RECONSTRUCTING THE AGE, PROVENANCE, AND THERMAL HISTORY OF THE BASAL GREAT VALLEY FOREARC BASIN, NORTHERN CALIFORNIA

by

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DEDICATION

This dissertation is dedicated to my family. Their endless love and support have contributed to my achievements throughout graduate school. Thank you to my mom, Maria McDaniel, for your unwavering support; your perseverance is and always will be inspiring. I thank my siblings, Austin and Justine Romero, for always believing in me and being there for me. To my Uncle Joe, Aunt Rachel, and Aunt Blanca, who continue to motivate me to work hard toward my goals. To my godmother, Isabel, for always encouraging me to try new things and to 'place one foot through the doorway, take a step inside, and look around.' I thank my Grandma Rita and Grandpa James McDaniel for encouraging their grandchildren to play outside and explore new places. I would especially like to thank Will Odom for his patience and never-ending words of encouragement since our first graduate-level course (Dating Methods) at Purdue University. A very special thank you to my dog, Io, for being my traveling co-pilot throughout the various voyages around the country.

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ABSTRACT

Forearc basins are important sediment archives of Earth's geologic history, preserving a record of the erosional history of magmatic arcs, subduction zone dynamics, and climatic changes over millions of years. However, questions remain about the early developmental stages of a forearc basin, including the relationship between a forearc basin and its underlying basement, and thermal histories of exhumed, ancient forearc basins that preserve extensive sedimentary successions. This dissertation examines the basement underlying the Great Valley Forearc basin, the upper Coast Range Ophiolite and ophiolitic breccia, and Great Valley Group strata using sedimentology, sandstone modal petrography, geochronology, thermochronology, and cathodoluminescence, photoluminescence, and Raman spectroscopy. Chapter 1 evaluates Upper Jurassic–Lower Cretaceous strata and underlying Coast Range Ophiolite in the northwestern Sacramento basin to constrain the timing of initial deposition within the Great Valley Forearc, identify potential provenances, and provide a tectonic model for the early development of the forearc. Detrital zircon and petrographic data from a localized breccia interval directly underlying basal forearc strata indicate provenance from the Coast Range Ophiolite and North American margin, with formation ongoing by ~151 Ma. Detrital zircon data from Upper Jurassic–Lower Cretaceous strata yield maximum depositional ages between ~165–141 Ma and are interpreted to reflect diachronous deposition in segmented depocenters during the early development of the forearc that was proximal to the Sierra Nevada-Klamath magmatic. Chapter 2 utilizes apatite and zircon (U-Th)/He thermochronology to constrain the thermal history of the Sacramento basin, which includes documenting minimum burial temperatures for the western outcrop belt to have exceeded 85°C with cooling in the Cenozoic, whereas the subsurface strata of the central-eastern parts of the basin reached ~180-200°C with cooling in the middle–Late Cretaceous and Cenozoic. Chapter 3 examines gabbro and granitic basement rock underlying the Great Valley Forearc, along with several zircon U-Pb age standards, to demonstrate that radiation damage in zircon can non-destructively be estimated using cathodoluminescence spectroscopy, a complementary technique to photoluminescence and Raman spectroscopy. This dissertation highlights the significance of studying forearc basins along with their accompanying basement component, as the linked relationship is crucial for understanding how forearc basins evolve.

CHAPTER ONE

INTRODUCTION

Forearc Basins

Forearc basins develop between the oceanic trench or accretionary wedge and magmatic arc of a convergent margin. The accumulated succession of sedimentary deposits within a forearc basin record changes in subduction zone dynamics and the erosional history of the upper plate (e.g., arc unroofing). Forearc basins may evolve atop extended continental crust and/or oceanic crust, trapping highly variable amounts of sediment (Dickinson, 1995; Noda, 2016). Evaluating the early development of a forearc basin and its relationship to the underlying basement (continental or oceanic crust) is challenging due to limited preservation and accessibility. Few ancient forearc sedimentary systems are preserved, and often these have experienced erosion and deformation due to subsequent collisional processes (e.g., the Xigaze basin in Tibet and Matanuska Valley-Talkeetna Mountains basin in south-central Alaska) (Orme et al., 2015, and references therein; Stevens Goddard et al., 2018, and references therein). By contrast, modern forearc sedimentary systems are predominantly in a deep-marine setting (e.g., the Tofino basin in northern Cascadia, Stevenson basin in western Alaska, and Arauco basin in central Chile) (Spence et al., 1991; von Huene and Klaeschen, 1999; Contreras-Reyes et al., 2010; Becerra et al., 2013). The low-preservation potential and restricted accessibility for ancient and modern forearc basins limit our understanding of forearc development atop different substrata as well as their evolved relationship. This research has societal significance for agriculture (e.g., volcanic soils), groundwater resources, and how economically valuable petroliferous forearc basins

develop, as forearc basins have been highlighted as significant sources of petroleum (Schoenherr, 1992; Hessler and Sharman, 2018; Ball et al., 2020).

Significance of the Problem

The Great Valley Forearc (GVF) basin is a world-class natural laboratory in which to conduct a detailed study of the initial geologic development of a forearc basin because sedimentary strata are relatively intact and continuous as a result of transform faulting initiating along the California margin, shifting plate interactions from a former convergent phase (e.g., Graham et al., 1984). The preservation and accessibility to outcrop and subsurface strata in the GVF permits the opportunity to evaluate the timing and depositional relationship between basement and overlying sedimentary strata. The GVF contains sedimentary strata that capture the evolution of an ancient convergent margin along western North America during Mesozoic–Cenozoic time. Previous investigations of the GVF have shed light on Jurassic(?)–Cenozoic arc-forearc development and configuration using sandstone petrofacies (e.g., Ojakangas, 1968; Dickinson and Rich, 1972; Ingersoll, 1983), conglomerate clast compositions (e.g., Rose and Colburn, 1963; Bertucci, 1983), palaeocurrent analysis (e.g., Ingersoll, 1979; Suchecki, 1984), palaeobathymetry (e.g., Haggart, 1986; Williams, 1997), seismic stratigraphy (e.g., Constenius et al., 2000; Mitchell et al., 2010; Williams and Graham, 2013), detrital thermochronology (Dumitru, 1988; Vermeesch et al., 2006), sedimentary geochemistry (Linn et al., 1991; Surpless, 2014), U-Pb detrital zircon geochronology (e.g., DeGraaff-Surpless et al., 2002; Wright and Wyld, 2007; Sharman et al., 2015; Orme and Surpless, 2019; Surpless et al., 2019), and four-dimensional (4-D) modeling of depositional geometry (Orme and Graham, 2018). Herein, this

study uses “Jurassic(?)” to indicate the uncertainty of the Jurassic age assignment (Surpless et al. 2006; Orme and Surpless 2019). Decades of studies within the GVF basin have made significant contributions to understanding its basin evolution, yet the following remain debated: (1) The precise age of the basal stratigraphy, original location of the GVF relative to North America, and co-evolution with its underlying basement; (2) The timing of maximum burial temperature and exhumation of basin strata and basement; and (3) The degree of radiation damage in GVF basement rock and subsequent effects on reconstructing thermal histories.

The GVF basin, California, preserves a >100 myr sedimentary record of the geologic history of North America from Mesozoic to Cenozoic time (e.g., Goudkoff, 1945; Hackel, 1966; Morrison et al., 1971; Ingersoll, 1978; Dickinson and Seely, 1979; Graham, 1981; Almgren and Hacker, 1984; Moxon, 1988; Williams, 1997). It evolved atop continental crust along its central to eastern margin and trapped oceanic crust along its western margin (Cady, 1975; Godfrey et al., 1997; Williams and Graham, 2013; Orme and Graham, 2018). Historically, basal strata of the GVF are assigned an Upper Jurassic stratigraphic age based on the occurrence of the pelecypod fossil *Buchia piochii* and its association with ammonites (Jones et al., 1969). However, Surpless et al. (2006) and Orme and Surpless (2019) document the presence of Cretaceous detrital zircons within basal GVF strata and maximum depositional ages (MDA) that are both Cretaceous and Jurassic in age. This suggests that the basal age of the GVF requires re-evaluation and implies that forearc basin deposition may have initiated ~10–20 m.y.r after Coast Range Ophiolite (CRO) formation ca. 170–155 Ma (Hopson et al., 2008). If initial deposition occurred later than previously interpreted from biostratigraphy (Tithonian age), as young as Valanginian–Hauterivian (Surpless et al., 2006), then sedimentation rates could be significantly greater than

previously interpreted (e.g., Ingersoll, 1979; Orme and Graham, 2018). In addition, the configuration of the underlying basement contributes to available accommodation and subsequent infilling of early forearc sediments within depositional centers. Along the northwestern Sacramento subbasin, segments of the CRO basement are exposed as a narrow outcrop belt and overlain by basal GVF strata; locally, ophiolitic breccia separates the CRO from basal GVF strata. The origins of the sedimentary breccia are debated and it remains unclear whether the breccia deposition was proximal or distal to the North American margin in the Late Jurassic (e.g., Lagabrielle et al., 1986; Robertson, 1990; Hopson et al., 2008) and how breccia formation relates to the development of the GVF.

Since the late 1800s, the Great Valley has been a major target for oil and gas exploration (Graham, 1987), as the northern and southern parts of the basin are main producers of gas and oil, respectively; the northern part of the basin experienced temperatures >120 °C, which are higher than oil window of ~120 °C. Previous studies applying apatite (U-Th)/He (AHe), zircon (U-Th)/He (ZHe), apatite fission track (AFT), and zircon fission track (ZFT) thermochronology indicate spatially variable thermal histories in the northwestern and west-central GVF basin (e.g., Dumitru, 1988; Vermeesch et al., 2006; Unruh et al., 2007). In the northern GVF, the Sacramento basin backstripping and AFT analysis of basal strata suggest burial depths >6.5 km under refrigerated thermal gradients (<15 °C/km) between 90–65 Ma (Dumitru, 1988). Southward in the Mount Diablo area east of San Francisco, sandstone from Upper Cretaceous GVG strata yield detrital AHe and AFT cooling ages interpreted to represent latest Cretaceous–Cenozoic subsidence and extension in a graben system within the western GVF basin, coeval with exhumation of the Franciscan complex (Unruh et al., 2007). In the southern GVF, Mesozoic

strata in the San Joaquin basin experienced sufficient temperatures to anneal apatite fission tracks as a result of serpentinite intrusion (Vermeesch et al., 2006).

Along the northwestern GVF basin margin, Mesozoic strata that were tilted and uplifted are now preserved within an east dipping homocline (Kirby, 1943; Ingersoll et al., 1977), with a stratigraphic thickness of >15 km and strata ranging in age from Tithonian to Campanian (Dumitru, 1988; Orme and Surpless, 2019). Initial uplift of the homocline occurred during the late early to middle Paleocene (~65–62 Ma) (Almgren, 1984), based on an angular unconformity identified in well correlations, and continued throughout the Cenozoic, based on detrital AFT and AHe cooling ages from GVG strata (Sims et al., 1973; Dumitru, 1988, 1989; Unruh et al., 2007). Low-temperature thermochronologic methods applied to Mesozoic forearc strata are restricted to a few local studies, and the basin-wide thermal history of the GVF basin has not been reconstructed.

Constraining the timing of magmatism and thermal cooling histories of plutonic rocks uses geochronologic and thermochronologic techniques that often rely on relatively pristine zircon. The crystal structure in zircon is damaged during radioactive decay, altering the retention of radiogenic lead and helium. Spectroscopic techniques such as photoluminescence (PL) and Raman spectroscopy provide quantitative characterization of radiation damage in zircon, and when coupled with dating methods (e.g., geochronology and thermochronology), can provide further insight into the thermal history of a zircon grain. Assessing radiation-damaged zircon has implications for the geoscience communities when the radiogenic nuclei retention within the grain may be negatively impacted by damage in the crystal lattice, resulting in erroneous isotopic

dates (e.g., U-Pb geochronology and (U-Th)/He thermochronology) (Geisler et al., 2003; Kuiper, 2005; Zamyatin et al., 2017).

Zircon shows a distinct broad emission band in a yellow region via its luminescence spectra. This yellow emission in zircon is assigned to radiation-induced defects caused by the decay of U and Th (Götze et al., 1999; Gaft et al., 2002; Nasdala et al., 2002; Tsuchiya et al., 2015). Studies have assessed a correlation between CL intensity and radiation-dose utilized radiation-damaged quartz, feldspar, and zircon (King et al., 2011; Kayama et al., 2014). CL features in zircon reveal the presence of lattice defects as well as REE impurity centers. Nasdala et al. (2011) document a shift in PL intensity in zircon where the PL intensity of the yellow emission increases with increasing radiation damage up to 5×10^{16} ions/cm^2, then decreases as radiation damage increases beyond this threshold, suggesting the consequential suppression of the yellow emission. Tsuchiya et al. (2017) also found that yellow emission CL intensity in zircon increases with radiation damage up to 4.29×10^{-4} C/cm^2, then decreases as radiation damage continues to increase. The accumulation of radiation damage within zircon has implications in the geosciences community. For instance, it has been demonstrated that diffusivity decreases with increasing radiation damage until a threshold cross-over, then diffusivity increases with continual increasing radiation damage (e.g., Guenthner et al., 2013; Anderson et al., 2017), as well as the ZHe closure temperature significantly decreases at relatively low radiation damage (e.g., Gautheron et al., 2020; Gérard et al., 2022).

Objectives and Research Questions

The goal of this dissertation is to elucidate the early development of the northern GVF basin along the western margin of North America during the Late Jurassic–Early Cretaceous, and the thermal histories of the western and eastern margins of the basin during the late Mesozoic–Cenozoic. For the latter, constraints on the degree of radiation damage within grains used for geo- and thermochronology is critical to improve data quality. The following objectives and corresponding research questions are addressed in the chapters herein. Each objective represents a dissertation chapter that is intended for publication in peer-reviewed journals.

Objective 1: Reconstruct age relationships between Great Valley forearc basement and basal strata and identify provenance for the Upper Jurassic–Lower Cretaceous basal strata.

1. What is the depositional age of a localized breccia interval and sedimentary strata that represent the basal stratigraphy of the northern GVF?
2. What is the provenance of the localized breccia interval and sedimentary strata that represent the basal stratigraphy of the northern GVF?

Objective 2: Constrain the thermal history of the northern GVF basin along its western outcrop belt and in the subsurface of the central-eastern parts of the basin.

1. What is the timing and maximum burial temperatures for the western outcrop belt and subsurface central-eastern parts of the basin?

2. What is the timing of exhumation for the western outcrop belt and subsurface central-eastern parts of the basin?

Objective 3: Demonstrate that CL spectroscopy can be utilized to non-destructively estimate radiation damage in zircon.

1. How can CL be used to gauge radiation damage in zircon?
2. What are the limitations to using CL spectroscopy to gauge radiation damage in zircon?

Chapter 2 addresses Objective 1 and accompanying research questions by conducting stratigraphic, petrographic, and geochronologic analysis on Great Valley forearc basement and basal strata.

Chapter 3 addresses Objective 2 and accompanying research questions by using apatite and zircon (U-Th)/He thermochronology on the western outcrop belt and subsurface central-eastern parts of the basin as well as constraining the depositional age of sampled strata by integrating stratigraphic observations with new maximum depositional ages from zircon U-Pb geochronology.

Chapter 4 addresses Objective 3 and accompanying research questions by integrating U-Pb geochronology with CL, PL, and Raman spectroscopy on natural zircon and assessing the yellow band CL response in zircon as well as its relationship to radiation damage.

Chapter 5 is a summary of the conclusions in each preceding chapter and includes the results and implications of this research.

Study Area

The northern GVF basin in California serves as an excellent location to study the early developmental history of this forearc along western North America, as the basement and overlying sedimentary strata are well preserved and relatively undeformed. Specifically, along the western margin of the Sacramento basin and near the town of Paskenta, upper CRO basement and ~10 km of overlying Upper Jurassic–Lower Cretaceous sedimentary are exposed in outcrop. Exposed stratigraphic sections are accessible via present-day creeks. Additionally, along the central-eastern margin of the Sacramento basin, much of the GVG sedimentary strata reside in the subsurface and onlap the western flanks of the Sierra Nevada; these strata are described in borehole rock records housed at the California Core Repository in Bakersfield, California.

Literature Cited

Almgren, A.A., 1984, Timing of Tertiary submarine canyons and marine cycles of deposition in the southern Sacramento Valley, California, *in* Almgren, A.A., and Hacker, P.D., eds., Paleogene Submarine Canyons of the Sacramento Valley, California: Bakersfield, California, Pacific Section, American Association of Petroleum Geologists, p. 1–16.

Almgren, A.A., and Hacker, P.D., eds., 1984, Paleogene Submarine Canyons of the Sacramento Valley, California: Bakersfield, California, Pacific Section, American Association of Petroleum Geologists, Symposium Volume 1, 187 p.

Anderson, A.J., Hodges, K.V., and van Soest, M.C., 2017, Empirical constraints on the effects of radiation damage on helium diffusion in zircon: Geochimica et Cosmochimica Acta, 218, 308–322. https://doi.org/10.1016/j.gca.2017.09.006

Ball, L. B., Davis, T. A., Minsley, B. J., Gillespie, J. M., and Landon, M. K., 2020, Probabilistic categorical groundwater salinity mapping from airborne electromagnetic data adjacent to California's Lost Hills and Belridge oil fields. Water Resources Research, 56, e2019WR026273. https://doi.org/ 10.1029/2019WR026273

Becerra, J., Contreras-Reyes, E., and Arriagada, C., 2013, Seismic structure and tectonics of the southern Arauco Basin, south-central Chile (~38°S): Tectonophysics, v. 592, p. 53–66, doi:10.1016/j.tecto.2013.02.012.

Bertucci, P.F., 1983, Petrology and provenance of the Stony Creek Formation, northwestern Sacramento Valley, California, *in* Bertucci, P.F., and Ingersoll, R.V., eds., Guidebook to the Stony Creek Formation, Great Valley Group, Sacramento Valley, California: Los Angeles, California, Pacific Section, Society of Economic Paleontology and Mineralogy, p. 1–16.

Brøgger, W.C., 1893, Amorf: Salmonens store illustrerede Konversationslexikon, 1, 742–743.

