80	130	-1.6	-0.3
28	21.7	69.5	9.6	19.0	2.6	74	0.27	0.5630	0.0620	0.01516	0.00065	0.6752	0.2610	0.0250	447.0	42.0	97.0	4.1	3210	160	78.3	8.3
258	22.2	171.0	11.0	37.9	2.5	180	0.22	0.1037	0.0060	0.01570	0.00030	0.0902	0.0478	0.0028	99.9	5.5	100.4	1.9	90	110	-0.5	-0.1
290	22.2	131.0	16.0	75.9	8.6	149	0.58	0.1055	0.0068	0.01591	0.00046	0.2006	0.0478	0.0032	102.2	6.1	101.7	2.9	100	130	0.5	0.1
179	22.2	142.0	12.0	60.5	4.0	156	0.43	0.0992	0.0063	0.01600	0.00034	0.2067	0.0458	0.0030	95.7	5.8	102.3	2.2	10	120	-6.9	-1.1
174	22.2	461.0	47.0	296.0	28.0	531	0.64	0.1041	0.0033	0.01601	0.00027	0.0700	0.0473	0.0016	100.4	3.0	102.4	1.7	76	67	-2.0	-0.7
226	22.2	96.2	9.1	36.1	2.3	105	0.38	0.1124	0.0096	0.01660	0.00047	0.0109	0.0492	0.0043	109.9	8.8	106.1	3.0	160	160	3.5	0.4
100	22.2	161.0	11.0	45.4	2.6	172	0.28	0.1275	0.0075	0.01828	0.00041	0.1232	0.0518	0.0031	121.4	6.8	116.8	2.6	240	120	3.8	0.7
298	22.2	178.0	19.0	57.7	6.1	192	0.32	0.1305	0.0072	0.02008	0.00048	0.3596	0.0474	0.0024	124.1	6.4	128.2	3.0	90	100	-3.3	-0.6
18	22.2	134.6	7.5	41.3	2.2	144	0.31	0.1364	0.0071	0.02032	0.00041	0.2970	0.0479	0.0022	129.4	6.4	129.6	2.6	116	90	-0.2	0.0
56	12.5	214.6	5.7	334.0	17.0	293	1.56	0.1802	0.0090	0.02511	0.00047	0.0351	0.0520	0.0025	167.9	7.8	159.9	3.0	300	100	4.8	1.0
242	15.0	254.5	9.1	184.2	5.1	298	0.72	0.1737	0.0082	0.02561	0.00063	0.3047	0.0495	0.0022	162.3	7.1	163.0	3.9	165	92	-0.4	-0.1
38	22.2	220.0	18.0	114.8	8.4	247	0.52	0.1697	0.0075	0.02579	0.00039	0.0503	0.0478	0.0022	158.7	6.5	164.1	2.4	97	90	-3.4	-0.8
29	21.7	114.2	5.6	79.3	7.8	133	0.69	0.1900	0.0120	0.02620	0.00055	0.1815	0.0512	0.0031	175.0	11.0	166.7	3.4	220	120	4.7	0.8
61	22.2	251.0	11.0	169.5	5.4	291	0.68	0.1789	0.0067	0.02627	0.00036	0.1767	0.0502	0.0018	166.8	5.7	167.1	2.2	184	75	-0.2	-0.1
79	22.2	555.0	32.0	583.0	38.0	692	1.05	0.1796	0.0047	0.02642	0.00037	0.2903	0.0493	0.0011	167.6	4.0	168.1	2.3	160	48	-0.3	-0.1
113	22.2	532.0	31.0	244.0	19.0	589	0.46	0.1811	0.0058	0.02645	0.00069	0.6070	0.0489	0.0013	169.3	5.1	168.2	4.3	148	56	0.6	0.2
145	22.2	469.0	41.0	186.0	24.0	513	0.40	0.1845	0.0069	0.02649	0.00040	0.1876	0.0506	0.0018	172.3	6.1	168.5	2.5	229	74	2.2	0.6
102	22.2	349.0	25.0	230.0	12.0	403	0.66	0.1790	0.0055	0.02653	0.00041	0.3216	0.0491	0.0013	167.5	4.7	168.8	2.6	149	57	-0.8	-0.3
21	16.6	320.0	44.0	269.0	43.0	383	0.84	0.1902	0.0076	0.02699	0.00045	0.2572	0.0510	0.0020	176.5	6.5	171.7	2.8	245	77	2.7	0.7
241	22.2	306.0	33.0	159.7	6.9	344	0.52	0.1798	0.0066	0.02727	0.00061	0.0676	0.0491	0.0018	167.6	5.6	173.4	3.8	158	76	-3.5	-1.0
238	22.2	198.0	13.0	108.6	7.5	224	0.55	0.2472	0.0093	0.03505	0.00072	0.3498	0.0519	0.0019	225.6	7.6	222.1	4.5	258	77	1.6	0.5
214	22.2	493.0	40.0	203.3	6.9	541	0.41	0.2788	0.0067	0.03967	0.00048	0.2823	0.0511	0.0012	249.5	5.4	250.8	3.0	236	52	-0.5	-0.2
115	19.7	13.3	0.8	0.0	0.0	13	0.00	0.2880	0.0460	0.04030	0.00170	0.0698	0.0523	0.0097	250.0	38.0	255.0	11.0	190	290	-2.0	-0.1
4	21.1	661.0	47.0	109.8	3.6	687	0.17	0.2880	0.0110	0.04110	0.00160	0.8006	0.0509	0.0012	257.0	8.9	259.4	9.9	234	54	-0.9	-0.3
132	22.2	253.0	20.0	71.6	5.5	270	0.28	0.2911	0.0086	0.04141	0.00050	0.1197	0.0513	0.0015	259.1	6.7	261.6	3.1	244	62	-1.0	-0.4
198	16.6	1100.0	120.0	386.0	29.0	1191	0.35	0.3220	0.0120	0.04450	0.00150	0.8545	0.0518	0.0011	282.8	9.0	280.7	9.2	281	49	0.7	0.2
224	20.5	90.2	8.9	20.6	1.8	95	0.23	0.4200	0.0490	0.04540	0.00370	0.8776	0.0639	0.0034	345.0	33.0	285.0	22.0	670	110	17.4	1.8
130	17.6	314.0	10.0	68.7	2.0	330	0.22	0.4580	0.0120	0.06046	0.00077	0.2863	0.0550	0.0012	382.5	8.1	378.4	4.7	415	51	1.1	0.5
196	22.2	428.0	67.0	19.3	3.8	433	0.05	0.4861	0.0120	0.06480	0.00140	0.5440	0.0541	0.0013	401.8	8.3	404.9	8.2	380	51	-0.8	-0.4
153	22.2	339.0	12.0	251.5	7.2	398	0.74	0.5090	0.0130	0.06655	0.00100	0.4380	0.0557	0.0012	418.2	8.8	415.9	6.4	454	48	0.5	0.3
52	23.0	65.9	3.8	48.6	2.5	77	0.74	0.7900	0.0430	0.06740	0.00260	0.6535	0.0829	0.0032	591.0	25.0	422.0	15.0	1257	80	28.6	6.8
194	21.8	299.0	21.0	50.7	8.5	311	0.17	0.8320	0.0660	0.07160	0.00210	0.4950	0.0835	0.0055	603.0	34.0	447.0	13.0	1184	93	25.9	4.6
35	10.5	69.7	2.1	24.7	1.1	76	0.35	0.7290	0.0430	0.08320	0.00260	0.5581	0.0627	0.0031	553.0	25.0	515.0	16.0	670	110	6.9	1.5
280	22.2	196.0	17.0	53.9	4.1	209	0.28	0.6950	0.0220	0.08630	0.00210	0.6099	0.0582	0.0016	534.0	13.0	533.0	12.0	530	58	0.2	0.1
112	22.2	366.0	14.0	39.3	1.6	375	0.11	0.7000	0.0240	0.08810	0.00250	0.4992	0.0580	0.0019	537.0	14.0	544.0	15.0	492	54	-1.3	-0.5
161	15.3	31.1	2.0	15.1	0.9	35	0.49	0.7590	0.0400	0.09650	0.00300	0.0344	0.0581	0.0034	574.0	22.0	593.0	18.0	530	130	-3.3	-0.9
193	10.7	75.0	7.1	38.7	2.2	84	0.52	0.8600	0.0380	0.09880	0.00310	0.2608	0.0642	0.0030	628.0	21.0	607.0	18.0	730	100	3.3	1.0
222	22.2	95.1	5.7	43.3	2.7	105	0.46	0.8670	0.0280	0.10250	0.00150	0.3763	0.0611	0.0018	635.0	15.0	629.0	8.9	658	63	0.9	0.4
14	21.3	642.0	56.0	53.1	2.6	654	0.08	1.4400	0.1300	0.10580	0.00900	0.9626	0.0972	0.0023	875.0	54.0	644.0	52.0	1570	43	26.4	4.3
54	22.6	541.0	63.0	124.0	18.0	570	0.23	1.7900	0.2200	0.13300	0.01600	0.9947	0.0960	0.0016	967.0	85.0	793.0	89.0	1543	32	18.0	2.0

Table 11: LA-ICP-MS Zircon Isotopic and Age Data Table: SC15-11: Scott County, KS Paleosol Sample

								Corrected Isotopic Ratios[5]							Ages (Ma)[7]							
Grain #	Signal Duration (s)	U (ppm)[1]	2σ	Th (ppm)[1]	2σ	eU (ppm)[2]	Th/U	$^{207}Pb/^{235}U$	2σ[4]	$^{206}Pb/^{238}U$	2σ[4]	Rho[5]	$^{207}Pb/^{206}Pb$[6]	2σ	$^{207}Pb/^{235}U$	2σ	$^{206}Pb/^{238}U$	2σ	$^{207}Pb/^{206}Pb$	2σ	% Disc.[8]	Uncert. Wtd. Disc.[9]
170	22.2	861.0	54.0	138.1	7.4	893	0.16	1.9070	0.0690	0.13170	0.00430	0.9417	0.1053	0.0016	1082.0	24.0	800.0	25.0	1719	27	26.1	11.8
216	22.2	736.0	64.0	246.0	15.0	794	0.33	2.2680	0.0860	0.15650	0.00540	0.9535	0.1041	0.0015	1196.0	26.0	936.0	30.0	1696	26	21.7	10.0
205	16.9	523.0	32.0	332.0	19.0	601	0.63	2.3110	0.0870	0.15710	0.00590	0.8577	0.1051	0.0025	1219.0	27.0	939.0	33.0	1717	45	23.0	10.4
48	22.2	151.0	26.0	127.0	21.0	181	0.84	1.5680	0.0470	0.16230	0.00330	0.4153	0.0708	0.0018	960.0	20.0	971.0	18.0	950	54	-1.1	-0.6
228	22.2	107.6	4.4	139.7	4.7	140	1.30	1.6190	0.0380	0.16370	0.00220	0.4004	0.0717	0.0014	976.0	15.0	977.0	12.0	969	42	-0.1	-0.1
156	22.2	43.5	2.4	27.0	1.1	50	0.62	1.8750	0.0580	0.17980	0.00300	0.2969	0.0759	0.0022	1069.0	20.0	1065.0	17.0	1084	57	0.4	0.2
73	22.2	145.4	8.6	141.7	6.5	179	0.97	1.9140	0.0430	0.18280	0.00230	0.5771	0.0763	0.0013	1085.0	15.0	1082.0	13.0	1104	33	0.3	0.2
195	22.2	137.1	8.9	76.1	3.8	155	0.56	1.9200	0.0480	0.18360	0.00330	0.6488	0.0752	0.0013	1086.0	17.0	1086.0	18.0	1075	34	0.0	0.0
256	22.2	50.2	3.1	42.3	2.1	60	0.84	1.9320	0.0600	0.18420	0.00300	0.1153	0.0761	0.0023	1089.0	21.0	1089.0	16.0	1080	65	0.0	0.0
171	19.6	280.0	19.0	100.0	5.7	304	0.36	1.9460	0.0420	0.18670	0.00280	0.6425	0.0764	0.0012	1096.0	15.0	1103.0	15.0	1102	31	-0.6	-0.5
271	21.2	214.0	22.0	22.7	1.9	219	0.11	2.7050	0.0970	0.19560	0.00620	0.9347	0.1007	0.0016	1328.0	25.0	1150.0	33.0	1633	29	13.4	7.1
215	22.2	37.8	2.5	30.0	1.6	45	0.79	2.0950	0.0660	0.19680	0.00290	0.2646	0.0773	0.0022	1149.0	20.0	1158.0	16.0	1119	55	-0.8	-0.5
70	22.2	99.4	7.0	83.2	6.0	119	0.84	2.1560	0.0550	0.19880	0.00340	0.5769	0.0789	0.0015	1165.0	18.0	1170.0	18.0	1162	38	-0.4	-0.3
261	22.4	246.0	8.1	73.4	1.7	263	0.30	2.2320	0.0450	0.19900	0.00250	0.5199	0.0807	0.0012	1191.3	14.0	1170.0	14.0	1211	30	1.8	1.5
176	22.2	32.3	2.3	15.2	1.4	36	0.47	2.2000	0.0730	0.20320	0.00360	0.2296	0.0795	0.0025	1182.0	23.0	1192.0	19.0	1170	61	-0.8	-0.4
210	22.2	48.5	5.2	35.0	4.3	57	0.72	2.3430	0.0750	0.21090	0.00440	0.5643	0.0818	0.0021	1228.0	23.0	1233.0	23.0	1231	50	-0.4	-0.2
268	22.2	279.0	31.0	103.1	8.2	303	0.37	3.4350	0.1100	0.22460	0.00710	0.8898	0.1100	0.0019	1508.0	24.0	1304.0	38.0	1796	31	13.5	8.5
60	22.6	425.0	37.0	59.1	4.1	439	0.14	2.8180	0.0550	0.22830	0.00270	0.7449	0.0902	0.0012	1360.8	15.0	1325.0	14.0	1431	25	2.6	2.4
237	22.2	14.0	0.8	14.5	0.6	17	1.04	2.7060	0.1000	0.22930	0.00450	0.2387	0.0851	0.0034	1330.0	30.0	1330.0	24.0	1327	77	0.0	0.0
67	12.8	76.0	2.5	49.6	1.3	88	0.65	2.7990	0.0780	0.22980	0.00450	0.4483	0.0902	0.0026	1357.0	22.0	1333.0	24.0	1418	55	1.8	1.1
165	13.2	98.5	2.8	53.9	1.3	111	0.55	2.8890	0.0680	0.23730	0.00420	0.2746	0.0900	0.0020	1383.0	19.0	1372.0	22.0	1420	44	0.8	0.6
159	11.0	115.4	3.4	98.6	2.4	139	0.85	2.9640	0.0730	0.23850	0.00420	0.3466	0.0898	0.0022	1397.0	19.0	1379.0	22.0	1423	48	1.3	0.9
272	10.8	161.8	5.4	9.6	0.6	164	0.06	2.9100	0.1200	0.23910	0.00920	0.9203	0.0899	0.0019	1380.0	31.0	1380.0	47.0	1431	40	0.0	0.0
281	22.2	70.0	3.2	45.1	2.2	81	0.64	2.9270	0.0820	0.24100	0.00550	0.6348	0.0872	0.0018	1388.0	21.0	1391.0	29.0	1359	41	-0.2	-0.1
20	21.2	140.5	6.1	68.8	2.3	157	0.49	3.0030	0.0630	0.24270	0.00310	0.5770	0.0889	0.0014	1411.0	16.0	1400.0	16.0	1405	31	0.8	0.7
253	22.2	110.4	8.9	200.0	16.0	157	1.81	3.0400	0.0660	0.24310	0.00430	0.6129	0.0905	0.0016	1416.0	17.0	1402.0	22.0	1437	34	1.0	0.8
211	22.2	128.0	11.0	56.8	3.3	141	0.44	2.9510	0.0600	0.24430	0.00320	0.5048	0.0878	0.0015	1394.0	15.0	1409.0	16.0	1373	32	-1.1	-1.0
23	12.8	185.0	12.0	69.7	4.8	201	0.38	3.0980	0.0700	0.24620	0.00410	0.5853	0.0908	0.0017	1434.0	17.0	1419.0	21.0	1438	35	1.0	0.9
57	15.7	99.4	6.5	115.9	6.3	127	1.17	3.1360	0.0730	0.24660	0.00390	0.4548	0.0931	0.0018	1440.0	18.0	1421.0	20.0	1490	37	1.3	1.1
97	17.8	186.6	9.4	131.4	9.8	217	0.70	3.0810	0.0770	0.24680	0.00430	0.6766	0.0908	0.0016	1426.0	19.0	1421.0	22.0	1446	35	0.4	0.3
277	22.2	164.0	20.0	62.1	6.5	179	0.38	3.0850	0.0750	0.24800	0.00550	0.6830	0.0905	0.0017	1429.0	19.0	1427.0	28.0	1433	37	0.1	0.1
288	22.2	174.0	14.0	129.0	8.3	204	0.74	3.0730	0.0880	0.24840	0.00710	0.7704	0.0901	0.0019	1422.0	22.0	1432.0	37.0	1428	39	-0.7	-0.5
64	22.2	107.3	8.8	156.0	13.0	144	1.45	3.1130	0.0680	0.25070	0.00330	0.6051	0.0904	0.0014	1434.0	17.0	1441.0	17.0	1431	30	-0.5	-0.4
166	22.2	197.0	19.0	166.0	24.0	236	0.84	3.1430	0.0730	0.25250	0.00460	0.7014	0.0914	0.0015	1443.0	18.0	1451.0	23.0	1454	33	-0.6	-0.4
152	22.2	193.0	11.0	65.1	2.6	208	0.34	3.1630	0.0680	0.25390	0.00340	0.6875	0.0902	0.0013	1449.0	17.0	1458.0	18.0	1433	28	-0.6	-0.5
144	23.0	244.0	18.0	59.0	6.3	258	0.24	3.2140	0.0920	0.25620	0.00640	0.9068	0.0916	0.0013	1459.0	23.0	1468.0	33.0	1462	27	-0.6	-0.4
191	18.9	240.0	15.0	18.7	1.8	244	0.08	3.3700	0.1500	0.26100	0.01000	0.9448	0.0937	0.0015	1500.0	33.0	1489.0	52.0	1506	28	0.7	0.3
77	11.8	1135.0	26.0	7.2	0.6	1137	0.01	3.3860	0.0840	0.26050	0.00450	0.8286	0.0940	0.0014	1500.0	20.0	1492.0	23.0	1506	29	0.5	0.4
294	22.2	499.0	63.0	98.0	13.0	522	0.20	3.8600	0.1400	0.25940	0.00880	0.9552	0.1061	0.0015	1598.0	28.0	1494.0	46.0	1733	25	6.5	3.7
255	22.2	162.0	20.0	87.0	10.0	182	0.54	3.3000	0.0730	0.26080	0.00470	0.7168	0.0908	0.0015	1479.0	17.0	1496.0	23.0	1439	31	-1.1	-1.0
189	14.2	93.7	6.0	23.0	0.8	99	0.25	3.3260	0.0790	0.26190	0.00350	0.4507	0.0913	0.0017	1486.0	19.0	1500.0	18.0	1454	38	-0.9	-0.7

Table 11: LA-ICP-MS Zircon Isotopic and Age Data Table: SC15-11: Scott County, KS Paleosol Sample

								Corrected Isotopic Ratios[3]							Ages (Ma)[7]							
Grain #	Signal Duration (s)	U (ppm)[1]	2σ	Th (ppm)[1]	2σ	eU (ppm)[2]	Th/U	$^{207}Pb/^{235}U$	2σ[4]	$^{206}Pb/^{238}U$	2σ[4]	Rho[5]	$^{207}Pb/^{206}Pb$[6]	2σ	$^{207}Pb/^{235}U$	2σ	$^{206}Pb/^{238}U$	2σ	$^{207}Pb/^{206}Pb$	2σ	% Disc.[8]	Uncert. Wtd. Disc.[9]
9	18.4	539.0	36.0	62.4	2.1	554	0.12	3.6100	0.1200	0.27000	0.00790	0.7787	0.0963	0.0022	1547.0	27.0	1544.0	39.0	1549	42	0.2	0.1
299	22.2	146.9	5.3	32.9	1.0	155	0.22	3.7060	0.0720	0.27120	0.00360	0.4850	0.0982	0.0015	1572.9	16.0	1547.0	18.0	1588	29	1.6	1.6
220	9.8	753.0	18.0	13.4	1.3	756	0.02	3.7670	0.0860	0.27560	0.00590	0.7023	0.0987	0.0019	1585.0	18.0	1568.0	30.0	1597	35	1.1	0.9
297	14.6	140.6	8.0	21.2	0.9	146	0.15	3.9180	0.0910	0.27650	0.00510	0.5662	0.1022	0.0020	1616.0	19.0	1573.0	26.0	1664	37	2.7	2.3
69	22.2	56.9	4.2	2.4	0.5	57	0.04	3.8500	0.1400	0.27920	0.00640	0.6520	0.0998	0.0025	1595.0	30.0	1585.0	32.0	1608	48	0.6	0.3
169	20.1	363.0	12.0	64.6	1.5	378	0.18	3.8930	0.0780	0.28170	0.00450	0.7609	0.1015	0.0014	1613.0	16.0	1599.0	22.0	1652	27	0.9	0.9
80	20.5	362.0	17.0	152.7	5.2	398	0.42	3.8180	0.0770	0.28230	0.00400	0.6487	0.0985	0.0015	1597.0	16.0	1605.0	20.0	1593	27	-0.5	-0.5
192	20.0	492.0	44.0	2.9	0.1	493	0.01	3.9160	0.0790	0.28340	0.00390	0.7286	0.1010	0.0014	1619.0	17.0	1608.0	20.0	1642	27	0.7	0.6
239	18.2	90.3	4.6	47.2	2.5	101	0.52	4.0400	0.3700	0.29000	0.02500	0.9727	0.1001	0.0023	1620.0	75.0	1620.0	130.0	1638	43	0.0	0.0
252	22.2	230.0	30.0	27.8	3.3	237	0.12	3.9670	0.1100	0.28670	0.00710	0.8439	0.1003	0.0017	1629.0	23.0	1623.0	36.0	1624	32	0.4	0.3
180	22.2	162.0	23.0	30.1	1.2	169	0.19	4.0570	0.0900	0.28870	0.00420	0.6571	0.1020	0.0017	1646.0	18.0	1635.0	21.0	1656	30	0.7	0.6
82	19.4	203.0	20.0	77.9	5.5	221	0.38	4.0960	0.0850	0.29140	0.00440	0.6616	0.1026	0.0016	1656.0	17.0	1648.0	22.0	1672	30	0.5	0.5
10	21.1	173.4	8.5	15.2	0.6	177	0.09	4.2100	0.1500	0.29400	0.01100	0.7757	0.1043	0.0026	1676.0	29.0	1655.0	52.0	1695	46	1.3	0.7
269	19.2	125.1	5.5	30.9	1.0	132	0.25	4.1490	0.0790	0.29280	0.00360	0.4119	0.1024	0.0017	1663.3	16.0	1655.0	18.0	1667	32	0.5	0.5
105	18.0	182.0	37.0	68.0	12.0	198	0.37	4.2300	0.1000	0.29370	0.00490	0.6740	0.1036	0.0019	1678.0	20.0	1663.0	25.0	1697	32	0.9	0.8
279	22.2	76.9	4.1	49.9	2.3	89	0.65	4.1010	0.1000	0.29410	0.00840	0.6816	0.1023	0.0022	1652.0	20.0	1664.0	43.0	1663	39	-0.7	-0.6
236	22.2	152.0	10.0	27.2	0.7	158	0.18	4.0910	0.0840	0.29520	0.00520	0.6154	0.1008	0.0017	1653.0	17.0	1667.0	26.0	1638	30	-0.8	-0.8
42	10.4	132.0	14.0	109.0	15.0	158	0.83	4.3200	0.1400	0.29540	0.00640	0.1728	0.1055	0.0030	1694.0	26.0	1668.0	32.0	1716	49	1.5	1.0
200	21.6	85.0	12.0	23.8	4.3	91	0.28	4.1600	0.1300	0.29610	0.00970	0.7881	0.1022	0.0021	1660.0	26.0	1668.0	48.0	1662	38	-0.5	-0.3
68	19.9	163.0	21.0	13.7	1.3	166	0.08	4.2300	0.1200	0.29720	0.00670	0.8726	0.1042	0.0018	1679.0	25.0	1676.0	33.0	1696	32	0.2	0.1
286	22.2	310.0	82.0	59.6	7.0	324	0.19	4.2550	0.1100	0.29740	0.00660	0.7789	0.1033	0.0019	1682.0	21.0	1677.0	33.0	1695	36	0.3	0.2
127	22.2	195.0	17.0	57.7	5.1	209	0.30	4.2570	0.0830	0.29760	0.00390	0.5392	0.1039	0.0016	1684.0	16.0	1679.0	20.0	1694	28	0.3	0.3
190	22.2	180.0	5.6	44.0	0.9	190	0.24	4.3010	0.0880	0.29830	0.00360	0.6766	0.1046	0.0016	1692.0	17.0	1682.0	18.0	1707	28	0.6	0.6
178	22.2	82.1	5.6	38.3	3.0	91	0.47	4.2420	0.0970	0.29850	0.00410	0.5845	0.1032	0.0018	1680.0	19.0	1684.0	20.0	1686	33	-0.2	-0.2
47	22.2	31.4	1.5	32.5	1.3	39	1.04	4.2700	0.1100	0.29950	0.00600	0.5521	0.1038	0.0023	1686.0	23.0	1687.0	30.0	1687	41	-0.1	0.0
95	12.4	621.0	52.0	50.3	3.6	633	0.08	4.3900	0.1700	0.30100	0.01000	0.9460	0.1044	0.0015	1705.0	33.0	1696.0	51.0	1706	28	0.5	0.3
49	22.2	137.0	11.0	77.6	8.2	155	0.57	4.3160	0.0940	0.30150	0.00560	0.7349	0.1033	0.0017	1695.0	18.0	1698.0	28.0	1683	30	-0.2	-0.2
235	22.2	35.3	2.8	14.0	1.0	39	0.40	4.4360	0.1100	0.30310	0.00470	0.3703	0.1065	0.0025	1719.0	20.0	1706.0	23.0	1731	42	0.8	0.7
186	22.2	26.3	1.7	9.1	0.6	28	0.34	4.4700	0.1300	0.30320	0.00540	0.3850	0.1058	0.0028	1723.0	24.0	1709.0	27.0	1726	48	0.8	0.6
184	16.8	233.0	37.0	63.9	9.9	248	0.27	4.4400	0.1100	0.30430	0.00710	0.8544	0.1069	0.0017	1720.0	22.0	1711.0	35.0	1744	30	0.5	0.4
204	21.4	157.3	8.4	57.0	2.1	171	0.36	4.3450	0.0970	0.30510	0.00700	0.7344	0.1045	0.0020	1702.0	19.0	1715.0	34.0	1703	35	-0.8	-0.7
11	21.8	112.1	7.9	30.5	1.7	119	0.27	4.4600	0.1400	0.30600	0.01200	0.8334	0.1063	0.0025	1729.0	26.0	1716.0	56.0	1731	44	0.8	0.5
233	18.1	97.3	4.5	33.7	1.4	105	0.35	4.5600	0.0990	0.30700	0.00510	0.6289	0.1071	0.0018	1742.0	18.0	1725.0	25.0	1747	31	1.0	0.9
285	22.2	289.0	38.0	49.7	5.5	301	0.17	4.4360	0.1200	0.30640	0.00840	0.7447	0.1051	0.0022	1716.0	21.0	1725.0	41.0	1728	38	-0.5	-0.4
110	14.4	187.8	7.5	37.5	2.0	197	0.20	4.4400	0.1500	0.31000	0.01100	0.8604	0.1035	0.0021	1718.0	27.0	1739.0	55.0	1687	38	-1.2	-0.8
24	22.2	71.2	7.1	33.6	2.5	79	0.47	4.5320	0.1100	0.30960	0.00370	0.3936	0.1052	0.0021	1738.0	20.0	1740.0	18.0	1718	36	-0.1	-0.1
116	21.6	236.0	21.0	51.6	3.9	248	0.22	4.2890	0.0980	0.31020	0.00640	0.7875	0.1015	0.0017	1693.0	19.0	1740.0	31.0	1654	29	-2.8	-2.5
266	17.9	223.0	4.3	88.5	1.6	244	0.40	4.5980	0.0930	0.30940	0.00450	0.5751	0.1083	0.0018	1749.0	16.0	1740.0	23.0	1768	30	0.5	0.6
107	22.2	253.0	21.0	82.8	3.4	272	0.33	4.5110	0.0860	0.31010	0.00400	0.6507	0.1050	0.0015	1734.0	16.0	1741.0	20.0	1715	25	-0.4	-0.4
32	22.0	95.0	10.0	18.4	1.3	99	0.19	5.1600	0.1700	0.31140	0.00690	0.6977	0.1194	0.0027	1845.0	28.0	1746.0	34.0	1938	41	5.4	3.5
206	20.3	137.0	16.0	82.8	4.5	156	0.60	4.4400	0.1400	0.31200	0.01100	0.7570	0.1040	0.0022	1714.0	26.0	1748.0	52.0	1693	41	-2.0	-1.3

Table 11: LA-ICP-MS Zircon Isotopic and Age Data Table: SC15-11: Scott County, KS Paleosol Sample

								Corrected Isotopic Ratios[3]							Ages (Ma)[7]							
Grain #	Signal Duration (s)	U (ppm)[1]	2σ	Th (ppm)[1]	2σ	eU (ppm)[2]	Th/U	$^{207}Pb/^{235}U$	2σ[4]	$^{206}Pb/^{238}U$	2σ[4]	Rho[5]	$^{207}Pb/^{206}Pb$[6]	2σ	$^{207}Pb/^{235}U$	2σ	$^{206}Pb/^{238}U$	2σ	$^{207}Pb/^{206}Pb$	2σ	% Disc.[8]	Uncert. Wtd. Disc.[9]
6	22.2	727.0	59.0	134.6	6.7	759	0.19	4.7300	0.1500	0.31200	0.01100	0.9216	0.1094	0.0018	1767.0	27.0	1760.0	55.0	1794	30	0.4	0.3
202	12.7	348.0	10.0	88.5	3.0	369	0.25	4.5200	0.1400	0.31320	0.00870	0.8548	0.1047	0.0018	1731.0	27.0	1761.0	41.0	1706	31	-1.7	-1.1
65	18.6	93.0	6.2	14.6	0.9	96	0.16	4.6430	0.1100	0.31660	0.00580	0.6478	0.1064	0.0020	1761.0	20.0	1772.0	28.0	1741	33	-0.6	-0.6
251	22.2	169.0	11.0	66.9	4.2	185	0.40	4.6140	0.0950	0.31630	0.00520	0.6624	0.1063	0.0016	1753.0	17.0	1773.0	26.0	1736	28	-1.1	-1.2
208	18.7	257.0	12.0	42.7	2.8	267	0.17	4.6600	0.1300	0.31760	0.00780	0.7746	0.1057	0.0018	1756.0	23.0	1776.0	38.0	1723	32	-1.1	-0.9
227	13.9	682.0	55.0	245.0	24.0	740	0.36	4.6720	0.1100	0.31860	0.00470	0.6051	0.1068	0.0020	1761.0	20.0	1783.0	23.0	1742	33	-1.2	-1.1
264	8.5	311.0	25.0	43.9	3.4	321	0.14	4.6400	0.1400	0.31940	0.00890	0.8789	0.1041	0.0019	1760.0	27.0	1786.0	44.0	1697	34	-1.5	-1.0
126	22.2	182.0	11.0	61.8	3.5	197	0.34	4.9120	0.1000	0.32090	0.00410	0.7457	0.1123	0.0016	1804.0	18.0	1794.0	20.0	1835	26	0.6	0.6
265	21.6	127.1	9.6	34.9	3.0	135	0.27	4.5700	0.1100	0.32740	0.00610	0.7233	0.1012	0.0017	1741.0	20.0	1828.0	30.0	1649	33	-5.0	-4.4
250	22.2	193.0	13.0	132.3	6.6	224	0.69	4.7320	0.1100	0.32820	0.00580	0.8058	0.1041	0.0015	1773.0	19.0	1829.0	28.0	1701	28	-3.2	-2.9
197	17.1	805.0	70.0	149.0	12.0	840	0.19	5.0800	0.2300	0.35600	0.01500	0.9329	0.1044	0.0020	1838.0	37.0	1957.0	71.0	1698	35	-6.5	-3.2
267	22.2	33.8	2.9	17.0	1.7	38	0.50	5.2600	0.1500	0.37480	0.00820	0.6499	0.1027	0.0022	1862.0	25.0	2055.0	39.0	1674	39	-10.4	-7.7
234	22.2	101.6	7.4	97.9	7.6	125	0.96	10.2500	0.2300	0.44270	0.00780	0.8455	0.1678	0.0024	2457.0	20.0	2361.0	35.0	2534	21	3.9	4.8

[1]U and Th have been concentrations and the Th/U ratios are calculated relative to the GJ-1 standard value using 287 ± 76 ppm for U and 8.4 ± 2.6 ppm for Th (Jackson et al., 2004)

[2]Equivalent U defined by the equation: eU = U ppm + 0.235*Th ppm

[3]Corrected for U-Pb fractionation and background and normalized to the GJ-1 standard value: $^{207}Pb/^{235}U$ =0.8093 ± 0.0009 and $^{206}Pb/^{238}U$ = 0.09761 ± 0.00011 (Jackson et al., 2004)

[4]Propagated uncertainty of internal uncertainties (2SE) and within run reproducibility of GJ-1 (2SE)

[5]Uncertainty correlation between $^{206}Pb/^{238}U$ and $^{207}Pb/^{235}U$ uncertainties

[6]Corrected for background and Pb isotopicfractionation using the GJ-1 standard value: $^{207}Pb/^{206}Pb$ = 0.06014 ± 0.00001 (Jackson et al., 2004)

[7]U-Pb ages calculated relative to the GJ-1 standard

[8]Discordance defined as (($^{207}Pb/^{235}U$age - $^{206}Pb/^{238}U$age)/($^{207}Pb/^{235}U$ age))*100

[9]Uncertainty weighted age difference defined as ($^{207}Pb/^{235}U$ age - $^{206}Pb/^{238}U$ age)/($^{207}Pb/^{235}U$ age uncertainty)