Cady, J.W., 1975, Magnetic and Gravity Anomalies in the Great Valley and Western Sierra Nevada Metamorphic Belt, California: Geological Society of America Special Paper 168, 56 p., https://doi.org/10.1130/SPE168-p1

Cecil, M.R., Ducea, M.N., Reiners, P.W., and Chase, C.G., 2006, Cenozoic exhumation of the northern Sierra Nevada, California, from (U-Th)/He thermochronology: Geological Society of America Bulletin, v. 118, p. 1481–1488, doi:10.1130/B25876.1

Cloos, M., 1985, Thermal evolution of convergent plate margins: Thermal modeling and reevaluation of isotopic Ar-ages for blueschists in the Franciscan Complex of California: Tectonics, 4, 421-433.

Constenius, K.N., Johnson, R.A., Dickinson, W.R., and Williams, T.A., 2000, Tectonic evolution of the Jurassic–Cretaceous Great Valley forearc, California: Implications for the Franciscan thrust-wedge hypothesis: Geological Society of America Bulletin, v. 112, p. 1703–1723, https://doi .org/10.1130/0016-7606(2000)112<1703:TEOTJC>2.0.CO;2

Contreras-Reyes, E., Flueh, E.R., and Grevemeyer, I., 2010, Tectonic control on sediment accretion and subduction off south central Chile: Implications for coseismic rupture processes of the 1960 and 2010 megathrust earthquakes: Tectonics, v. 29, TC6018, doi:10.1029 /2010TC002734.

DeGraaff-Surpless, K., Graham, S.A., Wooden, J.L., and McWilliams, M.O., 2002, Detrital zircon provenance analysis of the Great Valley Group, California: Evolution of an arc-forearc system: Geological Society of America Bulletin, v. 114, p. 1564–1580, https://doi.org/10.1130/0016-7606(2002)114<1564:DZPAOT>2.0.CO;2

Dickinson, W.R., 1995, Forearc basins, *in* Busby, C.J., and Ingersoll, R.V., eds., Tectonics of Sedimentary Basins: Cambridge, Massachusetts, Blackwell Science, p. 221–261.

Dickinson, W.R., and Rich, E.I., 1972, Petrologic intervals and petrofacies in the Great Valley sequence, Sacramento Valley, California: Geological Society of America Bulletin, v. 83, p. 3007–3024, https://doi.org/10.1130/0016-7606(1972)83[3007:PIAPIT]2.0.CO;2

Dickinson, W.R., and Seely, D.R., 1979, Structure and stratigraphy of forearc regions: American Association of Petroleum Geologists Bulletin, v. 63, p. 2–31.

Dumitru, T.A., 1988, Subnormal geothermal gradients in the Great Valley forearc basin, California, during Franciscan subduction: A fission track study: Tectonics, v. 7, p. 1201–1221.

Ewing, R.C., 1993, The metamict state: 1993—the centennial: Nuclear Instruments and Methods in Physics Research Section B, 91, 22–29.

Finch, R.J., Hanchar, J.M., Hoskin, P.W.O., and Burns, P.C., 2001, Rare-earth elements in synthetic zircon: Part 2. A single-crystal X-ray study of xenotime substitution: American Mineralogist, 86, 681–689.

Gaft, M., Shinno, I., Panczer, G., Reisfeld, R., 2002, Laser-induced time-resolved spectroscopy of visible broad luminescence bands in zircon: Mineralogy and Petrology, 76, 235–246.

Gautheron, C., Djimbi, D.M., Roques, J., Balout, H., Ketcham, R.A., Simoni, E., Pik, R., Seydoux-Guillaume, A.M., Tassan-Got, L.A, 2020, Multi-Method, Multi-Scale Theoretical Study of He and Ne Diffusion in Zircon: Geochimica et Cosmochimica Acta, 268, 348–367.

Geisler, T., Pidgeon, R.T., Kurtz, R., van Bronswijk, W., and Schleicher, H., 2003, Experimental hydrothermal alteration of partially metamict zircon: American Mineralogist, 88, 1496–1513.

Gérard, B., Robert, X., Grujic, D., Gautheron, C., Audin, L., Bernet, M., Balvay, M., 2022, Zircon (U-Th)/He Closure Temperature Lower Than Apatite Thermochronometric Systems: Reconciliation of a Paradox: Minerals, 12,145. https://doi.org/ 10.3390/min12020145

Godfrey, N.J., Beaudoin, B.C., Klemperer, S.L., and Mendocino Working Group, 1997, Ophiolitic basement to the Great Valley forearc basin, California, from seismic and gravity data: Implications for crustal growth at the North American continental margin: Geological Society of America Bulletin, v. 108, p. 1536–1562.

Götze, J., Kempe, U., Habermann, D., Nasdala, L., Neuser, R.D., and Richer, D.K., 1999, High-resolution cathodoluminescence combined with SHRIMP ion probe measurements of detrital zircon: Mineralogical Magazine, 63, 179–187, DOI 10.1180/002646199548411

Goudkoff, P.P., 1945, Stratigraphic relations of Upper Cretaceous in Great Valley, California: American Association of Petroleum Geologists Bulletin, v. 29, p. 956–1007.

Graham, S.A., 1981, Stratigraphic and depositional patterns and hydrocarbon occurrence, Sacramento Valley, California, *in* Graham, S.A., ed., Field Guide to the Mesozoic–Cenozoic Convergent Margin of Northern California: Bakersfield, California, Pacific Section, American Association of Petroleum Geologists, Book 50, p. 43–58.

Graham, S.A., 1987, Tectonic controls on petroleum occurrence in central California, *in* Ingersoll, R.V., and Ernst, W.G., eds., Cenozoic Basin Development of Coastal California: Englewood Cliffs, New Jersey, Prentice-Hall, p. 47–63.

Graham, S.A., McCloy, C., Hitzman, M., Ward, R., and Turner, R., 1984, Basin evolution during change from convergence to transform continental margin in central California: American Association of Petroleum Geologists Bulletin, v. 68, p. 233–349.

Guenthner, W.R., Reiners, P.W., Ketcham, R.A., Nasdala, L., Giester, G., 2013, Helium Diffusion in Natural Zircon: Radiation Damage, Anisotropy, and the Interpretation of Zircon (U-Th)/He Thermochronology: American Journal of Science, 313, 145-198.

Hackel, O., 1966, Summary of the geology of the Great Valley, *in* Bailey, E.H., ed., Geology of Northern California: California Division of Mines and Geology Bulletin, 190, p. 217–238.

Haggart, J.W., 1986, Stratigraphy of the Redding Formation of north-central California and its

bearing on Late Cretaceous paleogeography, *in* Abbott, P.L., ed., Cretaceous Stratigraphy, Western North America: Pacific Section, Society of Economic Paleontologists and Mineralogists Field Trip Guidebook 46, p. 161–178.

Heasler, H. P., and R. C. Surdam, 1985, Thermal evolution of coastal California with Application to hydrocarbon maturation: American Association of Petroleum Geologists Bulletin, 69, 1386-1400.

Hessler, A.M., and Sharman, G.R., 2018, Subduction zones and their hydrocarbon systems: Geosphere, v. 14, p. 2044–2067, https://doi.org/10.1130/GES01656.1

Hopson, C.A., Mattinson, J.M., Pessagno, E.A., Jr., and Luyendyk, B.P., 2008, California Coast Range ophiolite: Composite Middle and Late Jurassic oceanic lithosphere, *in* Wright, J.E., and Shervais, J.W., eds., Ophiolites, Arcs, and Batholiths: A Tribute to Cliff Hopson: Geological Society of America Special Paper 438, p. 1–101, doi: 10.1130/2008.2438(01)

Ingersoll, R.V., 1978, Paleogeography and paleotectonics of the Late Mesozoic fore-arc basin of northern and central California, *in* Howell, D. G., and McDougall, K. A., eds., Mesozoic Paleogeography of the Western United States: Society of Economic Paleontologists and Mineralogists Pacific Coast Paleogeography Symposium, 2, pp. 471-482.

Ingersoll, R.V., 1979, Evolution of the Late Cretaceous forearc basin, northern and central California: Geological Society of America Bulletin, v. 90, p. 813–826, https://doi.org/10.1130/0016-7606(1979)90<813:EOTLCF>2.0.CO;2

Ingersoll, R.V., 1983, Petrofacies and provenance of late Mesozoic forearc basin: Northern and central California: American Association of Petroleum Geologists Bulletin, v. 67, p. 1125–1142.

Ingersoll, R.V., Rich, E.I., and Dickinson, W.R., 1977, Great Valley Sequence, Sacramento Valley: Geological Society of America, Cordilleran Section, Field Guidebook, p. 1-72.

Jones, D.L., Bailey, E.H., and Imlay, R.W., 1969, Structural and Stratigraphic Significance of the Buchia Zones in the Colyear Springs–Paskenta Area, California: U.S. Geological Survey Professional Paper 647-A, p. 1-24.

Kayama, M., Nishido, H., Toyoda, S., Komuro, K., Finch, A.A., Lee, M.R., and Ninagawa, K., 2014, Cathodoluminescence of alkali feldspars and radiation effects on the luminescent properties: American Mineralogist, 99, p. 65–75, DOI 10.2138/am.2014.4361

King, G.E., Finch, A.A., Robinson, R.A.J., and Hole, D.E., 2011, The problem of dating quartz

1: Spectroscopic ionoluminescence of dose dependence: Radiation Measurements, 46, p. 1–9, DOI 10.1016/j.radmeas.2010.07.031

Kirby, J.M., 1943, Upper Cretaceous stratigraphy of west side of Sacramento Valley south of Willows, Glenn County, California: American Association of Petroleum Geologists Bulletin, v. 27, p. 279–305.

Kuiper, Y.D., 2005, Isotopic age constraints from electron microprobe U-Th-Pb dates, using a three-dimensional concordia diagram: American Mineralogist, 90, p. 586–591.

Lagabrielle, Y., Roure, F., Coutelle, A., Maury, R.C., Joron, J.L., and Thonon, P., 1986, The Coast Range ophiolites (northern California): Possible arc and back-arc basin remnants; their relations with the Nevadan orogeny: Geological Society of France Bulletin, v. 8, p. 981–999.

Linn, A. M., DePaolo, D. J., and Ingersoll, R. V., 1991, Nd-Sr isotopic provenance analysis of Upper Cretaceous Great Valley fore-arc sandstones: Geology, 19, p. 803-806.

Mitchell, C., Graham, S.A., and Suek, D.H., 2010, Subduction complex uplift and exhumation and its influence on Maastrichtian forearc stratigraphy in the Great Valley Basin, northern San Joaquin Valley, California: Geological Society of America Bulletin, v. 122, p. 2063–2078, https://doi.org/10.1130/B30180.1

Morrison, R.R., Brown, W.R., Edmonson, W.F., Thomson, J.N., and Young, R.J., 1971, Potential of Sacramento Valley gas province, California, *in* Cram, I.H., ed., Future Petroleum Provinces of the United States—Their Geology and Potential: American Association of Petroleum Geologists Memoir, 15, p. 329–338.

Moxon, I.W., 1988, Sequence stratigraphy of the Great Valley basin in the context of convergent margin tectonics, *in* Graham, S.A., ed., Studies of the Geology of the San Joaquin Basin: Bakersfield, California, Pacific Section, Society of Economic Paleontologists and Mineralogists, Field Trip Guidebook 60, p. 3–28.

Nasdala, L., Grambole, D., Götze, J., Kempe, U., Váczi, T., 2011, Helium irradiation study on zircon: Contributions to Mineralogy and Petrology, 161, 777–789.

Nasdala, L., Lengauer, C.L., Hanchar, J.M., Kronz, A., Wirth, R., Blanc, P., Kennedy, A.K., and Seydoux-Guikkaume, A.M., 2002, Annealing radiation damage and the recovery of cathodoluminescence: Chemical Geology, 191: 121–140, DOI 10.1016/S0009-2541(02)00152-3

Noda, A., 2016, Forearc basins: Types, geometries, and relationships to subduction zone dynamics: Geological Society of America Bulletin, v. 128, p. 879–895, https://doi.org/10.1130/B31345.1.

Ojakangas, R.W., 1968, Cretaceous sedimentation, Sacramento Valley, California: Geological Society of America Bulletin, v. 79, p. 973–1008, https://doi.org/10.1130/0016-7606(1968)79 [973:CSSVC]2.0.CO;2

Orme, D.A., and Graham, S.A., 2018, Four-dimensional model of Cretaceous depositional geometry and sediment flux in the northern Great Valley forearc, California, *in* Ingersoll, R.V., Lawton, T.F., and Graham, S.A., eds., Tectonics, Sedimentary Basins, and Provenance: A Celebration of William R. Dickinson's Career: Geological Society of America Special Paper 540, https://doi.org/10.1130/2018.2540(18)

Orme, D.A., and Surpless, K.D., 2019, The birth of a forearc: The basal Great Valley Group, California, USA: Geology, v. 47, p. 757-761.

Pabst, A., 1952, The metamict state: American Mineralogist, v. 37, p. 137–157.

Robertson, A.H.F., 1990, Sedimentology and tectonic implications of ophiolite-derived clastics overlying the Jurassic Coast Range ophiolite, northern California: American Journal of Science, v. 290, p. 109–163.

Rose, R.L., and Colburn, I.P., 1963, Geology of the east-central part of the Priest Valley Quadrangle, California, *in* Geology of the Salinas Valley and the San Andreas Fault: American Association of Petroleum Geologists and Society of Economic Paleontologists and Mineralogists, Pacific Sections, Annual Spring Field Trip Guidebook: Los Angeles, California, Pacific Section, American Association of Petroleum Geologists, p. 38–45.

Schoenherr, A.A., 1992, A Natural History of California: University of California Press, Berkeley, USA.

Sharman, G.R., Graham, S.A., Grove, M., Kimbrough, D.L., and Wright, J.E., 2015, Detrital zircon provenance of the Late Cretaceous–Eocene California forearc: Influence of Laramide low-angle subduction on sediment dispersal and paleogeography: Geological Society of America Bulletin, v. 127, p. 38–60, https://doi.org/10.1130/B31065.1

Sims, J.D., Fox Jr, K.F., Bartow, J.A., and Helley, E.J., 1973, Preliminary geologic map of Solano County and parts of Napa, Contra Costa, Marin, and Yolo Counties, California: U.S. Geological Survey Miscellaneous Field Study Map, MF-484.

Spence, G.D., Hyndman, R.D., Langton, S., Yorath, C.J., and Davis, E.E., 1991, Multichannel seismic reflection profiles across the Vancouver Island continental shelf and slope: Geological Survey of Canada Open-File 2391, 41 p., doi:10.4095/132398.

Stevens Goddard, A. L., Trop, J. M., and Ridgway, K. D., 2018, Detrital zircon record of a

Mesozoic collisional forearc basin in south central Alaska: The tectonic transition from an oceanic to continental arc: Tectonics, 37, https:// doi.org/10.1002/2017TC004825.

Suchecki, R.K., 1984, Facies history of the Upper Jurassic–Lower Cretaceous Great Valley Sequence: Response to structural development of an outer-arc basin: Journal of Sedimentary Petrology, v. 54, p. 170–191.

Surpless, K.D., 2014, Geochemistry of the Great Valley Group: An integrated provenance record: International Geology Review, v. 57, p. 747–766, https://doi.org/10.1080/00206814.2014.923347

Surpless, K.D., Clemens-Knott, D., Barth, A.P., and Gevedon, M., 2019, A survey of Sierra Nevada magmatism using Great Valley detrital zircon trace-element geochemistry: View from the forearc: Lithosphere, 11, p. 603-619.

Surpless, K.D., Graham, S.A., Covault, J.A., and Wooden, J.L., 2006, Does the Great Valley Group contain Jurassic strata? Reevaluation of the age and early evolution of a classic forearc basin: Geology, v. 34, p. 21–24, https:// doi.org/10.1130/G21940.1

Tsuchiya, Y., Kayama, M., Nishido, H., and Noumi, Y., 2015, Annealing effects on cathodoluminescence of zircon: Journal of Mineralogical and Petrological Sciences, 110, 283–292.

Tsuchiya, Y., Kayama, M., Nishido, H., and Noumi, Y., 2017, Cathodoluminescence of synthetic zircon implanted by He+ ion: Geochronometria, 44, 129–135.

Vermeesch, P., Miller, D.D., Graham, S.A., Grave, J.D., and McWilliams, M.O., 2006, Multimethod detrital thermochronology of the Great Valley Group near New Idria, California: Geological Society of America Bulletin, v. 118, p. 210–218, https://doi.org/10.1130/B25797.1

von Huene, R., and Klaeschen, D., 1999, Opposing gradients of permanent strain in the aseismic zone and elastic strain across the seismogenic zone of the Kodiak shelf and slope, Alaska: Tectonics, v. 18, no. 2, p. 248–262, doi:10.1029/1998TC900022.

Williams, T.A., 1997, Basin-Fill Architecture and Forearc Tectonics: Cretaceous Great Valley Group, Sacramento Basin, Northern California [Ph.D. thesis]: Stanford, California, Stanford University, 412 p.

Williams, T.A., and Graham, S.A., 2013, Controls on forearc basin architecture from seismic and sequence stratigraphy of the Upper Cretaceous Great Valley Group, central Sacramento Basin, California: International Geology Review, v. 55, p. 2030–2059, https://doi.org/10.1080/00206814.2013.817520

Wright, J.E., and Wyld, S.J., 2007, Alternative tectonic model for Late Jurassic through Early Cretaceous evolution of the Great Valley Group, California, *in* Cloos, M., Carlson, W.D., Gilbert, M.C., Liou, J.G., and Sorenson, S.S., eds., Convergent Margin Terranes and Associated Regions: A Tribute to W.G. Ernst: Geological Society of America Special Paper 419, p. 81–95, https://doi.org/10.1130/2007.2419(04)

Zamyatin, D.A., Shchapova, Y.V., Votyakov, S.L., Nasdala, L., and, Lenz, C., 2017, Alteration and chemical U-Th-total Pb dating of heterogeneous high-uranium zircon from a pegmatite from the Aduiskii Massif, Middle Urals, Russia: Mineralogy and Petrology, 111, 475–497.

CHAPTER TWO

AGE AND PROVENANCE RELATIONSHIPS BETWEEN GREAT VALLEY FOREARC BASEMENT AND BASAL STRATA: IMPLICATIONS FOR THE DEVELOPMENT OF THE LATE JURASSIC–EARLY CRETACEOUS CALIFORNIA MARGIN

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Abstract

The Great Valley Forearc (GVF) basin, California reflects deposition along the western margin of North America during active oceanic subduction from Jurassic to Paleogene time. Along the western GVF, its underlying basement, the Coast Range Ophiolite (CRO), is exposed as a narrow outcrop belt. CRO segments are overlain by basal GVF strata, and locally, an ophiolitic breccia separates the CRO from basal GVF strata. This study reports new stratigraphic, petrographic and geochronologic data (3865 detrital and 68 igneous zircon U-Pb ages) from the upper CRO, ophiolitic breccia, and basal GVF strata to resolve the temporal relationship between the three units, along with constraining the maximum depositional ages (MDAs) and identifying provenance signatures of the ophiolitic breccia and basal GVF strata. Gabbros from the upper CRO yield zircon U-Pb ages of 167.02 ± 0.29 Ma and 165.79 ± 0.27 Ma. Detrital zircon data from the lower and upper ophiolitic breccia yield MDAs of ~165 Ma and ~151 Ma, respectively. Along strike variation in Jurassic and Cretaceous MDAs from basal GVF strata range from ~147–141 Ma, which likely reflects diachronous deposition in segmented depocenters during early development of the forearc. Prominent detrital zircon age populations of the ophiolitic breccia and basal GVF strata comprise Jurassic and Early Cretaceous ages, likely derived from Mesozoic igneous and volcanic rocks of the Sierra Nevada-Klamath magmatic arc. Modal point-count results support this interpretation, with the majority of detrital samples comprising litharenites. Pre-Mesozoic detrital zircon ages from the ophiolitic breccia and basal GVF strata are consistent with ages of North America affinity sources. The ophiolitic breccia was deposited in a forearc position proximal to the Sierra Nevada-Klamath magmatic arc <6 myr prior to the onset of GVF deposition. Through this work, a tectonic model is offered for the early

development of a forearc basin that records a period of outer forearc extension within an overall contractional convergent margin.

INTRODUCTION

Forearc basins evolve oceanward of active volcanic arcs, making them important sediment archives of convergent margins that record the erosional history of the upper plate and changes in subduction zone dynamics (Clift and Vannucchi 2004). Forearc basins may evolve atop extended continental crust and/or trapped oceanic crust, trapping highly variable amounts of sediment as much as ~10-13 km thick (e.g., Noda 2016). The Great Valley forearc (GVF) basin, California (Fig. 2.1) preserves a >100 myr sedimentary record of the geologic history of North America from Mesozoic to Cenozoic time (e.g., Goudkoff 1945; Hackel 1966; Morrison et al. 1971; Ingersoll 1978; Dickinson and Seely 1979; Graham 1981; Almgren and Hacker 1984; Moxon 1988; Williams 1997). It evolved atop continental crust along its central to eastern margin and trapped oceanic crust along its western margin (Cady 1975; Godfrey et al. 1997; Williams and Graham 2013; Orme and Graham 2018). The good preservation of the GVF, relative to other ancient forearc systems that have been eroded and deformed (e.g., Ingersoll 2012; Orme et al. 2021), allows for thorough study of how forearc systems evolve across different substrata.

Pioneering investigations of the northern GVF shed light on Jurassic–Cenozoic arc-forearc development and configuration using sandstone petrofacies (e.g., Ojakangas 1968; Dickinson and Rich 1972; Ingersoll 1983), conglomerate clast compositions (e.g., Rose and Colburn 1963; Bertucci 1983), and palaeocurrent analysis (e.g., Ingersoll 1979; Suchecki 1984). Subsequent geochronologic analyses further detailed links between the basin and its magmatic source regions in the Sierra Nevada-Klamath arcs and continental interior (e.g., DeGraaff-Surpless et al. 2002; Sharman et al. 2015; Orme and Surpless 2019; Surpless et al. 2019). In

addition, subsurface and outcrop studies document eastward-widening of the basin through time, with the youngest strata onlapping the Sierra Nevada foothills (e.g., Constenius et al. 2000; Mitchell et al. 2010; Williams and Graham 2013; Orme and Graham 2018). Decades of studies within the GVF basin have made significant contributions to understanding its basin evolution, but the precise age of the basal stratigraphy, original location of the GVF, and co-evolution with its underlying basement are still debated (e.g., Orme and Surpless 2019; Zakharov and Rogov 2020).

Along the northwestern Sacramento subbasin, segments of the middle to late Coast Range Ophiolite (CRO) basement are exposed as a narrow outcrop belt and overlain by basal GVF strata; locally, ophiolitic breccia separates the CRO from basal GVF strata. The origins of the CRO remain debated (Saleeby 1982, 1992; Shervais 2001; Shervais et al. 2005, and references therein; Hopson et al. 2008, and references therein; Ingersoll 2019, and references therein), as well as the origin of the sedimentary breccia that locally overlies the CRO, and it remains unclear whether the breccia was deposited proximal or distal to the North American margin in the Late Jurassic (e.g., Lagabrielle et al. 1986; Robertson 1990; Hopson et al. 2008). This uncertainty limits our understanding of the evolved relationship between basal stratigraphy and its underlying basement during the geologic history of western U.S. and how continental forearc basins evolve atop oceanic basement. This study reports new stratigraphic, petrographic, and geochronologic data from the northern Sacramento subbasin to re-evaluate the age and provenance of the basal GVF and its relationship with underlying basement and an overlying breccia interval. Integrating this data with that of previous studies, this study presents a tectonic model for the early stages of GVF basin development that proposes extension within the outer

forearc region of the North American convergent margin during Late Jurassic–Early Cretaceous time.

GEOLOGIC BACKGROUND

Geologic Setting

From west to east, the Franciscan Complex, CRO, GVF, and Sierra Nevada magmatic arc record late Mesozoic–early Cenozoic convergence along the western margin of North America (Fig. 2.1) (e.g., Hamilton 1969; Engebretson et al. 1985). The Franciscan accretionary complex is an assemblage of oceanic material and sedimentary rocks deposited in or near the trench of a subduction zone (Ernst 1970; Wakabayashi 2011). Structurally overlying the Franciscan Complex, the CRO represents the oceanic basement of the western GVF basin (Bailey et al. 1970; Ingersoll 1982); igneous and metamorphic rocks of the Sierra Nevada foothills form the basement along the eastern GVF basin margin (Cady 1975; Godfrey et al. 1997; Orme and Graham 2018). The Coast Range Thrust marks the contact between the CRO and GVF, but a depositional contact is preserved locally (Ingersoll 1979). Mesozoic strata of the GVF are collectively referred to as the Great Valley Group (GVG). The initial timing of the onset of subduction and development of the Franciscan accretionary complex remains debated (e.g., Mulcahy et al. 2018, and references therein), as well as the uncertainty regarding the formation of the CRO, which may have been before, after, or coeval with the onset of Franciscan subduction.

The age of upper CRO varies from ~174–164 Ma throughout the northern Sacramento subbasin (Fig. 2.2). Zircon U-Pb ages for the Elder Creek and Stonyford segments of the

ophiolite are 172–165 Ma and 172–166 Ma, respectively (Shervais et al. 2005), but the CRO in Grindstone Creek yields a titanite U-Pb age of 166.6 ± 4.5 Ma (Orme and Surpless 2019). Proposed models for the development of the CRO include: (1) backarc-interarc spreading behind an east-facing intra-oceanic island arc that was subsequently accreted to the Sierran Nevada arc via arc collision during Jurassic time (Ingersoll 2019, and references therein), (2) mid-ocean ridge spreading, at/near paleoequatorial latitude, in an open-ocean setting; this mobile oceanic crust was then transported northward and subsequently became outboard of the Sierran continental-margin arc (Hopson et al. 2008, and references therein), or (3) forearc spreading in response to slab rollback within the forearc region of the Sierran continental-margin arc during the end of Middle Jurassic time (Saleeby 1982, 1992; Shervais 2001; Shervais et al. 2005, and references therein). Most recently, Orme and Surpless (2019) incorporated the latter model to help explain diachronous depositional ages within the basal forearc.

Upper Coast Range Ophiolitic Breccia

Pseudostratigraphy.— In northern California, several remnants of the CRO are overlain by sedimentary ophiolitic breccias and a thin transitional unit of mudstone, prior to deposition of deep-water facies assigned to the Great Valley forearc (Fig. 2.3) (Bezore 1969; Bailey et al. 1970; Bailey and Blake 1974; Evarts 1977; Hopson et al. 1981; Lagabrielle et al. 1986; Blake et al. 1987; McLaughlin et al. 1988; Robertson 1990). The stratigraphic thickness of the ophiolitic breccia varies along strike and ranges from ~ 1 m to ~600 m (Fig. 2.3) (Hopson et al. 1981; Lagabrielle et al. 1986; Robertson 1990). The unit consists of mega-breccia, clast-supported breccia, clast-and matrix-supported conglomerate, sandstone, and mudstone (Lagabrielle et al.

1986; Robertson 1990). Clasts within the ophiolitic breccia include basaltic rocks, gabbro, plagiogranite, anorthosite, pyroxenite, fine-grained mafic dike rocks, diabasic rocks, and radiolarian chert (Hopson et al. 1981; Lagabrielle et al. 1986; Robertson 1990; Hopson et al. 2008). The age of the ophiolitic breccia is interpreted as Late Jurassic (Kimmeridgian), based on preservation of *Buchia rugose* at Crowfoot Point, within the Paskenta area (Jones 1975; Pessagno 1977).

At Digger Creek, near Crowfoot Point, Robertson (1990) described a transitional unit of siliceous mudstone, sandstone, and minor conglomerate between the underlying ophiolitic breccia and the overlying GVG (Fig. 2.3A, 2.4). This unit contains lower Tithonian radiolarians locally (Robertson 1990). Pseudostratigraphy near Digger Creek (referred to as Elder Creek ophiolite remnant *in* Hopson et al. 2008) includes the CRO, which is overlain by >4 m of reddish-brown tuffaceous radiolarian chert, followed by ophiolitic breccia and subsequent thin volcanopelagic beds that are referred to as the "transitional unit" in Robertson (1990) (Fig. 2.3B). In contrast, Hopson et al. (2008) report this CRO remnant as overlain by syndepositional sedimentary ophiolitic breccia and subsequent basal strata of the GVG. Nearby, ~2 km north and at the head of Digger Creek, Lagabrielle et al. (1986) reported a basaltic sill that cuts across ophiolitic breccia and basal GVG mudstones, interpreting this to reflect a Late Jurassic magmatic event. These studies suggest spatially variable pseudostratigraphies along the western side of the Sacramento subbasin, warranting additional study of the temporal relationship between the CRO, ophiolitic breccia, and GVG.

Provenance and Tectonic Setting of the Upper Coast Range Ophiolitic Breccia.—In northern California, the ophiolitic breccia and transitional unit form the top of the ophiolite pseudostratigraphy (Fig. 2.3A) (Robertson, 1990, and references therein). The ophiolitic breccia contains debris from various levels of the underlying ophiolite and likely represents dismemberment of the underlying oceanic crust (e.g., Hopson et al. 1981; Blake et al. 1987; Lagabrielle et al. 1986; Robertson 1990; Hopson et al. 2008). Robertson (1990) suggested that the transitional unit also contains arc-derived detritus, based on the presence of subordinate silicic volcanic and tuffaceous sediment. Hopson et al. (2008) suggested that the interstratified siliceous sediment and tuff beds within the transitional unit of Robertson (1990) represent the upper volcanopelagic succession of the CRO oceanic crust, but interpreted the ophiolitic sandstone (microbreccia) beds as reworked from the underlying ophiolitic breccia.

Mechanisms proposed to produce the ophiolitic breccia and finer sediments include: (1) uplift and erosion of arc flanks, as part of an arc complex (Lagabrielle et al. 1986); (2) crustal tension in and above a subduction zone setting (Robertson 1990); or (3) a migrating transform zone (Hopson et al. 2008). Lagabrielle et al. (1986) suggested faulting and erosion of the CRO occurred before or during deposition of the breccia within an island-arc and extensional back-arc environment, based on trace element analysis. Robertson (1990) suggested that extensional faulting resulted in rock fall and slumping, along with sliding, debris flow, turbidity, and traction current deposition to deposit the ophiolitic breccia and transitional unit. However, Hopson et al. (2008) argued that sole faulting and the production of bedrock fault scarps cannot explain the voluminous fragmental debris that extended over large areas of the seafloor during Late Jurassic time. Hopson et al. (2008) proposed that dismembered oceanic crust developed large structural

relief via faulting that occurred before, coeval with, and after breccia deposition. Hopson et al. (2008) further proposed that crustal fault slices and extensive fragmental ophiolitic debris and finer sediments were produced in a migrating transform zone located between a propagating rift tip and the failing rift within a deep-sea setting during Late Jurassic distal volcanopelagic sedimentation. Hopson et al. (2008) noted that the ophiolitic breccia covers faulted parts of the CRO at six of the northern Coast Range ophiolite remnants (Table 1, Fig. 2B, localities #17-#22 *in* Hopson et al., 2008) and concluded that widespread faulting dismembered Middle Jurassic oceanic crust during the Late Jurassic.

Great Valley Group

Stratigraphy and Depositional Age.—In the northern GVF basin, the Sacramento subbasin is separated from the San Joaquin subbasin by the Cenozoic Stockton arch (Fig. 2.1). The present-day Sacramento subbasin is 72 km in width and 323 km in length and along its western limit, Mesozoic GVG strata are preserved as an eastward-dipping homoclinal belt (Kirby 1943; Ingersoll et al. 1977). Preserved only in the Sacramento subbasin of the GVF, the Stony Creek Formation, which is the basal unit of the GVG, rests unconformably atop the upper CRO and, where preserved, the ophiolitic breccia (Fig. 2.2, 2.3). The basal strata record a lithologic shift from Tithonian(?)–Berriasian ophiolitic, volcaniclastic sandstone and pelagic sediment that overly the CRO to Valanginian–Albian mudstone, sandstone, and conglomerate (Ingersoll 1976, 1982). This study uses “Tithonian(?)” and “Upper Jurassic(?)” to indicate the uncertainty of the Jurassic age assignment (Surpless et al. 2006; Orme and Surpless 2019); basal strata of the Stony Creek Formation have historically been assigned an Upper Jurassic stratigraphic age based on

the occurrence of the pelecypod fossil *Buchia piochii* and its association with ammonites (Jones et al. 1969).

Recent work by Zakharov and Rogov (2020) on the nomenclature and biostratigraphic zonal boundaries at Jurassic–Cretaceous transitional intervals in the Paskenta area of northern California (Fig. 2.1, 2.5) concluded that buchiid bivalves and ammonites from McCarty Creek and Grindstone Creek (Fig. 2.4, 2.5) indicate Tithonian (Late Jurassic) basal age of the GVG. However, Surpless et al. (2006) and Orme and Surpless (2019) documented the presence of Cretaceous detrital zircons within this same stratigraphic interval, suggesting that the chronostratigraphy of basal forearc strata requires re-evaluation and that forearc basin sedimentation may have initiated ~10–20 myr after CRO emplacement. If initial deposition occurred later than previously interpreted from biostratigraphy (Tithonian age), and as young as Valanginian–Hauterivian (Surpless et al. 2006; Orme and Surpless 2019), then sedimentation rates could be significantly higher than previously interpreted (Ingersoll 1979; Orme and Graham 2018).

Orme and Surpless (2019) used the Jurassic–Cretaceous boundary of 145 ± 0.8 Ma from Ogg and Hinnov (2012), consistent with the most recent timescale from the Geological Society of America (GSA). However, Lena et al. (2019) presented high-precision U-Pb geochronological data that support a Jurassic–Cretaceous age boundary of 140.9–140.7 Ma. Wimbledon et al. (2020) proposed that the Tithonian–Berriasian boundary is at 140.22 ± 0.14 Ma, based on biostratigraphic and magnetostratigraphic data from various global locations that contain the Jurassic–Cretaceous boundary. Because the proposed age boundaries of Lena et al. (2019) and Wimbledon et al. (2020) are not formally accepted on international timescales, this study uses

the GSA published age of 145 ± 0.8 Ma (Ogg and Hinnov 2012), but discusses the potential implications of a younger Jurassic–Cretaceous age boundary.

Depositional Environment.—In northern California, interbedded siltstone-sandstone, massive mudstone, siltstone, shale, and thin-bedded silty-sandstone comprise the deep marine strata of the Upper Jurassic(?)–Lower Cretaceous Great Valley sequence (Ingersoll 1976, 1982; Suchecki 1984). Upper Jurassic Tithonian(?)–Lower Cretaceous Berriasian strata record an overall coarsening-upward sequence that includes submarine-fan and slope facies along depositional strike, suggesting a time of progradation and off-lapping of submarine-fan debris over basin-plain mud and thin-bedded sand deposits (Suchecki 1984). Similarly, Upper Jurassic(?) to Lower Cretaceous strata contain interbedded mudstone with turbiditic siltstone and sandstone, along with limited lenticular (channel-fill) pebble conglomerate, all of which are interpreted to represent submarine slope deposits that prograde over basin-plain deposits (Bailey et al. 1964; Page 1972; Ingersoll 1976, 1982; Suchecki 1984). Subsequent Lower Cretaceous strata record retrogradation of the submarine-fan depositional system that was overlain by basin-plain deposits within the central part of the basin; the eastern part of the basin was overlain by coarser slope debris (Suchecki 1984). Throughout Early Cretaceous time, westward-flowing channel and depositional lobe systems that had developed during the Tithonian(?) became more widespread (Suchecki 1984).

Provenance.—Previous sandstone petrography and paleocurrent analysis have provided significant insight to the provenance of the northern GVF sediments (e.g., Ojakangas 1968;

Dickinson and Rich 1972; Mansfield 1979; Ingersoll 1979, 1983; Suchecki 1984). Within Tithonian(?) strata of the northern GVF, measured southward paleoflow indicators are interpreted to result from a system of bottom currents and thin turbidity currents (Suchecki 1984) sourced from the north. By contrast, Berriasian strata record westward-flowing channel and depositional lobe systems with paleocurrent measurements illustrating progradation of depositional lobes by the westward transport of coarse material to fill submarine channels (Suchecki 1984). The regional paleoslope configuration between Late Jurassic(?) to Early Cretaceous time was a southwest-dipping slope where Tithonian(?)–Hauterivian strata contain coarse material that were deposited in submarine-fan channels (Suchecki 1984).