Rows highlighted in grey were not used in interpretations or calculations based on discordance or short analysis times

Table 12: LA-ICP-MS Zircon Isotopic and Age Data Table: SC15-08: Scott County, KS Paleosol with Prismatic Nodules Sample

								Corrected Isotopic Ratios[5]							Ages (Ma)[7]							
Grain #	Signal Duration (s)	U (ppm)[1]	2σ	Th (ppm)[1]	2σ	eU (ppm)[2]	Th/U	$^{207}Pb/^{235}U$	2σ[4]	$^{206}Pb/^{238}U$	2σ[4]	Rho[8]	$^{207}Pb/^{206}Pb$[6]	2σ	$^{207}Pb/^{235}U$	2σ	$^{206}Pb/^{238}U$	2σ	$^{207}Pb/^{206}Pb$	2σ	% Disc.[9]	Uncert. Wtd. Disc.[9]
280	21.9	2325.0	81.0	1949.0	84.0	2783	0.84	0.0070	0.0004	0.00104	0.00002	0.0427	0.0495	0.0033	7.1	0.4	6.7	0.2	150	120	5.2	0.9
149	20.1	110.3	5.7	76.5	3.5	128	0.69	0.0307	0.0045	0.00433	0.00016	0.1119	0.0518	0.0080	30.5	4.4	27.9	1.0	250	270	8.5	0.6
20	21.1	48.5	4.2	113.7	9.5	75	2.34	0.0331	0.0081	0.00521	0.00025	0.0432	0.0460	0.0120	34.4	8.2	33.5	1.6	30	370	2.6	0.1
205	22.4	124.4	4.0	116.6	3.7	152	0.94	0.0371	0.0046	0.00530	0.00016	0.1499	0.0539	0.0074	36.8	4.5	34.1	1.0	240	240	7.4	0.6
239	12.3	1075.0	38.0	532.0	16.0	1200	0.49	0.0343	0.0016	0.00538	0.00015	0.2083	0.0463	0.0020	34.3	1.6	34.6	1.0	40	86	-0.8	-0.2
106	14.1	183.0	24.0	118.5	8.8	211	0.65	0.0360	0.0053	0.00541	0.00018	0.1321	0.0483	0.0084	35.8	5.2	34.8	1.2	120	260	2.8	0.2
71	15.5	497.0	21.0	262.5	7.8	559	0.53	0.0347	0.0023	0.00553	0.00014	0.1307	0.0466	0.0028	34.6	2.3	35.6	0.9	40	110	-2.8	-0.4
101	22.0	150.2	7.1	91.0	5.9	172	0.61	0.0326	0.0038	0.00554	0.00020	0.2219	0.0439	0.0051	32.4	3.8	35.6	1.3	-40	190	-9.9	-0.8
98	13.3	40.3	1.7	30.1	1.0	47	0.75	0.0410	0.0200	0.00566	0.00035	0.1508	0.0490	0.0220	39.0	18.0	36.3	2.2	-40	500	6.9	0.2
187	21.8	419.0	23.0	139.8	9.8	452	0.33	0.0369	0.0022	0.00580	0.00012	0.0806	0.0465	0.0030	36.8	2.1	37.3	0.8	50	120	-1.3	-0.2
298	14.1	92.6	4.6	82.6	4.9	112	0.89	0.0453	0.0053	0.00587	0.00019	0.1686	0.0570	0.0070	44.6	5.0	37.7	1.2	430	230	15.5	1.4
248	22.3	475.0	29.0	100.8	7.5	499	0.21	0.0442	0.0020	0.00697	0.00013	0.2991	0.0465	0.0021	43.8	1.9	44.7	0.8	42	86	-2.1	-0.5
24	4.7	25.9	2.9	14.8	4.1	29	0.57	0.0460	0.0130	0.00792	0.00060	0.2498	0.0450	0.0100	44.0	12.0	50.9	3.8	-320	300	-15.7	-0.6
23	18.7	293.0	64.0	97.0	15.0	316	0.33	0.0582	0.0043	0.00859	0.00024	0.2436	0.0486	0.0035	57.3	4.1	55.1	1.5	130	140	3.8	0.5
28	15.5	253.7	6.0	43.3	2.3	264	0.17	0.0570	0.0043	0.00872	0.00025	0.1602	0.0475	0.0032	56.1	4.1	55.9	1.6	90	130	0.4	0.0
154	13.2	543.0	33.0	191.0	14.0	588	0.35	0.0572	0.0031	0.00907	0.00015	0.1834	0.0464	0.0025	56.4	3.0	58.2	1.0	40	100	-3.2	-0.6
19	18.2	134.1	9.5	44.2	2.3	144	0.33	0.0616	0.0052	0.00933	0.00026	0.2220	0.0482	0.0046	60.5	4.9	59.9	1.7	130	170	1.0	0.1
10	20.8	39.9	2.4	36.7	2.5	49	0.92	0.0620	0.0100	0.00959	0.00042	0.0203	0.0453	0.0082	60.0	10.0	61.5	2.7	10	290	-2.5	-0.2
221	22.4	350.0	16.0	28.2	2.0	357	0.08	0.0645	0.0029	0.00980	0.00021	0.4437	0.0471	0.0020	63.4	2.8	62.8	1.3	65	82	0.9	0.2
78	22.4	72.8	4.3	60.1	2.9	87	0.83	0.0600	0.0100	0.00982	0.00030	0.0365	0.0462	0.0076	59.7	9.3	63.0	1.9	10	260	-5.5	-0.4
31	10.1	55.9	3.0	33.5	2.2	64	0.60	0.0680	0.0100	0.00994	0.00041	0.2311	0.0530	0.0072	67.0	9.6	63.7	2.6	160	230	4.9	0.3
139	14.8	131.3	8.9	19.8	1.7	136	0.15	0.0671	0.0080	0.00999	0.00034	0.1274	0.0490	0.0053	65.7	7.4	64.1	2.2	140	180	2.4	0.2
218	8.6	257.1	9.0	58.8	4.9	271	0.23	0.0628	0.3200	0.01004	0.02300	0.0171	0.0471	0.0056	61.7	140.0	64.4	130.0	50	180	-4.4	0.0
32	22.4	28.6	1.2	27.0	0.8	35	0.94	0.0700	0.0160	0.01005	0.00046	0.1127	0.0440	0.0110	68.0	15.0	64.5	3.0	-20	380	5.1	0.2
2	22.4	131.0	11.0	64.8	4.3	146	0.49	0.0702	0.0053	0.01009	0.00028	0.1624	0.0508	0.0039	68.6	5.0	64.7	1.8	210	150	5.7	0.8
244	22.4	117.1	6.7	75.9	5.9	135	0.65	0.0668	0.0060	0.01012	0.00032	0.0037	0.0486	0.0046	66.1	5.9	64.9	2.0	160	180	1.8	0.2
53	20.7	77.4	8.4	37.8	3.4	86	0.49	0.0718	0.0083	0.01013	0.00030	0.0520	0.0496	0.0064	69.8	7.8	65.0	1.9	260	230	6.9	0.6
43	10.9	51.0	5.4	52.6	4.8	63	1.03	0.0760	0.0170	0.01019	0.00043	0.0515	0.0530	0.0120	73.0	16.0	65.3	2.7	340	330	10.5	0.5
192	22.4	148.0	11.0	60.9	5.3	162	0.41	0.0675	0.0047	0.01019	0.00025	0.2361	0.0475	0.0032	66.1	4.4	65.4	1.6	110	130	1.1	0.2
35	20.6	131.0	11.0	88.5	8.2	152	0.68	0.0686	0.0055	0.01025	0.00027	0.0952	0.0490	0.0041	67.2	5.2	65.7	1.7	150	150	2.2	0.3
150	19.2	110.7	2.3	50.1	0.9	122	0.45	0.0803	0.0069	0.01027	0.00028	0.2489	0.0567	0.0050	77.9	6.6	65.9	1.8	410	180	15.4	1.8
86	13.1	311.0	14.0	106.4	6.4	336	0.34	0.0689	0.0046	0.01030	0.00025	0.2753	0.0493	0.0029	67.5	4.3	66.1	1.6	150	120	2.1	0.3
17	8.0	40.5	3.1	8.9	0.8	43	0.22	0.0840	0.0140	0.01032	0.00057	0.0976	0.0580	0.0081	80.0	13.0	66.2	3.7	670	250	17.3	1.1
69	22.4	65.5	8.2	50.1	7.1	77	0.76	0.0670	0.0110	0.01036	0.00038	0.1844	0.0461	0.0073	65.0	10.0	66.4	2.4	-70	250	-2.2	-0.1
240	22.4	134.6	9.9	71.1	4.4	151	0.53	0.0658	0.0056	0.01035	0.00028	0.0302	0.0468	0.0041	64.5	5.4	66.4	1.8	60	160	-2.9	-0.4
72	14.6	468.0	13.0	126.8	5.9	498	0.27	0.0696	0.0026	0.01039	0.00019	0.3873	0.0486	0.0018	68.3	2.5	66.6	1.2	129	76	2.5	0.7
74	13.8	299.0	17.0	114.6	5.1	326	0.38	0.0726	0.0046	0.01040	0.00018	0.1298	0.0510	0.0031	71.0	4.3	66.7	1.1	210	120	6.1	1.0
44	22.3	300.6	7.4	116.6	2.8	328	0.39	0.0717	0.0038	0.01042	0.00019	0.1842	0.0502	0.0027	70.2	3.6	66.8	1.2	180	110	4.8	0.9
96	22.4	233.0	13.0	104.1	4.4	257	0.45	0.0672	0.0040	0.01043	0.00022	0.1058	0.0454	0.0027	65.9	3.8	66.9	1.4	10	110	-1.5	-0.3
234	22.4	89.3	5.5	24.0	0.7	95	0.27	0.0718	0.0079	0.01045	0.00036	0.3322	0.0492	0.0052	69.8	7.4	67.0	2.3	160	190	4.0	0.4
37	6.1	498.0	12.0	26.5	0.8	504	0.05	0.0694	0.1200	0.01046	0.00890	0.2814	0.0481	0.0042	68.0	75.0	67.1	54.0	110	130	1.3	0.0

Table 12: LA-ICP-MS Zircon Isotopic and Age Data Table: SC15-08: Scott County, KS Paleosol with Prismatic Nodules Sample

								Corrected Isotopic Ratios[3]							Ages (Ma)[7]							
Grain #	Signal Duration (s)	U (ppm)[1]	2σ	Th (ppm)[2]	2σ	eU (ppm)[2]	Th/U	$^{207}Pb/^{235}U$	2σ[4]	$^{206}Pb/^{238}U$	2σ[4]	Rho[5]	$^{207}Pb/^{206}Pb$[6]	2σ	$^{207}Pb/^{235}U$	2σ	$^{206}Pb/^{238}U$	2σ	$^{207}Pb/^{206}Pb$	2σ	% Disc.[8]	Uncert. Wtd. Disc.[9]
46	21.1	203.0	12.0	31.4	3.3	210	0.15	0.0652	0.0036	0.01050	0.00018	0.0142	0.0449	0.0025	64.0	3.5	67.3	1.1	-20	99	-5.2	-0.9
58	22.4	373.2	9.3	133.9	4.5	405	0.36	0.0681	0.0030	0.01049	0.00018	0.1692	0.0474	0.0020	67.2	2.9	67.4	1.1	100	88	-0.3	-0.1
223	22.3	128.0	9.0	71.4	6.1	145	0.56	0.0676	0.0061	0.01051	0.00029	0.1452	0.0463	0.0039	66.8	5.8	67.4	1.8	70	160	-0.9	-0.1
91	15.3	202.3	9.5	35.2	1.8	211	0.17	0.0640	0.0043	0.01052	0.00023	0.0140	0.0437	0.0029	63.5	4.2	67.7	1.5	-70	120	-6.6	-1.0
281	22.3	236.7	9.1	16.8	2.3	241	0.07	0.0704	0.0036	0.01056	0.00021	0.0100	0.0486	0.0027	69.0	3.4	67.7	1.3	120	110	1.9	0.4
171	22.4	184.0	11.0	90.6	9.1	205	0.49	0.0695	0.0051	0.01057	0.00027	0.1750	0.0475	0.0035	68.0	4.8	67.8	1.7	70	130	0.3	0.0
258	22.4	128.0	11.0	43.7	5.1	138	0.34	0.0699	0.0072	0.01057	0.00027	0.1438	0.0483	0.0050	68.9	6.7	67.8	1.7	100	180	1.6	0.2
162	22.4	208.9	9.2	23.3	1.7	214	0.11	0.0668	0.0050	0.01061	0.00022	0.0012	0.0469	0.0036	65.4	4.8	68.0	1.4	60	140	-4.0	-0.5
182	22.2	238.4	9.1	61.3	4.0	253	0.26	0.0659	0.0046	0.01064	0.00018	0.1666	0.0470	0.0033	65.2	4.4	68.2	1.2	50	130	-4.6	-0.7
222	22.4	280.0	12.0	114.4	3.1	307	0.41	0.0686	0.0037	0.01064	0.00021	0.1811	0.0479	0.0027	67.2	3.5	68.2	1.3	100	100	-1.5	-0.3
259	22.4	336.0	11.0	114.0	3.1	363	0.34	0.0727	0.0038	0.01069	0.00019	0.2657	0.0494	0.0025	71.2	3.6	68.5	1.2	155	100	3.8	0.8
178	12.2	180.0	29.0	109.0	20.0	206	0.61	0.0698	0.0085	0.01071	0.00060	0.1330	0.0469	0.0047	68.2	8.3	68.7	3.8	100	170	-0.7	-0.1
120	17.2	115.0	9.4	71.0	4.7	132	0.62	0.0729	0.0061	0.01074	0.00038	0.1145	0.0498	0.0045	71.1	5.8	68.9	2.4	130	170	3.1	0.4
6	17.4	107.0	12.0	39.2	3.8	116	0.37	0.0667	0.0076	0.01077	0.00032	0.1236	0.0470	0.0050	65.3	7.2	69.0	2.0	50	190	-5.7	-0.5
132	22.4	150.5	5.7	60.6	2.0	165	0.40	0.0751	0.0063	0.01077	0.00025	0.1144	0.0502	0.0042	73.8	6.1	69.0	1.6	190	160	6.5	0.8
274	22.3	120.5	4.2	78.1	1.7	139	0.65	0.0730	0.0052	0.01076	0.00028	0.2219	0.0501	0.0037	71.3	4.9	69.0	1.8	170	140	3.2	0.5
117	14.1	136.7	3.2	33.4	0.7	145	0.24	0.0760	0.0056	0.01108	0.00031	0.1504	0.0494	0.0037	74.1	5.2	71.0	2.0	140	140	4.2	0.6
47	21.7	83.9	4.1	20.3	0.9	89	0.24	0.0783	0.0073	0.01109	0.00029	0.0440	0.0506	0.0048	76.1	6.8	71.1	1.9	240	180	6.6	0.7
80	14.9	60.9	2.5	64.1	3.0	76	1.05	0.0820	0.0110	0.01112	0.00045	0.2135	0.0509	0.0061	81.0	9.9	71.3	2.9	260	220	12.0	1.0
14	22.4	25.8	0.9	15.5	0.4	29	0.60	0.0840	0.0160	0.01116	0.00044	0.1198	0.0540	0.0120	79.0	15.0	71.5	2.8	270	350	9.5	0.5
246	12.5	2450.0	450.0	985.0	69.0	2681	0.40	0.0729	0.0065	0.01115	0.00029	0.1607	0.0478	0.0040	71.4	6.2	71.5	1.9	97	150	-0.1	0.0
88	22.4	104.9	7.3	65.2	5.4	120	0.62	0.0696	0.0070	0.01118	0.00027	0.0560	0.0427	0.0042	67.8	6.6	71.7	1.7	-40	170	-5.8	-0.6
67	13.4	270.0	13.0	216.0	16.0	321	0.80	0.0748	0.0048	0.01121	0.00030	0.0552	0.0473	0.0031	73.1	4.5	71.9	1.9	90	120	1.6	0.3
152	20.3	2022.0	80.0	680.0	16.0	2182	0.34	0.0731	0.0024	0.01122	0.00021	0.4834	0.0475	0.0032	71.6	2.3	71.9	1.3	83	55	-0.4	-0.1
7	22.4	79.8	4.0	30.7	1.2	87	0.38	0.0693	0.0086	0.01123	0.00035	0.1812	0.0439	0.0053	67.4	8.2	72.0	2.3	-30	190	-6.8	-0.6
87	5.8	143.5	6.6	66.7	5.0	159	0.46	0.0620	0.2100	0.01123	0.01500	0.5677	0.0394	0.0051	61.0	110.0	72.0	90.0	-240	150	-18.0	-0.1
38	22.4	126.4	3.6	70.0	3.8	143	0.55	0.0733	0.0058	0.01131	0.00030	0.1140	0.0470	0.0038	72.1	5.4	72.5	1.9	70	150	-0.6	-0.1
1	13.9	79.4	4.9	60.1	2.5	94	0.76	0.0820	0.0084	0.01134	0.00028	0.2376	0.0522	0.0055	81.0	7.8	72.7	1.8	260	190	10.2	1.1
75	22.4	214.0	19.0	324.0	30.0	290	1.51	0.0725	0.0039	0.01135	0.00027	0.0824	0.0457	0.0027	71.0	3.7	72.8	1.7	30	110	-2.5	-0.5
11	21.7	55.8	2.4	59.9	8.0	70	1.07	0.0674	0.0081	0.01137	0.00038	0.1150	0.0457	0.0057	65.6	7.7	72.9	2.4	-20	210	-11.1	-0.9
18	21.8	281.9	7.2	34.0	1.5	290	0.12	0.0746	0.0041	0.01137	0.00023	0.1667	0.0474	0.0026	72.9	3.9	72.9	1.5	80	110	0.0	0.0
21	19.8	65.5	2.4	34.1	1.3	74	0.52	0.0740	0.0100	0.01138	0.00039	0.1935	0.0470	0.0062	71.8	9.4	73.0	2.5	110	220	-1.7	-0.1
30	21.8	59.2	4.4	40.5	1.6	69	0.68	0.0677	0.0080	0.01139	0.00039	0.0222	0.0431	0.0053	65.9	7.6	73.0	2.5	-70	190	-10.8	-0.9
40	22.4	146.9	3.9	75.4	3.4	165	0.51	0.0773	0.0050	0.01140	0.00027	0.0482	0.0497	0.0034	75.4	4.7	73.1	1.7	150	130	3.1	0.5
137	22.4	83.9	3.3	128.4	5.1	114	1.53	0.0807	0.0091	0.01140	0.00028	0.0310	0.0520	0.0062	79.3	8.7	73.1	1.8	260	220	7.8	0.7
228	22.4	200.1	2.9	43.7	1.8	210	0.22	0.0796	0.0053	0.01140	0.00025	0.1251	0.0495	0.0034	77.5	5.0	73.1	1.6	190	130	5.7	0.9
100	22.4	196.3	4.9	39.8	1.1	206	0.20	0.0731	0.0046	0.01142	0.00031	0.0907	0.0479	0.0032	71.5	4.3	73.2	2.0	100	120	-2.4	-0.4
115	22.4	302.0	9.9	164.7	4.7	341	0.55	0.0755	0.0031	0.01143	0.00024	0.1384	0.0488	0.0021	73.8	2.9	73.2	1.5	134	87	0.8	0.2
167	15.8	105.6	5.4	27.3	1.6	112	0.26	0.0735	0.0072	0.01142	0.00035	0.0123	0.0443	0.0048	71.4	6.9	73.2	2.2	20	190	-2.5	-0.3
13	21.0	46.5	2.2	34.1	1.9	55	0.73	0.0650	0.0120	0.01147	0.00044	0.0618	0.0397	0.0078	65.0	11.0	73.5	2.8	-120	260	-13.1	-0.8
206	15.1	1438.0	66.0	464.0	13.0	1547	0.32	0.0749	0.0024	0.01150	0.00027	0.3933	0.0475	0.0014	73.3	2.2	73.7	1.7	91	59	-0.5	-0.2

Table 12: LA-ICP-MS Zircon Isotopic and Age Data Table: SC15-08: Scott County, KS Paleosol with Prismatic Nodules Sample

								Corrected Isotopic Ratios[5]							Ages (Ma)[7]							
Grain #	Signal Duration (s)	U (ppm)[1]	2σ	Th (ppm)[1]	2σ	eU (ppm)[2]	Th/U	$^{207}Pb/^{235}U$	2σ[4]	$^{206}Pb/^{238}U$	2σ[4]	Rho[8]	$^{207}Pb/^{206}Pb$[6]	2σ	$^{207}Pb/^{235}U$	2σ	$^{206}Pb/^{238}U$	2σ	$^{207}Pb/^{206}Pb$	2σ	% Disc.[9]	Uncert. Wtd. Disc.[9]
213	22.4	99.8	7.9	67.6	4.9	116	0.68	0.0878	0.0088	0.01152	0.00035	0.0698	0.0555	0.0057	85.7	8.1	73.8	2.2	360	190	13.9	1.5
15	21.9	129.9	8.2	50.3	2.9	142	0.39	0.0792	0.0065	0.01153	0.00025	0.0130	0.0499	0.0043	77.0	6.2	73.9	1.6	210	160	4.0	0.5
92	17.3	606.0	56.0	67.2	5.0	622	0.11	0.0728	0.0041	0.01154	0.00028	0.0523	0.0465	0.0023	71.3	3.7	74.0	1.8	43	92	-3.8	-0.7
151	22.3	40.1	1.0	21.3	0.7	45	0.53	0.0780	0.0130	0.01155	0.00041	0.1042	0.0468	0.0081	75.0	12.0	74.0	2.6	20	280	1.3	0.1
184	22.5	161.0	13.0	70.4	5.4	178	0.44	0.0803	0.0061	0.01154	0.00030	0.0997	0.0516	0.0041	78.1	5.7	74.0	1.9	230	150	5.2	0.7
286	22.4	34.6	2.6	11.4	0.8	37	0.33	0.0850	0.0150	0.01156	0.00050	0.1351	0.0531	0.0099	83.0	14.0	74.1	3.2	220	310	10.7	0.6
25	22.4	42.2	4.2	21.4	1.2	47	0.51	0.0760	0.0130	0.01159	0.00044	0.1290	0.0501	0.0086	75.0	12.0	74.3	2.8	70	270	0.9	0.1
134	21.7	100.7	7.7	60.9	3.7	115	0.60	0.0724	0.0068	0.01155	0.00034	0.0482	0.0468	0.0047	70.5	6.5	74.3	2.1	40	180	-5.4	-0.6
41	22.4	135.0	14.0	53.2	7.0	148	0.39	0.0787	0.0064	0.01161	0.00029	0.0828	0.0500	0.0041	76.6	6.3	74.4	1.8	170	160	2.9	0.3
284	22.4	108.6	4.7	14.3	0.5	112	0.13	0.0753	0.0065	0.01161	0.00029	0.0950	0.0473	0.0041	73.3	6.1	74.4	1.8	70	160	-1.5	-0.2
63	6.8	150.1	8.0	67.6	5.7	166	0.45	0.0789	0.0068	0.01164	0.00054	0.1384	0.0479	0.0033	76.8	6.3	74.6	3.4	140	130	2.9	0.3
209	20.9	150.6	4.3	52.4	1.3	163	0.35	0.0793	0.0055	0.01164	0.00036	0.2408	0.0498	0.0033	77.2	5.2	74.6	2.3	180	130	3.4	0.5
153	22.3	115.2	8.9	99.9	2.4	139	0.87	0.0751	0.0061	0.01166	0.00033	0.0234	0.0465	0.0041	73.2	5.8	74.7	2.1	80	160	-2.0	-0.3
177	22.3	160.4	7.8	67.0	2.6	176	0.42	0.0767	0.0051	0.01166	0.00026	0.0573	0.0478	0.0032	75.5	4.8	74.7	1.6	100	130	1.1	0.2
60	9.0	107.4	6.2	63.3	6.2	122	0.59	0.0793	0.0084	0.01167	0.00041	0.0179	0.0516	0.0052	77.3	7.7	74.8	2.6	220	180	3.2	0.3
22	22.4	230.0	12.0	71.1	5.5	247	0.31	0.0800	0.0043	0.01169	0.00026	0.1589	0.0489	0.0026	78.0	4.0	74.9	1.7	150	110	4.0	0.8
26	16.4	100.4	7.2	25.4	1.7	106	0.25	0.0790	0.0095	0.01169	0.00049	0.1953	0.0489	0.0054	77.0	8.7	74.9	3.1	120	190	2.7	0.2
285	22.4	482.0	31.0	48.0	3.4	493	0.10	0.0764	0.0031	0.01169	0.00021	0.1649	0.0473	0.0020	74.7	2.9	74.9	1.3	74	84	-0.3	-0.1
54	10.0	46.4	3.0	40.9	2.7	56	0.88	0.0850	0.0200	0.01171	0.00042	0.1449	0.0560	0.0120	82.0	17.0	75.0	2.7	320	260	8.5	0.4
265	10.5	884.0	23.0	530.0	12.0	1009	0.60	0.0759	0.0039	0.01171	0.00036	0.2208	0.0472	0.0019	74.2	3.6	75.1	2.3	80	79	-1.2	-0.2
95	22.2	80.6	7.5	64.6	6.3	96	0.80	0.0840	0.0100	0.01174	0.00039	0.0980	0.0521	0.0061	82.6	9.3	75.3	2.5	240	200	8.8	0.8
256	21.8	122.4	2.8	66.6	1.3	138	0.54	0.0799	0.0066	0.01175	0.00028	0.0615	0.0479	0.0040	77.6	6.2	75.3	1.8	150	160	3.0	0.4
273	22.4	204.9	9.0	26.1	0.9	211	0.13	0.0721	0.0046	0.01175	0.00022	0.0066	0.0446	0.0030	70.5	4.4	75.3	1.4	-40	120	-6.8	-1.1
163	22.4	48.5	2.3	25.0	0.9	54	0.52	0.0770	0.0110	0.01178	0.00041	0.1408	0.0485	0.0065	79.5	9.7	75.5	2.6	150	230	5.0	0.4
250	22.4	358.0	21.0	46.4	3.1	369	0.13	0.0791	0.0043	0.01179	0.00025	0.0465	0.0489	0.0028	77.6	4.1	75.5	1.6	160	110	2.7	0.5
128	22.4	163.2	6.9	104.5	2.0	188	0.64	0.0759	0.0056	0.01181	0.00026	0.1678	0.0476	0.0036	74.7	5.5	75.7	1.6	100	140	-1.3	-0.2
202	14.0	412.0	34.0	129.0	14.0	442	0.31	0.0745	0.0036	0.01181	0.00030	0.2506	0.0458	0.0022	72.9	3.5	75.7	1.9	10	89	-3.8	-0.8
224	22.4	170.3	6.2	40.6	1.4	180	0.24	0.0760	0.0064	0.01182	0.00031	0.0196	0.0471	0.0042	76.1	6.0	75.8	2.0	120	160	0.4	0.0
12	22.7	74.7	5.6	50.0	2.1	86	0.67	0.0925	0.0088	0.01184	0.00038	0.1555	0.0588	0.0054	90.2	8.2	75.9	2.4	510	180	15.9	1.7
116	20.3	96.0	13.0	79.0	11.0	115	0.82	0.1550	0.0160	0.01185	0.00054	0.0327	0.0940	0.0110	148.0	14.0	75.9	3.5	1380	220	48.7	5.2
207	22.4	327.0	10.0	61.5	1.3	341	0.19	0.0753	0.0033	0.01184	0.00023	0.0056	0.0459	0.0023	73.7	3.1	75.9	1.5	32	96	-3.0	-0.7
292	22.4	110.3	3.9	42.8	2.3	120	0.39	0.0806	0.0082	0.01187	0.00028	0.1362	0.0478	0.0051	78.1	7.7	76.1	1.8	150	190	2.6	0.3
55	22.4	208.0	18.0	209.0	15.0	257	1.00	0.0784	0.0047	0.01193	0.00025	0.0808	0.0487	0.0030	76.5	4.5	76.4	1.6	130	120	0.1	0.0
129	14.6	60.5	5.5	53.8	4.5	73	0.89	0.0820	0.0150	0.01192	0.00054	0.0586	0.0514	0.0096	79.0	14.0	76.4	3.4	300	270	3.3	0.2
135	22.4	140.2	4.5	41.4	1.0	150	0.30	0.0805	0.0064	0.01192	0.00037	0.2270	0.0486	0.0037	78.3	6.0	76.4	2.3	140	140	2.4	0.3
225	22.4	214.0	12.0	23.8	1.5	220	0.11	0.0761	0.0047	0.01190	0.00027	0.0337	0.0460	0.0029	74.3	4.5	76.4	1.7	30	120	-2.8	-0.5
230	17.5	52.3	1.8	23.2	1.0	58	0.44	0.0780	0.0140	0.01193	0.00048	0.0193	0.0448	0.0082	76.0	13.0	76.4	3.0	20	280	-0.5	0.0
90	22.4	251.0	15.0	122.1	9.2	280	0.49	0.0819	0.0051	0.01194	0.00028	0.2266	0.0483	0.0027	79.7	4.8	76.5	1.8	140	110	4.0	0.7
39	22.4	120.0	16.0	42.4	5.8	130	0.35	0.0810	0.0066	0.01196	0.00030	0.0789	0.0504	0.0044	78.7	6.2	76.6	1.9	200	160	2.7	0.3
130	21.5	392.0	21.0	53.7	3.4	405	0.14	0.0755	0.0035	0.01196	0.00025	0.2146	0.0458	0.0023	73.8	3.3	76.6	1.6	44	91	-3.8	-0.8
199	22.4	42.6	2.6	48.0	4.4	54	1.13	0.0780	0.0150	0.01196	0.00052	0.1952	0.0463	0.0091	74.0	14.0	76.6	3.3	90	310	-3.5	-0.2

Table 12: LA-ICP-MS Zircon Isotopic and Age Data Table: SC15-08: Scott County, KS Paleosol with Prismatic Nodules Sample