The sandstone petrographic and paleocurrent analyses and mudrock geochemistry support the interpretation that provenance was the Sierra Nevada and the Klamath Mountains (Fig. 2.1) (Ingersoll 1979, 1983; Suchecki 1984; Surpless 2014). In addition, Nd-Sr isotopic analyses of sandstones from Sacramento subbasin strata document positive ε_{Nd} values ranging from −1.6 to +7 (Linn et al. 1991), consistent with positive ε_{Nd} sediment sources in the northern Sierran foothills terranes, northern Sierra Nevada batholith, and the Klamath Mountains (DePaolo 1981).

Mesozoic detrital zircon ages from the GVG contain prominent Triassic–Early Cretaceous age populations (DeGraaff-Surpless et al. 2002; Surpless et al. 2006; Wright and Wyld 2007; Surpless and Augsburger 2009; Surpless 2014; Sharman et al. 2015; Martin and Clemens-Knott 2015; Greene and Surpless 2017; Orme and Surpless 2019). Detrital zircon age spectra from the GVG record changes in abundance of pre-Mesozoic age populations interpreted to reflect changes in catchment areas, some of which tap the interior of the continent (DeGraaff-

Surpless 2002; Orme and Surpless 2019). DeGraaff-Surpless et al. (2002) describe the drainage of the GVF depocenter to have evolved from localized to extensive catchment areas.

Paskenta Fault Zone

In the northwestern Sacramento subbasin, the Cold Fork, Elder Creek, and Paskenta fault zones strike approximately northwest-southeast across Upper Jurassic(?) and Lower Cretaceous GVG strata (Fig. 2.4) and are considered coeval with Jurassic–Cretaceous sedimentation (Jones et al. 1969; Suchecki 1984; Vogel 1985; Moxon 1988, 1990). The Paskenta fault zone is interpreted as a synsedimentary normal fault system (Fig. 2.4, 2.5A) (Suchecki 1984) with down-to-the-north faulting, based on small-scale fault structures and fold analysis as well as outcrop-scale field relations (Vogel 1985; Vogel and Cloos 1985). Vogel (1985) suggested that the Paskenta fault zone represents northwest-southeast–directed subhorizontal extension that occurred from Tithonian–Valanginian time, and that the faults within this fault zone were subsequently rotated by uplift of the Coast Ranges during the Neogene.

Constenius et al. (2000) showed the Paskenta fault zone as a tilted fault that dips to the east-northeast, based on subsurface mapping and mapped fault surface traces and inferred large-scale synextensional normal faulting associated with northwest tectonic transport of the Paskenta hanging-wall blocks and coeval with Tithonian–Valanginian through Coniacian sedimentation (151–86 Ma). Notably, Constenius et al. (2000) suggested that CRO segments near the Paskenta area represent mafic volcanic rocks associated with volcanic rifted margins, based on correlation of CRO outcrop to ophiolitic rock in the subsurface.

METHODS

Sedimentology and Stratigraphy

Detailed stratigraphic sections were measured at five localities at a bed-by-bed scale using a Jacob staff to determine depositional environments and provide context for provenance and maximum depositional ages within the northwestern Sacramento subbasin (Fig. 2.5; Table 2.1). This study applies lithofacies codes that are modified from marine deposits described in Orme et al. (2015, 2021), following the work of Bouma (1962) and Mutti (1992) (Table 2.2). Fine- to coarse-grained sandstone, along with clast-supported and matrix-supported breccia, were collected for petrologic and U-Pb geochronologic analysis.

Sandstone Modal Analysis

Thin sections were made from 11 fine- to coarse-grained sandstones, one clast-supported breccia, and one matrix-supported pebble breccia, all within the northwestern Sacramento subbasin. All thin sections were stained for plagioclase and potassium feldspar and the sandstones were point-counted with at least 300 framework counts per slide, following the Gazzi–Dickinson method of point-counting (Fig. 2.6) (Gazzi 1966; Ingersoll et al. 1984; Dickinson 1985); the clast-supported and matrix-supported breccia samples had <75 framework counts per slide due to large grain size. The lithologic fields of Garzanti (2019) and tectonic fields of Dickinson (1985) are used for sandstone classification and to aide in provenance interpretation, respectively. Photomicrographs of quartzo-feldspatho-lithic (qFL), lithic (L), feldspathic (F), and feldspatho-quartzo-lithic (fQL) petrofacies from ophiolitic breccia and basal

strata of the GVF basin are shown in Figure 2.7. Petrographic parameters for modal point-counting are listed and defined in Table 2.3. Modal data are provided in Appendix A.

Zircon U-Pb Geochronology

Sixteen sandstone samples from the GVG, three samples from the ophiolitic breccia, and two igneous samples from the CRO were collected for U-Pb geochronologic analysis (Table 2.1). Mineral separation for zircon was completed using standard separation techniques (e.g., Gehrels et al. 2008). Of the 21 samples collected for U-Pb geochronologic analysis, 16 (14 detrital, 2 igneous) yielded enough zircon for dating and analyses were conducted at the ALC (Table 2.1). Probability distribution plots (PDPs) for each detrital zircon sample were generated using the software package *detritalPy* (Sharman et al. 2018).

Backscattered electron (BSE) and cathodoluminescence (CL) images of detrital and igneous samples, respectively, aided in selecting zircons without cracks and/or significant inclusions. For analysis, 315 detrital zircon grains or 35 igneous grains per sample were randomly selected; all zircon grains were analyzed by laser ablation-inductively coupled plasma-mass spectrometry (LA-ICP-MS) using a Thermo Element2 single collector ICP-MS. U-Pb analyses were conducted with a 20 μm spot diameter, resulting in a 12 μm pit depth on each evaluated grain. U-Pb data were filtered to exclude ages with high common Pb, >5% reverse discordance, >10% uncertainty, or >20% discordance. The reported ages are based on the $^{206}Pb/^{238}U$ ages for grains < ~1.0 Ga and on the $^{206}Pb/^{207}Pb$ ages for grains > ~1.0 Ga (Gehrels et al. 2008; Gehrels 2012). U-Pb data are reported in Appendix A.

The maximum depositional age (MDA) of a detrital sample may be determined from the youngest population of zircon U-Pb ages (Dickinson and Gehrels 2009; Coutts et al. 2019). This study reports three possible MDAs for 14 detrital zircon samples: (1) Youngest Single Grain, YSG; (2) Youngest cluster of 2 or more ages with overlapping 1σ uncertainties, YC1σ(2+); and (3) Youngest cluster of three or more ages with overlapping 2σ uncertainties, YC2σ(3+) (Table 2.4). This study uses the YC2σ(3+) method for interpretation because this approach provides a conservative estimate of the MDA while avoiding use of grains that may be affected by Pb loss (Dickinson and Gehrels 2009), and Coutts et al. (2019) demonstrate this method produces ages that are equal to or older than the true depositional age (TDA). Within the GVF, detrital zircon samples are likely to yield MDAs that are similar to TDAs due to proximity to the Sierra Nevada-Klamath magmatic arc during the time of deposition (e.g., Orme and Surpless 2019). In addition, the sample size of n = ~300 grains for 12 of the 14 samples herein has been statistically shown to capture all age populations, including the youngest from which this study calculates MDAs (e.g., Pullen et al. 2014).

This study uses *detritalPy* (Sharman et al. 2018) to generate KDE plots (bandwidth of 5 myr) of detrital zircon age distributions from samples in this study and published U-Pb age datasets from North America "sink" regions during the Jurassic to earliest Cretaceous for provenance interpretation. Sample names and references are listed in Appendix A. This large compilation (n = 10,400) uses KDEs to visually highlight the comparison of U-Pb ages from sinks and sources. It is noted that KDE's smooth the probability curves, which can yield young diffuse tails and thereby reduce the visual appearance of the youngest age population.

Multi-Dimensional Scaling (MDS) Analysis

Multi-dimensional scaling (MDS) plots for different sample groupings (e.g., samples representing different sinks and sources) were produced using *detritalPy* (Sharman et al. 2018) to visually compare sample similarity and dissimilarity (Vermeesch 2013; Saylor et al. 2018). MDS calculations in *detritalPy* for the detrital zircon compilation are completed based on the maximum separation between cumulative distribution functions (CDF) as calculated using the Kolgomorov–Smirnov Dmax statistic, following Vermeesch (2013). Grouped samples used for each pie diagram in MDS space and references are listed in Appendix A. Sample groups in MDS space that plot near each other suggest similar detrital zircon age spectra, and possibly similar source regions (e.g., Sharman and Johnstone 2017).

RESULTS

Sedimentology and Stratigraphy

Five stratigraphic sections were measured along a north-south trend of the northwestern Sacramento subbasin (Fig. 2.4, 2.5). Sections MC1, DC1, CP1, P01, and GC1 range in thicknesses from ~15 to 420 m (Fig. 2.8). Stratigraphic sections are focused on the basal-most strata that are mapped as Jurassic in age to avoid up-section complexity (e.g., deformation) that might affect the age and provenance determinations for the basal strata. An exception is Section MC1 at McCarty Creek, which was measured within strata mapped as Cretaceous, structurally above the Paskenta Fault zone (Fig. 2.5A), and is included in this study because (1) McCarty Creek is host to one of the most continuously exposed sections within the Paskenta region; (2) the strata may provide insight to potential up-section changes in provenance; and (3) strata in

Section MC1 serve as a comparison to similar facies documented in Section GC1 at Grindstone Creek that contain shell fragments and the pelecypod *Buchia*, which may reflect the transport of fossils, fragments of fossils, and sediment downslope during turbidity flows.

Measured Section MC1: McCarty Creek

Facies Description.—This 64-m-thick section consists of alternating beds of tan to grey, fine- to medium-grained, moderately sorted sandstone and siltstone (Fig. 2.8, 2.9A). Bed forms vary from tabular to lenticular. Lithofacies include massive and laminated siltstone (Fsm and Fsl), fine- to medium-grained massive sandstone (Sm), and fine- to medium-grained plane-parallel laminated sandstone (Sh). Sandstone beds are typically 5-12 cm thick, with a few beds that are as thick as 40 cm; siltstone intervals range from 20-30 cm thick. Fossiliferous sandstone and siltstone beds contain the pelecypod *Buchia* as well as fragments of unidentified shells (Fig. 2.9B–D). Fine- to medium-grained massive sandstone beds (Sm) infrequently have erosional bases. A few sandstone beds contain dewatering features, such as flame structures and convolute laminations (Fig. 2.9E). Normal grading is observed in the sandstone beds throughout the section, typically grading from medium to fine-grained sandstone or fine-grained sandstone to siltstone. Sandstone beds containing the pelecypod *Buchia* are also observed at the upper part of measured section MC1 (Fig. 2.9F). Toward the top of Section MC1, beds are locally offset.

Interpretation.—The grain size of sandstone, predominantly non-erosional bases, thin beds, dewatering structures, and presence of interbedded siltstone likely reflect deposition at the most distal region of a turbidite fan, such as the basin plain (Mutti 1992; Talling et al. 2012).

Fossiliferous sandstone and siltstone beds that contain the pelecypod *Buchia* are often found in a coquina-like texture along with shell fragments, which suggests the transport of fossils, fragments of fossils, and sediment downslope during turbidity flows. Overall, lithofacies in Section MC1 are characteristic of deposition from a low-density turbidity current (Mutti 1992).

Measured Section DC1: Digger Creek

Facies Description.—This 43.5-m-thick section primarily comprises grey siltstone beds with relatively few tan to brown, fine- to medium-grained, moderately sorted sandstone beds (Fig. 2.8). Bed forms are mainly tabular and seldom lenticular. Lithofacies include laminated and massive and siltstone (Fsl and Fsm), fine- to coarse-grained massive sandstone (Sm), and very fine- to medium-grained plane-parallel laminated sandstone (Sh). Sandstone beds are ~10 cm thick and a few siltstone beds thicken up to ~15 cm. Few beds are slightly offset locally within Section DC1. Soft sediment deformation is preserved within a siltstone lens near the top of Section DC1.

Interpretation.—The grain size of sandstone, non-erosional bases, thin sandstone beds, and abundant siltstone suggest deposition at the most distal region of a turbidite fan, such as the basin plain (Mutti 1992; Talling et al. 2012). Overall, Section DC1 contains lithofacies that are characteristic of deposition from a low-density turbidity current (Mutti 1992).

Measured Section CP1: Crowfoot Point

Facies Description.—Section CP1 records the transition from the ophiolitic breccia to the basal GVG (Fig. 2.9G, H). This 34-m-thick section consists of a 50 cm-thick matrix-supported pebble-cobble breccia (Gmb) at its base, overlain by alternating beds of tan to brown, very fine- to coarse-grained, poorly sorted sandstone and grey siltstone (Fig. 2.8). The Gmb matrix is composed of reddish silty mudstone with clasts that are angular to subangular. Lithofacies that overly Gmb include massive and laminated siltstone (Fsm and Fsl), very fine- to coarse-grained massive sandstone (Sm), and medium- to coarse-grained plane-parallel laminated sandstone (Sh). Sandstone and siltstone bed forms are tabular. Sandstone beds are ~5-10 cm thick.

Interpretation.—The basal 50-cm-thick matrix-supported pebble-cobble breccia, lithofacies Gmb, within Section CP1 may represent deposits of cohesive debris flows (Lowe 1982) or plastic debris flows (Shultz 1984). Pebble-cobble-sized breccia are interpreted to have been derived from the underlying Coast Range ophiolite. Overlying the matrix-supported pebble-cobble breccia are lithofacies that are characteristic of flow in a low-density turbidity current (Mutti 1992), which includes massive and laminated siltstone, very fine- to coarse-grained massive sandstone, and medium- to coarse-grained plane-parallel laminated sandstone. The extensive presence of mudstone, thin sandstone beds, grain size of sandstones, and non-erosional bases suggests deposition at the most distal region of a turbidite fan, such as a basin plain setting (Mutti 1992; Talling et al. 2012).

Measured Section P01: Paskenta

Facies Description.—Section P01 records the first accessible exposure of Stony Creek Formation strata within this area of the study (Fig. 2.5B) as the basal contact, mapped ~0.7 km to the west, is serpentinite mélange. This 14-m-thick section contains alternating beds of buff to brown, very fine- to very coarse-grained, moderately sorted sandstone and siltstone (Fig. 2.8). Within this section, bed forms are mainly tabular. Lithofacies include massive and laminated siltstone (Fsm and Fsl), very fine- to medium-grained massive sandstone (Sm), very fine- to very coarse-grained plane-parallel laminated sandstone (Sh), and very fine- to fine-grained sandstone with small ripples (Sr). Sandstone beds are typically 5-10 cm thick. Near the base of Section P01, sandstone and siltstone beds contain vertical burrows that are ~1 cm in diameter (Fig. 2.9I), along with a siltstone bed that contains shell fragments of brachiopods. Bioturbation is occasionally observed in a few Sm lithofacies. Flecks of mica and black organic material are observed throughout the section. Within Section P01, there is an upsection increase in sandstone beds.

Interpretation.—Despite limited exposure in this area, the predominant grain size of sandstone, sharp contacts between thin beds, and massive to laminated siltstones and sandstones suggest deposition by turbidity flows at the most distal region of a turbidite fan or basin plain (Mutti 1992; Talling et al. 2012). Sandstone and siltstone beds that contain bioturbation and shell fragments suggest the transport of fossils, small marine invertebrates, and sediment downslope during a turbidity flow. Section P01 contains lithofacies that are characteristic of flow in a low-density turbidity current (Mutti 1992).

Measured Section GC1: Grindstone Creek

Facies Description.—Within Grindstone Creek (Fig. 2.5C), serpentinite mélange is faulted against the Stony Creek Formation and Quaternary alluvium covers the faulted contact between these two units (Fig. 2.9J). This 419.1-m-thick section represents a composite stratigraphic section constructed from two measured sections within Grindstone Creek (Fig. 2.8). Sparse sandstone beds stratigraphically above the fault contact display outcrop-scale dewatering structures and local soft-sediment deformation. Section GC1 starts ~0.5 km east of the fault contact, in the last exposure of serpentinite mélange. The lower 40.5-m part of the section consists of alternating beds of tan to grey, fine-grained, moderately sorted sandstone and siltstone (Fig. 2.9K). Bed forms are predominantly tabular. Lithofacies include massive and laminated siltstone (Fsm and Fsl), fine-grained massive sandstone (Sm), fine-grained plane-parallel laminated sandstone (Sh), and fine-grained sandstone with small ripples (Sr). Sandstone beds are typically 2-5 cm thick, with a rare bed that is ~10 cm thick; siltstone intervals range from 5-10 cm thick. The pelecypod *Buchia* is observed in Sr lithofacies that are ~10-cm-thick, within the lower part of Section GC1 (Fig. 2.9L). Near the base of the section are few sandstone and siltstone beds that are locally offset (i.e., < 1.5 meters of broken and discontinuous beds). At the top of the lower part of the section is a folded siltstone lens and bedding is no longer continuous; this is a relatively local feature within the section. Following this folded section, there is 360 m of disorganized deep-water sediments within Section GC1, before stratigraphically upright beds are observed again (Fig. 2.8).

The upper 18.6-m part of Section GC1 consists of beds that are tan to grey, medium- to very coarse, poorly sorted sandstone and siltstone, clast-supported granule conglomerate, clast-supported pebble conglomerate, and matrix-supported pebble-cobble conglomerate (Fig. 2.8). Bed forms are mainly tabular. Lithofacies include laminated and massive siltstone (Fsl and Fsm), medium- to very coarse-grained massive sandstone (Sm), clast-supported granule conglomerate (Gcg), clast-supported pebble conglomerate (Gcm), and matrix-supported pebble-cobble conglomerate (Gmm). Few beds display Gcg lithofacies that grade normally to Sm lithofacies. Sandstone beds are variable thicknesses between 20-40 cm, and some sandstone beds contain lenses of shale. Siltstone beds range from ~10-45 cm in thickness and some siltstone beds contain sandstone lenses. Shell fragments and the pelecypod *Buchia* are observed in Sm lithofacies within the upper part of Section GC1 (Fig. 2.9M). Clasts within the conglomerate beds contain red, green, and black chert. Conglomerate beds are between 70 cm to 3 m thick (Fig. 2.9N), and a few have erosional bases. Tool marks are observed at the bottom of a sandstone bed, near the top part of Section GC1. There are a few channel-forms filled with Gmm lithofacies at the top of Section GC1, along with lenses of medium-grained sandstone (Sm) within the Gmm lithofacies.