								Corrected Isotopic Ratios[3]							Ages (Ma)[7]							
Grain #	Signal Duration (s)	U (ppm)[1]	2σ	Th (ppm)[1]	2σ	eU (ppm)[2]	Th/U	$^{207}Pb/^{235}U$	2σ[4]	$^{206}Pb/^{238}U$	2σ[4]	Rho[5]	$^{207}Pb/^{206}Pb$[6]	2σ	$^{207}Pb/^{235}U$	2σ	$^{206}Pb/^{238}U$	2σ	$^{207}Pb/^{206}Pb$	2σ	% Disc.[8]	Uncert. Wtd. Disc.[9]
212	22.4	53.2	2.9	21.3	0.9	58	0.40	0.0740	0.0110	0.01198	0.00043	0.2348	0.0451	0.0072	71.0	10.0	76.7	2.7	-30	250	-8.0	-0.6
183	10.3	363.0	35.0	213.0	24.0	413	0.59	0.0820	0.0065	0.01199	0.00051	0.0973	0.0499	0.0032	79.9	6.0	76.8	3.2	170	120	3.9	0.5
108	22.3	202.6	6.0	182.7	7.0	246	0.90	0.0810	0.0046	0.01202	0.00026	0.1468	0.0489	0.0027	78.9	4.3	77.0	1.7	140	110	2.4	0.4
297	15.2	355.6	7.2	100.8	2.0	379	0.28	0.0765	0.0036	0.01202	0.00027	0.3941	0.0456	0.0020	74.7	3.4	77.0	1.7	5	81	-3.1	-0.7
198	12.3	235.0	25.0	183.0	21.0	278	0.78	0.0826	0.0081	0.01203	0.00036	0.4241	0.0492	0.0043	80.3	7.6	77.1	2.3	130	160	4.0	0.4
65	22.4	162.5	5.7	73.3	3.8	180	0.45	0.0772	0.0054	0.01204	0.00027	0.2348	0.0471	0.0031	75.3	5.0	77.2	1.7	70	120	-2.5	-0.4
82	22.4	554.0	18.0	135.9	5.5	586	0.25	0.0787	0.0021	0.01205	0.00019	0.2074	0.0479	0.0014	76.9	2.0	77.2	1.2	99	62	-0.4	-0.1
4	15.0	439.0	42.0	209.0	15.0	488	0.48	0.0805	0.0031	0.01208	0.00026	0.2703	0.0484	0.0016	78.6	2.9	77.4	1.7	116	69	1.5	0.4
59	21.8	187.0	19.0	122.0	12.0	216	0.65	0.0753	0.0043	0.01208	0.00022	0.2863	0.0454	0.0024	74.1	4.1	77.4	1.4	10	99	-4.5	-0.8
93	22.3	70.8	4.7	32.9	1.7	79	0.46	0.0806	0.0092	0.01208	0.00037	0.1349	0.0507	0.0058	79.1	8.5	77.4	2.3	280	200	2.1	0.2
245	22.4	386.0	23.0	72.7	2.8	403	0.19	0.0787	0.0032	0.01207	0.00022	0.0362	0.0483	0.0023	77.2	3.0	77.4	1.4	114	93	-0.3	-0.1
172	21.8	138.3	7.6	58.5	1.5	152	0.42	0.0821	0.0052	0.01211	0.00031	0.1211	0.0501	0.0034	79.9	4.9	77.6	2.0	170	130	2.9	0.5
196	22.4	101.5	8.6	36.1	2.6	110	0.36	0.0785	0.0082	0.01213	0.00041	0.1128	0.0461	0.0048	77.1	7.5	77.7	2.6	90	180	-0.8	-0.1
241	22.4	216.0	11.0	90.8	3.7	237	0.42	0.0821	0.0045	0.01218	0.00028	0.2794	0.0484	0.0027	80.4	4.3	78.0	1.8	150	110	3.0	0.6
168	21.8	56.3	5.2	30.9	2.4	64	0.55	0.0860	0.0120	0.01219	0.00046	0.3268	0.0531	0.0073	84.0	11.0	78.1	2.8	170	240	7.0	0.5
131	10.4	70.9	5.6	90.3	7.3	92	1.27	0.0800	0.0650	0.01224	0.00490	0.0492	0.0483	0.0083	77.0	42.0	78.4	28.0	60	250	-1.8	0.0
263	22.4	228.0	13.0	53.8	3.9	241	0.24	0.0790	0.0046	0.01224	0.00027	0.1149	0.0469	0.0028	77.0	4.4	78.4	1.7	70	110	-1.8	-0.3
42	22.4	98.1	4.2	22.8	0.6	103	0.23	0.0766	0.0082	0.01225	0.00038	0.0357	0.0447	0.0054	74.4	7.7	78.5	2.4	10	190	-5.5	-0.5
114	22.3	175.0	18.0	64.4	4.3	190	0.37	0.0756	0.0061	0.01225	0.00037	0.0506	0.0449	0.0039	74.3	5.9	78.5	2.3	-20	150	-5.7	-0.7
173	22.3	302.0	10.0	52.6	1.6	314	0.17	0.0819	0.0047	0.01229	0.00025	0.1711	0.0483	0.0028	79.7	4.4	78.8	1.6	110	110	1.1	0.2
99	21.1	49.9	4.0	43.2	3.6	60	0.87	0.0770	0.0120	0.01232	0.00042	0.1294	0.0445	0.0067	74.0	11.0	78.9	2.7	-70	230	-6.6	-0.4
122	19.9	156.0	22.0	72.5	7.2	173	0.46	0.0802	0.0110	0.01235	0.00042	0.0428	0.0457	0.0073	79.2	9.6	79.1	2.7	100	220	0.1	0.0
214	22.4	215.0	18.0	50.7	5.2	227	0.24	0.0773	0.0053	0.01234	0.00037	0.2476	0.0455	0.0030	75.4	5.0	79.1	2.4	30	120	-4.9	-0.7
283	15.3	263.7	8.6	34.2	5.1	272	0.13	0.0857	0.0047	0.01237	0.00040	0.1275	0.0501	0.0026	84.1	4.4	79.3	2.6	170	100	5.7	1.1
299	22.4	65.2	7.9	43.9	5.3	76	0.67	0.0840	0.0130	0.01238	0.00055	0.1442	0.0462	0.0075	82.0	12.0	79.3	3.5	150	270	3.3	0.2
186	23.4	231.0	27.0	136.0	21.0	263	0.59	0.0771	0.0054	0.01240	0.00038	0.2917	0.0461	0.0030	75.1	5.1	79.4	2.4	40	120	-5.7	-0.8
166	22.0	452.0	10.0	546.0	14.0	580	1.21	0.0789	0.0031	0.01238	0.00021	0.3429	0.0470	0.0018	77.1	2.9	79.5	1.3	58	75	-3.1	-0.8
70	22.4	330.0	18.0	78.9	3.7	349	0.24	0.0800	0.0036	0.01243	0.00022	0.3614	0.0470	0.0019	78.5	3.4	79.6	1.4	66	78	-1.4	-0.3
233	22.4	35.6	1.6	26.1	0.6	42	0.73	0.0920	0.0160	0.01243	0.00055	0.0199	0.0580	0.0110	89.0	15.0	79.6	3.5	220	320	10.6	0.6
174	22.6	258.0	19.0	146.0	10.0	292	0.57	0.0782	0.0045	0.01246	0.00029	0.2488	0.0451	0.0025	76.2	4.2	79.8	1.9	30	100	-4.7	-0.9
290	21.6	77.9	7.0	30.2	2.7	85	0.39	0.0830	0.0100	0.01246	0.00042	0.2338	0.0504	0.0062	79.9	9.5	79.8	2.7	210	210	0.1	0.0
83	22.4	355.0	26.0	130.0	14.0	386	0.37	0.0815	0.0038	0.01247	0.00024	0.1798	0.0479	0.0024	79.5	3.5	79.9	1.5	120	100	-0.5	-0.1
62	13.8	78.5	6.7	63.3	8.0	93	0.81	0.0860	0.0620	0.01250	0.00480	0.1446	0.0503	0.0062	83.0	39.0	80.1	30.0	180	210	3.5	0.1
102	22.4	182.0	7.0	28.2	1.7	189	0.15	0.0833	0.0048	0.01251	0.00031	0.2232	0.0481	0.0029	81.0	4.5	80.1	2.0	130	120	1.1	0.2
262	22.3	291.0	37.0	183.0	14.0	334	0.63	0.0816	0.0052	0.01253	0.00033	0.3863	0.0471	0.0027	79.4	4.9	80.3	2.1	80	110	-1.1	-0.2
193	22.4	181.0	24.0	99.0	18.0	204	0.55	0.0855	0.0069	0.01256	0.00035	0.2552	0.0487	0.0039	82.9	6.4	80.4	2.2	140	140	3.0	0.4
145	22.4	216.0	14.0	73.3	4.1	233	0.34	0.0820	0.0047	0.01257	0.00025	0.1970	0.0474	0.0027	79.8	4.4	80.5	1.6	100	110	-0.9	-0.2
208	21.6	381.0	32.0	450.0	39.0	487	1.18	0.0834	0.0040	0.01260	0.00032	0.1602	0.0483	0.0024	81.2	3.7	80.7	2.0	140	99	0.6	0.1
257	22.4	141.0	16.0	50.7	4.4	153	0.36	0.0872	0.0076	0.01263	0.00035	0.0720	0.0495	0.0042	84.3	7.1	80.9	2.2	150	150	4.0	0.5
161	22.3	161.0	19.0	107.0	12.0	186	0.66	0.0844	0.0062	0.01265	0.00032	0.2199	0.0481	0.0034	81.9	5.8	81.0	2.1	130	130	1.1	0.2
251	22.4	38.3	3.0	43.4	3.2	48	1.13	0.0870	0.0160	0.01268	0.00049	0.1621	0.0493	0.0095	82.0	15.0	81.2	3.1	70	310	1.0	0.1

Table 12: LA-ICP-MS Zircon Isotopic and Age Data Table: SC15-08: Scott County, KS Paleosol with Prismatic Nodules Sample

								Corrected Isotopic Ratios[3]							Ages (Ma)[7]							
Grain #	Signal Duration (s)	U (ppm)[1]	2σ	Th (ppm)[1]	2σ	eU (ppm)[2]	Th/U	$^{207}Pb/^{235}U$	$2\sigma^{4}$	$^{206}Pb/^{238}U$	$2\sigma^{4}$	Rho[5]	$^{207}Pb/^{206}Pb$[6]	2σ	$^{207}Pb/^{235}U$	2σ	$^{206}Pb/^{238}U$	2σ	$^{207}Pb/^{206}Pb$	2σ	% Disc.[8]	Uncert. Wtd. Disc.[9]
157	22.5	91.8	8.8	98.2	9.7	115	1.07	0.0815	0.0075	0.01274	0.00042	0.0201	0.0473	0.0044	80.0	7.2	81.6	2.6	70	160	-2.0	-0.2
229	21.1	390.0	22.0	288.0	15.0	458	0.74	0.0801	0.0035	0.01278	0.00026	0.3218	0.0459	0.0019	78.1	3.2	81.8	1.7	16	78	-4.7	-1.2
275	22.4	290.0	22.0	261.0	18.0	351	0.90	0.0892	0.0049	0.01278	0.00031	0.0846	0.0513	0.0026	87.1	4.5	81.8	2.0	270	110	6.1	1.2
143	22.3	140.0	16.0	130.0	15.0	171	0.93	0.0875	0.0067	0.01279	0.00034	0.1279	0.0494	0.0038	85.6	6.1	81.9	2.2	230	140	4.3	0.6
147	21.5	56.1	6.1	18.2	1.5	60	0.32	0.0800	0.0120	0.01278	0.00050	0.0803	0.0460	0.0073	80.0	11.0	81.9	3.2	170	260	-2.4	-0.2
176	22.4	73.8	3.0	51.4	4.5	86	0.70	0.0770	0.0100	0.01278	0.00039	0.2694	0.0456	0.0058	74.0	9.8	81.9	2.5	-20	210	-10.7	-0.8
64	22.4	204.2	8.3	180.6	6.9	247	0.88	0.0856	0.0053	0.01280	0.00028	0.1953	0.0482	0.0028	83.1	4.9	82.0	1.8	130	110	1.3	0.2
197	22.4	41.8	3.0	19.9	1.2	46	0.48	0.0860	0.0160	0.01281	0.00060	0.2163	0.0501	0.0088	87.0	14.0	82.0	3.8	160	280	5.7	0.4
295	22.3	154.1	8.6	80.2	3.7	173	0.52	0.0869	0.0064	0.01283	0.00041	0.1297	0.0510	0.0037	86.6	5.7	82.2	2.6	250	140	5.1	0.8
217	17.6	32.3	2.1	20.9	1.7	37	0.65	0.1020	0.0190	0.01285	0.00058	0.0240	0.0600	0.0120	95.0	17.0	82.3	3.7	360	340	13.4	0.7
288	22.4	341.0	30.0	367.0	30.0	427	1.08	0.0871	0.0045	0.01289	0.00030	0.2425	0.0482	0.0025	84.6	4.2	82.6	1.9	130	100	2.4	0.5
61	22.3	111.3	9.8	194.0	17.0	157	1.74	0.0858	0.0078	0.01293	0.00039	0.0908	0.0490	0.0046	84.0	7.2	82.8	2.5	140	170	1.4	0.2
236	22.3	22.1	1.8	23.0	1.4	28	1.04	0.1000	0.0310	0.01315	0.00081	0.0286	0.0570	0.0180	99.0	27.0	84.2	5.2	100	460	14.9	0.5
216	20.8	19.4	0.6	10.3	0.3	22	0.53	0.1100	0.0270	0.01321	0.00072	0.1032	0.0580	0.0150	109.0	25.0	84.6	4.6	340	410	22.4	1.0
113	9.0	114.0	18.0	79.0	17.0	133	0.69	0.0920	0.0092	0.01324	0.00052	0.2622	0.0496	0.0048	89.0	8.4	84.8	3.3	180	170	4.7	0.5
51	22.3	161.0	7.4	60.0	2.2	175	0.37	0.0843	0.0053	0.01333	0.00033	0.0666	0.0455	0.0030	82.5	4.9	85.3	2.1	40	120	-3.4	-0.6
133	21.5	59.5	6.3	58.8	4.0	73	0.99	0.0980	0.0130	0.01343	0.00048	0.2433	0.0525	0.0068	93.0	12.0	86.0	3.1	250	230	7.5	0.6
103	22.4	97.1	8.6	32.4	2.5	105	0.33	0.0875	0.0081	0.01355	0.00043	0.1543	0.0466	0.0042	86.4	7.2	86.8	2.7	60	150	-0.5	-0.1
140	22.0	489.0	60.0	204.0	21.0	537	0.42	0.0907	0.0041	0.01373	0.00027	0.2331	0.0475	0.0020	88.0	3.8	88.1	1.7	87	83	-0.1	0.0
27	21.8	25.4	3.1	21.8	4.2	31	0.86	0.0950	0.0240	0.01391	0.00073	0.1949	0.0500	0.0130	87.0	22.0	89.0	4.7	20	380	-2.3	-0.1
57	12.8	154.2	7.1	53.1	2.0	167	0.34	0.0958	0.0064	0.01487	0.00031	0.1391	0.0454	0.0029	92.4	5.9	95.2	2.0	20	120	-3.0	-0.5
146	14.2	354.0	38.0	100.0	13.0	378	0.28	0.0970	0.0040	0.01495	0.00029	0.2353	0.0481	0.0021	94.6	3.7	95.7	1.8	93	84	-1.2	-0.3
243	22.4	767.0	41.0	275.0	13.0	832	0.36	0.1003	0.0030	0.01513	0.00032	0.5438	0.0487	0.0012	97.3	2.8	96.8	2.0	138	53	0.5	0.2
5	22.4	115.9	6.2	56.9	1.9	129	0.49	0.1018	0.0071	0.01613	0.00034	0.0655	0.0468	0.0035	98.9	6.7	103.2	2.1	40	130	-4.3	-0.6
169	22.3	345.0	30.0	166.0	19.0	384	0.48	0.1051	0.0042	0.01619	0.00033	0.1202	0.0478	0.0021	101.3	3.9	103.5	2.1	99	85	-2.2	-0.6
109	22.4	979.0	18.0	237.4	9.8	1035	0.24	0.1099	0.0022	0.01646	0.00028	0.3475	0.0477	0.0011	105.8	2.0	105.3	1.8	88	49	0.5	0.3
175	22.4	576.0	25.0	375.0	14.0	664	0.65	0.1102	0.0033	0.01672	0.00024	0.1576	0.0483	0.0015	106.0	3.0	106.9	1.5	118	65	-0.8	-0.3
97	22.4	612.0	24.0	364.0	14.0	698	0.59	0.1108	0.0034	0.01676	0.00026	0.0145	0.0484	0.0015	106.6	3.1	107.1	1.6	116	67	-0.5	-0.2
121	22.4	105.6	8.2	29.2	1.9	112	0.28	0.1144	0.0083	0.01798	0.00043	0.0248	0.0474	0.0036	111.4	7.9	114.9	2.8	80	140	-3.1	-0.4
204	21.5	22.1	3.4	15.9	2.6	26	0.72	0.1770	0.0390	0.01911	0.00080	0.1240	0.0720	0.0160	163.0	34.0	122.0	5.1	670	400	25.2	1.2
126	10.2	67.7	2.5	19.5	0.9	72	0.29	0.1370	0.0140	0.02024	0.00059	0.0209	0.0524	0.0051	129.0	12.0	129.1	3.7	210	180	-0.1	0.0
127	20.9	24.6	0.7	34.8	0.7	33	1.41	0.1730	0.0240	0.02294	0.00090	0.1269	0.0548	0.0080	157.0	21.0	146.2	5.7	360	270	6.9	0.5
110	22.4	45.5	4.0	46.5	3.0	56	1.02	0.1740	0.0190	0.02454	0.00077	0.3068	0.0514	0.0052	161.0	16.0	156.2	4.9	310	190	3.0	0.3
276	22.4	39.1	3.7	55.2	4.9	52	1.41	0.1870	0.0240	0.02564	0.00084	0.3291	0.0521	0.0063	170.0	20.0	163.8	5.2	270	220	3.6	0.3
189	14.6	747.0	33.0	468.0	33.0	857	0.63	0.1746	0.0043	0.02601	0.00049	0.3317	0.0492	0.0012	163.3	3.8	165.5	3.0	155	52	-1.3	-0.6
136	22.4	272.9	7.2	110.9	2.3	299	0.41	0.1752	0.0063	0.02607	0.00048	0.2579	0.0484	0.0018	163.6	5.5	165.9	3.0	121	75	-1.4	-0.4
215	22.4	157.0	13.0	119.0	10.0	185	0.76	0.1736	0.0081	0.02625	0.00065	0.2823	0.0479	0.0023	163.0	7.2	167.0	4.1	119	97	-2.5	-0.6
291	21.0	423.0	28.0	288.0	16.0	491	0.68	0.1906	0.0058	0.02783	0.00056	0.4499	0.0503	0.0014	177.7	5.0	176.9	3.5	199	61	0.5	0.2
50	10.9	155.6	6.5	20.7	2.4	160	0.13	0.1930	0.0140	0.02808	0.00073	0.4199	0.0520	0.0029	178.0	11.0	178.5	4.6	330	100	-0.3	0.0
81	22.3	426.0	26.0	406.0	15.0	521	0.95	0.1937	0.0062	0.02839	0.00044	0.5501	0.0495	0.0013	179.4	5.3	180.4	2.8	168	58	-0.6	-0.2
195	11.7	526.0	58.0	300.0	24.0	597	0.57	0.1945	0.0068	0.02878	0.00080	0.3938	0.0483	0.0015	180.2	5.7	182.9	5.0	118	64	-1.5	-0.5

Table 12: LA-ICP-MS Zircon Isotopic and Age Data Table: SC15-08: Scott County, KS Paleosol with Prismatic Nodules Sample

								Corrected Isotopic Ratios[3]							Ages (Ma)[7]							
Grain #	Signal Duration (s)	U (ppm)[1]	2σ	Th (ppm)[1]	2σ	eU (ppm)[2]	Th/U	$^{207}Pb/^{235}U$	$2\sigma^4$	$^{206}Pb/^{238}U$	$2\sigma^4$	Rho[5]	$^{207}Pb/^{206}Pb$[6]	2σ	$^{207}Pb/^{235}U$	2σ	$^{206}Pb/^{238}U$	2σ	$^{207}Pb/^{206}Pb$	2σ	% Disc.[8]	Uncert. Wtd. Disc.[9]
278	22.3	366.0	24.0	164.0	12.0	405	0.45	0.2013	0.0057	0.03016	0.00041	0.2554	0.0487	0.0015	186.0	4.8	191.5	2.5	127	64	-3.0	-1.1
159	22.4	211.0	11.0	70.5	3.3	228	0.33	0.2111	0.0075	0.03068	0.00050	0.2219	0.0503	0.0018	194.9	6.4	194.8	3.2	202	76	0.1	0.0
76	22.4	235.5	4.6	92.4	4.3	257	0.39	0.2173	0.0061	0.03141	0.00052	0.1024	0.0502	0.0016	200.1	5.2	199.4	3.3	210	69	0.3	0.1
138	15.5	433.0	19.0	169.3	3.7	473	0.39	0.2298	0.0057	0.03327	0.00061	0.1355	0.0489	0.0012	210.7	4.6	211.0	3.8	141	53	-0.1	-0.1
200	21.4	14.0	1.1	13.0	1.3	17	0.93	0.3450	0.0510	0.04350	0.00170	0.1015	0.0587	0.0083	297.0	39.0	275.0	10.0	450	250	7.4	0.6
269	22.4	775.0	86.0	536.0	48.0	901	0.69	0.3595	0.0099	0.04960	0.00140	0.7449	0.0532	0.0011	311.3	7.4	312.2	8.6	329	46	-0.3	-0.1
227	5.3	194.0	7.5	48.7	1.8	205	0.25	0.7200	0.8000	0.08460	0.00720	0.0015	0.0645	0.0330	546.0	160.0	524.0	36.0	660	280	4.0	0.1
144	22.4	62.1	4.1	26.7	1.5	68	0.43	0.6670	0.0270	0.08580	0.00180	0.3311	0.0560	0.0022	516.0	16.0	530.7	11.0	435	85	-2.8	-0.9
165	22.3	360.0	14.0	23.3	1.2	365	0.06	0.7190	0.0120	0.08958	0.00100	0.3421	0.0585	0.0011	549.6	7.3	553.0	6.0	544	39	-0.6	-0.5
188	21.6	333.0	34.0	34.9	2.7	341	0.10	2.0270	0.0510	0.09100	0.00290	0.7631	0.1652	0.0034	1122.0	17.0	561.0	17.0	2503	35	50.0	33.0
170	21.8	68.4	3.5	20.7	0.8	73	0.30	1.9600	0.0820	0.15700	0.00560	0.8344	0.0904	0.0022	1103.0	28.0	939.0	31.0	1419	48	14.9	5.9
52	22.2	348.0	10.0	51.9	3.9	360	0.15	2.5400	0.2500	0.17800	0.01700	0.9933	0.1025	0.0015	1212.0	81.0	1039.0	94.0	1669	28	14.3	2.1
112	22.1	114.0	10.0	27.3	3.0	120	0.24	2.4800	0.2100	0.17700	0.01500	0.9610	0.1008	0.0022	1239.0	63.0	1040.0	79.0	1636	39	16.1	3.2
107	22.4	83.1	1.2	25.5	0.5	89	0.31	1.8030	0.0330	0.17910	0.00300	0.3927	0.0739	0.0015	1051.0	13.0	1062.0	16.0	1037	41	-1.0	-0.8
34	22.4	543.0	26.0	349.2	7.0	625	0.64	2.5450	0.0380	0.18220	0.00290	0.8088	0.1011	0.0012	1287.0	10.0	1079.0	16.0	1642	22	16.2	20.8
119	13.6	305.0	30.0	140.0	15.0	338	0.46	1.9730	0.0460	0.18680	0.00450	0.6676	0.0767	0.0014	1105.0	15.0	1104.0	24.0	1126	35	0.1	0.1
247	22.4	446.0	53.0	302.0	36.0	517	0.68	2.9250	0.0520	0.18710	0.00460	0.8807	0.1140	0.0015	1390.0	13.0	1105.0	25.0	1863	25	20.5	21.9
124	20.0	30.6	0.9	21.8	0.5	36	0.71	2.0210	0.0600	0.19020	0.00360	0.1105	0.0791	0.0027	1132.0	19.0	1122.0	20.0	1165	67	0.9	0.5
8	22.9	123.9	4.4	51.3	2.0	136	0.41	2.6300	0.0840	0.21100	0.00640	0.8842	0.0903	0.0014	1306.0	24.0	1232.0	34.0	1430	31	5.7	3.1
66	16.8	51.1	4.1	6.2	0.7	53	0.12	2.6200	0.1300	0.21610	0.01100	0.7653	0.0882	0.0023	1317.0	42.0	1259.0	58.0	1378	53	4.4	1.4
33	21.5	753.0	45.0	39.0	2.4	762	0.05	2.6910	0.0300	0.21850	0.00320	0.7806	0.0890	0.0010	1325.2	8.3	1274.0	17.0	1406	21	3.9	6.2
272	22.7	625.0	42.0	83.0	7.1	645	0.13	3.2080	0.0840	0.22080	0.00580	0.9547	0.1054	0.0012	1455.0	20.0	1284.0	30.0	1721	21	11.8	8.6
271	22.4	53.1	1.5	26.1	0.7	59	0.49	2.7730	0.0650	0.23180	0.00360	0.3313	0.0883	0.0018	1351.0	17.0	1343.0	19.0	1380	40	0.6	0.5
84	22.4	55.6	3.5	25.5	2.3	62	0.46	2.8380	0.0570	0.23350	0.00400	0.3689	0.0878	0.0018	1367.0	15.0	1352.0	21.0	1368	40	1.1	1.0
3	9.6	26.7	1.0	68.4	2.0	43	2.56	2.8200	0.1200	0.23430	0.00670	0.3363	0.0871	0.0018	1363.0	27.0	1356.0	34.0	1354	40	0.5	0.3
226	22.9	750.0	120.0	55.2	3.8	763	0.07	3.4000	0.1600	0.23600	0.01200	0.9690	0.1056	0.0013	1496.0	38.0	1362.0	60.0	1724	23	9.0	3.5
211	22.4	41.1	2.4	65.6	3.2	57	1.60	2.9420	0.0640	0.23660	0.00400	0.2247	0.0898	0.0021	1394.0	16.0	1368.0	21.0	1413	45	1.9	1.6
264	16.7	207.9	5.7	23.6	1.8	213	0.11	3.0260	0.0790	0.24520	0.00670	0.7964	0.0893	0.0011	1413.0	21.0	1413.0	35.0	1407	24	0.0	0.0
9	21.1	60.2	4.7	37.1	2.1	69	0.62	3.0210	0.0620	0.24530	0.00440	0.5452	0.0898	0.0019	1413.0	15.0	1414.0	23.0	1422	41	-0.1	-0.1
49	22.3	293.0	20.0	49.8	1.7	305	0.17	3.0480	0.0320	0.24530	0.00280	0.5015	0.0903	0.0010	1419.1	8.0	1414.0	14.0	1429	22	0.4	0.6
201	22.4	138.0	18.0	78.1	7.5	156	0.57	3.0840	0.0490	0.24860	0.00390	0.6233	0.0893	0.0013	1430.0	12.0	1431.0	20.0	1406	29	-0.1	-0.1
180	14.6	132.5	5.6	76.9	5.0	151	0.58	3.1210	0.0620	0.24920	0.00430	0.6784	0.0904	0.0014	1436.0	15.0	1434.0	22.0	1436	30	0.1	0.1
29	22.3	147.0	13.0	52.7	1.8	159	0.36	3.0680	0.0360	0.24950	0.00340	0.4635	0.0898	0.0013	1424.0	9.1	1436.0	18.0	1416	28	-0.8	-1.3
118	10.2	243.0	17.0	142.0	12.0	276	0.58	3.0980	0.0440	0.25020	0.00420	0.3087	0.0898	0.0014	1431.0	11.0	1439.0	22.0	1429	29	-0.6	-0.7
235	22.4	68.7	3.5	36.2	1.8	77	0.53	3.1410	0.0570	0.25110	0.00380	0.5181	0.0913	0.0017	1445.0	14.0	1444.0	19.0	1446	36	0.1	0.1
279	12.0	178.0	11.0	71.9	3.4	195	0.40	3.2020	0.0550	0.25260	0.00480	0.7540	0.0925	0.0014	1459.0	13.0	1451.0	24.0	1475	29	0.5	0.6
89	20.1	139.5	5.9	67.0	1.8	155	0.48	3.1080	0.0470	0.25330	0.00440	0.6196	0.0896	0.0013	1435.0	12.0	1455.0	23.0	1424	29	-1.4	-1.7
164	22.4	56.0	3.2	30.7	1.4	63	0.55	3.1370	0.0680	0.25410	0.00350	0.4102	0.0905	0.0020	1441.0	17.0	1459.0	18.0	1433	42	-1.2	-1.1
266	11.9	497.0	19.0	150.3	6.0	532	0.30	3.1810	0.0460	0.25410	0.00380	0.6950	0.0910	0.0011	1456.0	11.0	1459.0	19.0	1445	23	-0.2	-0.3
142	21.5	72.0	4.5	28.3	1.2	79	0.39	3.1590	0.0470	0.25450	0.00370	0.4773	0.0903	0.0015	1446.0	11.0	1461.0	19.0	1430	32	-1.0	-1.4
160	22.2	119.7	6.0	35.8	1.6	128	0.30	3.1420	0.0450	0.25580	0.00370	0.5763	0.0906	0.0012	1444.0	11.0	1468.0	19.0	1435	26	-1.7	-2.2

Table 12: LA-ICP-MS Zircon Isotopic and Age Data Table: SC15-08: Scott County, KS Paleosol with Prismatic Nodules Sample

								Corrected Isotopic Ratios[3]							Ages (Ma)[7]							
Grain #	Signal Duration (s)	U (ppm)[1]	2σ	Th (ppm)[1]	2σ	eU (ppm)[2]	Th/U	$^{207}Pb/^{235}U$	$2\sigma^{4}$	$^{206}Pb/^{238}U$	$2\sigma^{4}$	Rho[5]	$^{207}Pb/^{206}Pb$[6]	2σ	$^{207}Pb/^{235}U$	2σ	$^{206}Pb/^{238}U$	2σ	$^{207}Pb/^{206}Pb$	2σ	% Disc.[8]	Uncert. Wtd. Disc.[9]
190	14.7	333.0	18.0	117.7	5.4	361	0.35	3.2270	0.0450	0.25620	0.00360	0.5873	0.0914	0.0011	1463.0	11.0	1470.0	18.0	1452	22	-0.5	-0.6
296	10.4	219.0	11.0	93.1	3.5	241	0.43	3.2390	0.0800	0.25700	0.00720	0.6558	0.0924	0.0014	1465.0	18.0	1474.0	36.0	1470	30	-0.6	-0.5
260	22.4	81.8	8.0	11.3	0.2	84	0.14	3.2450	0.0680	0.25870	0.00470	0.7397	0.0921	0.0015	1467.0	16.0	1482.0	24.0	1468	31	-1.0	-0.9
238	22.4	101.1	7.0	45.9	3.5	112	0.45	3.2030	0.0650	0.25880	0.00440	0.6140	0.0903	0.0017	1457.0	15.0	1483.0	22.0	1427	36	-1.8	-1.7
237	21.6	153.0	12.0	78.6	5.2	171	0.51	3.2020	0.0590	0.26140	0.00460	0.6691	0.0897	0.0014	1457.0	14.0	1496.0	23.0	1421	29	-2.7	-2.8
104	23.2	132.3	6.3	62.7	2.0	147	0.47	3.2990	0.0510	0.26710	0.00400	0.4340	0.0909	0.0016	1482.0	12.0	1526.0	20.0	1449	32	-3.0	-3.7
123	22.2	123.0	25.0	27.1	1.2	129	0.22	3.2860	0.0720	0.26790	0.00450	0.5555	0.0900	0.0016	1477.0	17.0	1529.0	23.0	1423	33	-3.5	-3.1
105	22.4	115.0	12.0	58.5	5.6	129	0.51	3.4710	0.0630	0.27510	0.00420	0.5653	0.0916	0.0015	1520.0	14.0	1566.0	21.0	1461	33	-3.0	-3.3
68	20.1	149.0	10.0	108.8	9.2	175	0.73	3.7300	0.1200	0.27550	0.00800	0.9053	0.0978	0.0016	1576.0	27.0	1577.0	41.0	1589	32	-0.1	0.0
210	22.4	72.4	4.9	49.5	3.7	84	0.68	3.6800	0.1100	0.27760	0.00500	0.5348	0.0954	0.0021	1561.0	23.0	1581.0	25.0	1531	41	-1.3	-0.9
277	22.4	369.0	35.0	52.8	2.4	381	0.14	3.9560	0.0790	0.27850	0.00520	0.8894	0.1024	0.0011	1622.0	16.0	1583.0	26.0	1667	21	2.4	2.4
267	17.5	74.8	6.7	49.3	4.3	86	0.66	3.5500	0.0890	0.28230	0.00630	0.7456	0.0907	0.0017	1533.0	20.0	1601.0	31.0	1433	36	-4.4	-3.4
148	22.1	611.0	48.0	20.0	1.3	616	0.03	4.1450	0.0530	0.28680	0.00410	0.7964	0.1053	0.0011	1665.0	10.0	1625.0	21.0	1718	20	2.4	4.0
194	22.4	372.0	49.0	1.9	0.4	372	0.01	4.1820	0.0780	0.29290	0.00490	0.7885	0.1032	0.0013	1670.0	16.0	1655.0	25.0	1684	23	0.9	0.9
77	13.6	90.6	6.8	51.2	3.0	103	0.57	4.1700	0.0710	0.29550	0.00540	0.4382	0.1021	0.0014	1669.0	15.0	1668.0	27.0	1664	25	0.1	0.1
268	14.4	260.0	13.0	26.7	1.6	266	0.10	4.2450	0.0960	0.29530	0.00680	0.6315	0.1032	0.0013	1682.0	20.0	1668.0	34.0	1688	23	0.8	0.7
85	22.4	567.0	14.0	24.8	1.0	573	0.04	4.1850	0.0520	0.29570	0.00420	0.7732	0.1031	0.0011	1671.0	10.0	1670.0	21.0	1680	20	0.1	0.1
56	22.4	161.0	12.0	49.1	3.0	173	0.30	4.2370	0.0610	0.29600	0.00350	0.5140	0.1041	0.0014	1680.0	12.0	1671.0	17.0	1697	25	0.5	0.8
16	22.3	222.0	19.0	155.0	21.0	258	0.70	4.2190	0.0960	0.29700	0.00660	0.8578	0.1031	0.0013	1677.0	18.0	1675.0	34.0	1681	23	0.1	0.1
141	22.4	129.1	9.2	35.3	2.4	137	0.27	4.2410	0.0630	0.29660	0.00440	0.5279	0.1035	0.0016	1682.0	13.0	1676.0	22.0	1689	29	0.4	0.5
242	22.3	154.0	22.0	61.0	11.0	168	0.40	4.2790	0.0860	0.29770	0.00700	0.7791	0.1053	0.0016	1689.0	17.0	1678.0	35.0	1719	28	0.7	0.6
36	12.4	70.6	1.3	45.3	2.8	81	0.64	4.2440	0.1700	0.29780	0.01000	0.5340	0.1042	0.0018	1681.0	37.0	1680.0	53.0	1707	30	0.1	0.0
48	18.0	122.6	2.6	95.4	2.8	145	0.78	4.2200	0.2700	0.29860	0.01900	0.9278	0.1032	0.0017	1682.0	68.0	1682.0	98.0	1683	31	0.0	0.0
203	22.3	50.1	2.4	55.4	2.1	63	1.11	4.3250	0.0890	0.29870	0.00460	0.5732	0.1041	0.0019	1695.0	17.0	1687.0	23.0	1699	35	0.5	0.5
94	22.4	44.9	4.1	49.2	4.2	56	1.10	4.3060	0.0790	0.29950	0.00520	0.5334	0.1038	0.0019	1696.0	15.0	1691.0	25.0	1689	35	0.3	0.3
254	22.4	35.3	2.2	33.0	2.7	43	0.93	4.2670	0.0880	0.30100	0.00500	0.3740	0.1031	0.0021	1684.0	17.0	1695.0	25.0	1676	37	-0.7	-0.6
185	22.4	167.0	8.8	45.0	1.9	178	0.27	4.3930	0.0670	0.30130	0.00400	0.6165	0.1050	0.0014	1711.0	12.0	1697.0	20.0	1716	25	0.8	1.2
282	22.4	81.0	5.4	54.6	3.2	94	0.67	4.2610	0.0650	0.30120	0.00470	0.4684	0.1030	0.0015	1687.0	12.0	1697.0	23.0	1678	28	-0.6	-0.8
232	22.3	72.9	2.6	37.5	1.6	82	0.51	4.2880	0.0830	0.30160	0.00510	0.5470	0.1041	0.0019	1691.0	16.0	1698.0	25.0	1696	35	-0.4	-0.4
179	9.9	389.0	19.0	78.7	4.1	407	0.20	4.3560	0.0710	0.30210	0.00610	0.7933	0.1043	0.0011	1703.0	14.0	1701.0	30.0	1700	20	0.1	0.1
231	22.4	58.9	1.5	17.2	0.4	63	0.29	4.3400	0.0990	0.30210	0.00590	0.5341	0.1038	0.0022	1699.0	19.0	1701.0	29.0	1692	40	-0.1	-0.1
79	12.6	145.0	11.0	64.2	3.6	160	0.44	4.3090	0.0550	0.30280	0.00420	0.5973	0.1025	0.0014	1694.0	11.0	1705.0	21.0	1671	25	-0.6	-1.0
289	22.3	666.0	30.0	58.0	2.8	680	0.09	4.3880	0.0440	0.30300	0.00450	0.7524	0.1053	0.0011	1711.5	8.3	1706.0	22.0	1722	20	0.3	0.7
125	22.4	174.0	10.0	92.0	11.0	196	0.53	4.3550	0.0600	0.30390	0.00490	0.6088	0.1049	0.0015	1703.0	12.0	1710.0	25.0	1714	27	-0.4	-0.6
181	11.8	140.0	8.8	183.0	11.0	183	1.31	4.3560	0.0620	0.30440	0.00430	0.4980	0.1040	0.0014	1703.0	12.0	1713.0	21.0	1693	26	-0.6	-0.8
156	15.9	60.7	4.4	28.8	2.0	67	0.47	4.4800	0.1400	0.30460	0.00900	0.7514	0.1061	0.0017	1720.0	25.0	1718.0	43.0	1733	30	0.1	0.1
249	18.8	38.7	5.2	9.5	0.5	41	0.25	4.3300	0.0990	0.30570	0.00540	0.5272	0.1024	0.0020	1698.0	20.0	1718.0	27.0	1682	37	-1.2	-1.0
300	22.4	37.0	3.6	13.4	1.5	40	0.36	4.3760	0.0970	0.30680	0.00600	0.5822	0.1038	0.0021	1707.0	19.0	1727.0	30.0	1689	37	-1.2	-1.1
270	22.4	137.0	14.0	48.2	4.8	148	0.35	4.3900	0.0590	0.30800	0.00550	0.6066	0.1037	0.0015	1712.0	11.0	1730.0	27.0	1690	27	-1.1	-1.6
255	22.4	721.0	76.0	126.0	21.0	751	0.17	4.4800	0.0660	0.30920	0.00500	0.8650	0.1061	0.0010	1727.0	12.0	1736.0	25.0	1734	18	-0.5	-0.8
45	22.1	403.0	29.0	116.0	6.3	430	0.29	4.5300	0.0610	0.31080	0.00490	0.8481	0.1056	0.0010	1737.0	11.0	1744.0	24.0	1724	18	-0.4	-0.6

Table 12: LA-ICP-MS Zircon Isotopic and Age Data Table: SC15-08: Scott County, KS Paleosol with Prismatic Nodules Sample

								Corrected Isotopic Ratios[3]							Ages (Ma)[7]							
Grain #	Signal Duration (s)	U (ppm)[1]	2σ	Th (ppm)[1]	2σ	eU (ppm)[2]	Th/U	$^{207}Pb/^{235}U$	2σ[4]	$^{206}Pb/^{238}U$	2σ[4]	Rho[5]	$^{207}Pb/^{206}Pb$[6]	2σ	$^{207}Pb/^{235}U$	2σ	$^{206}Pb/^{238}U$	2σ	$^{207}Pb/^{206}Pb$	2σ	% Disc.[8]	Uncert. Wtd. Disc.[9]
287	22.3	81.2	5.2	70.6	4.7	98	0.87	4.5900	0.1500	0.31170	0.00550	0.2161	0.1065	0.0035	1741.0	23.0	1748.0	27.0	1722	51	-0.4	-0.3
158	14.5	337.0	49.0	75.0	11.0	355	0.22	4.5090	0.0740	0.31110	0.00560	0.7325	0.1056	0.0013	1731.0	13.0	1749.0	27.0	1723	23	-1.0	-1.4
293	20.7	99.0	11.0	35.8	2.6	107	0.36	4.6700	0.0830	0.31110	0.00690	0.7894	0.1083	0.0017	1764.0	15.0	1749.0	34.0	1774	29	0.9	1.0
155	20.0	157.0	18.0	31.3	3.6	164	0.20	4.6600	0.0880	0.31350	0.00550	0.7581	0.1082	0.0015	1760.0	16.0	1757.0	27.0	1766	25	0.2	0.2
219	22.4	202.0	19.0	53.0	4.6	214	0.26	4.6350	0.0650	0.31590	0.00500	0.6253	0.1059	0.0015	1756.0	11.0	1769.0	24.0	1726	27	-0.7	-1.2
111	21.9	943.0	25.0	112.3	2.7	969	0.12	4.5640	0.0570	0.31830	0.00530	0.8307	0.1050	0.0012	1742.0	11.0	1780.0	26.0	1718	21	-2.2	-3.5
253	22.4	295.0	24.0	128.2	9.4	325	0.43	4.7510	0.0610	0.31920	0.00430	0.7562	0.1080	0.0012	1776.0	11.0	1785.0	21.0	1767	20	-0.5	-0.8
294	22.6	127.8	7.1	65.2	3.1	143	0.51	4.7090	0.0840	0.32560	0.00580	0.6882	0.1047	0.0015	1768.0	15.0	1816.0	28.0	1708	27	-2.7	-3.2
261	22.4	156.0	10.0	60.2	3.8	170	0.39	4.7240	0.0950	0.32940	0.00660	0.7833	0.1033	0.0014	1768.0	17.0	1834.0	32.0	1686	24	-3.7	-3.9
220	21.4	305.0	35.0	139.0	15.0	338	0.46	4.8970	0.0690	0.33330	0.00490	0.6764	0.1068	0.0014	1803.0	12.0	1853.0	24.0	1745	24	-2.8	-4.2
252	21.3	57.9	6.1	23.0	2.1	63	0.40	4.7900	0.1300	0.33600	0.00880	0.7368	0.1037	0.0019	1780.0	22.0	1865.0	42.0	1693	34	-4.8	-3.9
73	22.6	104.1	8.6	67.7	6.1	120	0.65	4.9700	0.1200	0.33930	0.00690	0.7936	0.1060	0.0017	1810.0	20.0	1886.0	33.0	1726	30	-4.2	-3.8
191	22.4	318.0	30.0	200.0	38.0	365	0.63	5.6160	0.0770	0.34890	0.00490	0.7507	0.1169	0.0013	1917.0	12.0	1931.0	24.0	1907	20	-0.7	-1.2

[1]U and Th have been concentrations and the Th/U ratios are calculated relative to the GJ-1 standard value using 287 ± 76 ppm for U and 8.4 ± 2.6 ppm for Th (Jackson et al., 2004)

[2]Equivalent U defined by the equation: eU = U ppm + 0.235*Th ppm

[3]Corrected for U-Pb fractionation and background and normalized to the GJ-1 standard value: $^{207}Pb/^{235}U$ =0.8093 ± 0.0009 and $^{206}Pb/^{238}U$ = 0.09761 ± 0.00011 (Jackson et al., 2004)

[4]Propagated uncertainty of internal uncertanties (2SE) and within run reproducibility of GJ-1 (2SE)

[5]Uncertainty correlation between $^{206}Pb/^{238}U$ and $^{207}Pb/^{235}U$ uncertainties

[6]Corrected for background and Pb isotopicfractionation using the GJ-1 standard value: $^{207}Pb/^{206}Pb$ = 0.06014 ± 0.00001 (Jackson et al., 2004)

[7]U-Pb ages calculated relative to the GJ-1 standard

[8]Discordance defined as (($^{207}Pb/^{235}U$age - $^{206}Pb/^{238}U$age)/($^{207}Pb/^{235}U$ age))*100

[9]Uncertainty weighted age difference defined as ($^{207}Pb/^{235}U$ age - $^{206}Pb/^{238}U$ age)/($^{207}Pb/^{235}U$ age uncertainty)

Rows highlighted in grey were not used in interpretations or calculations based on discordance or short analysis times

Table 13: LA-ICP-MS Zircon Isotopic and Age Data Table: SC15-13: Scott County, KS Paleosol with Prismatic Nodules Sample

								Corrected Isotopic Ratios[3]							Ages (Ma)[7]							
Grain #	Signal Duration (s)	U (ppm)[1]	2σ	Th (ppm)[1]	2σ	eU (ppm)[2]	Th/U	$^{207}Pb/^{235}U$	2σ[4]	$^{206}Pb/^{238}U$	2σ[4]	Rho[5]	$^{207}Pb/^{206}Pb$[6]	2σ	$^{207}Pb/^{235}U$	2σ	$^{206}Pb/^{238}U$	2σ	$^{207}Pb/^{206}Pb$	2σ	% Disc.[8]	Uncert. Wtd. Disc.[9]
99	17.8	274.0	38.0	130.0	17.0	305	0.47	0.0255	0.0040	0.00434	0.00014	0.0296	0.0405	0.0064	25.4	3.9	27.9	0.9	-130	250	-9.9	-0.6
219	22.5	298.0	16.0	110.0	8.3	324	0.37	0.0276	0.0023	0.00450	0.00014	0.0350	0.0465	0.0042	27.6	2.3	29.0	0.9	40	160	-4.9	-0.6
177	22.4	197.9	8.9	152.3	5.2	234	0.77	0.0313	0.0047	0.00459	0.00012	0.1319	0.0495	0.0069	31.0	4.6	29.5	0.8	100	230	4.7	0.3
2	22.0	180.1	7.2	138.3	3.6	213	0.77	0.0267	0.0031	0.00470	0.00014	0.0118	0.0394	0.0047	26.6	3.1	30.3	0.9	-190	190	-13.8	-1.2
214	22.5	60.4	3.1	31.2	1.3	68	0.52	0.0244	0.0069	0.00478	0.00024	0.0323	0.0450	0.0120	26.0	7.2	30.7	1.5	-170	380	-18.1	-0.7
97	22.4	257.3	7.0	354.1	6.7	341	1.38	0.0288	0.0029	0.00485	0.00014	0.1860	0.0435	0.0043	28.7	2.8	31.2	0.9	-50	160	-8.7	-0.9
226	14.9	29.9	1.4	13.0	0.5	33	0.44	0.0200	0.0170	0.00495	0.00037	0.0450	0.0300	0.0280	20.0	18.0	31.8	2.4	-990	850	-59.0	-0.7
3	22.4	64.7	2.8	67.9	1.9	81	1.05	0.0264	0.0079	0.00496	0.00019	0.0342	0.0410	0.0120	25.8	7.8	31.9	1.2	-140	390	-23.6	-0.8
107	22.4	309.0	16.0	131.9	6.6	340	0.43	0.0299	0.0025	0.00507	0.00012	0.2445	0.0431	0.0036	29.8	2.5	32.6	0.8	-80	140	-9.5	-1.1
269	22.4	233.0	11.0	231.4	8.7	287	0.99	0.0313	0.0030	0.00508	0.00014	0.1279	0.0459	0.0046	31.6	3.1	32.7	0.9	80	180	-3.4	-0.3
282	22.4	175.9	9.0	212.0	15.0	226	1.21	0.0327	0.0038	0.00509	0.00013	0.0555	0.0478	0.0058	33.1	3.8	32.8	0.9	110	200	1.1	0.1
31	22.4	101.2	9.1	124.0	11.0	130	1.23	0.0352	0.0068	0.00521	0.00021	0.1104	0.0452	0.0089	34.7	6.6	33.5	1.4	-60	290	3.5	0.2
62	22.4	60.0	5.0	108.5	5.9	85	1.81	0.0275	0.0082	0.00525	0.00027	0.0334	0.0430	0.0120	27.9	8.0	33.7	1.7	-230	390	-20.8	-0.7
211	13.0	150.0	15.0	163.0	16.0	188	1.09	0.0304	0.0051	0.00527	0.00022	0.1581	0.0405	0.0069	30.3	5.1	33.9	1.4	-180	260	-11.9	-0.7
215	9.6	716.0	77.0	344.0	17.0	797	0.48	0.0349	0.0031	0.00531	0.00020	0.1127	0.0493	0.0047	35.9	3.1	34.1	1.3	140	180	5.0	0.6
14	22.4	283.0	39.0	323.0	61.0	359	1.14	0.0341	0.0040	0.00538	0.00014	0.0683	0.0472	0.0056	33.9	3.9	34.6	0.9	70	190	-1.9	-0.2
6	22.4	775.0	87.0	225.0	13.0	828	0.29	0.0339	0.0018	0.00544	0.00010	0.2616	0.0451	0.0024	33.9	1.7	35.0	0.6	-13	95	-3.1	-0.6
23	20.5	1317.0	75.0	437.0	21.0	1420	0.33	0.0338	0.0014	0.00545	0.00009	0.3673	0.0454	0.0017	33.8	1.3	35.0	0.6	-12	72	-3.6	-0.9
18	22.4	638.0	30.0	465.0	17.0	747	0.73	0.0341	0.0018	0.00546	0.00010	0.3244	0.0460	0.0023	34.0	1.8	35.1	0.6	34	96	-3.2	-0.6
47	22.4	1111.0	17.0	438.0	24.0	1214	0.39	0.0360	0.0014	0.00564	0.00010	0.3786	0.0469	0.0018	35.9	1.4	36.3	0.6	56	73	-1.0	-0.3
88	22.4	414.0	21.0	281.0	17.0	480	0.68	0.0384	0.0023	0.00575	0.00014	0.2256	0.0480	0.0028	38.2	2.2	36.9	0.9	160	110	3.3	0.6
72	22.4	232.4	7.9	126.5	3.4	262	0.54	0.0367	0.0037	0.00575	0.00014	0.0875	0.0473	0.0049	36.5	3.6	37.0	0.9	70	180	-1.2	-0.1
54	10.0	428.0	23.0	300.0	15.0	499	0.70	0.0417	0.0045	0.00576	0.00015	0.2520	0.0523	0.0059	41.4	4.4	37.0	1.0	280	230	10.6	1.0
196	19.1	207.0	14.0	113.8	7.8	234	0.55	0.0354	0.0034	0.00590	0.00017	0.0497	0.0452	0.0046	35.2	3.4	37.9	1.1	10	180	-7.7	-0.8
164	22.1	52.5	1.6	56.6	2.0	66	1.08	0.0390	0.0100	0.00598	0.00024	0.0108	0.0520	0.0130	38.0	10.0	38.4	1.5	-20	400	-1.1	0.0
147	22.4	372.0	48.0	189.0	33.0	416	0.51	0.0424	0.0028	0.00673	0.00016	0.1674	0.0453	0.0030	42.1	2.7	43.3	1.0	10	120	-2.9	-0.4
259	22.7	379.0	44.0	91.3	6.5	400	0.24	0.0470	0.0033	0.00693	0.00016	0.0021	0.0488	0.0035	46.5	3.2	44.5	1.0	160	140	4.2	0.6
286	22.9	176.4	7.0	50.7	2.0	188	0.29	0.0417	0.0044	0.00701	0.00019	0.1163	0.0438	0.0046	41.3	4.3	45.0	1.2	-20	180	-9.0	-0.9
27	9.8	584.0	20.0	176.8	5.3	626	0.30	0.0485	0.0030	0.00710	0.00022	0.2198	0.0488	0.0027	48.0	2.9	45.6	1.4	170	120	5.0	0.8
77	11.2	51.5	2.8	27.5	1.7	58	0.53	0.0550	0.0160	0.00904	0.00045	0.1386	0.0450	0.0130	53.0	15.0	58.0	2.8	-100	430	-9.4	-0.3
136	22.4	432.0	24.0	114.9	6.2	459	0.27	0.0609	0.0028	0.00935	0.00017	0.0458	0.0467	0.0023	59.9	2.6	60.0	1.1	47	91	-0.2	0.0
75	22.4	408.0	23.0	124.4	5.5	437	0.30	0.0599	0.0030	0.00942	0.00020	0.2049	0.0470	0.0022	59.0	2.9	60.4	1.3	73	92	-2.4	-0.5
94	8.3	46.1	2.3	39.8	1.7	55	0.86	0.0860	0.0250	0.00967	0.00071	0.0236	0.0630	0.0180	82.0	23.0	62.0	4.5	550	480	24.4	0.9
239	22.4	184.9	6.6	62.0	1.9	199	0.34	0.0638	0.0053	0.01000	0.00025	0.2239	0.0458	0.0037	62.5	5.0	64.2	1.6	60	140	-2.7	-0.3
138	22.4	24.0	1.0	22.8	0.9	29	0.95	0.0680	0.0220	0.01012	0.00050	0.0551	0.0390	0.0170	68.0	20.0	64.9	3.2	-210	460	4.6	0.2
206	22.4	1518.0	46.0	106.6	1.5	1543	0.07	0.0662	0.0018	0.01015	0.00015	0.4082	0.0481	0.0012	65.0	1.7	65.1	1.0	103	53	-0.1	-0.1
195	22.4	46.5	1.2	29.4	0.8	53	0.63	0.0660	0.0110	0.01017	0.00041	0.1319	0.0460	0.0084	64.0	10.0	65.2	2.6	-20	280	-1.9	-0.1
163	14.7	40.8	3.2	17.3	1.5	45	0.42	0.0730	0.0150	0.01020	0.00046	0.0491	0.0510	0.0110	70.0	14.0	65.4	2.9	220	360	6.6	0.3
12	22.4	70.6	3.9	51.5	2.2	83	0.73	0.0711	0.0091	0.01030	0.00037	0.0639	0.0512	0.0066	69.0	8.5	66.0	2.4	250	230	4.3	0.4
190	22.4	80.3	3.7	34.7	1.0	88	0.43	0.0655	0.0092	0.01030	0.00033	0.3427	0.0487	0.0073	63.7	8.7	66.0	2.1	100	250	-3.6	-0.3
78	22.4	266.0	13.0	58.4	1.3	280	0.22	0.0647	0.0043	0.01033	0.00023	0.1648	0.0466	0.0031	64.1	4.2	66.2	1.4	40	120	-3.3	-0.5

Table 13: LA-ICP-MS Zircon Isotopic and Age Data Table: SC15-13: Scott County, KS Paleosol with Prismatic Nodules Sample

								Corrected Isotopic Ratios[3]							Ages (Ma)[7]							
Grain #	Signal Duration (s)	U (ppm)[1]	2σ	Th (ppm)[1]	2σ	eU (ppm)[2]	Th/U	$^{207}Pb/^{235}U$	2σ[4]	$^{206}Pb/^{238}U$	2σ[4]	Rho[5]	$^{207}Pb/^{206}Pb$[6]	2σ	$^{207}Pb/^{235}U$	2σ	$^{206}Pb/^{238}U$	2σ	$^{207}Pb/^{206}Pb$	2σ	% Disc.[8]	Uncert. Wtd. Disc.[9]
125	22.4	176.6	5.9	96.9	2.6	199	0.55	0.0650	0.0054	0.01035	0.00023	0.0710	0.0453	0.0037	63.7	5.1	66.4	1.5	20	150	-4.2	-0.5
112	22.4	452.0	11.0	85.0	3.3	472	0.19	0.0670	0.0032	0.01039	0.00024	0.3942	0.0473	0.0021	65.8	3.0	66.6	1.5	75	86	-1.2	-0.3
165	22.4	536.0	18.0	137.9	4.6	568	0.26	0.0694	0.0030	0.01040	0.00024	0.2771	0.0485	0.0020	68.0	2.8	66.7	1.5	122	84	1.9	0.5
292	18.0	60.1	8.6	71.0	13.0	77	1.18	0.0790	0.0140	0.01041	0.00045	0.1736	0.0590	0.0110	80.0	13.0	66.8	2.9	400	300	16.5	1.0
264	22.4	276.0	23.0	122.3	9.3	305	0.44	0.0664	0.0038	0.01049	0.00018	0.0817	0.0461	0.0028	65.6	3.5	67.3	1.1	20	110	-2.6	-0.5
267	22.4	68.8	1.9	30.1	0.7	76	0.44	0.0730	0.0110	0.01055	0.00040	0.0868	0.0526	0.0081	71.0	10.0	67.6	2.6	230	260	4.8	0.3
231	22.4	208.8	6.3	67.0	1.8	225	0.32	0.0683	0.0043	0.01058	0.00024	0.0539	0.0473	0.0031	66.9	4.1	67.9	1.5	60	120	-1.5	-0.2
121	22.4	116.5	4.3	35.8	1.5	125	0.31	0.0706	0.0065	0.01067	0.00028	0.1075	0.0463	0.0043	68.8	6.2	68.4	1.8	80	170	0.6	0.1
144	22.4	398.0	32.0	159.0	13.0	435	0.40	0.0692	0.0036	0.01068	0.00023	0.2901	0.0466	0.0023	67.9	3.4	68.5	1.5	52	95	-0.9	-0.2
274	17.9	26.6	0.7	32.2	1.6	34	1.21	0.0830	0.0240	0.01069	0.00063	0.1968	0.0520	0.0150	76.0	22.0	68.5	4.0	150	470	9.9	0.3
244	20.0	22.3	0.9	12.8	0.4	25	0.57	0.0690	0.0260	0.01075	0.00056	0.0586	0.0500	0.0190	69.0	25.0	68.9	3.6	-110	530	0.1	0.0
131	22.4	185.0	23.0	183.0	31.0	228	0.99	0.0708	0.0053	0.01076	0.00028	0.1151	0.0479	0.0035	69.2	5.0	69.0	1.8	120	130	0.3	0.0
1	22.4	335.4	7.6	85.0	1.7	355	0.25	0.0721	0.0032	0.01078	0.00023	0.1566	0.0489	0.0024	71.0	2.9	69.1	1.5	138	95	2.7	0.7
285	13.6	57.3	1.8	11.0	0.4	60	0.19	0.0790	0.0140	0.01080	0.00041	0.0088	0.0513	0.0089	76.0	13.0	69.2	2.6	210	310	8.9	0.5
22	12.1	195.0	11.0	17.5	0.5	199	0.09	0.0699	0.0059	0.01081	0.00034	0.1231	0.0481	0.0042	68.4	5.6	69.3	2.2	100	160	-1.3	-0.2
143	19.4	51.2	2.0	22.1	0.9	56	0.43	0.0800	0.0120	0.01103	0.00047	0.2364	0.0558	0.0093	78.0	11.0	70.7	3.0	270	280	9.4	0.7
233	22.4	57.1	1.7	26.3	1.0	63	0.46	0.0680	0.0110	0.01113	0.00041	0.0247	0.0444	0.0077	68.0	10.0	71.3	2.6	-30	260	-4.9	-0.3
241	22.4	257.0	16.0	79.1	4.5	276	0.31	0.0711	0.0040	0.01115	0.00019	0.1118	0.0460	0.0027	69.6	3.8	71.5	1.2	60	110	-2.7	-0.5
194	12.2	193.0	15.0	51.2	1.7	205	0.27	0.0732	0.0063	0.01117	0.00046	0.1643	0.0488	0.0037	71.5	5.9	71.6	2.9	140	150	-0.1	0.0
238	18.6	35.4	3.1	14.2	1.4	39	0.40	0.0730	0.0150	0.01117	0.00053	0.1286	0.0490	0.0110	70.0	15.0	71.6	3.4	200	320	-2.3	-0.1
247	22.4	652.0	27.0	306.0	16.0	724	0.47	0.0748	0.0030	0.01123	0.00020	0.2208	0.0478	0.0019	73.1	2.8	72.0	1.3	88	80	1.5	0.4
277	14.3	42.4	2.9	14.7	0.9	46	0.35	0.0750	0.0170	0.01127	0.00057	0.0995	0.0500	0.0120	77.0	17.0	72.2	3.6	80	360	6.2	0.3
175	22.4	121.3	7.3	51.5	2.1	133	0.42	0.0766	0.0071	0.01133	0.00032	0.0782	0.0496	0.0047	75.3	6.5	72.6	2.0	190	170	3.6	0.4
96	22.4	73.4	7.2	24.8	2.3	79	0.34	0.0750	0.0097	0.01134	0.00037	0.0397	0.0489	0.0067	72.5	9.2	72.7	2.3	110	240	-0.3	0.0
283	14.5	79.0	4.1	28.2	0.9	86	0.36	0.0809	0.0098	0.01135	0.00040	0.0539	0.0522	0.0066	79.9	9.5	72.7	2.6	230	240	9.0	0.8
272	22.4	502.0	53.0	175.0	19.0	543	0.35	0.0770	0.0037	0.01136	0.00024	0.2975	0.0493	0.0024	75.2	3.5	72.8	1.5	155	97	3.2	0.7
130	22.4	94.4	2.2	33.3	1.0	102	0.35	0.0717	0.0067	0.01138	0.00032	0.0525	0.0468	0.0046	70.8	6.5	72.9	2.0	60	170	-3.0	-0.3
152	22.4	136.2	3.7	40.2	1.2	146	0.30	0.0709	0.0063	0.01138	0.00023	0.0159	0.0459	0.0043	69.2	5.9	72.9	1.5	30	160	-5.3	-0.6
159	18.6	53.7	2.9	12.6	0.6	57	0.23	0.0640	0.0130	0.01138	0.00048	0.1035	0.0444	0.0086	62.0	12.0	72.9	3.1	-50	290	-17.6	-0.9
148	21.9	94.5	6.1	63.7	3.5	109	0.67	0.0697	0.0084	0.01140	0.00044	0.2239	0.0435	0.0051	67.8	7.9	73.1	2.8	-90	180	-7.8	-0.7
202	16.8	146.0	12.0	105.0	10.0	171	0.72	0.0776	0.0065	0.01141	0.00035	0.1012	0.0475	0.0041	75.6	6.1	73.1	2.2	120	160	3.3	0.4
52	22.4	302.0	11.0	195.4	8.9	348	0.65	0.0764	0.0038	0.01146	0.00019	0.0582	0.0486	0.0026	74.6	3.6	73.5	1.2	130	100	1.5	0.3
260	22.5	176.0	22.0	54.6	6.5	189	0.31	0.0811	0.0071	0.01147	0.00031	0.3692	0.0518	0.0043	78.7	6.7	73.5	2.0	300	150	6.6	0.8
166	22.4	68.0	4.0	50.8	2.7	80	0.75	0.0760	0.0140	0.01148	0.00048	0.2965	0.0503	0.0088	74.0	13.0	73.6	3.1	40	280	0.5	0.0
169	12.6	154.0	19.0	50.7	5.8	166	0.33	0.0681	0.0082	0.01151	0.00044	0.4452	0.0453	0.0051	66.5	7.7	73.7	2.8	-20	200	-10.8	-0.9
181	16.5	256.1	7.3	119.5	2.5	284	0.47	0.0715	0.0048	0.01153	0.00025	0.1067	0.0454	0.0032	70.0	4.6	73.9	1.6	10	130	-5.6	-0.8
240	20.0	202.6	5.0	69.6	1.4	219	0.34	0.0794	0.0046	0.01153	0.00024	0.0083	0.0500	0.0031	77.4	4.3	73.9	1.5	180	120	4.5	0.8
299	22.4	86.3	9.3	34.9	6.0	95	0.40	0.0703	0.0081	0.01152	0.00038	0.0599	0.0430	0.0053	68.3	7.7	73.9	2.4	-40	190	-8.2	-0.7
8	22.4	68.3	2.2	29.5	0.5	75	0.43	0.0730	0.0100	0.01155	0.00038	0.3076	0.0448	0.0063	71.3	9.9	74.0	2.5	-20	220	-3.8	-0.3
61	22.4	423.0	25.0	151.5	7.6	459	0.36	0.0725	0.0035	0.01154	0.00021	0.2472	0.0458	0.0021	71.3	3.3	74.0	1.4	22	86	-3.8	-0.8
63	22.4	250.0	17.0	145.0	12.0	284	0.58	0.0743	0.0050	0.01155	0.00023	0.1686	0.0464	0.0029	73.1	4.6	74.0	1.5	70	120	-1.2	-0.2

Table 13: LA-ICP-MS Zircon Isotopic and Age Data Table: SC15-13: Scott County, KS Paleosol with Prismatic Nodules Sample

								Corrected Isotopic Ratios[3]							Ages (Ma)[7]							
Grain #	Signal Duration (s)	U (ppm)[1]	2σ	Th (ppm)[1]	2σ	eU (ppm)[2]	Th/U	$^{207}Pb/^{235}U$	2σ[4]	$^{206}Pb/^{238}U$	2σ[4]	Rho[5]	$^{207}Pb/^{206}Pb$[6]	2σ	$^{207}Pb/^{235}U$	2σ	$^{206}Pb/^{238}U$	2σ	$^{207}Pb/^{206}Pb$	2σ	% Disc.[8]	Uncert. Wtd. Disc.[9]
224	22.4	39.9	1.4	19.1	0.5	44	0.48	0.0760	0.0130	0.01154	0.00046	0.0037	0.0459	0.0084	72.0	12.0	74.0	2.9	0	290	-2.8	-0.2
20	22.4	727.0	31.0	625.0	19.0	874	0.86	0.0755	0.0024	0.01157	0.00020	0.4089	0.0472	0.0015	73.9	2.3	74.1	1.3	73	64	-0.3	-0.1
229	21.0	182.0	18.0	74.2	2.6	199	0.41	0.0751	0.0054	0.01153	0.00026	0.3272	0.0463	0.0032	73.3	5.1	74.1	1.6	60	130	-1.1	-0.2
105	22.4	279.0	15.0	97.4	4.0	302	0.35	0.0805	0.0041	0.01158	0.00022	0.2603	0.0507	0.0024	78.5	3.8	74.2	1.4	220	98	5.5	1.1
284	22.4	130.8	8.1	93.5	5.7	153	0.71	0.0779	0.0068	0.01158	0.00032	0.0683	0.0475	0.0046	75.8	6.4	74.2	2.0	180	180	2.1	0.2
32	20.2	64.6	5.4	64.7	6.5	80	1.00	0.0810	0.0120	0.01159	0.00037	0.3584	0.0516	0.0076	79.0	12.0	74.3	2.4	210	260	5.9	0.4
81	22.4	61.1	2.1	37.2	1.0	70	0.61	0.0750	0.0100	0.01159	0.00039	0.1090	0.0463	0.0062	72.0	9.5	74.3	2.5	-20	220	-3.2	-0.2
249	22.4	112.2	1.7	24.8	1.2	118	0.22	0.0773	0.0062	0.01159	0.00033	0.1230	0.0487	0.0039	76.6	5.8	74.3	2.1	160	150	3.0	0.4
278	22.4	144.0	11.0	91.2	6.1	165	0.63	0.0766	0.0069	0.01160	0.00030	0.1261	0.0497	0.0046	74.5	6.5	74.3	1.9	130	170	0.3	0.0
25	22.4	226.0	14.0	91.2	4.2	247	0.40	0.0776	0.0045	0.01161	0.00021	0.2045	0.0493	0.0033	75.7	4.3	74.4	1.3	180	130	1.7	0.3
199	22.4	267.0	24.0	97.0	10.0	290	0.36	0.0761	0.0044	0.01161	0.00027	0.0990	0.0474	0.0028	74.3	4.1	74.4	1.7	90	110	-0.1	0.0
7	19.0	31.6	2.4	39.6	2.7	41	1.25	0.0730	0.0190	0.01163	0.00047	0.1639	0.0440	0.0120	69.0	18.0	74.5	3.0	-50	400	-8.0	-0.3
24	22.4	1253.0	97.0	256.0	11.0	1313	0.20	0.0767	0.0020	0.01162	0.00015	0.3649	0.0477	0.0012	75.0	1.9	74.5	0.9	98	53	0.7	0.3
49	22.4	171.9	9.7	59.3	2.9	186	0.34	0.0738	0.0043	0.01159	0.00027	0.0609	0.0457	0.0030	72.1	4.1	74.5	1.7	10	120	-3.3	-0.6
82	22.4	109.7	7.2	48.7	2.9	121	0.44	0.0684	0.0068	0.01162	0.00042	0.0283	0.0445	0.0046	69.3	6.4	74.5	2.7	90	180	-7.5	-0.8
141	22.4	70.4	3.6	15.1	0.6	74	0.22	0.0750	0.0100	0.01163	0.00045	0.0750	0.0477	0.0069	72.2	9.7	74.5	2.9	100	250	-3.2	-0.2
40	22.4	140.2	9.0	26.7	1.6	146	0.19	0.0760	0.0055	0.01164	0.00031	0.0534	0.0466	0.0036	74.1	5.1	74.6	2.0	100	150	-0.7	-0.1
270	22.4	127.3	6.4	72.4	4.8	144	0.57	0.0720	0.0061	0.01164	0.00031	0.1276	0.0460	0.0040	70.2	5.8	74.6	2.0	60	150	-6.3	-0.8
113	15.6	67.7	6.3	21.4	1.9	73	0.32	0.0840	0.0130	0.01165	0.00064	0.2586	0.0512	0.0079	81.0	13.0	74.7	4.1	270	280	7.8	0.5
201	22.4	138.9	8.1	34.0	2.3	147	0.24	0.0728	0.0059	0.01166	0.00026	0.0382	0.0469	0.0040	71.0	5.6	74.7	1.7	60	150	-5.2	-0.7
294	20.4	93.8	6.2	75.1	5.6	111	0.80	0.0794	0.0083	0.01169	0.00035	0.0600	0.0498	0.0052	78.1	8.0	74.9	2.2	240	190	4.1	0.4
48	22.4	160.8	8.9	55.0	2.1	174	0.34	0.0746	0.0050	0.01171	0.00025	0.2530	0.0467	0.0030	72.8	4.7	75.0	1.6	50	120	-3.0	-0.5
5	18.6	142.0	10.0	87.7	5.3	163	0.62	0.0704	0.0059	0.01172	0.00030	0.1536	0.0434	0.0039	68.8	5.6	75.1	1.9	-50	160	-9.2	-1.1
106	22.4	104.5	7.5	52.9	3.2	117	0.51	0.0803	0.0070	0.01173	0.00034	0.0373	0.0496	0.0044	78.0	6.6	75.2	2.2	170	170	3.6	0.4
71	22.4	1229.0	77.0	144.1	6.1	1263	0.12	0.0761	0.0024	0.01176	0.00025	0.4848	0.0472	0.0013	74.7	2.3	75.3	1.6	66	57	-0.8	-0.3
232	22.4	72.9	3.2	76.1	6.9	91	1.04	0.0818	0.0098	0.01179	0.00029	0.0541	0.0502	0.0060	79.0	9.2	75.6	1.9	220	220	4.3	0.4
135	22.4	114.0	13.0	22.2	3.4	119	0.19	0.0751	0.0084	0.01182	0.00037	0.0339	0.0463	0.0052	75.1	7.4	75.7	2.4	50	180	-0.8	-0.1
297	22.4	47.2	3.4	46.5	3.6	58	0.99	0.0750	0.0140	0.01182	0.00046	0.0627	0.0456	0.0086	72.0	13.0	75.7	2.9	-140	270	-5.1	-0.3
111	22.4	125.9	8.3	53.4	2.8	138	0.42	0.0811	0.0076	0.01185	0.00037	0.1927	0.0501	0.0048	81.2	6.8	75.9	2.4	220	170	6.5	0.8
255	22.4	116.0	18.0	33.8	7.1	124	0.29	0.0745	0.0095	0.01184	0.00032	0.1090	0.0417	0.0055	72.1	8.9	75.9	2.0	0	210	-5.3	-0.4
39	22.4	644.0	30.0	481.0	25.0	757	0.75	0.0757	0.0028	0.01185	0.00025	0.1988	0.0462	0.0018	74.1	2.6	76.0	1.6	29	75	-2.6	-0.7
83	22.4	66.0	2.4	18.0	1.3	70	0.27	0.0734	0.0091	0.01187	0.00048	0.0942	0.0432	0.0055	71.1	8.5	76.0	3.0	-40	210	-6.9	-0.6
140	17.7	156.3	7.7	65.9	1.9	172	0.42	0.0719	0.0067	0.01186	0.00029	0.0433	0.0437	0.0041	70.2	6.4	76.0	1.8	-30	170	-8.3	-0.9
74	22.4	404.0	15.0	164.6	4.6	443	0.41	0.0758	0.0033	0.01187	0.00025	0.0860	0.0461	0.0022	74.1	3.1	76.1	1.6	24	88	-2.7	-0.6
76	22.4	381.8	7.6	33.4	1.4	390	0.09	0.0761	0.0039	0.01189	0.00021	0.1882	0.0462	0.0023	74.3	3.6	76.2	1.3	29	92	-2.6	-0.5
154	22.4	333.0	12.0	50.6	2.8	345	0.15	0.0747	0.0036	0.01189	0.00026	0.1095	0.0457	0.0023	73.1	3.4	76.2	1.7	20	96	-4.2	-0.9
205	22.4	60.8	8.7	54.7	7.6	74	0.90	0.0780	0.0170	0.01189	0.00050	0.0069	0.0500	0.0110	74.0	16.0	76.2	3.2	130	330	-3.0	-0.1
230	22.4	366.0	20.0	61.1	2.7	380	0.17	0.0771	0.0036	0.01191	0.00021	0.1905	0.0477	0.0022	75.3	3.4	76.3	1.4	91	89	-1.3	-0.3
295	22.4	80.3	3.6	29.6	0.4	87	0.37	0.0725	0.0079	0.01191	0.00030	0.0818	0.0446	0.0050	70.5	7.5	76.3	1.9	-20	190	-8.2	-0.8
271	22.4	237.2	7.1	86.0	2.7	257	0.36	0.0801	0.0043	0.01194	0.00028	0.2546	0.0498	0.0028	78.1	4.0	76.5	1.8	170	110	2.0	0.4
251	22.4	235.0	30.0	33.3	1.8	243	0.14	0.0759	0.0046	0.01198	0.00034	0.0614	0.0461	0.0030	74.1	4.3	76.7	2.2	50	120	-3.5	-0.6