Interpretation.—In the lower 40.5-m of Section GC1, lithofacies are representative of flow in a low-density turbidity current (Mutti 1992). The dominantly fine-grained sandstone, thin beds, absence of erosional bases, and abundant siltstone likely record deposition at the most distal region of a turbidite fan (Mutti 1992; Talling et al. 2012). The 360 m of disorganized deep-water sediments in conjunction with underlying discontinuous and deformed bedding may

represent a single slump deposit (Stow 1986; King et al. 2011). The along strike extent of this slump is uncertain, but the shell fragments and fossils (e.g., pelecypod *Buchia)* within segments of Section GC1 may be reworked from off of the margin and transported downslope during transport of this deposit.

The upper 18.6-m of Section GC1 contain an increase in conglomeratic lithofacies that include Gcm, Gcg, and Gmm. Conglomerate lithofacies Gcm and Gcg likely represent deposits of clast-rich or pseudoplastic debris flows (Shultz 1984). The upper portion of Section GC1 also records a change in conglomerate lithofacies from Gcg to Gmm, where Gmm becomes the dominant lithofacies and represents the uppermost strata of Section GC1; Gmm may represent deposits of cohesive debris flows (Lowe 1982) or plastic debris flows (Shultz 1984). In addition, toward the end of Section GC1, the association of matrix-supported conglomerate beds (Gmm) with eroded bases and massive sandstone (Sm) further imply cohesive debris-flow deposits (Lowe 1982; Shultz 1984) or hybrid flows (Talling 2013). The change from Gcg to Gmm may reflect a shift in flow strength up-section from clast-rich or pseudoplastic debris flows (Shultz 1984) to plastic or cohesive debris flows (Lowe 1982; Shultz 1984). Fine-grained sandstone beds that contain the pelecypod *Buchia*, as well as medium- to coarse-grained sandstone beds that contain the pelecypod *Buchia* and shell fragments, are observed in both segments of Section GC1 and suggest downslope transport of fossils, fragments of fossils, and sediment during low-density turbidity flows and clast-rich or pseudoplastic debris flows. The overall up-section trend in Section GC1 changes from deposits that represent a distal region of a turbidite fan to deposits that represent deposition within a middle turbidite fan setting.

Sandstone Modal Analysis

Quartzose grains comprise monocrystalline quartz (Qm) and polycrystalline quartz (Qp). Total feldspar grains are identified as potassium types (K: microcline, orthoclase, and perthite) and plagioclase (P: Ca and Na varieties) based primarily on twinning style (Table 2.3). Lithic grains are identified as phyllite (Lph), mica schist (Lsm), felsic volcanic (Lvf), lathwork volcanic (Lvl), mafic volcanic (Lvm), vitric volcanic (Lvv), and microlitic (Lvx) (Table 2.3). Accessory minerals comprise amphibole, apatite, biotite, chlorite, epidote, olivine, and zircon. Following Garzanti (2016), the majority of GVF sandstones are quartzo-lithic or feldspatho-quartzo-lithic, with a few particularly feldspar- or quartz-rich few samples classified as quartzo-feldspathic or feldspatho-quartzose (Fig. 2.6). On tectonic ternary plots, all samples plot within the Magmatic Arc or Continental Block provenance fields of Dickinson (1985) and are further separated into the compositional fields of an Undissected, Transitional, and Dissected Arc as well as Transitional Continental and Basement Uplift, respectively (Fig. 2.6).

Zircon U-Pb Geochronology

Coast Range Ophiolite.—Samples 0619-MR-06 and 0619-MR-07 were collected from outcrops of gabbro near Eagle Peak, west of the Paskenta fault zone (Fig. 2.5A; Table 2.1). Zircon U-Pb analysis yields Middle Jurassic weighted mean ages that are Middle Jurassic in age: 167.02 ± 0.29 Ma (sample 0619-MR-06; n = 34) and 165.79 ± 0.27 Ma (sample 0619-MR-07; n = 34) (Appendix A).

Great Valley Forearc.—Each detrital zircon sample includes n > 300 grains, with the exception of sample 0619-MR-26 (*n* = 102) and sample 0619-MR-27 (*n* = 71), which had poor zircon yield (Table 2.1). All 14 detrital zircon samples yield U-Pb age spectra containing Precambrian–Mesozoic age populations (Fig. 2.10). Mesozoic age populations consist of major age modes at 250–240 Ma, 200–190 Ma, 175–160 Ma, 155–145 Ma, and 140–130 Ma (Fig. 2.10). Pre-Mesozoic age populations range from 2200–2000 Ma, 1900–1600 Ma, 1500–1400 Ma, 1300–950 Ma, 700–550 Ma, and 450–250 Ma (Fig. 2.10). The following describes the results from all detrital samples by field area, from north to south.

McCarty Creek.—Within measured Section MC1, sample 0619-MR-22 is the most basal sample with an MDA of 133.2 ± 0.19 Ma (Fig. 2.5A, Table 2.4). Up-section, samples 0619-MR-23 and 0619-MR-24 yield MDAs of 133.7 ± 0.31 Ma and 132.7 ± 0.14 Ma, respectively (Fig. 2.5A, Table 2.4). Mesozoic grains comprise 80-96% of the three detrital samples, with age peaks at ~150 Ma and ~135 Ma, and relatively fewer pre-Mesozoic grains (Fig. 2.10).

Digger Creek.—Samples 0619-MR-16 and 0619-MR-17 were collected within Digger Creek, ~0.38 km up-section of measured Section DC1 and ~0.52 km from the contact with the ophiolitic breccia at Crowfoot Point (Fig. 2.5A). Sample 0619-MR-16 is stratigraphically below sample 0619-MR-17. Samples 0619-MR-16 and 0619-MR-17 yield MDAs of 145.9 ± 0.54 Ma and 145.4 ± 0.52 Ma, respectively (Table 2.4). Mesozoic detrital zircon grains comprise 53-58% of the two detrital samples, with Mesozoic age modes at ~230 Ma, ~195 Ma, ~165 Ma, and ~155

Ma (Fig. 2.10). Pre-Mesozoic age populations for detrital samples within Digger Creek include ~1700–1600 Ma, ~1550–1400 Ma, ~1300–950 Ma, ~420–400 Ma, and ~285–265 Ma.

Crowfoot Point.—Sample 0619-MR-26 was collected from sandstone matrix within the lower ophiolitic breccia that overlies the CRO and yields an MDA of 165.6 ± 0.23 Ma (Fig. 2.5A, Table 2.4). Sample 0619-MR-27 was collected from matrix-supported pebble-cobble breccia of the upper ophiolitic breccia and yields an MDA of 151.4 ± 0.53 Ma (Fig. 2.5A, Table 2.4). Mesozoic detrital zircon ages comprise 92-99% of these two samples, with major age peaks at ~170 Ma, ~165 Ma, ~150 Ma, and relatively fewer pre-Mesozoic grains (Fig. 2.10). Sample 0619-MR-30 was collected from the lower strata of the Stony Creek Formation and yields an MDA of 145.9 ± 0.2 Ma (Fig. 2.5A, Table 2.4). This sample contains 98% Mesozoic detrital zircon ages that form a unimodal age peak at ~150 Ma (Fig. 2.10).

Paskenta.— Sample P01-3 yields an MDA of 147.7 ± 0.47 Ma, and sample 0119-MR-01, collected up-section from P01-3, yields an MDA of 146.0 ± 0.32 Ma (Fig. 2.5B; Table 2.4). Mesozoic detrital zircon grains comprise 50-57% of the two detrital samples, with age peaks at ~245 Ma, ~200 Ma, ~195 Ma, ~167 Ma, and ~150 Ma (Fig. 2.10). Pre-Mesozoic detrital zircon grains yield age populations of ~1550–1350 Ma, ~1250–950 Ma, ~650–500 Ma, and ~450–300 Ma.

Chrome.—Sample 0119-MR-02 was collected between measured Section P01 and Section GC1, along Hull Road (i.e., County Road 313, Forest Route 23N05) ~4 km southwest of

the unincorporated community of Chrome (Fig. 2.5C), within sandstones ~63 m from the uppermost CRO. This sample yields an MDA of 146.9 ± 0.34 Ma (Table 2.4) and contains 50% Mesozoic detrital zircon ages, with age peaks at ~200 Ma, ~165 Ma, ~150 Ma (Fig. 2.10). The other 50% of detrital zircon ages are pre-Mesozoic with age populations of ~1850–1550 Ma, ~1500–1350 Ma, ~1250–900 Ma, ~650–560 Ma, ~500–400 Ma, and ~370–300 Ma.

Grindstone Creek.—Sample 0619-MR-35 was collected from a ~1 m thick sandstone bed within Grindstone Creek, ~180 m above the contact with the underlying CRO, and yields an MDA of 141.3 ± 0.36 Ma (Fig. 2.5C, Table 2.4). This detrital zircon sample was obtained down-section of composite measured Section GC1 (Fig. 2.5C). Within the composite measured Section GC1, sample 0619-MR-36 is the most basal sample with an MDA of 143.0 ± 0.45 Ma (Fig. 2.8, Table 2.4). Sample 0619-MR-37 is located within the upper part of this section and records an MDA of 146.7 ± 0.46 Ma (Fig. 2.8, Table 2.4). Detrital zircon samples contain 31-44% Mesozoic detrital zircon ages, with age modes at ~242 Ma, ~200 Ma, ~195 Ma, ~187Ma, ~170 Ma, ~162 Ma, ~155 Ma, ~150 Ma, and ~147 Ma. The three detrital samples yield pre-Mesozoic detrital zircon ages with populations that include ~1800–1600 Ma, ~1550–1350 Ma, ~1250–950 Ma, ~640–550 Ma, and ~450–350 Ma (Fig. 2.10).

DISCUSSION

Sedimentology and Stratigraphy

Measured stratigraphic sections Digger Creek (DC1), Crowfoot Point (CP1), Paskenta (P01), Grindstone Creek (GC1), and McCarty Creek (MC1) predominantly contain tabular beds

of alternating laminated and massive siltstone (Fsl and Fsm), plane-parallel laminated, very fine- to medium-grained sandstone (Sh), and massive, fine- to coarse-grained sandstone (Sm) (Fig. 2.8). These lithofacies are characteristic of deposition by low-density turbidity currents, consistent with previous studies that interpret deposition of the Upper Jurassic(?)–Lower Cretaceous Great Valley sequence to have been primarily controlled by sediment-gravity flows (low and high-density turbidity flows) (Ingersoll 1976, 1982; Suchecki 1984).

The Crowfoot Point (CP1) measured stratigraphic section documents the unconformable stratigraphic contact between the upper ophiolitic breccia and the overlying GVG strata (Fig. 2.8). Section CP1 also documents an overall up-section shift from deposits of ophiolitic breccia that represent localized cohesive or plastic debris flows (Lowe 1982; Shultz 1984) to strata of the Stony Creek Formation, which were deposited at the distal region of a turbidite fan. The matrix-supported pebble-cobble breccia documented herein is consistent with the description of the ophiolitic breccia of Lagabrielle et al. (1986) and Robertson (1990), which includes mega-breccia, clast-and matrix-supported conglomerate and breccia, sandstone, and mudstone, and was interpreted to represent ophiolite-derived talus that resulted from a debris flow. The southern-most measured stratigraphic section, Section GC1, records an overall up-section trend from deposition of low-density turbidity flows to deposition of clast-rich or pseudoplastic debris flows (Shultz 1984).

Pelecypod *Buchia* and shell fragments within turbidite and debris flow facies occur in the majority of measured stratigraphic sections within strata mapped as Upper Jurassic GVG, leaving open the possibility of down-slope transport off of the continental margin and contemporaneous reworking of fossils, fragments of fossils, and sediment containing small

marine invertebrates. Section MC1, which was measured within strata mapped as Cretaceous, shows a higher abundance of fossiliferous sandstone and siltstone beds that contain the pelecypod *Buchia*, appearing in a coquina-like texture within turbidite facies, not within in situ carbonate seeps documented by Zakharov and Rogov (2020). These facies within section MC1 document the continuation of clastic deposition primarily by low- and high-density turbidity flows into the Early Cretaceous.

Along Strike Variation in Maximum Depositional Age

In the northernmost part of the study area at Eagle Peak, two samples of gabbro within the upper CRO yield Middle Jurassic zircon U-Pb weighted mean ages of 167.02 ± 0.29 Ma and 165.79 ± 0.27 Ma (Fig. 2.5A; Table 2.1). South of Eagle Peak, at Crowfoot Point and Digger Creek, samples from the lower and upper ophiolitic breccia that overlies the CRO yield Jurassic MDAs of 165.6 ± 0.23 Ma (sample 0619-MR-26) and 151.4 ± 0.53 Ma (sample 0619-MR-27), respectively (Fig. 2.5A; Table 2.1). The lower breccia MDA overlaps with the timing of CRO development (~173–161 Ma; Mattinson and Hopson 1992; Shervais et al. 2002, 2005; Hopson et al. 2008; Orme and Surpless 2019; this study); however, because the lower ophiolitic breccia is primarily locally derived with non-arc sources and reflects the available igneous source material during deposition in the latest Jurassic, it is likely that the true depositional age of the lower ophiolitic breccia is younger than all of the MDA methods reported herein. The upper ophiolitic breccia, sampled ~520 m up-section, yields a younger MDA of 151.4 ± 0.5 Ma and a non-unimodal age distribution, further suggesting a younger, Tithonian depositional age for the breccia. Herein, the depositional age result is younger than the published late Kimmeridgian

depositional age for the ophiolitic breccia, which was based on the *Buchia rugose* within the Paskenta area (Jones 1975; Pessagno 1977). This study suggests that recycling of older, Kimmeridgian strata containing fossils and fragments of fossils occurred during deposition of ophiolitic breccia. Within this local area at Crowfoot Point (Fig. 2.5A), a sample from basal GVF strata unconformably overlies the ophiolitic breccia and yields an MDA of 145.9 ± 0.2 Ma (sample 0619-MR-30), reflecting a ~5-6 myr unconformity (151.4–145.9 Ma), consistent with the inferred > 5 myr in duration unconformity at the base of the GVG strata (Surpless et al. 2006).

Southward, GVF strata are juxtaposed against serpentinite mélange along a fault contact, potentially omitting ophiolitic breccia and basal GVF strata (Fig. 2.5B, C). At Paskenta, Chrome, and Grindstone Creek localities, the stratigraphically lowest detrital zircon samples from each locality were collected from strata mapped as Jurassic and yield MDAs of 147.7 ± 0.47 Ma (sample P01-3), 146.9 ± 0.34 Ma (sample 0119-MR-02), and 141.3 ± 0.36 Ma (sample 0619-MR-35), respectively (Fig. 2.5B-C, 10).

Following the Jurassic–Cretaceous boundary age of 145.5 ± 0.8 (Ogg and Hinnov 2012), detrital zircon samples from northern localities of Chrome, Paskenta, and Crowfoot Point yield MDAs > 145 Ma, consistent with deposition during the Jurassic. In contrast, the base of the section exposed at Grindstone Creek was deposited during Cretaceous time. Detrital zircon samples from strata mapped as Jurassic within Digger Creek yield MDAs that overlap the Jurassic–Cretaceous boundary, suggesting Cretaceous deposition as these MDAs are either equal to or older than true depositional ages. Additional strata mapped as Jurassic along strike of Digger Creek and Crowfoot Point (Fig. 2.5A) could also record a Cretaceous depositional age,

based on neighboring MDAs of samples in Digger Creek and Crowfoot Point. The variations in depositional age of basal GVF strata from multiple localities within the study area are consistent with diachronous sedimentation during early development of the GVF basin (Orme and Surpless 2019). Possible contributing factors to diachronous deposition of basal GVF strata include: (1) development of accommodation to capture detritus (Orme and Surpless 2019) and/or (2) available/local sources near/within the sediment routing system(s) supplying detritus to different regions of the basin.

This study uses the Jurassic–Cretaceous boundary of 145.5 ± 0.8 (Ogg and Hinnov 2012), but modification of the Jurassic–Cretaceous boundary to the 140.9–140.7 Ma date proposed by Lena et al. (2019) would result in Jurassic depositional ages for five of the basal GVF detrital zircon samples that yield Cretaceous or near-boundary MDAs with the published boundary age. If the younger modification of the Jurassic–Cretaceous boundary is not accepted, some of the strata in the western margin of the Sacramento Valley subbasin in northern California mapped as Jurassic should be re-mapped as Cretaceous.

Three sandstone samples analyzed for U-Pb geochronology were obtained from Cretaceous strata in the McCarty Creek region located less than 2 km from Jurassic strata to the west (Fig. 2.4, 5A). The three sandstone samples yield MDAs of ~133 Ma and ~132 Ma (Fig. 2.10, Table 2.4). The Cretaceous strata up-section from the mapped Jurassic strata likely indicate the presence of a fault that omits stratigraphic section, placing younger Cretaceous strata against upper Jurassic strata.

Provenance Interpretations

Detrital zircon in sedimentary basins may derive from primary sources (first-cycle grains from crystalline/igneous sources) and recycled sources (poly-cycle grains from sedimentary sources) (e.g., Schwartz et al. 2019, and references therein). As recently highlighted by Schwartz et al. (2019), during the initiation of the Cordilleran orogen, Paleozoic–early Mesozoic sedimentary strata had overlain most North American crustal provinces, suggesting that pre-Sierran-Klamath arc-aged grains in the forearc were recycled from sedimentary and crystalline sources that were eroded from the exposed orogen. To determine the provenance of sediments deposited with the basal GVG, this study compares the detrital zircon age spectra herein to known potential sources from North America. These sources are very briefly summarized below and explained in more detail in Appendix B. The described pre-Cordilleran arc sources do not require direct source to sink connections with respect to GVF sedimentation.

Potential sources from North America include Laurentian bedrock, Cordillera passive-margin strata, western accreted terranes and Cordilleran magmatic arc. Laurentian bedrock sources entail Archean–Paleozoic provinces within North America (e.g., Gehrels and Pecha 2014, and references therein); these sources have been summarized in many recent studies (e.g., Leary et al. 2020). Potential sources from western North America also include Neoproterozoic through Triassic passive margin strata, which collectively comprise detrital zircon age populations that include 2.85–2.59 Ga, 2.12–2.05 Ga, 1.99–1.74 Ga, 1.85–1.62 Ga, 1.52–1.38 Ga, 1.20–0.97 Ga, 580–490 Ma, and 330–210 Ma (Gehrels and Pecha 2014; Leary et al. 2020, and references therein). Proximal to the study region in northern California, the Klamath

Mountains Province of southern Oregon and northern California comprise multiple terranes that were built and accreted to western North America, prior to development of the GVF (see LaMaskin et al. 2021 for a summary). These terranes consist of Neoproterozoic to Late Jurassic tectonostratigraphic units that are intruded by early Paleozoic to Early Cretaceous plutons (Irwin 1972; Hacker et al. 1995; Irwin 2003; Snoke and Barnes 2006; Dickinson 2008). Additional potential sources include accreted terranes of the Sierra Nevada in northern California; these sources are inferred to have been located southward and along strike of the accreted terranes in the Klamath Mountains Province, prior to ~140 Ma (e.g., Constenius et al. 2000; Snow and Scherer 2006; Ernst 2013). Potential sources of the Mesozoic Cordilleran magmatic arc comprise Late Triassic to Late Cretaceous calc-alkaline granitoid batholiths and related volcanic rocks (Saleeby and Busby-Spera 1992; Bateman and Dodge 1970; Chen and Moore 1982; Bateman 1983).

The majority of samples from sandstone from the matrix of ophiolitic breccia and strata of the basal Stony Creek Formation plot within the magmatic arc provenance fields of Dickinson (1985) (Fig. 2.6), reflecting local CRO and arc sources in the Sierra Nevada-Klamath magmatic arc. Five samples plot within the Continental Block field; three of these samples are from GVG strata with Jurassic MDAs and ~50% pre-Mesozoic detrital zircon ages. These results are similar to the high percentage of pre-300 Ma detrital zircon ages reported for Permo–Triassic to Upper Jurassic intra-arc strata of the eastern Sierra Nevada (Attia et al. 2021), which is consistent with the pre-Mesozoic prebatholithic framework as a major source region for basal GVF strata. Two arkose samples from Upper Jurassic and Lower Cretaceous strata likely record derivation from localized potassium-feldspar rich sources of the Sierra Nevada-Klamath magmatic arc (Fig. 2.6).

Lithic-rich samples from Upper Jurassic or Lower Cretaceous strata in this study are starkly different in grain composition from Upper Cretaceous strata that are reported to contain a higher ratio of quartz and feldspar (Ingersoll 1983). This difference in grain composition for Upper Jurassic or Lower Cretaceous strata suggests a relatively wider range of sources during the initiation of sedimentation within the forearc, prior to the overall trends in grain composition that appear upsection in Upper Cretaceous strata (e.g., Ingersoll 1983). This shift in lithic-rich basal GVF strata to quartz and feldspar-rich Upper Cretaceous strata is consistent with the pioneering provenance work (Ojakangas 1968; Dickinson and Rich 1972; Mansfield 1979; Ingersoll 1979, 1983; Suchecki 1984) that interpret the increase in quartz content as unroofing of the Sierra Nevada magmatic arc throughout the Cretaceous.

Comparison of U-Pb age spectra in this study to potential source regions proximal to the GVF and to coeval sedimentary basins along western North America through a series of KDE and MDS plots (Fig. 2.11). Coeval sedimentary basins, or “sinks”, include the Middle–Late Jurassic depocenters in the Klamath Mountains and foreland basin depocenters east of the Sierra Nevada magmatic arc. Mesozoic sources for KDE and MDS analysis include igneous rocks in the central Sierra Nevada batholith (Attia et al. 2020, and references therein). Pre-Mesozoic batholithic framework source regions for KDE and MDS analysis include Neoproterozoic–Triassic strata along the western North American margin, Paleozoic strata from terranes in the Klamath Mountains Province and northern Sierra terrane (Gehrels and Miller 2000; Harding et al. 2000; Spurlin et al. 2000; Wallin et al. 2000; Gehrels and Pecha 2014).

The ophiolitic breccia predominantly yields Jurassic detrital zircon ages and in MDS space plots closest to Upper Jurassic strata of the basal GVF from this study and Upper Jurassic–

Lower Cretaceous strata of the GVF from published studies, likely indicating similar sources, although different in the abundance of pre-Mesozoic populations. The distribution of Mesozoic detrital zircon ages from Upper Jurassic strata of the GVF presented herein and from previous studies are similar to that of Upper Jurassic strata from the Rattlesnake Creek and Western Klamath terranes in the Klamath Mountains Province (LaMaskin et al. 2021) (Fig. 2.11). This suggests similar sources during time of deposition, namely derivation from North American affinity sources (e.g., LaMaskin et al. 2021). In MDS space, plots representing detrital zircons from Paleozoic strata from terranes in the Klamath Mountains Province and Paleozoic strata in the northern Sierra terrane are too similar to each other to differentiate as sources for basal GVF strata (Fig. 2.11B).

Samples from Lower Cretaceous strata of the GVF and North American Cordilleran foreland basin plot away from each other in MDS space, consistent with Cretaceous topographic growth of the Sierra Nevada placing the drainage divide within the western terranes of the northern Sierran magmatic arc, as proposed by DeGraaff-Surpless et al. (2002). As the Sierra Nevada arc grew topographically, the forearc became dominated by Early Cretaceous detrital zircon grains associated with the Sierra Nevada magmatic arc while the foreland received more recycled material that contained an abundance of Precambrian detrital zircon ages (Fig. 2.11B) (e.g., Schwartz et al. 2021).

Tectonic Implications

This study proposes a tectonic model for the early development of the northwestern Sacramento subbasin during Late Jurassic–earliest Early Cretaceous time (Fig. 2.12). In the

northwestern Sacramento subbasin, ophiolitic breccia and basal strata of the Stony Creek Formation contain Pre-Mesozoic and Mesozoic detrital zircon grains of North American affinity. The ophiolitic breccia was deposited by ~151 Ma (Fig. 2.12A), based on new stratigraphic, petrographic and geochronologic data reported herein. This study interprets formation of the ophiolitic breccia to be the result of faulting within an extensional setting proximal to North America, reflecting localized dismemberment and uplift of the middle Jurassic CRO (Hopson et al. 1981; Robertson 1990). This is consistent with Hopson et al. (2008), who first proposed that dismembered oceanic crust developed large structural relief via faulting that occurred before, during, and after breccia deposition. Faulting likely occurred locally and was not widespread, given the limited documentation of ophiolitic breccia overlying the CRO in northern California (e.g., Robertson et al. 1990). Due to the lack of folding, contractional faulting of the CRO, or thrust duplication of the CRO prior to the deposition of ophiolitic breccia, Robertson et al. (1990) further suggested that faulting within the CRO reflected a tensional setting. Moreover, the faults in the Paskenta, Cold Fork and Elder Creek fault zone are interpreted to have governed the development of a half-graben system that attenuated the CRO and Stony Creek Formation (Constenius et al. 2000). Specifically, the Paskenta area records synextensional normal faulting that was ongoing by ~151 Ma, during deposition of the breccia and basal GVF (Constenius et al. 2000; this study).

The timing of extension proposed by this study and by Constenius et al. (2000) overlaps with the timing of Late Jurassic contractional deformation that is documented in the western Sierran foothills and Klamath Mountains. Specifically, deformation and metamorphism of the Late Jurassic Galice Formation in the Klamath Mountains between 155–150 Ma (Harper et al.

1994; Hacker et al. 1995; MacDonald et al. 2006), the foliated Late Jurassic (~152 Ma) Mariposa Formation in the western foothills of the Sierra Nevada (Bogen 1984; Snow and Ernst 2008), and the ~152 Ma Guadalupe Igneous Complex (Saleeby et al. 1989) support regional contraction of in the Late Jurassic–Early Cretaceous (155–135 Ma) (Paterson et al. 1991; Haeussler and Paterson 1993; Paterson and Miller 1998). Coeval extension and contraction along the west side of the magmatic arc suggests the forearc may have been segmented into an outer and inner forearc region with different stress regimes. Specifically, the Early–Middle Jurassic northern California margin is characterized by sinistral strike-slip; post-150 Ma, the margin was in a sinistral transtensional regime (e.g., Seton et al. 2012; Saleeby and Dunne 2015; Balgord et al. 2021), overlapping with the timing of proposed extension and deposition of the breccia in northern California (Constenius et al. 2000; this study). Synchronous extension and contraction along the west side of the magmatic arc in northern California during the Late Jurassic–Early Cretaceous may be analogous to the modern northern Chilean margin where the outer forearc region is experiencing extension that is synchronous with compression in the western margin of the active magmatic arc (Reuther and Adam 1996; Adam and Reuther 2000).

Extensional dismemberment of the CRO likely contributed to the development of isolated depocenters of various geometries and depths within a forearc setting of the Sierra Nevada-Klamath magmatic arc between ~151–145 Ma (Fig. 2.12B). This interpretation is consistent with previous models invoking extension during this period to explain the observed syndepositional faulting (Constenius et al. 2000; Hitz and Wakabayashi 2012) and variations in depositional age along strike that likely reflect diachronous initiation of sedimentation within the GVF (Orme and Surpless 2019). This study interprets the Late Jurassic–earliest Cretaceous segmented and

perhaps fault-bounded depocenters to have become overfilled during Early Cretaceous time, forming an integrated forearc basin (Fig. 2.12C) (DeGraaff-Surpless et al. 2002; Orme and Surpless 2019). The decrease in pre-Mesozoic detrital zircons and shift from entirely litharenites during the earliest Cretaceous supports previous models that invoke topographic growth of the proximal Sierra Nevada magmatic arc and a westward shift in the drainage divide during Cretaceous time (e.g., DeGraaff-Surpless et al. 2002).

CONCLUSIONS

The ophiolitic breccia in northern California was deposited as late as ~151 Ma, possibly later, atop the Middle Jurassic CRO (~164 Ma) as a result of localized faulting within a tectonic tensional setting. Jurassic MDAs along with the presence of pre-Mesozoic and Mesozoic detrital zircon ages within the ophiolitic breccia suggest deposition in a forearc position proximal to the Sierra Nevada-Klamath magmatic arc of North America. Extensional dismemberment of the CRO may have generated isolated fault-bounded depocenters that trapped sediment during the early development of the GVF. This study suggests that the variation in maximum depositional ages from basal strata of the GVF at Digger Creek, Crowfoot Point, Paskenta, Chrome, and Grindstone Creek reflect diachronous deposition within these segmented depocenters during the early development of the Sacramento subbasin between ~151–145 Ma. Subsequently, these Late Jurassic–earliest Cretaceous isolated depocenters became overfilled during the Early Cretaceous, forming a coherent forearc basin that collected an abundance of detritus from sources within the Klamath-Sierra Nevada magmatic arc as the forearc-arc system matured.

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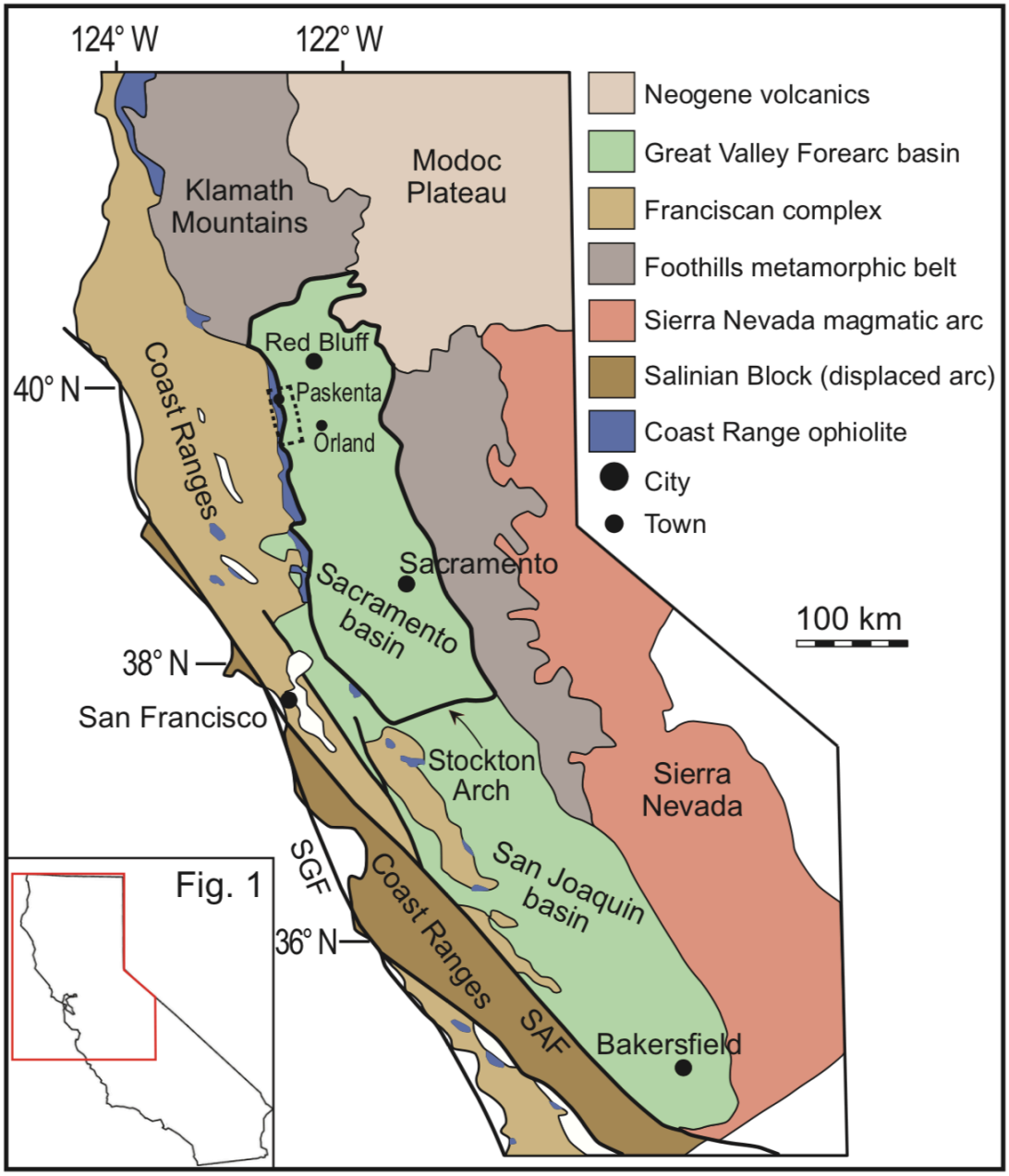


Figure 2.1. Generalized geologic map of northern California. The black dashed rectangle near the towns of Paskenta and Orland outlines the study area, within which measured sections were conducted within basal strata of the Great Valley forearc (GVF) basin (green). The Sacramento subbasin is outlined by a bold black line. SAF – San Andreas fault; SGF – San Gregorio fault. Modified from Orme and Graham (2018).

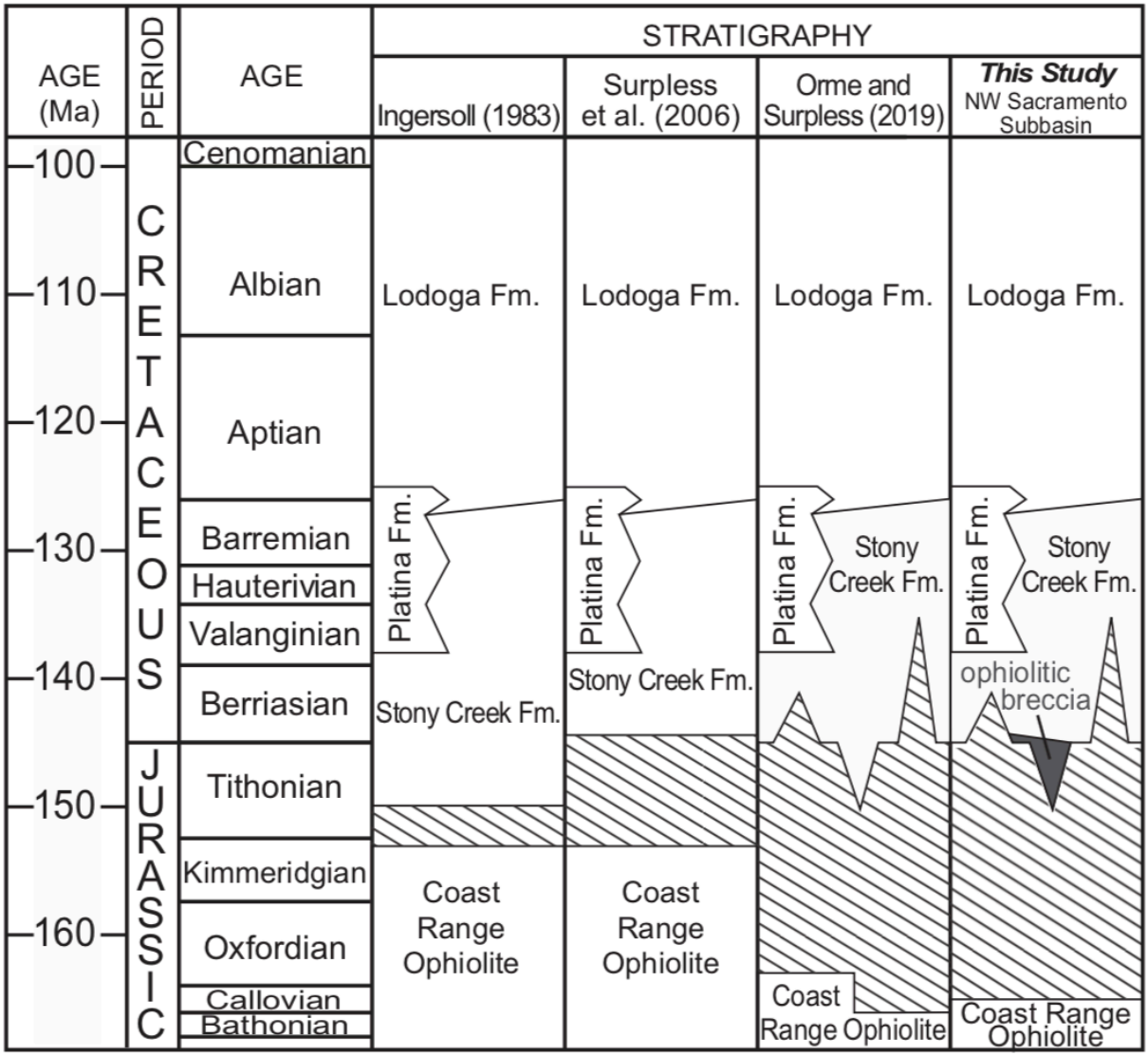


Figure 2.2. General stratigraphic chart of upper Jurassic–lower Cretaceous basement and sedimentary units in the northwestern Sacramento subbasin. U-Pb analyses of igneous zircons from two sampled plutonic rocks within the Coast Range ophiolite (CRO) of this study yield weighted mean ages of 167.02 ± 0.29 Ma (sample 0619-MR-06) and 165.79 ± 0.27 Ma (sample 0619-MR-07). Note that the ca. ~167–165 Ma age of upper CRO is specific to the study area. Previous studies use the youngest reported ages from the CRO, which include the ca. ~155 Ma age from the Josephine ophiolite. Modified from Surpless et al. (2006).