Table 13: LA-ICP-MS Zircon Isotopic and Age Data Table: SC15-13: Scott County, KS Paleosol with Prismatic Nodules Sample

								Corrected Isotopic Ratios[5]							Ages (Ma)[7]							
Grain #	Signal Duration (s)	U (ppm)[1]	2σ	Th (ppm)[1]	2σ	eU (ppm)[2]	Th/U	$^{207}Pb/^{235}U$	2σ[4]	$^{206}Pb/^{238}U$	2σ[4]	Rho[5]	$^{207}Pb/^{206}Pb$[6]	2σ	$^{207}Pb/^{235}U$	2σ	$^{206}Pb/^{238}U$	2σ	$^{207}Pb/^{206}Pb$	2σ	% Disc.[8]	Uncert. Wtd. Disc.[9]
298	15.0	42.9	3.8	13.2	1.6	46	0.31	0.0680	0.0170	0.01199	0.00060	0.2118	0.0440	0.0110	68.0	16.0	76.8	3.8	-30	360	-12.9	-0.6
44	22.4	205.0	12.0	97.8	5.8	228	0.48	0.0757	0.0050	0.01202	0.00029	0.1535	0.0460	0.0030	73.9	4.7	77.0	1.8	30	120	-4.2	-0.7
178	22.4	91.7	5.5	53.0	2.4	104	0.58	0.0759	0.0073	0.01205	0.00029	0.0210	0.0461	0.0045	74.6	6.8	77.2	1.8	40	170	-3.5	-0.4
300	22.4	90.4	6.7	39.9	2.6	100	0.44	0.0778	0.0076	0.01206	0.00036	0.0394	0.0467	0.0049	76.4	7.3	77.3	2.3	60	180	-1.2	-0.1
91	22.4	946.0	59.0	157.5	7.4	983	0.17	0.0784	0.0025	0.01208	0.00026	0.3579	0.0464	0.0014	76.6	2.4	77.4	1.7	34	60	-1.0	-0.3
145	14.7	57.9	7.2	38.0	6.2	67	0.66	0.0830	0.0150	0.01210	0.00054	0.0419	0.0505	0.0091	80.0	14.0	77.5	3.4	180	320	3.1	0.2
43	22.4	85.6	5.7	60.4	4.5	100	0.71	0.0837	0.0085	0.01211	0.00038	0.0412	0.0492	0.0052	82.9	7.7	77.6	2.4	170	180	6.4	0.7
191	22.4	103.1	9.1	47.0	4.8	114	0.46	0.0757	0.0066	0.01214	0.00048	0.0037	0.0474	0.0044	73.7	6.2	77.8	3.0	60	170	-5.6	-0.7
279	19.9	55.7	4.1	37.8	3.2	65	0.68	0.0810	0.0110	0.01214	0.00050	0.0140	0.0480	0.0068	79.2	9.9	77.8	3.2	90	230	1.8	0.1
30	22.4	1498.0	56.0	341.0	20.0	1578	0.23	0.0788	0.0023	0.01216	0.00029	0.6271	0.0481	0.0010	76.9	2.1	77.9	1.8	108	46	-1.3	-0.5
42	22.4	327.0	11.0	59.5	1.2	341	0.18	0.0766	0.0032	0.01218	0.00030	0.1244	0.0455	0.0020	75.3	3.0	78.0	1.9	13	81	-3.6	-0.9
55	22.4	58.2	2.9	121.0	85.0	87	2.08	0.0770	0.0120	0.01217	0.00042	0.0249	0.0438	0.0071	74.0	11.0	78.0	2.7	-10	230	-5.4	-0.4
204	22.4	75.5	4.1	27.5	1.7	82	0.36	0.0766	0.0081	0.01221	0.00054	0.1828	0.0463	0.0047	75.3	7.8	78.2	3.4	30	180	-3.9	-0.4
100	22.4	94.8	7.0	22.7	1.3	100	0.24	0.0753	0.0084	0.01226	0.00039	0.0767	0.0458	0.0056	75.1	7.6	78.5	2.5	70	200	-4.5	-0.4
155	22.4	323.0	16.0	36.9	1.0	332	0.11	0.0805	0.0036	0.01227	0.00028	0.1553	0.0472	0.0022	78.5	3.4	78.6	1.8	72	89	-0.1	0.0
265	22.4	78.7	7.0	73.8	7.6	96	0.94	0.0854	0.0098	0.01230	0.00042	0.0132	0.0522	0.0061	83.7	9.4	78.8	2.7	250	200	5.9	0.5
158	22.4	113.0	14.0	75.0	11.0	131	0.66	0.0773	0.0078	0.01231	0.00037	0.1614	0.0454	0.0046	75.0	7.3	78.9	2.4	10	170	-5.2	-0.5
29	22.4	240.0	13.0	174.0	18.0	281	0.73	0.0826	0.0047	0.01233	0.00037	0.2901	0.0479	0.0027	81.4	4.5	79.0	2.3	90	110	2.9	0.5
126	22.4	942.0	53.0	567.0	29.0	1075	0.60	0.0818	0.0023	0.01234	0.00024	0.4538	0.0485	0.0012	79.8	2.2	79.1	1.5	116	52	0.9	0.3
288	15.0	73.1	5.7	42.4	4.5	83	0.58	0.0930	0.0170	0.01240	0.00048	0.0067	0.0550	0.0100	89.0	15.0	79.4	3.0	230	310	10.8	0.6
223	22.4	104.3	9.7	54.6	4.1	117	0.52	0.0780	0.0077	0.01242	0.00038	0.3049	0.0449	0.0041	75.8	7.2	79.6	2.4	10	160	-5.0	-0.5
257	22.4	500.0	12.0	291.8	7.0	569	0.58	0.0802	0.0027	0.01248	0.00023	0.2233	0.0468	0.0016	78.3	2.6	79.9	1.5	44	68	-2.0	-0.6
128	22.4	125.0	16.0	52.9	5.8	137	0.42	0.0818	0.0074	0.01251	0.00037	0.0783	0.0482	0.0046	79.3	6.9	80.2	2.4	120	160	-1.1	-0.1
129	22.4	606.0	85.0	79.0	11.0	625	0.13	0.0854	0.0041	0.01276	0.00038	0.4561	0.0496	0.0021	83.0	3.8	81.7	2.4	169	85	1.6	0.3
242	15.3	228.7	5.6	83.7	3.3	248	0.37	0.0888	0.0059	0.01272	0.00034	0.2717	0.0502	0.0033	86.2	5.5	81.8	2.1	180	130	5.1	0.8
184	22.4	278.0	21.0	41.7	2.8	288	0.15	0.0806	0.0054	0.01284	0.00035	0.0777	0.0450	0.0030	79.7	5.2	82.3	2.2	-20	120	-3.3	-0.5
79	22.4	262.0	16.0	125.3	8.2	291	0.48	0.0856	0.0046	0.01383	0.00030	0.1372	0.0459	0.0025	83.8	4.4	88.5	1.9	30	100	-5.6	-1.1
157	15.0	350.0	31.0	110.9	8.0	376	0.32	0.0859	0.0042	0.01417	0.00034	0.0445	0.0444	0.0025	84.1	3.8	90.7	2.2	-40	100	-7.8	-1.7
280	15.9	91.2	3.4	122.6	5.1	120	1.34	0.0870	0.0100	0.01441	0.00044	0.0765	0.0462	0.0058	84.0	9.5	92.2	2.8	50	220	-9.8	-0.9
89	22.4	392.0	29.0	204.8	8.7	440	0.52	0.0971	0.0042	0.01501	0.00036	0.3874	0.0469	0.0019	93.9	3.8	96.1	2.3	59	77	-2.3	-0.6
171	17.9	489.0	40.0	176.0	16.0	530	0.36	0.0966	0.0041	0.01510	0.00027	0.1872	0.0464	0.0020	93.5	3.8	96.6	1.7	40	82	-3.3	-0.8
37	22.4	103.8	5.2	38.7	1.0	113	0.37	0.0956	0.0073	0.01549	0.00038	0.1779	0.0437	0.0033	93.0	6.7	99.1	2.4	-60	130	-6.6	-0.9
213	22.4	329.0	15.0	62.7	2.7	344	0.19	0.1029	0.0042	0.01576	0.00028	0.1962	0.0481	0.0020	99.3	3.9	100.8	1.8	108	83	-1.5	-0.4
120	22.4	440.0	19.0	224.5	3.7	493	0.51	0.1063	0.0044	0.01638	0.00028	0.3652	0.0469	0.0018	102.4	4.1	104.8	1.8	59	75	-2.3	-0.6
261	22.8	61.6	4.2	32.7	1.5	69	0.53	0.1560	0.0120	0.01763	0.00054	0.1998	0.0658	0.0054	146.0	11.0	112.6	3.4	700	160	22.9	3.0
253	22.4	167.0	9.4	165.9	8.9	206	0.99	0.1707	0.0074	0.02517	0.00053	0.2583	0.0492	0.0022	159.6	6.4	160.2	3.3	150	88	-0.4	-0.1
69	22.4	223.0	18.0	20.7	2.1	228	0.09	0.1737	0.0061	0.02540	0.00052	0.1629	0.0492	0.0020	162.3	5.3	161.7	3.3	164	84	0.4	0.1
68	9.9	56.0	2.0	42.8	1.1	66	0.76	0.1960	0.0250	0.02590	0.00110	0.1363	0.0529	0.0073	180.0	21.0	165.1	6.9	380	260	8.3	0.7
293	22.4	429.0	18.0	323.0	26.0	505	0.75	0.1859	0.0055	0.02699	0.00045	0.3255	0.0505	0.0014	173.5	4.6	171.7	2.8	218	61	1.0	0.4
80	13.4	724.0	35.0	396.0	13.0	817	0.55	0.1831	0.0060	0.02730	0.00061	0.6183	0.0481	0.0011	170.5	5.1	173.6	3.8	107	49	-1.8	-0.6
258	18.1	804.0	45.0	569.0	25.0	938	0.71	0.1875	0.0047	0.02786	0.00049	0.4945	0.0487	0.0011	174.4	4.0	177.1	3.1	131	49	-1.5	-0.7

Table 13: LA-ICP-MS Zircon Isotopic and Age Data Table: SC15-13: Scott County, KS Paleosol with Prismatic Nodules Sample

								Corrected Isotopic Ratios[5]							Ages (Ma)[7]							
Grain #	Signal Duration (s)	U (ppm)[1]	2σ	Th (ppm)[1]	2σ	eU (ppm)[2]	Th/U	$^{207}Pb/^{235}U$	2σ[4]	$^{206}Pb/^{238}U$	2σ[4]	Rho[5]	$^{207}Pb/^{206}Pb$[5]	2σ	$^{207}Pb/^{235}U$	2σ	$^{206}Pb/^{238}U$	2σ	$^{207}Pb/^{206}Pb$	2σ	% Disc.[8]	Uncert. Wtd. Disc.[9]
208	19.9	100.6	9.8	169.0	12.0	140	1.68	0.1940	0.0110	0.02802	0.00087	0.2742	0.0508	0.0029	179.4	9.5	178.8	5.4	210	120	0.3	0.1
142	22.4	95.0	2.1	24.1	0.7	101	0.25	0.2060	0.0120	0.03053	0.00085	0.1215	0.0493	0.0029	189.1	9.7	193.8	5.3	160	110	-2.5	-0.5
252	22.0	228.0	14.0	85.4	5.3	248	0.37	0.2123	0.0067	0.03071	0.00053	0.0740	0.0502	0.0018	195.2	5.6	194.9	3.3	190	73	0.2	0.1
124	22.4	104.7	5.3	48.5	2.2	116	0.46	0.2170	0.0130	0.03086	0.00065	0.1829	0.0498	0.0029	200.0	10.0	195.9	4.1	210	120	2.1	0.4
237	22.4	500.0	13.0	17.4	0.5	504	0.03	0.4930	0.0130	0.06570	0.00160	0.6475	0.0548	0.0011	405.8	8.7	409.9	9.4	403	47	-1.0	-0.5
109	22.4	419.0	33.0	48.9	1.7	430	0.12	0.4953	0.0100	0.06701	0.00083	0.3034	0.0539	0.0012	408.9	6.7	418.1	5.0	361	49	-2.2	-1.4
172	22.4	232.0	27.0	97.0	16.0	255	0.42	0.6790	0.0130	0.08470	0.00130	0.4282	0.0579	0.0013	525.4	8.1	524.1	7.9	527	50	0.2	0.2
139	22.4	27.4	1.6	11.3	0.5	30	0.41	0.6720	0.0430	0.08530	0.00190	0.0283	0.0570	0.0039	515.0	26.0	527.0	11.0	440	140	-2.3	-0.5
33	21.8	488.0	28.0	175.0	15.0	529	0.36	1.0200	0.1100	0.08610	0.00680	0.9862	0.0845	0.0025	710.0	56.0	530.0	40.0	1282	60	25.4	3.2
200	22.4	161.0	12.0	27.1	1.4	167	0.17	0.6880	0.0170	0.08640	0.00130	0.1650	0.0575	0.0016	530.0	10.0	534.2	8.0	505	61	-0.8	-0.4
35	22.4	301.0	16.0	18.9	0.7	305	0.06	0.7160	0.0170	0.08960	0.00150	0.5525	0.0587	0.0013	549.0	10.0	553.1	9.0	547	48	-0.7	-0.4
174	22.4	326.0	20.0	203.0	8.2	374	0.62	0.8090	0.0150	0.09880	0.00140	0.4179	0.0606	0.0012	602.4	8.4	607.1	8.2	615	42	-0.8	-0.6
290	22.4	228.0	14.0	149.7	5.7	263	0.66	0.8240	0.0170	0.09970	0.00130	0.3484	0.0604	0.0013	609.3	9.4	612.3	7.8	618	47	-0.5	-0.3
115	22.4	80.5	4.0	69.4	2.4	97	0.86	0.8560	0.0250	0.10400	0.00190	0.5121	0.0595	0.0016	626.0	14.0	639.0	11.0	593	58	-2.1	-0.9
133	8.4	182.0	18.0	63.6	5.0	197	0.35	0.9510	0.0520	0.11110	0.00440	0.7419	0.0627	0.0026	676.0	27.0	679.0	26.0	711	89	-0.4	-0.1
234	17.3	133.0	25.0	29.2	4.6	140	0.22	1.6740	0.0690	0.16410	0.00650	0.8273	0.0746	0.0019	1001.0	26.0	978.0	36.0	1061	49	2.3	0.9
289	22.4	88.0	15.0	72.0	11.0	105	0.82	1.8800	0.0400	0.16870	0.00260	0.4946	0.0800	0.0016	1072.0	14.0	1005.0	15.0	1189	40	6.3	4.8
170	21.9	130.0	3.8	82.5	5.4	149	0.63	2.2700	0.2800	0.17400	0.01900	0.9877	0.0935	0.0020	1157.0	86.0	1020.0	100.0	1499	41	11.8	1.6
36	22.4	76.8	3.5	46.8	1.8	88	0.61	1.9250	0.0460	0.18350	0.00340	0.4446	0.0761	0.0018	1089.0	16.0	1086.0	18.0	1102	48	0.3	0.2
87	22.4	91.1	7.8	66.0	3.4	107	0.72	1.8960	0.0440	0.18490	0.00330	0.3798	0.0738	0.0017	1079.0	16.0	1095.0	17.0	1027	49	-1.5	-1.0
123	13.0	45.6	2.9	27.6	1.5	52	0.61	1.9070	0.0630	0.18680	0.00400	0.3204	0.0737	0.0026	1088.0	22.0	1104.0	22.0	1014	70	-1.5	-0.7
187	16.6	370.0	61.0	181.0	33.0	413	0.49	1.9640	0.0400	0.18760	0.00410	0.6906	0.0759	0.0014	1104.0	13.0	1108.0	22.0	1088	36	-0.4	-0.3
95	22.4	53.0	2.5	18.8	0.7	57	0.35	2.0120	0.0590	0.18900	0.00340	0.4917	0.0773	0.0020	1115.0	20.0	1116.0	18.0	1131	51	-0.1	-0.1
90	17.1	258.0	16.0	79.0	3.9	277	0.31	2.0030	0.0440	0.19100	0.00340	0.5096	0.0770	0.0016	1117.0	15.0	1126.0	19.0	1112	42	-0.8	-0.6
167	22.4	302.0	22.0	99.8	4.6	325	0.33	2.0570	0.0360	0.19350	0.00340	0.5955	0.0778	0.0014	1136.0	12.0	1140.0	18.0	1135	36	-0.4	-0.3
118	22.4	60.5	2.3	38.6	1.0	70	0.64	2.2320	0.0530	0.20210	0.00380	0.4876	0.0804	0.0018	1191.0	16.0	1186.0	20.0	1213	46	0.4	0.3
34	11.4	23.7	1.0	10.7	0.3	26	0.45	2.1700	0.1100	0.20220	0.00610	0.3392	0.0794	0.0040	1166.0	35.0	1187.0	33.0	1170	92	-1.8	-0.6
101	20.2	50.6	3.7	30.5	2.6	58	0.60	2.2100	0.0640	0.20510	0.00330	0.3982	0.0783	0.0022	1181.0	20.0	1202.0	18.0	1167	56	-1.8	-1.1
110	17.2	199.1	5.5	161.4	4.8	237	0.81	2.3130	0.0390	0.20610	0.00340	0.5890	0.0812	0.0014	1215.0	12.0	1208.0	18.0	1221	33	0.6	0.6
134	22.4	64.9	2.8	45.7	1.7	76	0.70	2.2960	0.0620	0.20630	0.00330	0.4667	0.0806	0.0019	1212.0	19.0	1209.0	18.0	1214	49	0.2	0.2
198	17.9	116.2	5.3	55.6	2.0	129	0.48	2.2830	0.0540	0.20920	0.00390	0.5641	0.0794	0.0016	1209.0	16.0	1224.0	21.0	1176	40	-1.2	-0.9
218	9.5	70.3	3.7	40.2	1.8	80	0.57	2.6700	0.0960	0.21550	0.00820	0.5353	0.0904	0.0033	1317.0	27.0	1257.0	43.0	1433	67	4.6	2.2
13	21.6	73.7	1.7	40.1	1.1	83	0.54	2.9200	0.1100	0.22460	0.00720	0.8706	0.0940	0.0018	1383.0	28.0	1308.0	39.0	1510	35	5.4	2.7
193	22.4	83.0	4.2	17.9	0.8	87	0.22	2.7500	0.0560	0.23180	0.00470	0.4812	0.0866	0.0020	1344.0	15.0	1343.0	25.0	1341	44	0.1	0.1
183	22.4	26.2	1.9	16.6	1.0	30	0.63	2.8180	0.0880	0.23290	0.00520	0.2702	0.0888	0.0031	1355.0	23.0	1352.0	28.0	1388	68	0.2	0.1
262	16.4	99.1	5.3	64.2	2.8	114	0.65	2.9770	0.0610	0.23880	0.00480	0.5401	0.0899	0.0019	1402.0	15.0	1380.0	25.0	1432	41	1.6	1.5
86	19.5	89.4	4.5	32.5	0.7	97	0.36	2.8530	0.0670	0.23910	0.00490	0.4848	0.0868	0.0021	1369.0	17.0	1381.0	25.0	1345	46	-0.9	-0.7
11	22.0	65.2	3.1	36.4	1.3	74	0.56	3.0820	0.0610	0.24540	0.00400	0.4583	0.0906	0.0017	1428.0	15.0	1414.0	21.0	1431	36	1.0	0.9
245	22.4	479.0	89.0	18.3	1.5	483	0.04	3.0290	0.0750	0.24600	0.00610	0.8825	0.0897	0.0014	1411.0	19.0	1416.0	32.0	1421	31	-0.4	-0.3
168	21.7	117.0	6.4	22.7	1.5	122	0.19	3.4550	0.0850	0.24590	0.00510	0.7905	0.1009	0.0018	1516.0	19.0	1419.0	27.0	1638	34	6.4	5.1
45	22.4	62.2	1.6	41.7	0.8	72	0.67	3.1070	0.0690	0.24720	0.00410	0.4969	0.0906	0.0018	1433.0	17.0	1424.0	21.0	1429	39	0.6	0.5

Table 13: LA-ICP-MS Zircon Isotopic and Age Data Table: SC15-13: Scott County, KS Paleosol with Prismatic Nodules Sample

								Corrected Isotopic Ratios[5]							Ages (Ma)[7]							
Grain #	Signal Duration (s)	U (ppm)[1]	2σ	Th (ppm)[1]	2σ	eU (ppm)[2]	Th/U	$^{207}Pb/^{235}U$	2σ[4]	$^{206}Pb/^{238}U$	2σ[4]	Rho[5]	$^{207}Pb/^{206}Pb$[6]	2σ	$^{207}Pb/^{235}U$	2σ	$^{206}Pb/^{238}U$	2σ	$^{207}Pb/^{206}Pb$	2σ	% Disc.[8]	Uncert. Wtd. Disc.[9]
137	19.3	161.6	5.4	1.1	0.2	162	0.01	3.1340	0.0610	0.24840	0.00470	0.6119	0.0910	0.0017	1439.0	15.0	1429.0	24.0	1441	36	0.7	0.7
153	22.6	80.4	8.0	43.9	3.6	91	0.55	3.4100	0.1200	0.24870	0.00570	0.5955	0.0992	0.0028	1510.0	27.0	1430.0	30.0	1645	53	5.3	3.0
179	22.4	184.3	8.1	28.9	0.8	191	0.16	3.1300	0.0440	0.24840	0.00320	0.5675	0.0918	0.0013	1439.0	11.0	1430.0	16.0	1465	29	0.6	0.8
197	17.3	101.9	4.7	83.0	3.2	121	0.81	3.0500	0.0710	0.24850	0.00480	0.4088	0.0890	0.0023	1418.0	18.0	1430.0	25.0	1405	49	-0.8	-0.7
4	22.4	100.4	8.5	39.5	2.9	110	0.39	3.1100	0.0680	0.24900	0.00440	0.6609	0.0909	0.0017	1433.0	17.0	1432.0	23.0	1445	35	0.1	0.1
104	16.8	50.0	2.8	36.7	1.5	59	0.73	3.1390	0.0940	0.24910	0.00360	0.1727	0.0909	0.0026	1438.0	23.0	1434.0	19.0	1432	56	0.3	0.2
216	11.1	125.0	9.7	47.7	2.9	136	0.38	3.0490	0.0850	0.24920	0.00520	0.7126	0.0895	0.0018	1422.0	20.0	1434.0	27.0	1419	39	-0.8	-0.6
235	15.4	66.1	8.6	18.4	1.2	70	0.28	3.1200	0.1500	0.25000	0.01100	0.8322	0.0896	0.0028	1440.0	36.0	1437.0	59.0	1419	58	0.2	0.1
38	22.4	210.8	5.0	141.9	2.5	244	0.67	3.1160	0.0430	0.24960	0.00380	0.6134	0.0898	0.0014	1436.9	11.0	1438.0	19.0	1425	28	-0.1	-0.1
248	22.4	36.2	1.4	20.6	0.3	41	0.57	3.1350	0.0870	0.25020	0.00470	0.3270	0.0917	0.0026	1436.0	22.0	1438.0	24.0	1460	54	-0.1	-0.1
266	23.6	702.0	37.0	13.1	0.6	705	0.02	3.1430	0.0470	0.25040	0.00390	0.8453	0.0912	0.0012	1442.0	11.0	1440.0	20.0	1452	25	0.1	0.2
276	21.5	178.0	16.0	27.6	2.4	184	0.16	3.5500	0.3900	0.25800	0.02800	0.9883	0.0979	0.0029	1651.0	62.0	1440.0	150.0	1558	73	12.8	3.4
53	22.4	170.1	7.9	122.2	3.6	199	0.72	3.1290	0.0450	0.25090	0.00280	0.4585	0.0906	0.0014	1441.0	11.0	1443.0	14.0	1442	27	-0.1	-0.2
73	22.4	103.5	7.1	48.5	2.0	115	0.47	3.1210	0.0610	0.25050	0.00410	0.4964	0.0898	0.0017	1441.0	15.0	1443.0	22.0	1423	35	-0.1	-0.1
15	22.4	84.9	3.5	104.5	3.2	109	1.23	3.1130	0.0600	0.25150	0.00410	0.6183	0.0893	0.0016	1436.0	14.0	1446.0	21.0	1407	36	-0.7	-0.7
60	22.4	183.0	13.0	191.9	8.8	228	1.05	3.1410	0.0530	0.25180	0.00390	0.4710	0.0900	0.0016	1441.0	13.0	1449.0	20.0	1423	35	-0.6	-0.6
58	22.4	129.2	5.9	70.0	1.5	146	0.54	3.1760	0.0470	0.25330	0.00410	0.4237	0.0903	0.0016	1453.0	12.0	1455.0	21.0	1428	34	-0.1	-0.2
180	22.4	103.1	6.3	44.1	0.7	113	0.43	3.1660	0.0590	0.25380	0.00450	0.5536	0.0916	0.0017	1452.0	15.0	1457.0	23.0	1461	34	-0.3	-0.3
186	22.4	207.0	12.0	82.4	3.4	226	0.40	3.1720	0.0520	0.25440	0.00390	0.5451	0.0908	0.0014	1449.0	13.0	1460.0	20.0	1441	29	-0.8	-0.8
122	16.5	86.4	5.1	58.4	4.4	100	0.68	3.1720	0.0720	0.25500	0.00460	0.4532	0.0911	0.0022	1448.0	18.0	1463.0	23.0	1450	46	-1.0	-0.8
103	12.5	150.0	17.0	77.0	10.0	168	0.51	3.1540	0.0650	0.25500	0.00510	0.4907	0.0898	0.0018	1445.0	16.0	1464.0	26.0	1416	39	-1.3	-1.2
127	18.3	199.0	16.0	64.1	2.6	214	0.32	3.2350	0.0600	0.25550	0.00460	0.7148	0.0911	0.0014	1466.0	14.0	1466.0	23.0	1452	31	0.0	0.0
70	22.7	142.1	4.7	93.7	2.1	164	0.66	3.3840	0.0620	0.25620	0.00440	0.6311	0.0952	0.0016	1499.0	14.0	1470.0	23.0	1534	32	1.9	2.1
149	9.8	342.0	49.0	108.0	11.0	367	0.32	3.4500	0.1900	0.25800	0.02000	0.9026	0.0975	0.0030	1509.0	42.0	1470.0	100.0	1589	58	2.6	0.9
228	18.4	206.0	13.0	64.8	2.8	221	0.31	3.2470	0.0660	0.25680	0.00530	0.6788	0.0923	0.0016	1468.0	16.0	1473.0	27.0	1481	34	-0.3	-0.3
114	23.3	181.0	6.7	118.6	2.3	209	0.66	3.2040	0.0510	0.25770	0.00420	0.6256	0.0905	0.0014	1457.0	12.0	1480.0	22.0	1431	30	-1.6	-1.9
93	14.9	108.2	4.7	41.0	1.6	118	0.38	3.2690	0.0880	0.25970	0.00650	0.5902	0.0922	0.0024	1474.0	20.0	1487.0	33.0	1461	49	-0.9	-0.7
221	17.8	164.0	11.0	40.1	1.7	173	0.24	3.2720	0.0680	0.25980	0.00490	0.6530	0.0901	0.0016	1472.0	16.0	1488.0	25.0	1436	33	-1.1	-1.0
236	22.4	16.8	1.0	20.0	1.0	22	1.19	6.0400	0.1700	0.26180	0.00650	0.3549	0.1640	0.0053	1976.0	25.0	1505.0	34.0	2495	53	23.8	18.8
150	16.3	82.5	4.1	41.6	2.0	92	0.50	3.3300	0.0740	0.26450	0.00690	0.5682	0.0918	0.0021	1486.0	17.0	1511.0	35.0	1475	42	-1.7	-1.5
17	10.1	115.3	5.1	43.5	1.7	126	0.38	3.7700	0.1700	0.27000	0.01300	0.9265	0.1033	0.0020	1587.0	36.0	1535.0	66.0	1681	37	3.3	1.4
51	21.8	77.0	4.5	36.2	1.0	86	0.47	3.4000	0.0690	0.26940	0.00390	0.5382	0.0921	0.0018	1504.0	16.0	1537.0	20.0	1469	35	-2.2	-2.1
146	13.1	412.0	15.0	19.9	1.8	417	0.05	3.4960	0.0950	0.26940	0.00670	0.7292	0.0932	0.0021	1527.0	22.0	1537.0	34.0	1493	43	-0.7	-0.5
212	12.2	228.0	16.0	51.5	3.0	240	0.23	3.5920	0.0770	0.26940	0.00490	0.5168	0.0971	0.0020	1546.0	17.0	1537.0	25.0	1571	38	0.6	0.5
162	22.4	412.0	11.0	94.1	7.3	434	0.23	3.7100	0.1300	0.27520	0.00740	0.8868	0.0971	0.0017	1572.0	27.0	1565.0	38.0	1564	33	0.4	0.3
217	22.4	278.0	13.0	50.8	1.8	290	0.18	3.7820	0.0640	0.27780	0.00480	0.7358	0.0991	0.0015	1587.0	14.0	1580.0	24.0	1607	27	0.4	0.5
225	8.6	65.0	5.0	10.8	0.9	68	0.17	4.1000	0.1800	0.28000	0.01500	0.7415	0.1051	0.0037	1649.0	36.0	1588.0	73.0	1718	63	3.7	1.7
203	9.4	306.4	8.2	78.1	2.2	325	0.25	4.0170	0.0980	0.28250	0.00680	0.6649	0.1039	0.0020	1636.0	20.0	1603.0	34.0	1692	35	2.0	1.7
57	22.4	42.9	3.1	34.9	2.1	51	0.81	3.9300	0.0830	0.28270	0.00460	0.4869	0.1013	0.0022	1619.0	16.0	1604.0	23.0	1640	40	0.9	0.9
291	22.4	101.7	6.2	44.8	2.6	112	0.44	3.6400	0.1100	0.28440	0.00850	0.9215	0.0918	0.0018	1552.0	26.0	1611.0	43.0	1460	38	-3.8	-2.3
108	22.4	704.0	96.0	99.8	5.1	727	0.14	4.1000	0.0650	0.29160	0.00460	0.7525	0.1025	0.0014	1653.0	13.0	1649.0	23.0	1672	26	0.2	0.3

Table 13: LA-ICP-MS Zircon Isotopic and Age Data Table: SC15-13: Scott County, KS Paleosol with Prismatic Nodules Sample