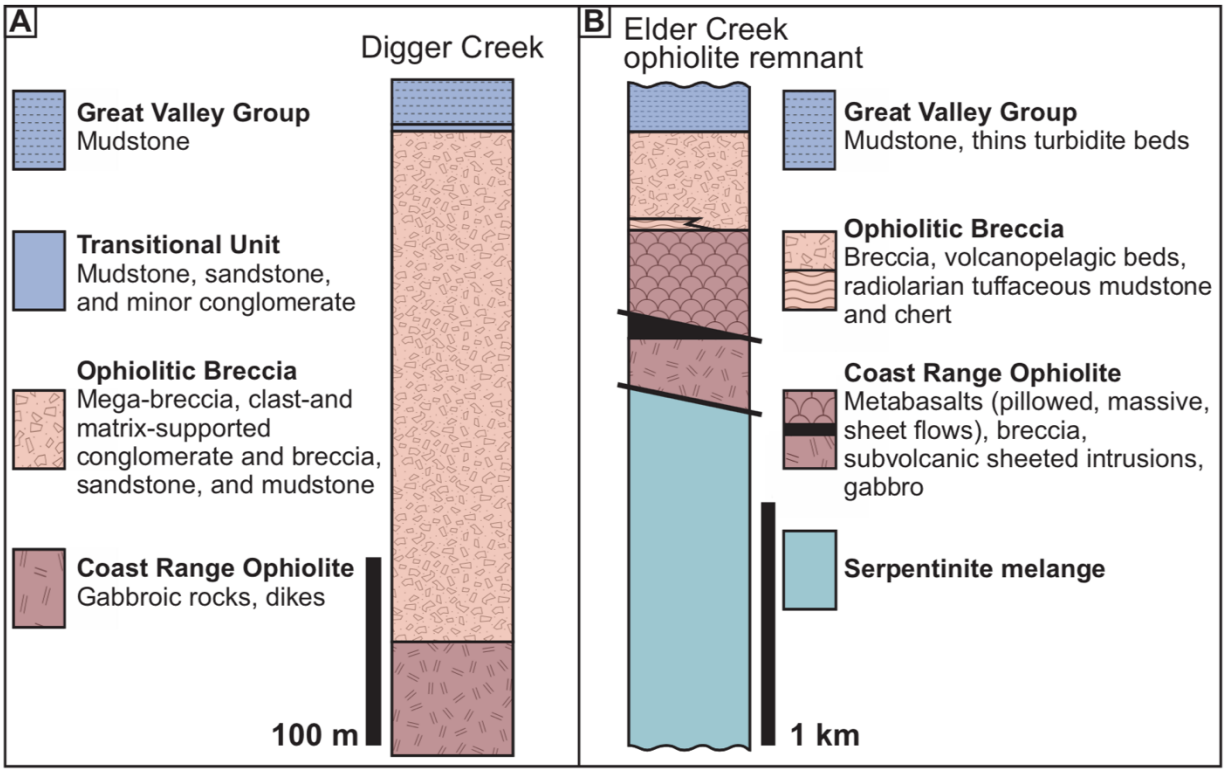


Figure 2.3. (A) Composite pseudostratigraphic column for the Coast Range ophiolite and overlying sedimentary successions for the Digger Creek area, north of Crowfoot Point. Modified after Robertson (1990). (B) Composite pseudostratigraphic column for the Elder Creek ophiolite remnant and overlying sedimentary successions. Modified after Hopson et al. (2008). Diagonal thick black lines within the right column represent fault contacts. Note the different scale bars for each column.

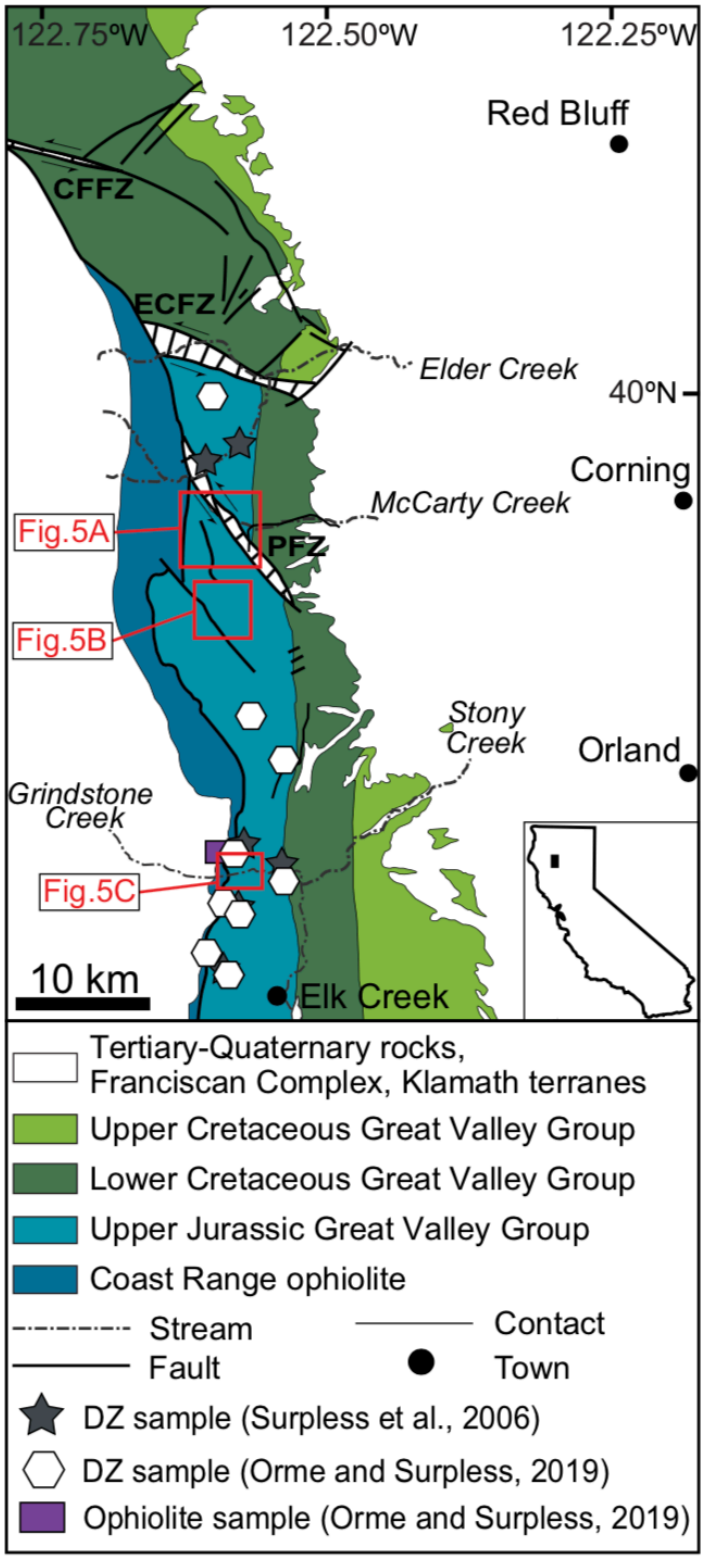

122.75ºW
122.50ºW
122.25ºW
Red Bluff
CFFZ
ECFZ
Elder Creek
40ºN
Corning
McCarty Creek
Fig.5A
PFZ
Fig.5B
Stony Creek
Orland
Grindstone Creek
Fig.5C
10 km
Elk Creek
Tertiary-Quaternary rocks, Franciscan Complex, Klamath terranes
Upper Cretaceous Great Valley Group
Lower Cretaceous Great Valley Group
Upper Jurassic Great Valley Group
Coast Range ophiolite
Stream
Contact
Fault
Town
DZ sample (Surpless et al., 2006)
DZ sample (Orme and Surpless, 2019)
Ophiolite sample (Orme and Surpless, 2019)

Figure 2.4. Generalized geologic map with sample locations from previous studies in the northwestern Sacramento subbasin. Red insets are sample location maps (Fig. 2.5A-C) for this study. CFFZ – Cold Fork fault zone; ECFZ – Elder Creek fault zone; PFZ – Paskenta fault zone. Modified from Orme and Surpless (2019).

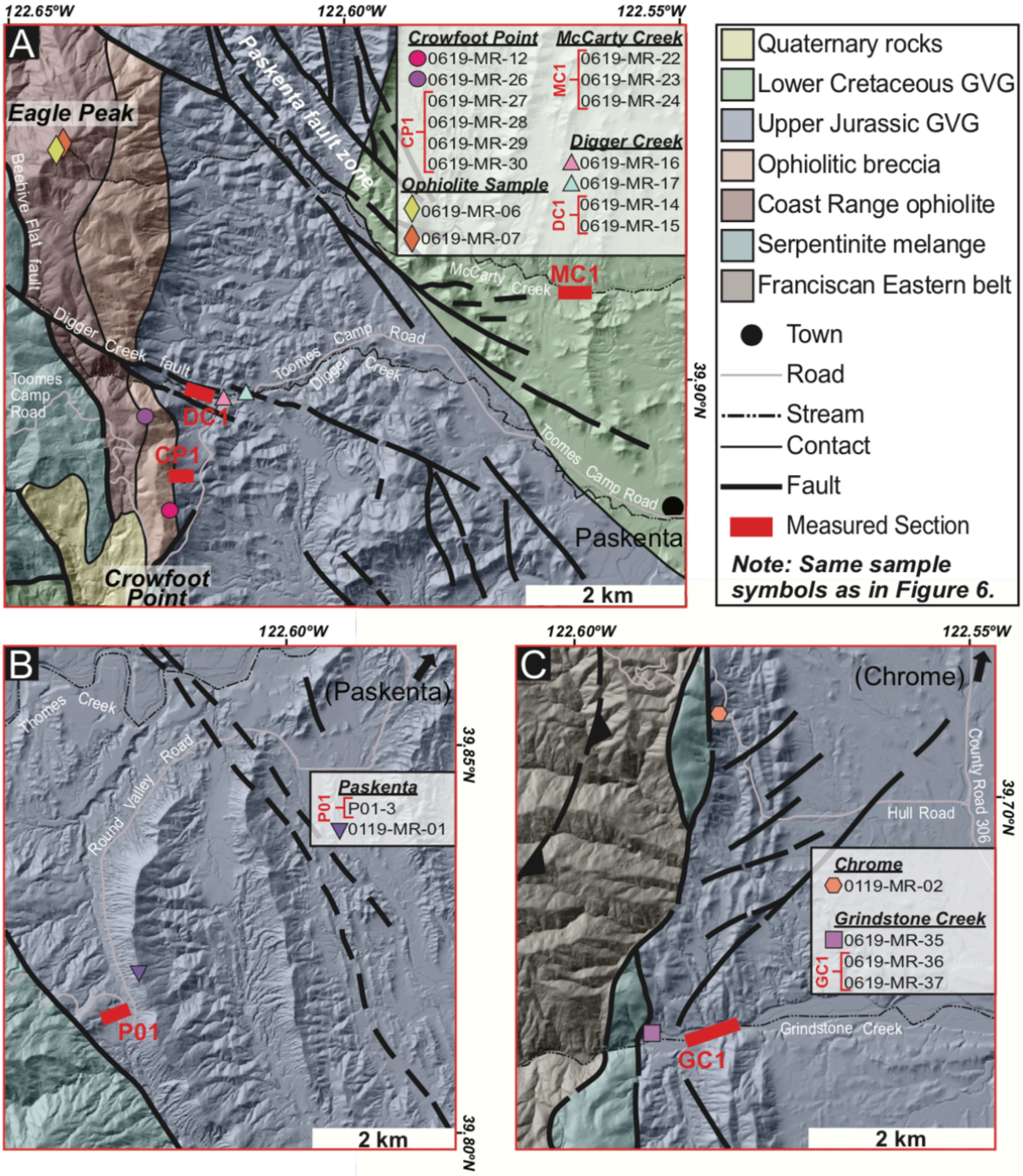


Figure 2.5. Geologic maps with locations for measured sections, geochronologic, and petrographic samples within this study. (A) Field area west of the town of Paskenta, including Eagle Peak, Crowfoot Point, McCarty and Digger Creek. (B) Field area southwest of Paskenta. (C) Field area near Chrome and along Grindstone Creek. Sample symbols are the same as in Figure 2.6. Modified from Lagabrielle et al. (1986), Jayko et al. (1987), Robertson (1990), and Blake et al. (1992).

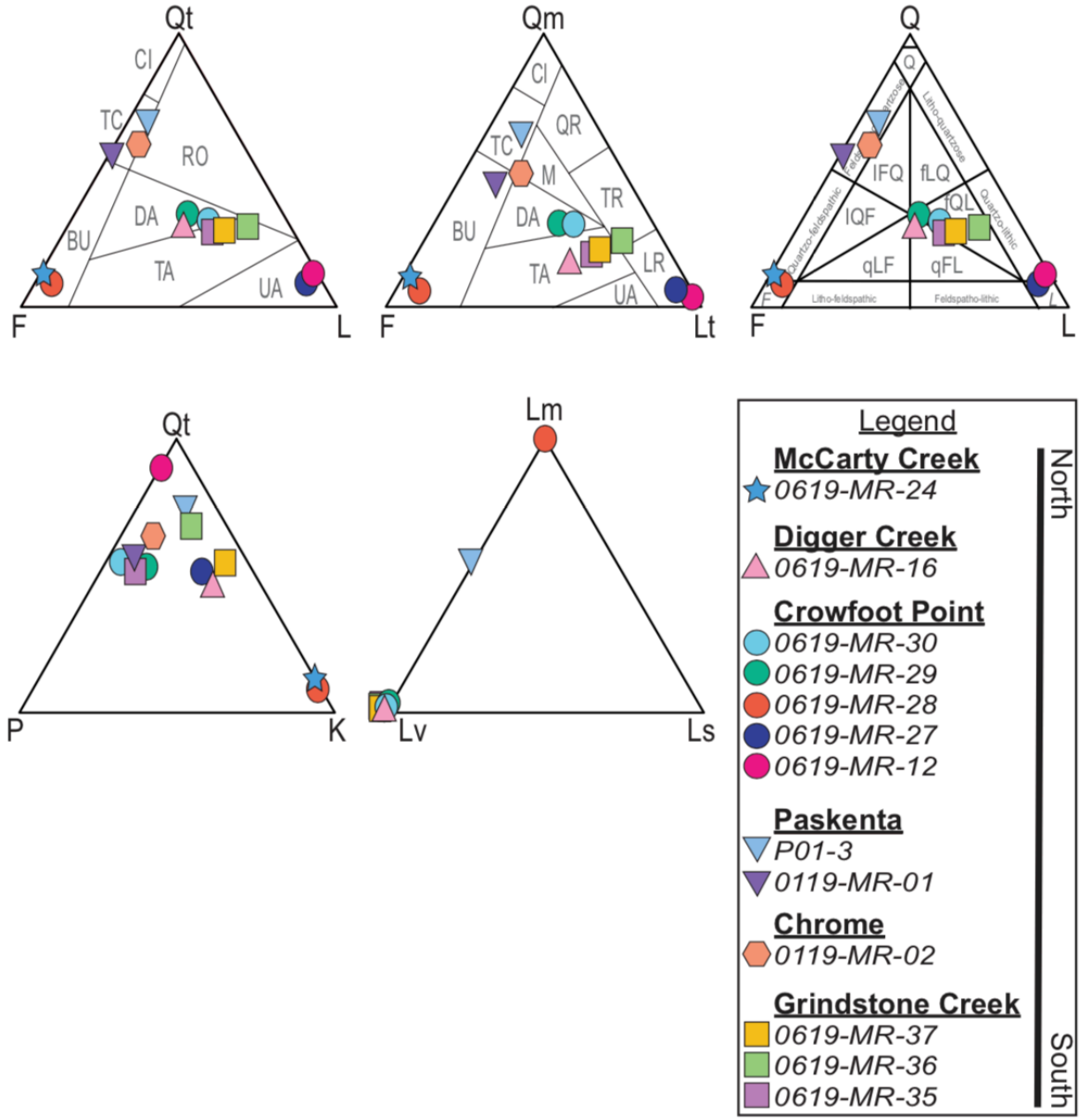


Figure 2.6. Ternary diagrams showing the modal composition of sandstone and ophiolitic breccia from Upper Jurassic–Lower Cretaceous strata within the northwestern Sacramento subbasin. Provenance fields of Dickinson (1985) and sandstone classification of Garzanti (2019). Summary of parameters for modal point-counting are listed and defined in Table 2.3. BU – basement uplift; CI – craton interior; DA – dissected arc; LR – lithic recycled; M – mixed; QR – quartzose recycled; RO – Recycled Orogenic; TA – transitional arc; TC – transitional continental; TR –

transitional recycled; UA – undissected arc. F – feldspathic; L – lithic; Q – quartzose; fLQ – feldspatho-litho-quartzose; fQL – feldspatho-quartzo-lithic; lFQ – litho-feldspatho-quartzose; lQF – litho-quartzo-feldspathic; qFL – quartzo-feldspatho-lithic; qLF – quartzo-litho-feldspathic.