								Corrected Isotopic Ratios[3]							Ages (Ma)[7]							
Grain #	Signal Duration (s)	U (ppm)[1]	2σ	Th (ppm)[1]	2σ	eU (ppm)[2]	Th/U	$^{207}Pb/^{235}U$	2σ[4]	$^{206}Pb/^{238}U$	2σ[4]	Rho[5]	$^{207}Pb/^{206}Pb$[6]	2σ	$^{207}Pb/^{235}U$	2σ	$^{206}Pb/^{238}U$	2σ	$^{207}Pb/^{206}Pb$	2σ	% Disc.[8]	Uncert. Wtd. Disc.[9]
59	16.3	124.9	5.6	42.9	1.5	135	0.34	4.1800	0.0780	0.29220	0.00570	0.6322	0.1022	0.0017	1668.0	15.0	1652.0	29.0	1670	32	1.0	1.1
67	22.4	46.8	3.8	40.9	3.7	56	0.87	4.1750	0.0860	0.29300	0.00540	0.4420	0.1039	0.0024	1669.0	17.0	1655.0	27.0	1694	44	0.8	0.8
182	22.3	527.0	54.0	49.6	2.5	539	0.09	4.1500	0.2000	0.29600	0.01300	0.9773	0.1017	0.0016	1653.0	43.0	1664.0	65.0	1654	31	-0.7	-0.3
185	22.4	99.1	7.1	24.4	1.2	105	0.25	4.2040	0.0900	0.29650	0.00600	0.7356	0.1029	0.0018	1676.0	18.0	1672.0	30.0	1678	32	0.2	0.2
275	14.8	242.0	37.0	50.7	5.3	254	0.21	4.1700	0.1100	0.29650	0.00590	0.7570	0.1001	0.0019	1665.0	23.0	1673.0	29.0	1636	37	-0.5	-0.3
222	22.4	171.0	15.0	16.3	0.4	175	0.10	4.1650	0.0980	0.29560	0.00650	0.6702	0.1023	0.0019	1664.0	19.0	1675.0	32.0	1660	35	-0.7	-0.6
116	22.4	358.0	16.0	45.7	1.7	369	0.13	4.2040	0.0610	0.29700	0.00530	0.7189	0.1022	0.0016	1674.0	12.0	1676.0	26.0	1665	28	-0.1	-0.2
16	22.4	77.4	6.8	22.8	1.8	83	0.29	4.2850	0.0890	0.29770	0.00590	0.6669	0.1041	0.0019	1688.0	17.0	1679.0	29.0	1697	33	0.5	0.5
102	22.4	118.5	4.4	38.8	1.4	128	0.33	4.2750	0.0620	0.29950	0.00420	0.5410	0.1033	0.0016	1689.0	12.0	1688.0	21.0	1684	29	0.1	0.1
160	22.4	117.4	4.5	183.9	3.5	161	1.57	4.2330	0.0830	0.29960	0.00520	0.5753	0.1025	0.0020	1680.0	16.0	1688.0	26.0	1667	36	-0.5	-0.5
287	22.4	109.9	3.4	70.1	4.3	126	0.64	4.2500	0.0780	0.30050	0.00440	0.7815	0.1035	0.0018	1686.0	16.0	1689.0	24.0	1689	30	-0.2	-0.2
26	22.4	54.7	5.7	15.0	3.7	58	0.27	4.3700	0.0740	0.30040	0.00370	0.2570	0.1052	0.0019	1706.0	14.0	1693.0	19.0	1723	33	0.8	0.9
176	22.4	87.3	5.0	24.6	1.0	93	0.28	4.3200	0.0750	0.30040	0.00430	0.5785	0.1051	0.0019	1697.0	15.0	1693.0	21.0	1719	32	0.2	0.3
173	10.1	188.0	10.0	92.5	4.0	210	0.49	4.2350	0.0730	0.30140	0.00680	0.5839	0.1033	0.0022	1680.0	14.0	1698.0	34.0	1693	38	-1.1	-1.3
84	15.2	160.0	17.0	30.6	1.9	167	0.19	4.2430	0.0920	0.30070	0.00790	0.6002	0.1032	0.0022	1683.0	19.0	1699.0	38.0	1682	40	-1.0	-0.8
9	11.2	211.9	7.8	69.7	2.4	228	0.33	4.2670	0.1000	0.30210	0.00740	0.5372	0.1032	0.0022	1685.0	20.0	1701.0	37.0	1679	39	-0.9	-0.8
188	20.0	243.0	19.0	84.2	9.5	263	0.35	4.2520	0.0780	0.30230	0.00570	0.7070	0.1030	0.0017	1682.0	15.0	1702.0	28.0	1674	30	-1.2	-1.3
19	22.4	111.5	3.8	91.2	2.3	133	0.82	4.3800	0.0590	0.30250	0.00380	0.5907	0.1046	0.0015	1708.0	11.0	1703.0	19.0	1707	27	0.3	0.5
210	11.6	513.0	40.0	21.2	0.7	518	0.04	4.3800	0.2100	0.30100	0.01400	0.9761	0.1049	0.0014	1700.0	41.0	1704.0	74.0	1711	24	-0.2	-0.1
28	18.2	294.0	15.0	197.0	14.0	340	0.67	4.3800	0.1600	0.30300	0.01000	0.9290	0.1048	0.0017	1708.0	31.0	1705.0	50.0	1710	28	0.2	0.1
207	14.7	69.2	6.5	40.4	2.0	79	0.58	4.2900	0.1000	0.30340	0.00550	0.5484	0.1031	0.0023	1693.0	19.0	1707.0	27.0	1674	40	-0.8	-0.7
117	11.8	115.0	11.0	17.7	1.0	119	0.15	4.4500	0.1500	0.30420	0.00850	0.7991	0.1046	0.0019	1717.0	27.0	1711.0	42.0	1704	33	0.3	0.2
85	16.7	154.4	5.6	48.2	2.5	166	0.31	4.3200	0.1100	0.30450	0.00690	0.6856	0.1033	0.0019	1696.0	20.0	1712.0	34.0	1684	33	-0.9	-0.8
250	22.4	343.0	16.0	102.9	3.1	367	0.30	4.3890	0.0610	0.30370	0.00520	0.6640	0.1043	0.0016	1711.0	11.0	1712.0	25.0	1701	28	-0.1	-0.1
273	23.7	114.0	14.0	37.8	2.5	123	0.33	4.4460	0.0850	0.30370	0.00530	0.6270	0.1064	0.0017	1720.0	16.0	1712.0	27.0	1737	30	0.5	0.5
243	13.4	146.0	13.0	52.4	9.6	158	0.36	4.3660	0.0760	0.30460	0.00560	0.5183	0.1031	0.0022	1705.0	14.0	1713.0	28.0	1675	39	-0.5	-0.6
10	22.4	62.6	3.1	23.1	0.5	68	0.37	4.4410	0.1000	0.30550	0.00530	0.6159	0.1055	0.0021	1716.0	19.0	1717.0	26.0	1719	38	-0.1	-0.1
161	22.4	171.0	15.0	60.0	5.1	185	0.35	4.4500	0.1400	0.30500	0.01000	0.8925	0.1052	0.0018	1718.0	27.0	1719.0	48.0	1712	32	-0.1	0.0
156	16.6	142.0	31.0	31.1	2.3	149	0.22	4.4060	0.0960	0.30600	0.00660	0.5566	0.1033	0.0023	1711.0	18.0	1720.0	33.0	1682	41	-0.5	-0.5
227	22.4	225.0	12.0	63.2	2.4	240	0.28	4.4300	0.1200	0.30630	0.00820	0.8853	0.1039	0.0016	1717.0	22.0	1720.0	41.0	1697	27	-0.2	-0.1
263	17.5	286.0	13.0	50.2	2.2	298	0.18	4.5020	0.0730	0.30650	0.00470	0.7645	0.1060	0.0015	1730.0	14.0	1723.0	23.0	1733	26	0.4	0.5
46	17.4	58.2	3.0	37.7	1.8	67	0.65	4.4200	0.1000	0.30690	0.00560	0.4355	0.1054	0.0024	1718.0	18.0	1724.0	28.0	1718	44	-0.3	-0.3
268	18.7	70.8	2.5	8.0	0.3	73	0.11	4.4200	0.0780	0.30760	0.00520	0.4882	0.1047	0.0018	1718.0	15.0	1728.0	25.0	1714	32	-0.6	-0.7
246	22.4	215.5	5.5	121.1	2.4	244	0.56	4.5000	0.0690	0.30810	0.00450	0.7345	0.1056	0.0015	1732.0	12.0	1733.0	22.0	1725	26	-0.1	-0.1
41	22.4	403.0	21.0	265.0	12.0	465	0.66	4.5490	0.0660	0.30890	0.00560	0.7451	0.1061	0.0016	1740.0	12.0	1734.0	27.0	1730	27	0.3	0.5
65	22.4	198.1	6.9	101.0	2.8	222	0.51	4.5290	0.0650	0.30820	0.00460	0.5854	0.1061	0.0016	1735.0	12.0	1734.0	22.0	1730	27	0.1	0.1
209	22.4	128.5	3.2	71.5	4.2	145	0.56	4.4020	0.0730	0.30830	0.00440	0.6215	0.1035	0.0016	1713.0	13.0	1734.0	22.0	1689	27	-1.2	-1.6
92	22.4	76.7	2.2	24.4	0.8	82	0.32	4.4930	0.0910	0.30930	0.00570	0.5904	0.1051	0.0020	1731.0	16.0	1736.0	28.0	1717	35	-0.3	-0.3
119	9.9	161.0	22.0	80.0	12.0	180	0.50	4.5100	0.1300	0.31000	0.01100	0.6905	0.1051	0.0029	1735.0	22.0	1738.0	54.0	1710	51	-0.2	-0.1
220	10.6	163.0	10.0	27.3	1.8	169	0.17	4.3300	0.1000	0.30860	0.00730	0.6425	0.1029	0.0026	1701.0	21.0	1740.0	34.0	1670	46	-2.3	-1.9
98	22.4	200.0	19.0	56.9	4.9	213	0.28	4.5780	0.0780	0.31050	0.00530	0.5603	0.1072	0.0019	1745.0	15.0	1742.0	26.0	1754	33	0.2	0.2

Table 13: LA-ICP-MS Zircon Isotopic and Age Data Table: SC15-13: Scott County, KS Paleosol with Prismatic Nodules Sample

								Corrected Isotopic Ratios[3]							Ages (Ma)[7]							
Grain #	Signal Duration (s)	U (ppm)[1]	2σ	Th (ppm)[1]	2σ	eU (ppm)[2]	Th/U	$^{207}Pb/^{235}U$	2σ[4]	$^{206}Pb/^{238}U$	2σ[4]	Rho[5]	$^{207}Pb/^{206}Pb$[6]	2σ	$^{207}Pb/^{235}U$	2σ	$^{206}Pb/^{238}U$	2σ	$^{207}Pb/^{206}Pb$	2σ	% Disc.[8]	Uncert. Wtd. Disc.[9]
151	20.3	154.0	14.0	49.4	3.2	166	0.32	4.5100	0.1200	0.31080	0.00900	0.8572	0.1052	0.0021	1732.0	23.0	1742.0	44.0	1718	37	-0.6	-0.4
254	16.9	152.5	5.1	69.4	3.1	169	0.46	4.6220	0.0910	0.31100	0.00630	0.6802	0.1087	0.0018	1751.0	16.0	1744.0	31.0	1775	30	0.4	0.4
192	8.6	228.0	22.0	38.1	3.3	237	0.17	4.4100	0.1400	0.31200	0.01500	0.7078	0.1037	0.0035	1710.0	27.0	1747.0	72.0	1681	62	-2.2	-1.4
21	22.4	101.4	5.3	34.8	3.1	110	0.34	4.5730	0.0750	0.31210	0.00440	0.5386	0.1056	0.0017	1746.0	13.0	1750.0	22.0	1723	29	-0.2	-0.3
281	22.7	113.0	13.0	29.1	4.2	120	0.26	4.4630	0.0930	0.31470	0.00620	0.7940	0.1030	0.0017	1721.0	18.0	1762.0	31.0	1676	30	-2.4	-2.3
50	21.8	360.0	22.0	60.3	3.2	374	0.17	4.5390	0.0780	0.31810	0.00530	0.8312	0.1046	0.0013	1741.0	14.0	1779.0	26.0	1706	23	-2.2	-2.7
56	12.0	303.0	17.0	57.6	1.5	317	0.19	4.6880	0.0820	0.31850	0.00540	0.6041	0.1062	0.0019	1766.0	15.0	1782.0	26.0	1737	32	-0.9	-1.1
66	20.5	273.0	17.0	127.8	7.6	303	0.47	4.7160	0.0770	0.31880	0.00610	0.7505	0.1062	0.0016	1769.0	14.0	1783.0	30.0	1732	28	-0.8	-1.0
256	10.6	138.3	5.9	44.1	1.5	149	0.32	4.6400	0.1300	0.32540	0.00980	0.5422	0.1064	0.0031	1759.0	23.0	1814.0	48.0	1730	54	-3.1	-2.4
132	16.6	65.5	3.4	28.5	1.0	72	0.44	4.9000	0.1200	0.33430	0.00720	0.7334	0.1052	0.0021	1806.0	22.0	1863.0	34.0	1712	37	-3.2	-2.6
189	22.2	171.0	14.0	57.7	4.1	185	0.34	5.1020	0.0920	0.34650	0.00640	0.6894	0.1066	0.0019	1834.0	16.0	1916.0	31.0	1737	33	-4.5	-5.1
296	22.4	172.0	15.0	90.3	6.2	193	0.53	15.8900	0.2800	0.58060	0.00860	0.7895	0.1996	0.0026	2867.0	17.0	2957.0	35.0	2821	21	-3.1	-5.3

[1]U and Th have been concentrations and the Th/U ratios are calculated relative to the GJ-1 standard value using 287 ± 76 ppm for U and 8.4 ± 2.6 ppm for Th (Jackson et al., 2004)

[2]Equivalent U defined by the equation: eU = U ppm + 0.235*Th ppm

[3]Corrected for U-Pb fractionation and background and normalized to the GJ-1 standard value: $^{207}Pb/^{235}U$ =0.8093 ± 0.0009 and $^{206}Pb/^{238}U$ = 0.09761 ± 0.00011 (Jackson et al., 2004)

[4]Propagated uncertainty of internal uncertanties (2SE) and within run reproducibility of GJ-1 (2SE)

[5]Uncertainty correlation between $^{206}Pb/^{238}U$ and $^{207}Pb/^{235}U$ uncertainties

[6]Corrected for background and Pb isotopicfractionation using the GJ-1 standard value: $^{207}Pb/^{206}Pb$ = 0.06014 ± 0.00001 (Jackson et al., 2004)

[7]U-Pb ages calculated relative to the GJ-1 standard

[8]Discordance defined as (($^{207}Pb/^{235}U$age - $^{206}Pb/^{238}U$age)/($^{207}Pb/^{235}U$ age))*100

[9]Uncertainty weighted age difference defined as ($^{207}Pb/^{235}U$ age - $^{206}Pb/^{238}U$ age)/($^{207}Pb/^{235}U$ age uncertainty)

Rows highlighted in grey were not used in interpretations or calculations based on discordance or short analysis times

Table 14: LA-ICP-MS Zircon Isotopic and Age Data Table: SC15-14: Scott County, KS Paleosol Sample

								Corrected Isotopic Ratios[3]							Ages (Ma)[7]							
Grain #	Signal Duration (s)	U (ppm)[1]	2σ	Th (ppm)[1]	2σ	eU (ppm)[2]	Th/U	$^{207}Pb/^{235}U$	$2\sigma^{4}$	$^{206}Pb/^{238}U$	$2\sigma^{4}$	Rho[5]	$^{207}Pb/^{206}Pb$[6]	2σ	$^{207}Pb/^{235}U$	2σ	$^{206}Pb/^{238}U$	2σ	$^{207}Pb/^{206}Pb$	2σ	% Disc.[8]	Uncert. Wtd. Disc.[9]
202	21.3	76.3	4.8	50.8	2.8	88	0.67	0.0125	0.0078	0.00090	0.00013	0.0944	0.1200	0.1500	13.0	8.0	5.8	0.8	3230	270	55.3	0.9
63	22.8	275.0	14.0	152.9	6.7	311	0.56	0.0060	0.0023	0.00099	0.00005	0.0761	0.0560	0.0210	6.0	2.3	6.4	0.3	1480	230	-6.3	-0.2
283	12.3	52.7	3.2	20.8	1.7	58	0.39	0.0221	0.0078	0.00289	0.00023	0.0012	0.0550	0.0190	23.0	7.6	18.6	1.5	1030	210	19.1	0.6
297	17.9	172.5	9.0	161.1	7.9	210	0.93	0.0285	0.0046	0.00468	0.00016	0.1548	0.0461	0.0068	28.4	4.5	30.1	1.0	480	120	-6.0	-0.4
121	21.4	212.0	13.0	73.6	4.4	229	0.35	0.0295	0.0037	0.00481	0.00013	0.1118	0.0440	0.0058	29.4	3.6	30.9	0.8	600	120	-5.2	-0.4
282	22.5	328.0	27.0	116.0	12.0	355	0.35	0.0295	0.0021	0.00486	0.00011	0.2484	0.0443	0.0031	29.5	2.1	31.3	0.7	380	97	-6.0	-0.8
260	12.7	122.8	3.8	123.9	4.0	152	1.01	0.0401	0.0069	0.00516	0.00018	0.0836	0.0580	0.0100	39.6	6.7	33.2	1.1	810	150	16.2	1.0
159	21.0	280.0	29.0	89.0	14.0	301	0.32	0.0346	0.0033	0.00518	0.00015	0.1108	0.0486	0.0047	34.4	3.3	33.3	1.0	484	84	3.1	0.3
110	13.3	148.8	2.9	77.6	1.7	167	0.52	0.0389	0.0066	0.00525	0.00020	0.0048	0.0511	0.0088	38.5	6.4	33.8	1.3	690	150	12.2	0.7
284	8.5	110.9	5.9	111.8	4.1	137	1.01	0.0339	0.0085	0.00525	0.00024	0.0481	0.0490	0.0130	33.6	8.3	33.8	1.5	780	270	-0.6	0.0
30	21.3	313.0	16.0	119.2	4.6	341	0.38	0.0362	0.0026	0.00529	0.00012	0.0003	0.0492	0.0037	36.0	2.5	34.0	0.8	433	66	5.5	0.8
157	22.4	132.8	2.7	57.7	1.6	146	0.43	0.0376	0.0056	0.00536	0.00019	0.0329	0.0507	0.0076	37.2	5.5	34.4	1.2	810	140	7.5	0.5
280	19.4	130.0	13.0	58.1	5.1	144	0.45	0.0335	0.0053	0.00535	0.00019	0.1148	0.0445	0.0073	33.2	5.2	34.4	1.2	720	140	-3.6	-0.2
80	22.4	250.3	9.9	224.8	6.1	303	0.90	0.0351	0.0033	0.00549	0.00015	0.2421	0.0469	0.0041	35.3	3.2	35.3	1.0	389	90	0.0	0.0
275	22.4	181.0	19.0	117.0	11.0	208	0.65	0.0376	0.0042	0.00561	0.00015	0.0389	0.0474	0.0053	37.3	4.1	36.1	1.0	503	96	3.3	0.3
229	21.3	374.0	18.0	441.0	19.0	478	1.18	0.0363	0.0030	0.00563	0.00011	0.1677	0.0460	0.0035	36.1	2.9	36.2	0.7	284	78	-0.3	0.0
285	10.2	124.4	4.3	62.6	2.4	139	0.50	0.0439	0.0074	0.00577	0.00028	0.0263	0.0536	0.0092	43.4	7.2	37.1	1.8	780	170	14.5	0.9
257	21.4	22.9	0.5	22.3	0.9	28	0.97	0.0510	0.0230	0.00588	0.00039	0.1076	0.0720	0.0300	49.0	21.0	37.8	2.5	1920	200	22.9	0.5
16	23.2	173.1	9.5	108.1	7.7	199	0.62	0.0468	0.0035	0.00730	0.00018	0.0911	0.0443	0.0032	46.7	3.4	46.9	1.2	305	79	-0.4	-0.1
104	11.7	102.0	12.0	61.6	9.4	116	0.60	0.0505	0.0055	0.00820	0.00032	0.2123	0.0431	0.0057	49.9	5.3	52.6	2.1	430	120	-5.4	-0.5
289	21.0	599.0	55.0	366.0	42.0	685	0.61	0.0560	0.0024	0.00833	0.00014	0.1503	0.0463	0.0019	55.5	2.4	53.5	0.9	197	47	3.7	0.8
66	22.4	145.0	11.0	357.0	35.0	229	2.46	0.0600	0.0049	0.00862	0.00018	0.0317	0.0501	0.0043	59.0	4.7	55.4	1.2	521	81	6.1	0.8
132	16.1	129.3	7.9	22.1	2.6	134	0.17	0.0694	0.0074	0.00959	0.00028	0.0989	0.0540	0.0060	68.8	6.8	61.5	1.8	650	110	10.6	1.1
140	22.2	116.7	2.6	80.9	2.3	136	0.69	0.0725	0.0066	0.00974	0.00025	0.0265	0.0543	0.0050	71.3	6.4	62.5	1.6	668	86	12.3	1.4
191	21.3	31.0	1.5	16.5	0.5	35	0.53	0.0590	0.0170	0.01007	0.00056	0.0880	0.0440	0.0130	55.0	16.0	64.6	3.6	1090	180	-17.5	-0.6
27	22.0	146.0	12.0	60.5	7.0	160	0.41	0.0711	0.0056	0.01012	0.00025	0.0501	0.0526	0.0048	69.4	5.3	64.9	1.6	559	92	6.5	0.8
17	22.4	122.0	4.7	85.6	3.8	142	0.70	0.0681	0.0055	0.01017	0.00026	0.0022	0.0493	0.0043	66.7	5.3	65.2	1.6	522	74	2.2	0.3
45	8.5	416.0	10.0	107.3	5.9	441	0.26	0.0632	0.0064	0.01029	0.00028	0.4140	0.0448	0.0036	62.1	6.1	66.0	1.8	115	35	-6.3	-0.6
274	21.5	109.1	5.4	12.6	1.2	112	0.12	0.0663	0.0066	0.01028	0.00028	0.0543	0.0463	0.0047	64.8	6.3	66.1	1.8	505	87	-2.0	-0.2
239	14.1	372.0	12.0	47.1	1.0	383	0.13	0.0708	0.0046	0.01032	0.00024	0.0798	0.0492	0.0030	69.4	4.4	66.2	1.5	340	56	4.6	0.7
199	22.4	154.0	10.0	50.3	3.3	166	0.33	0.0709	0.0057	0.01044	0.00029	0.0687	0.0503	0.0042	69.3	5.4	67.0	1.8	475	67	3.3	0.4
153	22.4	40.4	2.6	39.4	2.1	50	0.98	0.0720	0.0140	0.01047	0.00044	0.0104	0.0530	0.0110	69.0	13.0	67.1	2.8	850	120	2.8	0.1
92	22.4	227.8	8.6	99.9	4.8	251	0.44	0.0677	0.0038	0.01057	0.00024	0.2310	0.0458	0.0025	66.4	3.6	67.7	1.5	285	55	-2.0	-0.4
176	9.0	496.0	31.0	167.7	8.2	535	0.34	0.0733	0.0047	0.01058	0.00030	0.1304	0.0507	0.0032	71.7	4.4	67.9	1.9	372	73	5.3	0.9
95	22.0	173.0	12.0	30.8	2.0	180	0.18	0.0791	0.0056	0.01064	0.00027	0.1104	0.0537	0.0036	78.3	5.3	68.2	1.7	451	70	12.9	1.9
4	21.4	126.0	12.0	70.9	6.9	143	0.56	0.0779	0.0056	0.01069	0.00031	0.1188	0.0532	0.0041	75.9	5.3	68.5	2.0	451	67	9.7	1.4
124	19.0	34.1	2.4	13.9	0.9	37	0.41	0.0850	0.0210	0.01073	0.00047	0.1427	0.0590	0.0140	89.0	19.0	68.8	3.0	1320	180	22.7	1.1
24	13.1	64.3	3.3	20.4	1.5	69	0.32	0.0800	0.0160	0.01076	0.00059	0.0264	0.0530	0.0110	79.0	14.0	69.0	3.8	760	160	12.7	0.7
162	21.3	22.8	1.2	24.2	2.1	28	1.06	0.0570	0.0260	0.01078	0.00065	0.1775	0.0360	0.0180	56.0	25.0	69.1	4.1	1110	200	-23.4	-0.5
19	17.2	62.1	4.0	18.2	1.2	66	0.29	0.0830	0.0140	0.01079	0.00038	0.1057	0.0579	0.0098	82.0	13.0	69.2	2.4	990	170	15.6	1.0
171	20.4	81.3	6.3	83.1	3.7	101	1.02	0.0736	0.0087	0.01082	0.00035	0.0575	0.0519	0.0065	71.4	8.3	69.4	2.2	680	110	2.8	0.2

Table 14: LA-ICP-MS Zircon Isotopic and Age Data Table: SC15-14: Scott County, KS Paleosol Sample

								Corrected Isotopic Ratios[5]							Ages (Ma)[7]							
Grain #	Signal Duration (s)	U (ppm)[1]	2σ	Th (ppm)[3]	2σ	eU (ppm)[2]	Th/U	$^{207}Pb/^{235}U$	2σ[4]	$^{206}Pb/^{238}U$	2σ[4]	Rho[8]	$^{207}Pb/^{206}Pb$[6]	2σ	$^{207}Pb/^{235}U$	2σ	$^{206}Pb/^{238}U$	2σ	$^{207}Pb/^{206}Pb$	2σ	% Disc.[8]	Uncert. Wtd. Disc.[9]
235	21.5	28.9	1.9	19.9	0.8	34	0.69	0.0620	0.0170	0.01082	0.00047	0.0327	0.0390	0.0110	58.0	16.0	69.4	3.0	850	130	-19.7	-0.7
216	18.5	53.2	2.2	52.7	1.7	66	0.99	0.0850	0.0140	0.01090	0.00041	0.1144	0.0555	0.0097	83.0	13.0	69.9	2.6	1000	160	15.8	1.0
18	18.5	19.5	1.0	5.7	0.6	21	0.29	0.0870	0.0360	0.01093	0.00076	0.1377	0.0570	0.0250	75.0	33.0	70.0	4.8	1580	330	6.7	0.2
25	21.7	58.7	1.8	59.5	2.2	73	1.01	0.0780	0.0120	0.01095	0.00043	0.0425	0.0512	0.0076	76.0	11.0	70.2	2.8	740	100	7.6	0.5
180	22.4	89.1	2.7	41.6	0.9	99	0.47	0.0798	0.0098	0.01094	0.00029	0.1583	0.0519	0.0062	77.1	9.2	70.2	1.9	720	120	8.9	0.7
37	22.4	256.0	12.0	181.4	8.8	299	0.71	0.0704	0.0044	0.01098	0.00022	0.0339	0.0469	0.0029	69.0	4.1	70.4	1.4	373	76	-2.0	-0.3
117	21.8	264.0	9.3	54.2	1.8	277	0.21	0.0749	0.0042	0.01098	0.00022	0.3440	0.0504	0.0027	73.2	4.0	70.4	1.4	362	46	3.8	0.7
291	12.6	34.0	2.3	15.8	1.1	38	0.46	0.0640	0.0240	0.01098	0.00063	0.1808	0.0420	0.0160	60.0	22.0	70.4	4.0	1130	320	-17.3	-0.5
208	22.4	359.0	16.0	276.0	17.0	424	0.77	0.0732	0.0031	0.01099	0.00018	0.1151	0.0482	0.0020	72.0	3.0	70.5	1.2	289	50	2.1	0.5
211	22.4	16.3	1.3	12.4	0.9	19	0.76	0.0730	0.0310	0.01101	0.00082	0.1247	0.0580	0.0250	70.0	30.0	70.5	5.2	1710	290	-0.7	0.0
207	19.3	52.5	3.8	47.8	2.8	64	0.91	0.0820	0.0130	0.01103	0.00043	0.2035	0.0536	0.0085	79.0	12.0	70.7	2.7	770	110	10.5	0.7
9	22.4	149.0	15.0	272.0	31.0	213	1.83	0.0781	0.0069	0.01105	0.00032	0.2207	0.0501	0.0052	75.9	6.6	70.8	2.1	528	84	6.7	0.8
245	22.4	1041.0	80.0	438.0	26.0	1144	0.42	0.0718	0.0024	0.01107	0.00015	0.3544	0.0474	0.0013	70.4	2.2	71.0	1.0	159	29	-0.8	-0.2
28	22.4	71.2	3.1	40.7	1.0	81	0.57	0.0690	0.0098	0.01111	0.00034	0.1011	0.0459	0.0069	68.0	9.5	71.2	2.1	700	130	-4.7	-0.3
86	22.4	119.2	5.4	29.6	1.3	126	0.25	0.0755	0.0072	0.01111	0.00038	0.3405	0.0490	0.0044	74.3	6.7	71.2	2.4	585	88	4.2	0.5
150	19.3	32.8	2.1	27.7	1.7	39	0.84	0.0970	0.0220	0.01110	0.00057	0.3265	0.0650	0.0140	90.0	21.0	71.2	3.6	1110	170	20.9	0.9
264	20.8	156.2	8.7	58.6	3.4	170	0.38	0.0785	0.0068	0.01111	0.00030	0.2229	0.0516	0.0043	76.4	6.4	71.2	1.9	551	86	6.8	0.8
51	22.4	36.7	2.2	13.3	1.2	40	0.36	0.0790	0.0180	0.01113	0.00040	0.1389	0.0490	0.0120	74.0	17.0	71.3	2.6	1020	140	3.6	0.2
59	22.0	103.7	4.5	41.3	3.0	113	0.40	0.0631	0.0059	0.01113	0.00031	0.0328	0.0424	0.0041	62.5	5.5	71.3	2.0	500	110	-14.1	-1.6
242	22.4	68.2	3.8	17.6	0.8	72	0.26	0.0775	0.0098	0.01112	0.00035	0.2142	0.0506	0.0063	76.0	9.1	71.3	2.2	720	130	6.2	0.5
96	18.9	73.7	2.9	97.3	2.0	97	1.32	0.0727	0.0098	0.01115	0.00035	0.0942	0.0470	0.0062	70.5	9.2	71.5	2.2	670	130	-1.4	-0.1
203	22.4	229.0	20.0	210.0	17.0	278	0.92	0.0691	0.0048	0.01119	0.00025	0.0639	0.0448	0.0031	67.6	4.5	71.8	1.6	308	71	-6.2	-0.9
35	21.3	74.0	4.0	20.4	1.0	79	0.28	0.0722	0.0092	0.01123	0.00034	0.1175	0.0475	0.0062	72.2	8.4	72.0	2.2	540	110	0.3	0.0
36	21.5	108.2	7.6	16.0	0.8	112	0.15	0.0791	0.0073	0.01124	0.00029	0.1098	0.0511	0.0047	76.9	6.8	72.0	1.9	534	86	6.4	0.7
84	22.4	33.4	2.2	18.6	0.9	38	0.56	0.0720	0.0180	0.01123	0.00054	0.1455	0.0540	0.0120	68.0	17.0	72.0	3.5	970	150	-5.9	-0.2
58	22.4	51.8	4.0	8.2	0.5	54	0.16	0.0720	0.0140	0.01128	0.00036	0.1636	0.0481	0.0087	69.0	13.0	72.3	2.3	780	140	-4.8	-0.3
62	22.4	210.0	13.0	68.2	3.8	226	0.32	0.0738	0.0056	0.01127	0.00021	0.1236	0.0474	0.0035	72.0	5.2	72.3	1.3	361	67	-0.4	-0.1
234	22.4	404.0	14.0	129.6	4.8	434	0.32	0.0752	0.0033	0.01129	0.00020	0.1666	0.0487	0.0021	73.5	3.1	72.3	1.3	259	49	1.6	0.4
205	22.4	60.7	3.3	45.1	2.1	71	0.74	0.0810	0.0120	0.01131	0.00035	0.0586	0.0521	0.0076	78.0	11.0	72.5	2.2	840	150	7.1	0.5
279	7.4	315.8	9.7	56.4	1.6	329	0.18	0.0695	0.0052	0.01136	0.00035	0.0136	0.0449	0.0035	68.2	4.9	72.8	2.2	250	95	-6.7	-0.9
130	22.4	306.2	6.2	93.4	3.4	328	0.31	0.0751	0.0042	0.01137	0.00019	0.0862	0.0489	0.0028	73.4	4.0	72.9	1.2	396	62	0.7	0.1
133	22.4	213.5	9.8	130.0	8.2	244	0.61	0.0742	0.0045	0.01138	0.00025	0.2116	0.0474	0.0027	73.0	4.3	72.9	1.6	289	65	0.1	0.0
256	22.4	46.7	2.7	40.7	2.5	56	0.87	0.0830	0.0120	0.01138	0.00036	0.0518	0.0511	0.0078	79.0	11.0	72.9	2.3	970	140	7.7	0.6
49	22.4	151.6	7.1	78.9	5.0	170	0.52	0.0779	0.0057	0.01140	0.00029	0.2096	0.0507	0.0037	75.9	5.4	73.1	1.9	356	61	3.7	0.5
113	20.8	203.5	7.2	121.6	7.8	232	0.60	0.0802	0.0052	0.01144	0.00026	0.2133	0.0498	0.0032	78.1	4.9	73.3	1.7	405	76	6.1	1.0
26	22.4	68.6	2.6	22.5	0.6	74	0.33	0.0800	0.0120	0.01145	0.00034	0.2092	0.0490	0.0071	77.0	11.0	73.4	2.2	790	110	4.7	0.3
22	22.4	50.1	3.1	9.4	0.5	52	0.19	0.0870	0.0130	0.01147	0.00042	0.0763	0.0522	0.0087	83.0	12.0	73.5	2.7	820	120	11.4	0.8
240	22.4	370.0	11.0	120.7	2.7	398	0.33	0.0772	0.0037	0.01146	0.00019	0.0769	0.0497	0.0022	75.4	3.5	73.5	1.2	301	47	2.5	0.5
123	21.0	92.0	3.2	47.9	1.3	103	0.52	0.0885	0.0088	0.01148	0.00028	0.0170	0.0561	0.0054	85.4	8.2	73.6	1.8	670	100	13.8	1.4
139	22.0	58.0	1.9	56.0	2.5	71	0.97	0.0810	0.0140	0.01150	0.00032	0.2270	0.0521	0.0088	79.0	13.0	73.7	2.0	840	120	6.7	0.4
293	19.4	100.4	8.4	23.8	2.4	106	0.24	0.0750	0.0076	0.01153	0.00036	0.2017	0.0461	0.0047	73.0	7.2	73.9	2.3	540	110	-1.2	-0.1

Table 14: LA-ICP-MS Zircon Isotopic and Age Data Table: SC15-14: Scott County, KS Paleosol Sample

								Corrected Isotopic Ratios[5]							Ages (Ma)[7]							
Grain #	Signal Duration (s)	U (ppm)[1]	2σ	Th (ppm)[1]	2σ	eU (ppm)[2]	Th/U	$^{207}Pb/^{235}U$	2σ[4]	$^{206}Pb/^{238}U$	2σ[4]	Rho[6]	$^{207}Pb/^{206}Pb$[6]	2σ	$^{207}Pb/^{235}U$	2σ	$^{206}Pb/^{238}U$	2σ	$^{207}Pb/^{206}Pb$	2σ	% Disc.[8]	Uncert. Wtd. Disc.[9]
78	22.4	100.7	4.4	34.9	1.2	109	0.35	0.0758	0.0098	0.01155	0.00034	0.2693	0.0484	0.0060	73.3	9.2	74.0	2.2	590	110	-1.0	-0.1
48	22.5	281.0	32.0	190.0	22.0	326	0.68	0.0732	0.0049	0.01157	0.00029	0.3263	0.0457	0.0030	71.5	4.7	74.1	1.8	293	69	-3.6	-0.6
268	22.4	94.7	6.4	32.0	1.8	102	0.34	0.0735	0.0075	0.01158	0.00033	0.0086	0.0481	0.0050	71.6	7.0	74.2	2.1	551	90	-3.6	-0.4
276	22.4	59.2	2.7	24.2	0.9	65	0.41	0.0770	0.0110	0.01158	0.00043	0.0652	0.0487	0.0068	76.0	11.0	74.2	2.8	606	94	2.4	0.2
111	18.3	217.0	31.0	111.0	20.0	243	0.51	0.0789	0.0062	0.01160	0.00029	0.2830	0.0479	0.0034	76.9	5.8	74.3	1.9	446	88	3.4	0.4
142	8.7	123.1	5.9	43.0	1.2	133	0.35	0.0780	0.0110	0.01160	0.00052	0.1278	0.0498	0.0063	78.0	10.0	74.3	3.3	450	110	4.7	0.4
144	22.4	171.8	7.8	48.7	2.5	183	0.28	0.0784	0.0057	0.01159	0.00022	0.0139	0.0492	0.0036	76.9	5.2	74.3	1.4	400	71	3.4	0.5
134	17.5	108.8	6.3	29.4	1.9	116	0.27	0.0809	0.0067	0.01160	0.00036	0.0993	0.0523	0.0047	79.5	6.5	74.4	2.3	540	110	6.4	0.8
55	22.4	136.5	4.4	104.2	2.0	161	0.76	0.0696	0.0058	0.01163	0.00026	0.0158	0.0439	0.0037	68.1	5.5	74.5	1.6	375	75	-9.4	-1.2
137	15.8	80.1	1.0	79.0	1.2	99	0.99	0.0880	0.0130	0.01162	0.00043	0.0149	0.0536	0.0080	85.0	12.0	74.5	2.8	710	120	12.4	0.9
72	22.0	82.0	5.9	49.1	3.2	94	0.60	0.0793	0.0093	0.01169	0.00035	0.0683	0.0509	0.0058	76.7	8.7	74.9	2.2	660	110	2.3	0.2
200	22.4	39.0	1.9	23.9	1.6	45	0.61	0.0840	0.0150	0.01168	0.00047	0.0970	0.0550	0.0100	81.0	15.0	74.9	3.0	880	130	7.5	0.4
122	22.4	259.0	12.0	40.6	3.7	269	0.16	0.0772	0.0044	0.01171	0.00021	0.2246	0.0482	0.0026	75.8	4.2	75.0	1.3	297	57	1.1	0.2
38	16.8	376.0	7.1	447.0	11.0	481	1.19	0.0733	0.0039	0.01173	0.00021	0.0127	0.0454	0.0024	71.8	3.7	75.2	1.3	220	58	-4.7	-0.9
231	22.4	402.0	28.0	215.0	12.0	453	0.53	0.0775	0.0032	0.01179	0.00022	0.3137	0.0480	0.0019	75.7	3.0	75.6	1.4	225	40	0.1	0.0
39	20.8	39.0	2.0	23.9	1.2	45	0.61	0.0820	0.0140	0.01181	0.00048	0.0635	0.0506	0.0095	82.0	13.0	75.7	3.1	790	130	7.7	0.5
2	13.1	313.0	16.0	452.0	23.0	419	1.44	0.0785	0.0065	0.01185	0.00043	0.3592	0.0475	0.0031	76.5	6.1	75.9	2.8	306	75	0.8	0.1
3	22.4	59.6	3.1	58.9	3.0	73	0.99	0.0810	0.0120	0.01184	0.00042	0.1597	0.0479	0.0073	78.0	12.0	75.9	2.7	710	130	2.7	0.2
15	18.5	23.2	2.2	7.5	0.9	25	0.32	0.0950	0.0280	0.01185	0.00064	0.0423	0.0630	0.0190	86.0	26.0	75.9	4.1	1300	200	11.7	0.4
182	22.4	76.0	13.0	46.7	9.0	87	0.61	0.0850	0.0120	0.01186	0.00050	0.0909	0.0514	0.0079	81.0	12.0	76.0	3.2	720	150	6.2	0.4
230	22.4	99.4	8.3	126.0	13.0	129	1.27	0.0758	0.0080	0.01186	0.00028	0.0431	0.0482	0.0053	74.6	7.7	76.0	1.8	478	80	-1.9	-0.2
247	22.5	384.0	7.7	251.0	13.0	443	0.65	0.0779	0.0032	0.01187	0.00021	0.1077	0.0481	0.0018	76.1	3.0	76.0	1.3	224	37	0.1	0.0
298	22.4	190.4	3.6	102.1	2.6	214	0.54	0.0814	0.0049	0.01186	0.00027	0.2304	0.0480	0.0027	79.2	4.6	76.0	1.7	436	73	4.0	0.7
246	22.4	86.7	9.0	64.7	6.9	102	0.75	0.0753	0.0095	0.01189	0.00034	0.0703	0.0452	0.0057	72.9	8.9	76.2	2.2	590	110	-4.5	-0.4
23	22.4	189.0	8.2	61.0	2.2	203	0.32	0.0809	0.0050	0.01198	0.00027	0.0459	0.0486	0.0032	78.8	4.7	76.8	1.7	369	72	2.5	0.4
295	22.4	101.7	7.4	60.7	4.3	116	0.60	0.0809	0.0074	0.01199	0.00033	0.1230	0.0472	0.0042	78.5	6.9	76.8	2.1	446	80	2.2	0.2
31	21.4	173.0	13.0	107.7	9.0	198	0.62	0.0806	0.0057	0.01200	0.00025	0.1937	0.0473	0.0031	79.1	5.4	76.9	1.6	385	52	2.8	0.4
83	22.4	85.2	4.4	87.7	3.5	106	1.03	0.0729	0.0082	0.01200	0.00033	0.0547	0.0457	0.0056	70.8	7.8	76.9	2.1	570	130	-8.6	-0.8
91	22.4	470.0	46.0	184.0	21.0	513	0.39	0.0807	0.0036	0.01203	0.00026	0.1648	0.0474	0.0020	78.7	3.4	77.1	1.7	257	48	2.0	0.5
106	22.4	244.0	19.0	17.3	1.2	248	0.07	0.0765	0.0043	0.01207	0.00026	0.1650	0.0455	0.0025	74.7	4.1	77.4	1.7	222	53	-3.6	-0.7
263	12.6	46.1	3.5	43.3	2.0	56	0.94	0.0830	0.0150	0.01208	0.00067	0.0846	0.0540	0.0120	85.0	14.0	77.4	4.3	830	140	8.9	0.5
46	22.4	79.5	4.9	60.1	3.9	94	0.76	0.0814	0.0097	0.01211	0.00038	0.2786	0.0515	0.0058	80.8	8.8	77.6	2.4	580	100	4.0	0.4
188	22.4	196.6	9.7	56.9	1.7	210	0.29	0.0830	0.0052	0.01212	0.00032	0.1509	0.0496	0.0030	80.7	4.9	77.7	2.0	332	57	3.7	0.6
265	21.3	22.6	2.0	6.9	0.6	24	0.30	0.0830	0.0240	0.01215	0.00054	0.0740	0.0570	0.0160	79.0	21.0	77.8	3.5	1210	220	1.5	0.1
79	3.5	22.5	1.2	12.9	0.5	26	0.57	0.0910	0.0780	0.01220	0.00200	0.4796	0.0670	0.0500	81.0	72.0	78.0	12.0	1430	390	3.7	0.0
197	20.3	126.6	6.3	141.7	9.0	160	1.12	0.0844	0.0066	0.01217	0.00031	0.0930	0.0515	0.0041	81.9	6.1	78.0	1.9	392	69	4.8	0.6
251	14.8	109.2	9.7	46.6	3.8	120	0.43	0.0733	0.0092	0.01222	0.00048	0.2487	0.0448	0.0055	71.3	8.7	78.3	3.1	362	95	-9.8	-0.8
7	22.4	321.0	15.0	153.0	25.0	357	0.48	0.0808	0.0039	0.01228	0.00034	0.3567	0.0476	0.0023	78.8	3.7	78.7	2.2	247	47	0.1	0.0
196	8.5	229.8	6.7	48.8	1.8	241	0.21	0.0807	0.0059	0.01239	0.00044	0.0205	0.0482	0.0037	78.7	5.6	79.3	2.8	255	86	-0.8	-0.1
290	22.4	274.0	17.0	112.0	13.0	300	0.41	0.0848	0.0045	0.01245	0.00024	0.3738	0.0491	0.0025	82.5	4.2	79.8	1.6	320	46	3.3	0.6
12	21.4	17.7	2.0	13.7	1.7	21	0.77	0.0710	0.0420	0.01269	0.00081	0.1756	0.0480	0.0310	71.0	40.0	81.2	5.1	1270	210	-14.4	-0.3

Table 14: LA-ICP-MS Zircon Isotopic and Age Data Table: SC15-14: Scott County, KS Paleosol Sample

								Corrected Isotopic Ratios[5]							Ages (Ma)[7]							
Grain #	Signal Duration (s)	U (ppm)[1]	2σ	Th (ppm)[1]	2σ	eU (ppm)[2]	Th/U	$^{207}Pb/^{235}U$	2σ[4]	$^{206}Pb/^{238}U$	2σ[4]	Rho[6]	$^{207}Pb/^{206}Pb$[6]	2σ	$^{207}Pb/^{235}U$	2σ	$^{206}Pb/^{238}U$	2σ	$^{207}Pb/^{206}Pb$	2σ	% Disc.[8]	Uncert. Wtd. Disc.[9]
94	22.4	493.0	31.0	394.0	14.0	586	0.80	0.0840	0.0029	0.01276	0.00026	0.2932	0.0481	0.0016	81.9	2.7	81.7	1.6	191	31	0.2	0.1
42	13.4	113.7	6.0	110.0	18.0	140	0.97	0.0885	0.0093	0.01281	0.00032	0.0620	0.0498	0.0054	85.6	8.7	82.0	2.0	580	130	4.2	0.4
147	17.5	327.0	56.0	384.0	65.0	417	1.17	0.0861	0.0059	0.01321	0.00032	0.1597	0.0458	0.0031	83.7	5.5	84.6	2.0	258	56	-1.1	-0.2
101	9.8	178.0	15.0	207.0	17.0	227	1.16	0.0856	0.0066	0.01349	0.00045	0.2836	0.0459	0.0035	84.6	5.8	86.4	2.8	290	88	-2.1	-0.3
108	21.5	107.7	9.7	76.5	8.2	126	0.71	0.0812	0.0098	0.01356	0.00054	0.1445	0.0423	0.0052	78.4	9.2	86.8	3.5	670	120	-10.7	-0.9
75	21.4	204.0	14.0	213.0	15.0	254	1.04	0.0924	0.0054	0.01378	0.00033	0.1584	0.0483	0.0029	89.5	5.0	88.2	2.1	329	63	1.5	0.3
74	8.7	591.0	30.0	155.0	14.0	627	0.26	0.0983	0.0054	0.01400	0.00043	0.5099	0.0501	0.0023	95.1	5.0	89.6	2.8	257	52	5.8	1.1
278	22.4	270.7	6.6	82.8	1.6	290	0.31	0.0980	0.0051	0.01444	0.00026	0.3423	0.0485	0.0023	94.7	4.7	92.4	1.6	307	49	2.4	0.5
105	22.4	241.0	30.0	159.0	23.0	278	0.66	0.0976	0.0070	0.01447	0.00032	0.0783	0.0489	0.0034	94.9	6.3	92.6	2.1	347	57	2.4	0.4
258	22.4	352.0	40.0	253.0	33.0	411	0.72	0.0982	0.0046	0.01453	0.00026	0.0282	0.0492	0.0025	95.5	4.3	93.0	1.6	288	41	2.6	0.6
215	11.6	77.0	5.3	41.7	2.7	87	0.54	0.1020	0.0150	0.01481	0.00055	0.2913	0.0499	0.0073	98.0	14.0	94.7	3.5	620	130	3.4	0.2
82	22.4	397.0	36.0	163.0	12.0	435	0.41	0.0996	0.0044	0.01492	0.00028	0.2112	0.0489	0.0020	96.2	4.0	95.5	1.8	255	48	0.7	0.2
244	22.4	106.0	13.0	46.0	6.6	117	0.43	0.0964	0.0093	0.01509	0.00033	0.0174	0.0472	0.0048	93.8	8.4	96.5	2.1	440	98	-2.9	-0.3
44	22.4	227.0	16.0	115.2	6.3	254	0.51	0.1026	0.0056	0.01534	0.00035	0.1981	0.0481	0.0025	99.0	5.2	98.1	2.2	316	59	0.9	0.2
5	11.6	910.0	110.0	403.0	50.0	1005	0.44	0.1055	0.0076	0.01542	0.00097	0.6852	0.0501	0.0023	101.6	7.0	98.6	6.2	248	59	3.0	0.4
292	9.1	131.8	7.2	22.8	2.5	137	0.17	0.1120	0.0120	0.01552	0.00076	0.2735	0.0491	0.0047	107.0	11.0	99.3	4.8	318	80	7.2	0.7
236	20.7	203.8	6.6	93.7	4.4	226	0.46	0.1022	0.0051	0.01558	0.00034	0.0779	0.0470	0.0023	98.6	4.7	99.7	2.2	242	38	-1.1	-0.2
56	22.5	246.0	62.0	61.9	3.7	261	0.25	0.1033	0.0064	0.01560	0.00032	0.1513	0.0492	0.0030	99.5	5.9	99.8	2.0	357	66	-0.3	-0.1
269	22.4	371.0	6.6	110.1	1.8	397	0.30	0.1052	0.0046	0.01592	0.00026	0.3204	0.0486	0.0019	101.4	4.2	101.8	1.7	237	37	-0.4	-0.1
115	21.5	67.5	3.3	119.5	5.0	96	1.77	0.5850	0.0330	0.01654	0.00048	0.3412	0.2570	0.0130	469.0	22.0	105.7	3.1	3221	69	77.5	16.5
77	22.4	126.6	4.3	98.4	3.4	150	0.78	0.1590	0.0086	0.02355	0.00046	0.2259	0.0485	0.0024	150.2	7.6	150.0	2.9	349	53	0.1	0.0
252	22.4	93.9	5.3	62.7	2.5	109	0.67	0.1598	0.0100	0.02371	0.00052	0.1115	0.0500	0.0032	150.8	8.9	151.0	3.3	353	57	-0.1	0.0
281	17.2	599.0	71.0	392.0	32.0	691	0.65	0.1695	0.0052	0.02452	0.00037	0.3563	0.0489	0.0014	158.9	4.5	156.1	2.3	200	33	1.8	0.6
1	22.4	678.0	18.0	746.0	38.0	853	1.10	0.1676	0.0050	0.02487	0.00049	0.5171	0.0491	0.0012	157.6	4.2	158.4	3.1	189	25	-0.5	-0.2
226	22.4	62.3	4.3	70.5	5.2	79	1.13	0.1710	0.0160	0.02529	0.00053	0.1308	0.0487	0.0044	162.0	14.0	161.0	3.3	556	95	0.6	0.1
198	22.5	140.9	5.7	58.1	2.1	155	0.41	0.1744	0.0100	0.02553	0.00048	0.1151	0.0494	0.0029	162.5	8.7	162.5	3.0	381	61	0.0	0.0
194	22.4	245.0	12.0	389.4	9.3	337	1.59	0.1774	0.0070	0.02577	0.00040	0.1940	0.0503	0.0019	165.5	6.1	164.0	2.5	278	41	0.9	0.2
266	21.5	310.0	12.0	138.5	3.8	343	0.45	0.1761	0.0060	0.02587	0.00047	0.4261	0.0493	0.0015	164.5	5.2	164.6	2.9	214	30	-0.1	0.0
165	22.4	219.0	3.8	147.8	5.8	254	0.67	0.1811	0.0074	0.02666	0.00042	0.0990	0.0497	0.0020	169.4	6.3	169.6	2.7	267	39	-0.1	0.0
47	22.0	105.4	5.9	44.2	2.3	116	0.42	0.1787	0.0100	0.02676	0.00056	0.0251	0.0489	0.0028	167.2	8.5	170.2	3.5	312	56	-1.8	-0.4
57	21.1	210.0	18.0	170.0	19.0	250	0.81	0.1852	0.0084	0.02678	0.00064	0.5227	0.0508	0.0020	174.0	7.6	170.4	4.0	281	42	2.1	0.5
248	22.4	194.0	12.0	97.0	4.6	217	0.50	0.1836	0.0066	0.02686	0.00048	0.2336	0.0498	0.0019	170.9	5.7	170.8	3.0	242	35	0.1	0.0
69	22.2	258.0	20.0	229.0	17.0	312	0.89	0.1977	0.0081	0.02776	0.00061	0.4359	0.0515	0.0017	182.8	6.9	176.5	3.8	300	42	3.4	0.9
85	18.3	373.0	13.0	214.2	7.9	423	0.57	0.1922	0.0079	0.02853	0.00063	0.3862	0.0490	0.0018	178.2	6.7	181.3	4.0	254	47	-1.7	-0.5
271	21.5	342.0	25.0	120.9	8.0	370	0.35	0.1975	0.0072	0.02888	0.00065	0.5360	0.0495	0.0014	182.7	6.1	183.5	4.1	233	32	-0.4	-0.1
287	10.5	30.7	2.4	3.5	0.3	32	0.11	0.3800	0.0450	0.03240	0.00160	0.0136	0.0840	0.0100	329.0	31.0	205.7	9.8	1370	190	37.5	4.0
193	22.5	336.0	23.0	104.6	5.8	361	0.31	0.2583	0.0085	0.03630	0.00057	0.3090	0.0514	0.0015	233.6	6.8	229.9	3.6	282	34	1.6	0.5
34	22.4	329.7	9.7	280.0	22.0	396	0.85	0.2565	0.0079	0.03650	0.00060	0.4284	0.0506	0.0013	231.6	6.3	231.1	3.8	272	34	0.2	0.1
64	22.4	278.0	13.0	110.7	4.7	304	0.40	0.2746	0.0082	0.03844	0.00061	0.3065	0.0517	0.0014	246.1	6.5	243.1	3.8	266	36	1.2	0.5
148	22.4	334.0	16.0	137.4	5.3	366	0.41	0.2804	0.0076	0.03967	0.00054	0.2087	0.0509	0.0012	250.7	6.1	250.8	3.4	239	29	0.0	0.0
243	20.8	168.5	9.1	76.6	2.2	187	0.45	0.2758	0.0100	0.04012	0.00066	0.2404	0.0508	0.0017	246.8	8.0	253.6	4.1	293	44	-2.8	-0.8

Table 14: LA-ICP-MS Zircon Isotopic and Age Data Table: SC15-14: Scott County, KS Paleosol Sample

								Corrected Isotopic Ratios[5]							Ages (Ma)[7]							
Grain #	Signal Duration (s)	U (ppm)[1]	2σ	Th (ppm)[1]	2σ	eU (ppm)[2]	Th/U	$^{207}Pb/^{235}U$	2σ[4]	$^{206}Pb/^{238}U$	2σ[4]	Rho[5]	$^{207}Pb/^{206}Pb$[6]	2σ	$^{207}Pb/^{235}U$	2σ	$^{206}Pb/^{238}U$	2σ	$^{207}Pb/^{206}Pb$	2σ	% Disc.[8]	Uncert. Wtd. Disc.[9]
233	22.4	480.0	100.0	77.0	18.0	498	0.16	0.2930	0.0120	0.04054	0.00082	0.3092	0.0518	0.0019	260.4	9.8	256.2	5.1	321	39	1.6	0.4
164	22.4	139.5	4.5	102.0	2.7	163	0.73	0.2940	0.0130	0.04195	0.00070	0.3835	0.0508	0.0020	261.6	10.0	264.9	4.3	310	48	-1.3	-0.3
286	9.5	894.0	83.0	328.0	34.0	971	0.37	0.3067	0.0110	0.04230	0.00130	0.7088	0.0526	0.0015	271.4	8.3	266.9	7.9	300	42	1.7	0.5
131	22.4	279.0	18.0	99.3	6.4	302	0.36	0.4800	0.0150	0.06470	0.00110	0.3763	0.0544	0.0014	397.4	10.0	404.1	6.7	407	36	-1.7	-0.7
249	5.6	400.0	140.0	4.3	1.4	401	0.01	0.5490	0.0340	0.07030	0.00240	0.8182	0.0571	0.0024	443.0	22.0	438.0	15.0	520	56	1.1	0.2
76	13.4	79.9	2.8	27.8	1.0	86	0.35	0.6720	0.0290	0.08180	0.00190	0.0100	0.0609	0.0029	523.0	17.0	507.0	12.0	607	61	3.1	0.9
255	22.4	47.5	2.1	18.0	0.6	52	0.38	0.6480	0.0320	0.08200	0.00170	0.0195	0.0568	0.0028	506.0	20.0	509.2	10.0	619	56	-0.6	-0.2
98	22.4	88.0	5.5	29.1	1.5	95	0.33	0.6630	0.0230	0.08270	0.00130	0.1402	0.0574	0.0019	515.0	14.0	512.2	7.8	524	42	0.5	0.2
61	10.9	132.6	3.8	36.3	2.0	141	0.27	0.6910	0.0250	0.08410	0.00160	0.0498	0.0593	0.0020	533.0	15.0	520.6	9.3	610	49	2.3	0.8
192	22.4	59.1	5.4	14.9	1.3	63	0.25	0.6700	0.0270	0.08580	0.00160	0.1728	0.0568	0.0022	520.0	16.0	530.3	9.4	512	50	-2.0	-0.6
120	22.4	62.2	4.1	25.2	1.3	68	0.41	0.6930	0.0220	0.08700	0.00130	0.1942	0.0583	0.0019	535.0	14.0	537.5	7.7	535	33	-0.5	-0.2
116	22.4	202.0	14.0	101.1	7.5	226	0.50	0.7090	0.0170	0.08810	0.00130	0.2513	0.0583	0.0012	544.7	11.0	546.0	8.0	543	28	-0.2	-0.1
178	20.0	224.1	9.8	62.3	2.4	239	0.28	4.7100	0.1900	0.13350	0.00510	0.8863	0.2553	0.0055	1764.0	33.0	807.0	29.0	3213	23	54.3	29.0
143	22.4	99.1	2.7	21.5	2.1	104	0.22	1.5270	0.0360	0.15960	0.00230	0.1561	0.0696	0.0015	940.0	15.0	954.0	13.0	923	22	-1.5	-0.9
224	22.4	183.6	9.1	53.1	1.7	196	0.29	1.8830	0.0400	0.18000	0.00200	0.4822	0.0759	0.0012	1076.5	14.0	1066.7	11.0	1101	19	0.9	0.7
261	22.4	47.7	2.1	29.1	0.9	55	0.61	1.8250	0.0620	0.18100	0.00340	0.5165	0.0739	0.0022	1053.0	23.0	1072.0	19.0	1046	30	-1.8	-0.8
222	22.4	89.4	2.4	52.1	1.1	102	0.58	1.8700	0.0460	0.18110	0.00270	0.4495	0.0755	0.0015	1069.0	16.0	1073.0	15.0	1080	23	-0.4	-0.3
273	22.4	138.2	6.5	46.1	1.7	149	0.33	1.9110	0.0430	0.18120	0.00300	0.5598	0.0765	0.0013	1084.0	15.0	1073.0	17.0	1106	23	1.0	0.7
43	20.3	83.5	2.3	44.7	2.5	94	0.54	1.8480	0.0540	0.18270	0.00320	0.3996	0.0757	0.0019	1063.0	20.0	1081.0	18.0	1100	32	-1.7	-0.9
10	22.4	61.1	2.9	42.3	1.5	71	0.69	1.9160	0.0520	0.18270	0.00300	0.3142	0.0770	0.0018	1086.0	19.0	1082.0	16.0	1103	29	0.4	0.2
33	22.4	76.8	4.8	54.6	3.2	90	0.71	1.9880	0.0520	0.18650	0.00280	0.3405	0.0760	0.0016	1111.0	17.0	1102.0	15.0	1098	30	0.8	0.5
214	22.4	96.9	1.9	45.3	0.9	108	0.47	1.9530	0.0470	0.18700	0.00280	0.4484	0.0760	0.0014	1099.0	16.0	1105.0	15.0	1102	21	-0.5	-0.4
220	12.0	141.5	7.9	67.0	3.2	157	0.47	1.9900	0.0540	0.18850	0.00340	0.2482	0.0760	0.0019	1111.0	18.0	1113.0	19.0	1118	28	-0.2	-0.1
145	10.4	143.0	18.0	69.8	8.0	159	0.49	2.2520	0.0800	0.20090	0.00450	0.3671	0.0823	0.0028	1195.0	25.0	1180.0	24.0	1253	47	1.3	0.6
53	21.8	248.0	26.0	70.7	5.6	265	0.29	3.0100	0.1400	0.20550	0.00950	0.9663	0.1063	0.0016	1398.0	36.0	1201.0	51.0	1743	21	14.1	5.5
67	21.1	44.4	3.3	10.5	0.3	47	0.24	2.4860	0.0740	0.20770	0.00380	0.4444	0.0874	0.0023	1265.0	22.0	1216.0	20.0	1372	30	3.9	2.2
237	21.8	315.0	33.0	251.0	23.0	374	0.80	2.7710	0.1000	0.21430	0.00740	0.9393	0.0950	0.0015	1347.0	27.0	1249.0	39.0	1531	18	7.3	3.6
107	20.7	86.1	9.2	75.9	8.4	104	0.88	3.1480	0.0800	0.21450	0.00340	0.3814	0.1037	0.0019	1444.0	19.0	1252.0	18.0	1696	19	13.3	10.1
172	22.4	21.1	0.8	11.8	0.5	24	0.56	2.4940	0.0940	0.21770	0.00390	0.1906	0.0837	0.0032	1274.0	28.0	1269.0	21.0	1303	39	0.4	0.2
138	21.8	25.1	1.3	11.1	0.5	28	0.44	2.5620	0.1100	0.21980	0.00390	0.3812	0.0839	0.0032	1288.0	32.0	1280.0	20.0	1334	38	0.6	0.3
129	22.5	257.0	25.0	32.7	2.9	265	0.13	3.0070	0.1100	0.22070	0.00780	0.9349	0.1012	0.0016	1409.0	27.0	1283.0	41.0	1647	17	8.9	4.7
14	21.4	12.6	0.4	4.8	0.2	14	0.38	2.6900	0.1300	0.22200	0.00530	0.3401	0.0852	0.0037	1314.0	35.0	1295.0	29.0	1346	45	1.4	0.5
93	21.8	456.0	80.0	130.0	21.0	487	0.29	3.1570	0.1100	0.22280	0.00590	0.9064	0.1016	0.0016	1444.0	28.0	1295.0	31.0	1662	22	10.3	5.3
103	17.3	41.0	2.0	21.4	1.0	46	0.52	2.6100	0.0820	0.22470	0.00360	0.3567	0.0849	0.0025	1300.0	23.0	1306.0	19.0	1322	32	-0.5	-0.3
8	22.5	441.0	28.0	117.0	13.0	468	0.27	2.9810	0.1100	0.22550	0.00710	0.9614	0.0957	0.0014	1399.0	28.0	1314.0	36.0	1541	15	6.1	3.0
136	22.4	63.5	3.8	50.4	2.8	75	0.79	2.7200	0.0700	0.22930	0.00390	0.4510	0.0864	0.0019	1333.0	19.0	1330.0	20.0	1354	25	0.2	0.2
204	22.4	67.2	5.5	35.0	2.8	75	0.52	2.7290	0.0770	0.22940	0.00380	0.3651	0.0873	0.0021	1335.0	21.0	1331.0	20.0	1381	24	0.3	0.2
160	12.2	60.6	4.9	83.8	6.8	80	1.38	2.8010	0.0940	0.23060	0.00580	0.5720	0.0903	0.0024	1353.0	25.0	1337.0	30.0	1431	28	1.2	0.6
272	9.0	146.3	3.9	47.9	1.6	158	0.33	2.7930	0.0910	0.23050	0.00440	0.3216	0.0886	0.0027	1352.0	24.0	1337.0	23.0	1399	33	1.1	0.6
213	22.4	57.9	3.8	29.6	1.9	65	0.51	2.7910	0.0720	0.23120	0.00380	0.4653	0.0879	0.0018	1353.0	20.0	1340.0	20.0	1394	24	1.0	0.7
6	22.7	446.0	10.0	26.4	2.6	452	0.06	2.9090	0.0870	0.23200	0.00780	0.7880	0.0914	0.0021	1381.0	23.0	1342.0	41.0	1464	15	2.8	1.7

Table 14: LA-ICP-MS Zircon Isotopic and Age Data Table: SC15-14: Scott County, KS Paleosol Sample

								Corrected Isotopic Ratios[5]							Ages (Ma)[7]							
Grain #	Signal Duration (s)	U (ppm)[1]	2σ	Th (ppm)[1]	2σ	eU (ppm)[2]	Th/U	$^{207}Pb/^{235}U$	2σ[4]	$^{206}Pb/^{238}U$	2σ[4]	Rho[5]	$^{207}Pb/^{206}Pb$[6]	2σ	$^{207}Pb/^{235}U$	2σ	$^{206}Pb/^{238}U$	2σ	$^{207}Pb/^{206}Pb$	2σ	% Disc.[8]	Uncert. Wtd. Disc.[9]
232	22.4	104.4	4.5	37.5	0.8	113	0.36	2.7410	0.0650	0.23230	0.00370	0.5515	0.0873	0.0015	1338.0	18.0	1346.0	19.0	1360	20	-0.6	-0.4
195	22.4	102.6	4.6	18.9	0.7	107	0.18	2.8160	0.0730	0.23320	0.00420	0.5554	0.0886	0.0016	1358.0	19.0	1351.0	22.0	1392	22	0.5	0.4
20	21.5	43.2	2.6	48.7	2.8	55	1.13	2.9750	0.0990	0.23440	0.00470	0.5610	0.0885	0.0022	1399.0	25.0	1360.0	25.0	1403	31	2.8	1.6
73	21.4	62.7	2.4	47.7	1.9	74	0.76	2.9420	0.0740	0.23800	0.00440	0.4020	0.0893	0.0020	1391.0	19.0	1378.0	23.0	1411	22	0.9	0.7
52	22.4	83.7	5.7	32.6	2.1	91	0.39	2.9770	0.0710	0.24080	0.00350	0.6909	0.0909	0.0015	1402.0	18.0	1390.0	18.0	1442	20	0.9	0.7
238	22.4	55.4	5.0	34.6	2.9	64	0.62	2.9950	0.0820	0.24180	0.00390	0.3164	0.0905	0.0020	1408.0	20.0	1395.0	20.0	1452	24	0.9	0.7
210	19.4	337.0	30.0	363.0	19.0	422	1.08	2.9860	0.0730	0.24080	0.00450	0.7871	0.0906	0.0014	1402.0	19.0	1396.0	24.0	1433	16	0.4	0.3
41	22.4	137.0	13.0	40.9	2.7	147	0.30	3.0040	0.0670	0.24260	0.00320	0.5537	0.0918	0.0015	1410.0	17.0	1400.0	16.0	1461	15	0.7	0.6
88	22.4	80.1	4.3	38.7	1.8	89	0.48	3.0330	0.0780	0.24320	0.00410	0.4750	0.0916	0.0019	1415.0	20.0	1403.0	21.0	1482	20	0.8	0.6
163	22.0	128.5	4.7	53.4	1.6	141	0.42	3.0530	0.0690	0.24380	0.00380	0.5842	0.0913	0.0016	1420.0	17.0	1406.0	20.0	1461	18	1.0	0.8
40	22.4	114.2	8.3	31.8	0.6	122	0.28	3.0140	0.0760	0.24400	0.00350	0.6348	0.0909	0.0015	1414.0	18.0	1407.0	18.0	1447	20	0.5	0.4
11	22.4	57.4	5.9	27.8	3.1	64	0.48	3.0120	0.0830	0.24500	0.00410	0.3501	0.0903	0.0021	1414.0	21.0	1412.0	21.0	1422	26	0.1	0.1
267	22.4	60.9	2.3	39.1	1.5	70	0.64	3.0770	0.0790	0.24530	0.00450	0.4302	0.0917	0.0020	1428.0	19.0	1413.0	23.0	1457	21	1.1	0.8
81	21.5	116.0	11.0	27.1	0.8	122	0.23	3.0180	0.0810	0.24560	0.00360	0.6157	0.0891	0.0017	1411.0	21.0	1415.0	19.0	1412	18	-0.3	-0.2
126	22.4	50.2	2.0	36.0	1.0	59	0.72	3.0140	0.0790	0.24550	0.00350	0.3500	0.0902	0.0020	1411.0	20.0	1415.0	18.0	1433	23	-0.3	-0.2
21	17.9	68.3	6.9	29.7	3.5	75	0.43	3.1270	0.0920	0.24620	0.00550	0.6768	0.0891	0.0019	1439.0	22.0	1418.0	29.0	1423	18	1.5	1.0
89	22.5	120.7	7.8	62.5	2.9	135	0.52	3.0610	0.0680	0.24660	0.00360	0.5207	0.0909	0.0015	1424.0	17.0	1421.0	19.0	1438	17	0.2	0.2
250	15.0	548.0	81.0	120.4	4.0	576	0.22	3.0870	0.0950	0.24690	0.00680	0.9215	0.0918	0.0014	1427.0	24.0	1421.0	35.0	1459	16	0.4	0.3
128	22.4	265.0	18.0	111.3	6.3	291	0.42	3.0630	0.0620	0.24720	0.00290	0.5198	0.0906	0.0013	1422.7	15.0	1424.0	15.0	1436	17	-0.1	-0.1
225	22.4	129.4	8.6	50.6	2.8	141	0.39	3.0740	0.0670	0.24780	0.00360	0.5502	0.0906	0.0014	1425.0	17.0	1429.0	18.0	1439	15	-0.3	-0.2
99	19.7	48.2	3.9	27.3	1.9	55	0.57	3.0980	0.0940	0.24850	0.00380	0.4117	0.0910	0.0024	1431.0	24.0	1430.0	20.0	1458	26	0.1	0.0
109	20.8	86.5	5.1	29.5	1.7	93	0.34	3.1430	0.0810	0.24850	0.00370	0.4454	0.0913	0.0018	1441.0	20.0	1430.0	19.0	1459	20	0.8	0.6
87	22.4	91.4	4.6	61.5	2.9	106	0.67	3.0640	0.0890	0.24910	0.00550	0.6195	0.0908	0.0020	1422.0	22.0	1432.0	28.0	1439	24	-0.7	-0.5
300	14.0	330.0	61.0	37.6	1.4	339	0.11	3.2730	0.0920	0.24930	0.00570	0.7778	0.0932	0.0016	1473.0	22.0	1434.0	30.0	1487	19	2.6	1.8
156	22.4	75.0	2.2	27.9	0.6	82	0.37	3.1060	0.0780	0.24910	0.00430	0.4649	0.0895	0.0018	1432.0	19.0	1436.0	22.0	1422	24	-0.3	-0.2
201	22.4	111.7	7.7	59.9	3.0	126	0.54	3.0770	0.0720	0.24980	0.00360	0.5048	0.0906	0.0015	1428.0	18.0	1437.0	18.0	1449	22	-0.6	-0.5
219	21.7	74.4	3.9	40.5	1.9	84	0.54	3.0960	0.0760	0.24980	0.00340	0.2370	0.0905	0.0019	1433.0	18.0	1437.0	18.0	1450	19	-0.3	-0.2
221	19.3	274.0	13.0	9.6	0.5	276	0.04	3.2000	0.0810	0.25110	0.00430	0.7531	0.0934	0.0013	1459.0	19.0	1444.0	22.0	1504	19	1.0	0.8
177	16.9	250.0	21.0	132.5	6.8	281	0.53	3.1990	0.0800	0.25180	0.00430	0.5989	0.0911	0.0016	1455.0	19.0	1450.0	23.0	1455	19	0.3	0.3
168	20.8	90.8	5.6	58.6	2.1	105	0.65	3.1120	0.0760	0.25410	0.00390	0.5183	0.0909	0.0017	1436.0	19.0	1461.0	20.0	1444	24	-1.7	-1.3
185	22.4	182.0	10.0	60.8	2.9	196	0.33	3.1990	0.0710	0.25440	0.00430	0.7043	0.0906	0.0014	1457.0	18.0	1463.0	22.0	1445	16	-0.4	-0.3
13	22.2	76.7	4.4	67.3	2.7	93	0.88	3.1570	0.0800	0.25540	0.00410	0.5636	0.0893	0.0017	1445.0	20.0	1466.0	21.0	1419	21	-1.5	-1.1
112	21.8	83.6	5.7	30.0	1.8	91	0.36	3.2800	0.0860	0.25950	0.00410	0.5858	0.0906	0.0019	1480.0	20.0	1487.0	21.0	1435	21	-0.5	-0.4
135	21.8	89.5	5.6	51.6	2.9	102	0.58	3.2510	0.0750	0.26330	0.00480	0.5631	0.0906	0.0017	1468.0	18.0	1508.0	24.0	1443	16	-2.7	-2.2
32	22.0	416.0	28.0	72.2	7.2	433	0.17	3.8150	0.0840	0.26920	0.00440	0.8244	0.1023	0.0014	1597.0	17.0	1536.0	22.0	1671	15	3.8	3.6
294	20.7	110.0	12.0	24.8	1.7	116	0.23	4.0380	0.1000	0.27050	0.00550	0.6832	0.1051	0.0019	1642.0	21.0	1542.0	28.0	1723	18	6.1	4.8
270	22.0	135.3	2.8	33.9	1.0	143	0.25	3.6550	0.0830	0.27130	0.00430	0.4206	0.0983	0.0019	1562.0	18.0	1547.0	22.0	1613	23	1.0	0.8
299	22.2	448.0	47.0	120.3	6.8	476	0.27	3.8540	0.1200	0.27290	0.00660	0.8721	0.1001	0.0016	1602.0	24.0	1554.0	34.0	1633	17	3.0	2.0
296	22.2	267.0	44.0	79.7	8.0	286	0.30	4.1100	0.1500	0.27540	0.00950	0.9498	0.1070	0.0016	1656.0	32.0	1564.0	48.0	1751	15	5.6	2.9
175	22.4	135.0	15.0	41.0	2.2	145	0.30	3.9440	0.0960	0.27510	0.00400	0.6485	0.1034	0.0019	1626.0	21.0	1566.0	20.0	1688	19	3.7	2.9
100	21.8	26.0	2.8	10.2	1.0	28	0.39	3.4120	0.1100	0.27700	0.00540	0.4239	0.0893	0.0023	1506.0	24.0	1575.0	27.0	1424	32	-4.6	-2.9

Table 14: LA-ICP-MS Zircon Isotopic and Age Data Table: SC15-14: Scott County, KS Paleosol Sample

								Corrected Isotopic Ratios[3]							Ages (Ma)[7]							
Grain #	Signal Duration (s)	U (ppm)[1]	2σ	Th (ppm)[1]	2σ	eU (ppm)[2]	Th/U	$^{207}Pb/^{235}U$	2σ[4]	$^{206}Pb/^{238}U$	2σ[4]	Rho[5]	$^{207}Pb/^{206}Pb$[6]	2σ	$^{207}Pb/^{235}U$	2σ	$^{206}Pb/^{238}U$	2σ	$^{207}Pb/^{206}Pb$	2σ	% Disc.[8]	Uncert. Wtd. Disc.[9]
155	22.2	122.6	5.3	32.4	1.3	130	0.26	3.9650	0.0850	0.27740	0.00420	0.4841	0.1029	0.0017	1626.0	17.0	1578.0	21.0	1678	17	3.0	2.8
154	21.7	304.0	5.8	72.5	2.3	321	0.24	4.1370	0.1100	0.27990	0.00550	0.8864	0.1067	0.0014	1659.0	21.0	1590.0	28.0	1745	12	4.2	3.3
169	22.4	141.0	21.0	16.5	1.1	145	0.12	3.9300	0.1300	0.28440	0.00680	0.7813	0.1031	0.0019	1618.0	26.0	1616.0	35.0	1649	23	0.1	0.1
218	21.5	356.0	13.0	35.1	1.2	364	0.10	4.1200	0.0840	0.28720	0.00330	0.5751	0.1045	0.0014	1658.4	16.0	1627.0	17.0	1699	14	1.9	2.0
65	22.1	719.0	48.0	329.3	9.9	796	0.46	4.1520	0.0870	0.28760	0.00400	0.7732	0.1038	0.0014	1665.0	17.0	1629.0	20.0	1696	13	2.2	2.1
254	22.4	39.5	2.4	48.5	2.4	51	1.23	4.0450	0.1000	0.28800	0.00490	0.3848	0.1030	0.0023	1645.0	21.0	1630.0	25.0	1713	22	0.9	0.7
212	19.2	80.7	6.4	24.0	2.1	86	0.30	4.1030	0.0980	0.28890	0.00520	0.4188	0.1030	0.0022	1653.0	20.0	1635.0	26.0	1686	19	1.1	0.9
262	22.4	97.2	6.4	33.1	1.9	105	0.34	3.9800	0.1000	0.28880	0.00460	0.5444	0.1007	0.0019	1633.0	20.0	1635.0	23.0	1632	15	-0.1	-0.1
217	22.4	59.1	2.0	15.4	0.6	63	0.26	4.1000	0.0940	0.28920	0.00450	0.4821	0.1035	0.0019	1654.0	18.0	1637.0	23.0	1685	18	1.0	0.9
184	22.5	130.0	14.0	73.1	2.1	147	0.56	4.0930	0.0950	0.28910	0.00560	0.6758	0.1034	0.0018	1656.0	20.0	1639.0	29.0	1682	17	1.0	0.9
71	21.7	49.6	2.6	15.9	0.8	53	0.32	4.2110	0.1100	0.29090	0.00530	0.4970	0.1054	0.0023	1674.0	21.0	1645.0	27.0	1700	20	1.7	1.4
152	22.5	304.8	7.5	194.6	3.8	351	0.64	4.1370	0.0920	0.29080	0.00480	0.7269	0.1026	0.0016	1660.0	18.0	1645.0	24.0	1678	18	0.9	0.8
228	21.5	226.0	18.0	59.5	2.1	240	0.26	4.1750	0.0810	0.29110	0.00340	0.4861	0.1054	0.0014	1668.6	16.0	1647.0	17.0	1718	13	1.3	1.3
288	21.8	129.0	13.0	26.8	2.1	135	0.21	4.2520	0.0990	0.29230	0.00470	0.6032	0.1045	0.0018	1682.0	19.0	1652.0	24.0	1699	20	1.8	1.6
209	22.5	61.5	2.7	9.3	0.5	64	0.15	4.1880	0.1100	0.29320	0.00470	0.4747	0.1036	0.0022	1668.0	23.0	1657.0	23.0	1696	19	0.7	0.5
166	13.8	64.9	2.4	31.8	1.2	72	0.49	4.2050	0.1200	0.29380	0.00610	0.5775	0.1046	0.0023	1673.0	23.0	1659.0	30.0	1711	21	0.8	0.6
68	15.4	441.0	38.0	23.4	3.5	446	0.05	4.2120	0.0950	0.29380	0.00570	0.5998	0.1028	0.0020	1675.0	19.0	1660.0	28.0	1682	18	0.9	0.8
97	17.5	432.0	17.0	23.3	1.0	437	0.05	4.1830	0.0960	0.29400	0.00520	0.6938	0.1032	0.0016	1671.0	19.0	1661.0	26.0	1689	17	0.6	0.5
183	22.4	356.0	16.0	115.4	3.3	383	0.32	4.2200	0.1100	0.29470	0.00630	0.7768	0.1031	0.0017	1675.0	22.0	1664.0	31.0	1679	19	0.7	0.5
253	22.4	25.0	1.7	19.6	1.0	30	0.78	4.0570	0.1200	0.29430	0.00440	0.3307	0.1002	0.0026	1647.0	24.0	1665.0	21.0	1667	26	-1.1	-0.8
277	14.4	68.9	4.0	22.0	0.9	74	0.32	4.2440	0.1100	0.29520	0.00700	0.5929	0.1048	0.0023	1684.0	22.0	1666.0	35.0	1706	22	1.1	0.8
161	21.0	33.2	1.5	5.0	0.2	34	0.15	4.1320	0.1200	0.29540	0.00570	0.5288	0.1042	0.0024	1665.0	24.0	1667.0	28.0	1696	22	-0.1	-0.1
206	22.4	243.0	15.0	43.6	1.8	253	0.18	4.2020	0.0920	0.29550	0.00450	0.6355	0.1038	0.0016	1673.0	18.0	1668.0	22.0	1699	15	0.3	0.3
125	21.8	115.7	6.7	69.9	3.5	132	0.60	4.0520	0.0930	0.29600	0.00380	0.5632	0.1012	0.0017	1643.0	19.0	1671.0	19.0	1649	21	-1.7	-1.5
158	12.6	178.7	5.8	25.6	1.5	185	0.14	4.2400	0.1200	0.29610	0.00540	0.7293	0.1036	0.0019	1683.0	23.0	1671.0	27.0	1684	14	0.7	0.5
186	22.5	78.0	2.9	24.1	1.3	84	0.31	4.1610	0.1100	0.29590	0.00530	0.6459	0.1016	0.0020	1666.0	22.0	1673.0	26.0	1665	21	-0.4	-0.3
90	18.6	83.6	5.2	29.8	1.0	91	0.36	4.2920	0.1100	0.29680	0.00480	0.5814	0.1051	0.0022	1692.0	20.0	1675.0	24.0	1721	18	1.0	0.9
149	22.4	470.0	20.0	22.7	0.7	475	0.05	4.2430	0.0860	0.29670	0.00350	0.6396	0.1040	0.0014	1681.5	17.0	1675.0	17.0	1697	17	0.4	0.4
29	20.8	207.0	4.6	61.4	1.1	221	0.30	4.4820	0.0980	0.29770	0.00460	0.7096	0.1069	0.0016	1726.0	18.0	1679.0	23.0	1741	13	2.7	2.6
241	22.4	47.4	2.5	11.4	0.5	50	0.24	4.1790	0.1100	0.29780	0.00420	0.5300	0.1045	0.0021	1667.0	21.0	1680.0	21.0	1710	18	-0.8	-0.6
119	22.4	106.3	8.2	28.5	1.5	113	0.27	4.3010	0.0920	0.29810	0.00450	0.6061	0.1050	0.0016	1694.0	17.0	1681.0	22.0	1718	15	0.8	0.8
227	22.4	38.8	3.3	12.1	0.8	42	0.31	4.3220	0.1100	0.29840	0.00410	0.1566	0.1063	0.0024	1703.0	21.0	1683.0	21.0	1734	23	1.2	1.0
50	22.4	75.4	4.3	33.3	2.0	83	0.44	4.2360	0.0960	0.29810	0.00470	0.5351	0.1033	0.0018	1681.0	18.0	1684.0	23.0	1700	17	-0.2	-0.2
174	18.0	309.0	28.0	8.4	1.3	311	0.03	4.2640	0.1100	0.29870	0.00660	0.8946	0.1049	0.0015	1684.0	21.0	1684.0	33.0	1702	16	0.0	0.0
187	22.4	222.0	12.0	32.3	1.8	230	0.15	4.3750	0.1000	0.30110	0.00630	0.6028	0.1059	0.0020	1709.0	18.0	1695.0	31.0	1724	15	0.8	0.8
190	22.4	243.0	16.0	134.1	6.3	275	0.55	4.3320	0.0980	0.30090	0.00360	0.7319	0.1049	0.0015	1699.0	18.0	1695.0	18.0	1709	15	0.2	0.2
102	21.3	33.1	1.0	6.8	0.2	35	0.21	4.3600	0.1300	0.30130	0.00460	0.4027	0.1054	0.0026	1706.0	24.0	1697.0	23.0	1717	33	0.5	0.4
70	21.5	209.6	7.3	102.1	2.6	234	0.49	4.5820	0.1100	0.30150	0.00420	0.5255	0.1087	0.0020	1746.0	20.0	1701.0	21.0	1776	23	2.6	2.3
181	22.4	52.8	2.6	29.5	0.6	60	0.56	4.3400	0.1300	0.30250	0.00520	0.7021	0.1037	0.0021	1699.0	23.0	1703.0	26.0	1692	19	-0.2	-0.2
259	14.8	135.3	8.5	52.1	2.8	148	0.39	4.3430	0.0930	0.30410	0.00410	0.3963	0.1046	0.0019	1701.0	18.0	1711.0	20.0	1709	18	-0.6	-0.6
189	21.0	88.1	3.4	36.9	1.3	97	0.42	4.2880	0.1200	0.30470	0.00750	0.7575	0.1020	0.0020	1690.0	23.0	1712.0	37.0	1672	18	-1.3	-1.0

Table 14: LA-ICP-MS Zircon Isotopic and Age Data Table: SC15-14: Scott County, KS Paleosol Sample

								Corrected Isotopic Ratios[3]							Ages (Ma)[7]							
Grain #	Signal Duration (s)	U (ppm)[1]	2σ	Th (ppm)[1]	2σ	eU (ppm)[2]	Th/U	$^{207}Pb/^{235}U$	2σ[4]	$^{206}Pb/^{238}U$	2σ[4]	Rho[5]	$^{207}Pb/^{206}Pb$[6]	2σ	$^{207}Pb/^{235}U$	2σ	$^{206}Pb/^{238}U$	2σ	$^{207}Pb/^{206}Pb$	2σ	% Disc.[8]	Uncert. Wtd. Disc.[9]
118	21.8	345.0	33.0	65.5	5.3	360	0.19	4.3900	0.1300	0.30490	0.00650	0.8641	0.1046	0.0015	1709.0	24.0	1718.0	32.0	1710	17	-0.5	-0.4
141	20.7	255.0	33.0	20.0	0.7	260	0.08	4.3330	0.0950	0.30550	0.00420	0.6283	0.1033	0.0016	1700.0	18.0	1718.0	21.0	1686	17	-1.1	-1.0
167	8.4	94.2	5.1	26.3	1.8	100	0.28	4.3100	0.1500	0.30570	0.00980	0.6449	0.1049	0.0029	1692.0	30.0	1718.0	48.0	1710	31	-1.5	-0.9
54	22.4	209.4	6.5	52.8	3.2	222	0.25	4.4380	0.0940	0.30570	0.00430	0.7421	0.1064	0.0014	1721.0	18.0	1719.0	21.0	1738	13	0.1	0.1
223	11.9	137.0	11.0	31.3	5.6	144	0.23	4.3570	0.1100	0.30610	0.00550	0.6605	0.1040	0.0018	1703.0	21.0	1721.0	27.0	1703	17	-1.1	-0.9
127	21.0	86.3	3.1	62.6	1.4	101	0.73	4.3240	0.0940	0.30760	0.00400	0.4786	0.1036	0.0017	1697.0	18.0	1728.0	20.0	1682	21	-1.8	-1.7
60	22.4	78.1	7.6	39.9	3.7	87	0.51	4.4280	0.1200	0.30790	0.00570	0.7376	0.1052	0.0019	1724.0	24.0	1729.0	28.0	1713	19	-0.3	-0.2
114	19.3	102.3	2.3	30.5	0.7	109	0.30	4.6600	0.1100	0.30820	0.00510	0.5044	0.1082	0.0021	1758.0	20.0	1734.0	26.0	1774	20	1.4	1.2
179	22.4	228.0	15.0	119.9	7.4	256	0.53	4.5400	0.1100	0.30900	0.00570	0.6515	0.1065	0.0019	1736.0	20.0	1735.0	28.0	1739	19	0.1	0.1
173	10.8	79.2	3.2	18.1	1.4	83	0.23	4.4100	0.1400	0.31150	0.00800	0.4366	0.1032	0.0032	1717.0	26.0	1747.0	39.0	1685	39	-1.7	-1.2
170	19.7	148.5	8.1	11.1	0.6	151	0.07	4.4700	0.1200	0.31180	0.00700	0.7488	0.1061	0.0018	1724.0	23.0	1748.0	34.0	1724	21	-1.4	-1.0
146	15.5	134.6	9.8	56.5	4.2	148	0.42	4.7100	0.1300	0.31430	0.00660	0.7851	0.1085	0.0019	1766.0	23.0	1761.0	32.0	1781	19	0.3	0.2
151	21.1	246.0	16.0	94.0	5.4	268	0.38	4.7010	0.1000	0.32530	0.00510	0.7297	0.1046	0.0015	1768.0	18.0	1818.0	25.0	1707	18	-2.8	-2.8

[1]U and Th have been concentrations and the Th/U ratios are calculated relative to the GJ-1 standard value using 287 ± 76 ppm for U and 8.4 ± 2.6 ppm for Th (Jackson et al., 2004)

[2]Equivalent U defined by the equation: eU = U ppm + 0.235*Th ppm

[3]Corrected for U-Pb fractionation and background and normalized to the GJ-1 standard value: $^{207}Pb/^{235}U$ =0.8093 ± 0.0009 and $^{206}Pb/^{238}U$ = 0.09761 ± 0.00011 (Jackson et al., 2004)

[4]Propagated uncertainty of internal uncertanties (2SE) and within run reproducibility of GJ-1 (2SE)

[5]Uncertainty correlation between $^{206}Pb/^{238}U$ and $^{207}Pb/^{235}U$ uncertainties

[6]Corrected for background and Pb isotopicfractionation using the GJ-1 standard value: $^{207}Pb/^{206}Pb$ = 0.06014 ± 0.00001 (Jackson et al., 2004)

[7]U-Pb ages calculated relative to the GJ-1 standard

[8]Discordance defined as (($^{207}Pb/^{235}U$age - $^{206}Pb/^{238}U$age)/($^{207}Pb/^{235}U$ age))*100

[9]Uncertainty weighted age difference defined as ($^{207}Pb/^{235}U$ age - $^{206}Pb/^{238}U$ age)/($^{207}Pb/^{235}U$ age uncertainty)

Rows highlighted in grey were not used in interpretations or calculations based on discordance or short analysis times

Table 15: LA-ICP-MS Zircon Isotopic and Age Data Table: Landon Draw Ash (2014 Data)

								Corrected Isotopic Ratios[3]							Ages (Ma)[7]							
Grain #	Signal Duration (s)	U (ppm)[1]	2σ	Th (ppm)[1]	2σ	eU (ppm)[2]	Th/U	$^{207}Pb/^{235}U$	2σ[4]	$^{206}Pb/^{238}U$	2σ[4]	Rho[5]	$^{207}Pb/^{206}Pb$[6]	2σ	$^{207}Pb/^{235}U$	2σ	$^{206}Pb/^{238}U$	2σ	$^{207}Pb/^{206}Pb$	2σ	% Disc.[8]	Uncert. Wtd. Disc.[9]
LDA_45	10.8	187.0	13.0	111.0	13.0	213	0.59	0.0129	0.0012	0.00177	0.00006	0.5000	0.0519	0.0056	13.0	1.2	11.4	0.4	280	180	12.2	1.3
LDA_36	19.6	159.4	3.8	192.7	6.4	205	1.21	0.0327	0.0016	0.00487	0.00013	0.0851	0.0480	0.0022	32.6	1.6	31.3	0.9	111	89	4.0	0.8
LDA_10	11.5	99.4	3.6	67.9	2.4	115	0.68	0.0317	0.0032	0.00490	0.00015	0.2434	0.0475	0.0047	31.6	3.2	31.5	1.0	60	170	0.3	0.0
LDA_41	18.2	424.0	34.0	562.0	73.0	556	1.33	0.0339	0.0013	0.00509	0.00011	0.1950	0.0484	0.0017	33.9	1.2	32.7	0.7	120	69	3.5	1.0
LDA_31	22.5	74.0	11.0	80.7	8.1	93	1.09	0.0373	0.0033	0.00554	0.00019	0.5000	0.0489	0.0044	37.1	3.2	35.6	1.2	160	170	4.0	0.5
LDA_24	16.2	528.6	9.7	1030.0	31.0	771	1.95	0.0362	0.0014	0.00567	0.00011	0.1422	0.0467	0.0017	36.1	1.4	36.5	0.7	57	71	-1.0	-0.3
LDA_8	22.3	99.3	4.0	110.1	5.7	125	1.11	0.0356	0.0024	0.00576	0.00015	0.1634	0.0451	0.0028	35.5	2.3	37.0	1.0	-10	110	-4.3	-0.7
LDA_49	22.0	163.0	11.0	50.7	2.8	175	0.31	0.0574	0.0023	0.00863	0.00019	0.0190	0.0485	0.0018	56.8	2.2	55.4	1.2	117	74	2.5	0.6
LDA_19	21.3	316.0	14.0	134.6	5.3	348	0.43	0.0618	0.0022	0.00942	0.00018	0.1770	0.0471	0.0016	60.9	2.1	60.4	1.2	67	65	0.8	0.2
LDA_38	8.6	325.0	12.0	98.3	7.0	348	0.30	0.0664	0.2400	0.00968	0.01900	0.1315	0.0496	0.0041	65.3	120.0	62.1	110.0	170	130	4.9	0.0
LDA_48	21.3	104.5	4.4	73.5	5.1	122	0.70	0.0673	0.0031	0.01002	0.00020	0.0666	0.0487	0.0022	66.0	2.9	64.3	1.3	134	89	2.7	0.6
LDA_34	22.8	82.4	4.1	33.6	1.6	90	0.41	0.0830	0.0070	0.01013	0.00025	0.4554	0.0582	0.0040	79.4	6.4	65.0	1.6	420	130	18.1	2.3
LDA_28	15.2	205.6	3.5	78.6	5.0	224	0.38	0.0679	0.0026	0.01012	0.00022	0.2165	0.0484	0.0017	66.6	2.5	65.1	1.4	134	72	2.3	0.6
LDA_2	13.9	43.7	2.0	26.7	1.5	50	0.61	0.0649	0.0059	0.01024	0.00048	0.5000	0.0462	0.0033	63.6	5.5	65.7	3.1	30	130	-3.3	-0.4
LDA_40	13.5	203.0	22.0	41.3	4.5	213	0.20	0.0694	0.0042	0.01048	0.00041	0.6923	0.0485	0.0018	68.1	4.2	67.2	2.6	120	72	1.3	0.2
LDA_42	18.7	103.0	5.1	39.7	2.1	112	0.39	0.0735	0.0046	0.01051	0.00033	0.5000	0.0507	0.0025	71.9	4.3	67.4	2.1	210	98	6.3	1.0
LDA_55	21.4	323.9	9.4	145.0	12.0	358	0.45	0.0710	0.0023	0.01051	0.00020	0.2242	0.0490	0.0013	69.6	2.2	67.4	1.3	155	56	3.1	1.0
LDA_32	19.5	84.2	5.5	52.2	3.1	96	0.62	0.0707	0.0035	0.01063	0.00028	0.2154	0.0487	0.0022	69.2	3.3	68.2	1.8	131	88	1.4	0.3
LDA_50	21.4	170.0	14.0	127.0	11.0	200	0.75	0.0732	0.0031	0.01087	0.00026	0.2984	0.0484	0.0015	71.7	2.9	69.7	1.7	147	68	2.8	0.7
LDA_20	22.2	99.3	5.3	62.6	4.2	114	0.63	0.0737	0.0031	0.01110	0.00024	0.5000	0.0483	0.0020	72.2	2.9	71.2	1.6	116	81	1.4	0.3
LDA_17	21.9	88.1	5.7	100.3	6.1	112	1.14	0.0775	0.0043	0.01114	0.00027	0.2728	0.0504	0.0027	75.7	4.1	71.4	1.7	200	100	5.7	1.0
LDA_25	22.4	176.0	19.0	398.0	74.0	270	2.26	0.1038	0.0068	0.01116	0.00025	0.4561	0.0669	0.0039	99.9	6.2	71.6	1.6	770	120	28.3	4.6
LDA_29	15.3	79.9	7.1	17.4	1.3	84	0.22	0.0743	0.0040	0.01126	0.00028	0.0958	0.0462	0.0025	72.6	3.9	72.2	1.8	60	100	0.6	0.1
LDA_30	20.3	230.5	7.9	211.0	17.0	280	0.92	0.0739	0.0025	0.01129	0.00024	0.1766	0.0476	0.0016	72.6	2.4	72.4	1.5	86	67	0.3	0.1
LDA_44	21.5	63.9	6.2	38.6	3.1	73	0.60	0.0764	0.0046	0.01136	0.00030	0.1557	0.0485	0.0027	74.6	4.4	72.8	1.9	140	110	2.4	0.4
LDA_13	16.7	82.4	4.2	111.1	9.1	109	1.35	0.0793	0.0043	0.01152	0.00029	0.1664	0.0499	0.0024	77.3	4.1	73.8	1.8	200	98	4.5	0.9
LDA_43	21.5	232.3	8.3	189.8	9.0	277	0.82	0.0759	0.0026	0.01153	0.00023	0.2952	0.0479	0.0014	74.2	2.5	73.9	1.5	101	60	0.4	0.1
LDA_15	21.3	24.6	3.0	12.4	1.5	28	0.50	0.0773	0.0085	0.01155	0.00038	0.2201	0.0485	0.0052	74.9	7.9	74.0	2.4	120	190	1.2	0.1
LDA_7	20.8	270.0	18.0	246.0	21.0	328	0.91	0.0762	0.0022	0.01158	0.00023	0.1483	0.0475	0.0012	74.6	2.1	74.2	1.5	77	50	0.5	0.2
LDA_6	6.9	317.0	15.0	194.0	11.0	363	0.61	0.0742	0.0031	0.01159	0.00025	0.3991	0.0466	0.0014	72.6	2.9	74.3	1.6	42	59	-2.3	-0.6
LDA_35	22.3	20.8	0.4	12.8	0.8	24	0.62	0.0792	0.0080	0.01169	0.00042	0.1595	0.0492	0.0048	77.5	7.4	74.9	2.7	190	180	3.4	0.4
LDA_33	18.9	101.5	6.5	34.0	3.5	109	0.33	0.0754	0.0370	0.01193	0.00290	0.2864	0.0450	0.0029	73.7	20.0	76.4	18.0	8	120	-3.7	-0.1
LDA_5	15.4	126.0	6.1	23.5	0.9	132	0.19	0.0774	0.0036	0.01195	0.00027	0.1197	0.0470	0.0020	75.6	3.4	76.5	1.7	77	80	-1.2	-0.3
LDA_47	21.6	71.5	1.9	139.4	5.8	104	1.95	0.0775	0.0035	0.01197	0.00030	0.5000	0.0472	0.0021	75.7	3.3	76.7	1.9	89	88	-1.3	-0.3
LDA_54	21.6	161.4	8.8	121.2	8.9	190	0.75	0.0887	0.0045	0.01198	0.00025	0.0957	0.0537	0.0027	86.2	4.2	76.8	1.6	328	100	10.9	2.2
LDA_27	17.9	270.0	27.0	125.0	11.0	299	0.46	0.0833	0.0024	0.01224	0.00025	0.1327	0.0493	0.0012	81.2	2.3	78.4	1.6	155	51	3.4	1.2
LDA_18	13.9	566.0	15.0	992.0	26.0	799	1.75	0.0810	0.0021	0.01225	0.00024	0.4931	0.0482	0.0010	79.4	2.0	78.5	1.6	111	44	1.1	0.5
LDA_23	18.6	214.0	27.0	228.0	27.0	268	1.07	0.0851	0.0036	0.01242	0.00028	0.4094	0.0493	0.0019	82.8	3.4	79.6	1.8	165	77	3.9	0.9
LDA_26	19.4	85.3	1.9	34.9	1.3	94	0.41	0.0843	0.0042	0.01242	0.00029	0.0893	0.0491	0.0025	82.0	3.9	79.6	1.9	160	100	2.9	0.6
LDA_22	21.9	326.0	32.0	336.0	37.0	405	1.03	0.0884	0.0031	0.01259	0.00025	0.4827	0.0508	0.0013	86.2	2.9	80.6	1.6	223	55	6.5	1.9

LDA_9	22.6	345.8	9.9	218.2	7.0	397	0.63	0.0930	0.0069	0.01287	0.00027	0.7022	0.0531	0.0031	90.0	6.2	82.4	1.7	300	110	8.4	1.2
LDA_21	22.1	144.0	14.0	113.0	11.0	171	0.78	0.1101	0.0088	0.01352	0.00035	0.4827	0.0582	0.0039	105.4	7.9	86.5	2.2	470	130	17.9	2.4
LDA_16	6.8	945.0	34.0	181.0	15.0	988	0.19	0.0973	0.0160	0.01417	0.00029	0.2402	0.0488	0.0083	94.2	14.0	90.7	1.9	137	190	3.7	0.3
LDA_37	22.5	218.0	12.0	125.0	10.0	247	0.57	0.0968	0.0031	0.01445	0.00028	0.2901	0.0487	0.0013	93.7	2.8	92.5	1.8	127	56	1.3	0.4
LDA_52	21.3	101.6	4.5	98.9	6.8	125	0.97	0.1011	0.0038	0.01499	0.00033	0.2923	0.0488	0.0018	97.7	3.5	95.9	2.1	145	74	1.8	0.5
LDA_56	21.4	513.0	20.0	438.0	16.0	616	0.85	0.1696	0.0036	0.02487	0.00044	0.4279	0.0497	0.0006	159.0	3.1	158.4	2.8	178	28	0.4	0.2
LDA_11	19.7	532.0	14.0	181.3	3.6	575	0.34	0.2210	0.0083	0.02707	0.00050	0.6214	0.0590	0.0017	203.8	6.9	172.2	3.1	568	63	15.5	4.6
LDA_46	16.2	159.7	6.2	92.0	16.0	181	0.58	0.2798	0.0480	0.04029	0.00410	0.3855	0.0503	0.0018	250.3	26.0	254.6	25.0	211	68	-1.7	-0.2
LDA_1	8.3	183.0	25.0	93.8	7.0	205	0.51	0.7710	0.0360	0.09318	0.00190	0.3971	0.0600	0.0023	580.0	19.0	574.3	11.0	599	69	1.0	0.3
LDA_14	23.3	142.0	11.0	87.1	5.8	162	0.61	1.9890	0.0510	0.18860	0.00380	0.6025	0.0760	0.0011	1111.0	17.0	1115.0	21.0	1100	29	-0.4	-0.2
LDA_53	23.9	46.6	2.1	28.8	1.3	53	0.62	2.2220	0.0530	0.20060	0.00360	0.4990	0.0805	0.0012	1186.0	17.0	1178.0	20.0	1206	29	0.7	0.5
LDA_51	20.7	80.0	6.6	34.1	3.5	88	0.43	2.7370	0.0580	0.22930	0.00390	0.4384	0.0866	0.0009	1337.5	16.0	1331.0	21.0	1351	20	0.5	0.4
LDA_4	11.0	162.7	6.6	56.0	5.4	176	0.34	2.7480	0.0620	0.22990	0.00420	0.5597	0.0861	0.0009	1340.0	16.0	1334.0	22.0	1338	21	0.4	0.4
LDA_39	14.9	74.9	5.7	43.4	5.0	85	0.58	3.0960	0.0760	0.24490	0.00510	0.7240	0.0912	0.0012	1429.0	19.0	1412.0	26.0	1458	25	1.2	0.9
LDA_12	23.3	224.0	13.0	72.9	4.4	241	0.33	4.2790	0.1000	0.29400	0.00530	0.5179	0.1042	0.0014	1687.0	19.0	1661.0	27.0	1701	24	1.5	1.4
LDA_3	22.4	48.8	2.2	31.0	1.5	56	0.64	4.5060	0.0980	0.31110	0.00560	0.4986	0.1051	0.0012	1732.0	17.0	1746.0	28.0	1712	22	-0.8	-0.8

[1]U and Th have been concentrations and the Th/U ratios are calculated relative to the GJ-1 standard value using 287 ± 76 ppm for U and 8.4 ± 2.6 ppm for Th (Jackson et al., 2004)

[2]Equivalent U defined by the equation: eU = U ppm + 0.235*Th ppm

[3]Corrected for U-Pb fractionation and background and normalized to the GJ-1 standard value: $^{207}Pb/^{235}U$ =0.8093 ± 0.0009 and $^{206}Pb/^{238}U$ = 0.09761 ± 0.00011 (Jackson et al., 2004)

[4]Propagated uncertainty of internal uncertainties (2SE) and within run reproducibility of GJ-1 (2SE)

[5]Uncertainty correlation between $^{206}Pb/^{238}U$ and $^{207}Pb/^{235}U$ uncertainties

[6]Corrected for background and Pb isotopicfractionation using the GJ-1 standard value: $^{207}Pb/^{206}Pb$ = 0.06014 ± 0.00001 (Jackson et al., 2004)

[7]U-Pb ages calculated relative to the GJ-1 standard

[8]Discordance defined as (($^{207}Pb/^{235}U$age - $^{206}Pb/^{238}U$age)/($^{207}Pb/^{235}U$ age))*100

[9]Uncertainty weighted age difference defined as ($^{207}Pb/^{235}U$ age - $^{206}Pb/^{238}U$ age)/($^{207}Pb/^{235}U$ age uncertainty)