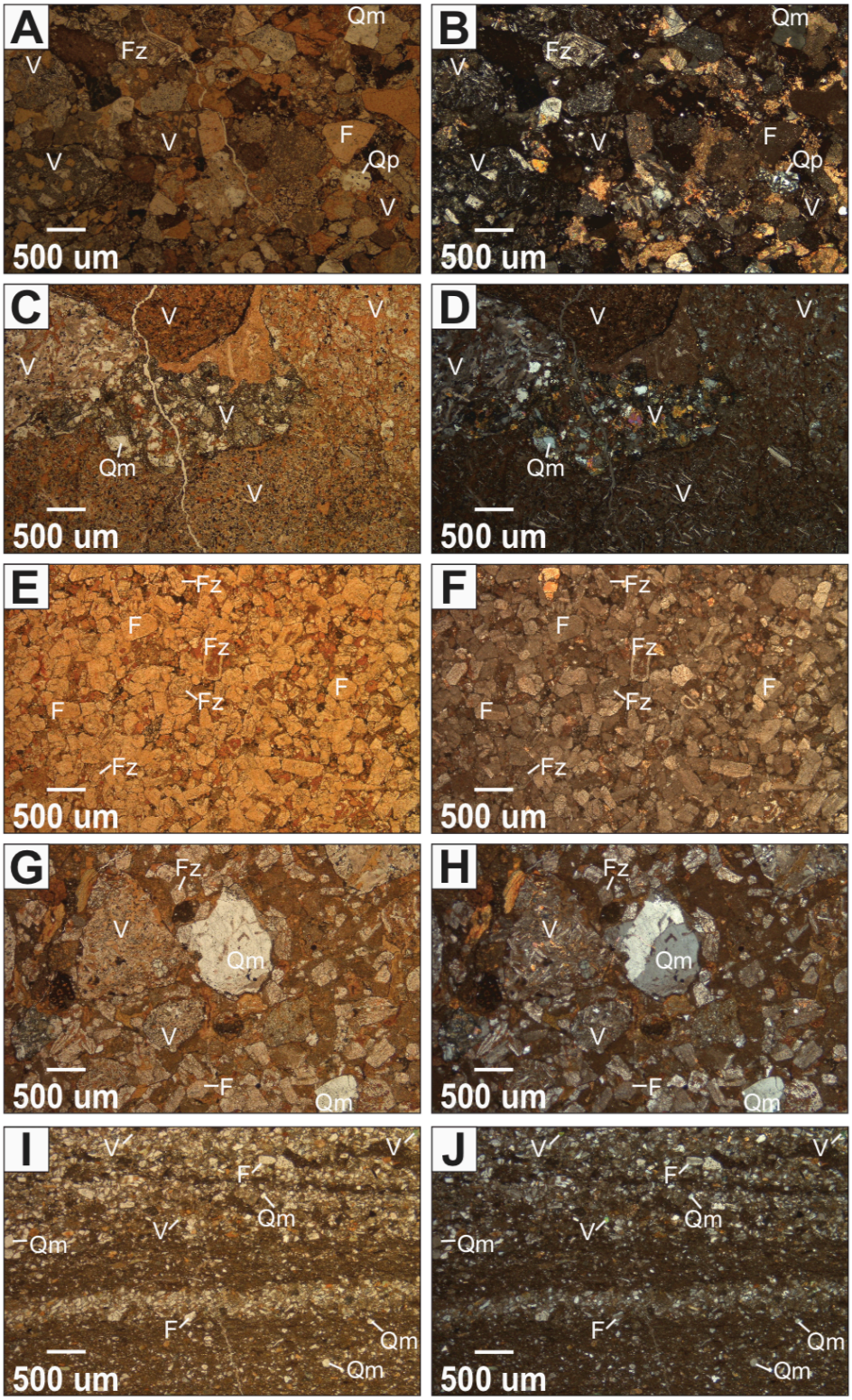

A
Qm
Fz
V
V
V
F
Qp
V
500 um
B
Qm
Fz
V
V
V
F
Qp
V
500 um
C
V
V
V
V
Qm
V
500 um
D
V
V
V
V
Qm
V
500 um
E
Fz
F
Fz
F
Fz
F
Fz
500 um
F
Fz
F
Fz
F
Fz
F
Fz
500 um
G
Fz
V
Qm
V
F
Qm
500 um
H
Fz
V
Qm
V
F
Qm
500 um
I
V
V
F
Qm
V
Qm
F
Qm
Qm
500 um
J
V
V
F
Qm
V
Qm
F
Qm
Qm
500 um

Figure 2.7. Photomicrographs of quartzo-feldspatho-lithic (qFL), lithic (L), feldspathic (F), and feldspatho-quartzo-lithic (fQL) petrofacies from ophiolitic breccia and basal strata of the GVF. All photomicrographs are from samples collected within a measured section. (A, B): PPL (A) and XPL (B) photomicrographs of quartzo-feldspatho-lithic petrofacies, sample 0619-MR-16. (C, D): PPL (C) and XPL (D) photomicrographs of lithic petrofacies, sample 0619-MR-27. (E, F): PPL (E) and XPL (F) photomicrographs of feldspathic petrofacies, sample 0619-MR-28. (G, H): PPL (G) and XPL (H) photomicrographs of feldspatho-quartzo-lithic petrofacies, sample 0619-MR-29. (I, J): PPL (I) and XPL (J) photomicrographs of feldspatho-quartzo-lithic petrofacies, sample 0619-MR-30. Classification scheme of Garzanti (2019).
F – feldspar; Fz – zoned feldspar; Qm – monocrystalline quartz; Qp – polycrystalline quartz; V – volcanic (all varieties).

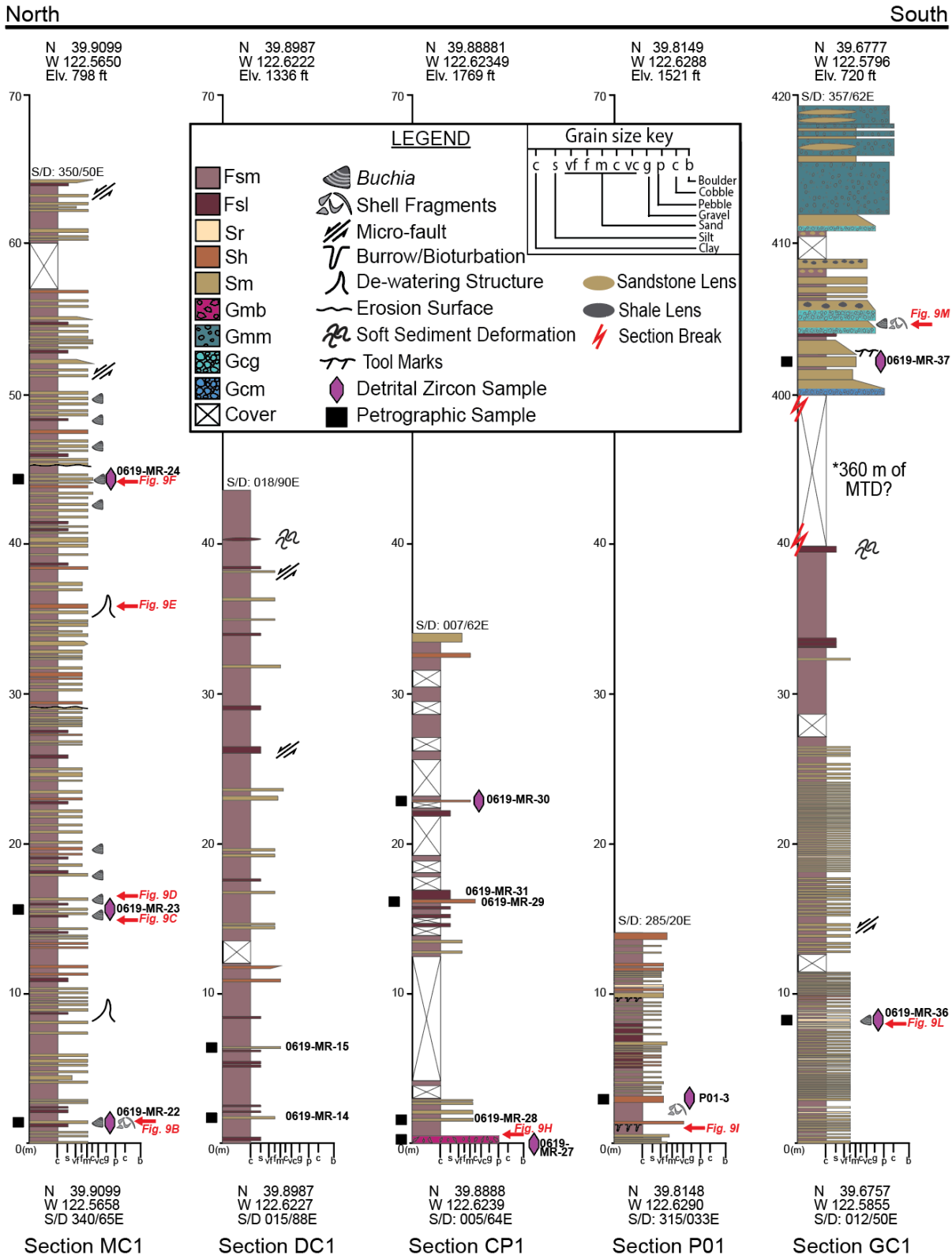
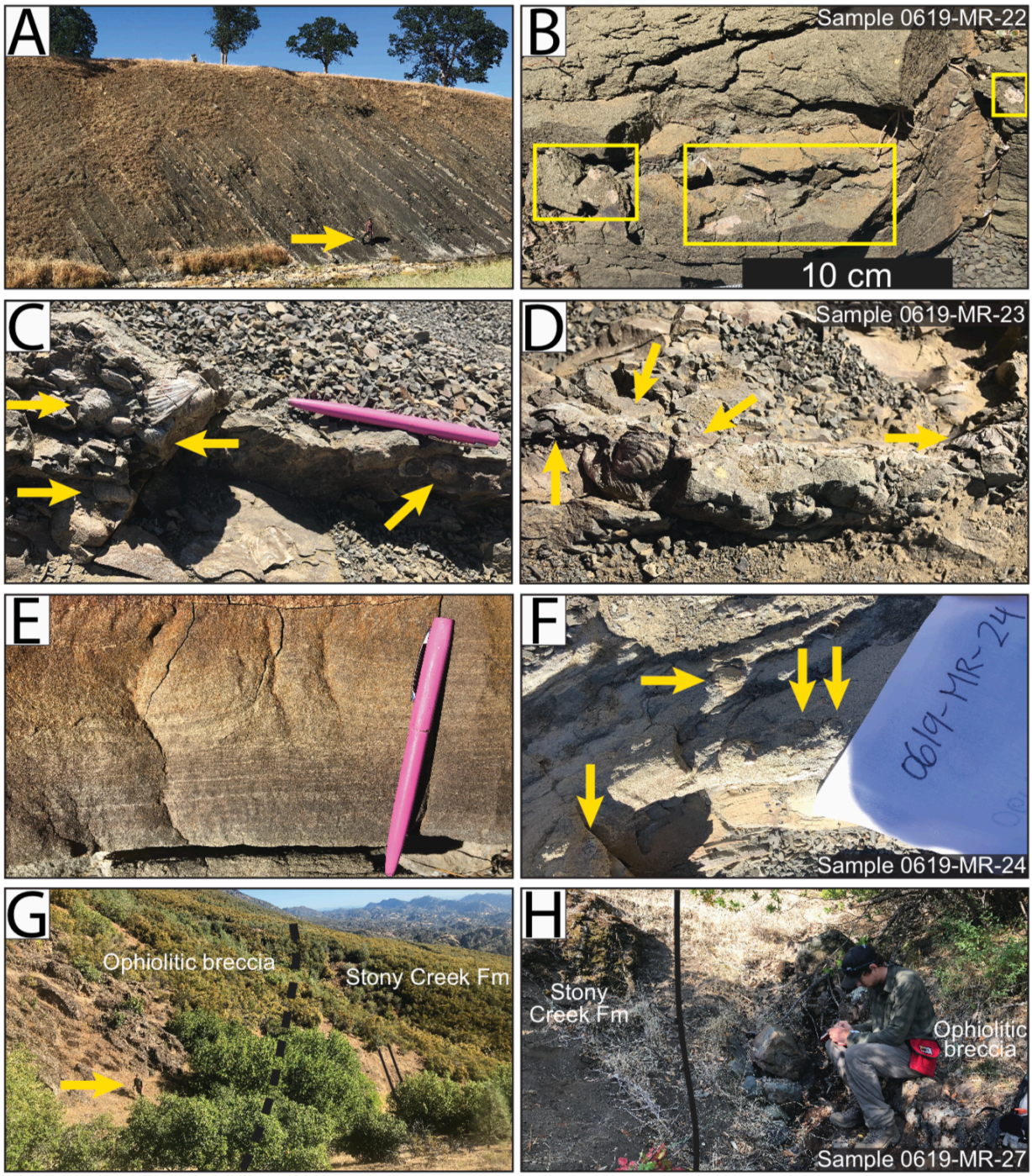

North
South
N 39.9099
W 122.5650
Elv. 798 ft
N 39.8987
W 122.6222
Elv. 1336 ft
N 39.88881
W 122.62349
Elv. 1769 ft
N 39.8149
W 122.6288
Elv. 1521 ft
N 39.6777
W 122.5796
Elv. 720 ft
LEGEND
Fsm
Fsl
Sr
Sh
Sm
Gmb
Gmm
Gcg
Gcm
Cover
Buchia
Shell Fragments
Micro-fault
Burrow/Bioturbation
De-watering Structure
Erosion Surface
Soft Sediment Deformation
Tool Marks
Detrital Zircon Sample
Petrographic Sample
Sandstone Lens
Shale Lens
Section Break
Grain size key
c s vf f m c vc g p c b
Boulder
Cobble
Pebble
Gravel
Sand
Silt
Clay
S/D: 350/50E
0619-MR-24
Fig. 9F
Fig. 9E
Fig. 9D
0619-MR-23
Fig. 9C
0619-MR-22
Fig. 9B
S/D: 018/90E
0619-MR-15
0619-MR-14
S/D: 007/62E
0619-MR-30
0619-MR-31
0619-MR-29
0619-MR-28
Fig. 9H
0619-MR-27
S/D: 285/20E
P01-3
Fig. 9I
S/D: 357/62E
Fig. 9M
0619-MR-37
*360 m of MTD?
0619-MR-36
Fig. 9L
N 39.9099
W 122.5658
S/D 340/65E
Section MC1
N 39.8987
W 122.6227
S/D 015/88E
Section DC1
N 39.8888
W 122.6239
S/D: 005/64E
Section CP1
N 39.8148
W 122.6290
S/D: 315/033E
Section P01
N 39.6757
W 122.5855
S/D: 012/50E
Section GC1

Figure 2.8. Detailed logs (in meters) of measured stratigraphic sections from Stony Creek Formation strata showing geochronologic and petrographic samples. Each section was measured on a bed-by-bed basis using a Jacob staff. Measured stratigraphic section abbreviations: CP1 – Crowfoot Point; DC1 – Digger Creek; GC1 – Grindstone Creek; MC1 – McCarty Creek; P01 – Paskenta.


A
B
Sample 0619-MR-22
10 cm
C
D
Sample 0619-MR-23
E
F
0619-MR-24
Sample 0619-MR-24
G
Ophiolitic breccia
Stony Creek Fm
H
Stony
Creek Fm
Ophiolitic
breccia
Sample 0619-MR-27

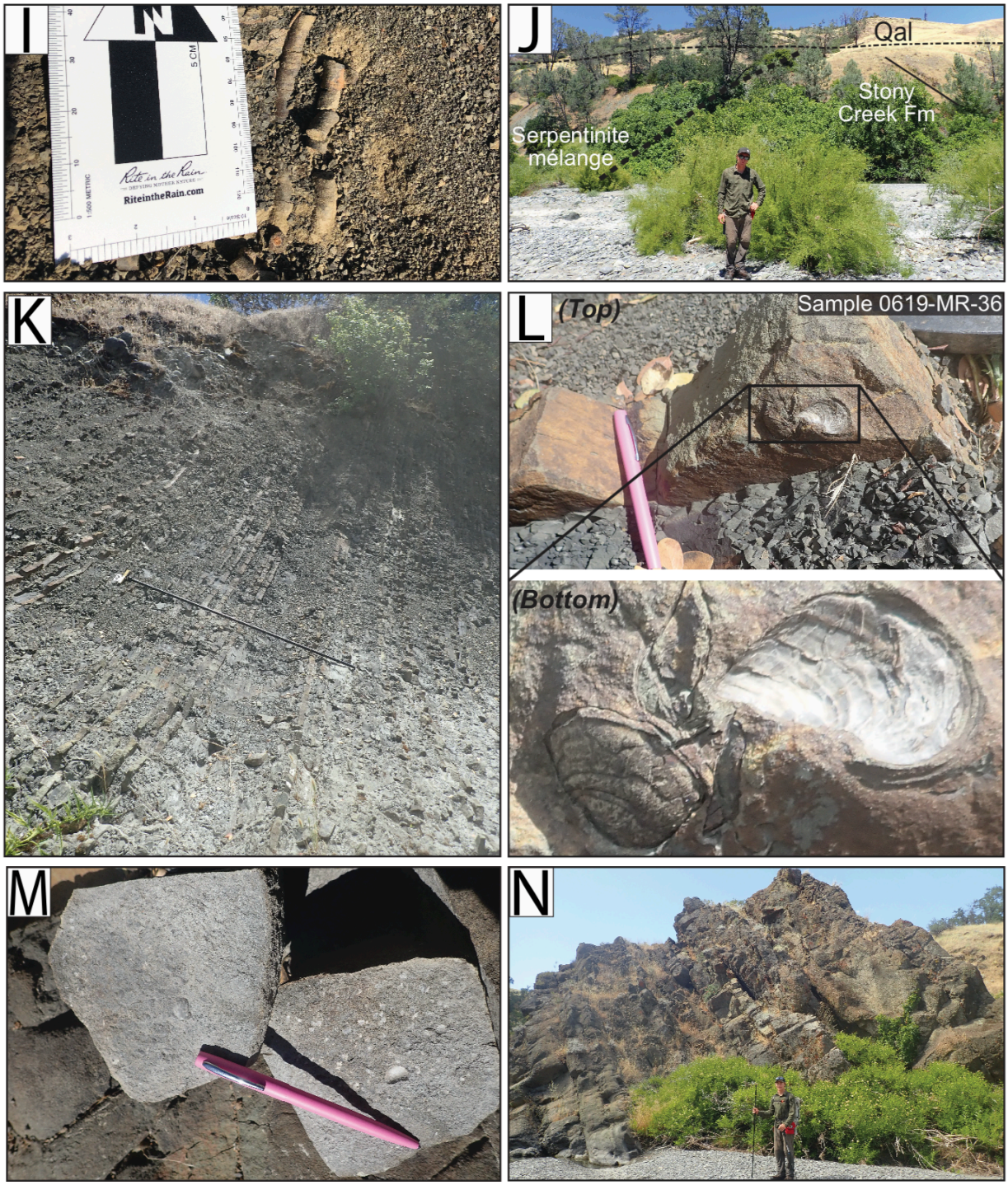

I
N
5 CM
Rite in the Rain
RiteintheRain.com
J
Qal
Stony
Creek Fm
Serpentinite
mélange
K
L
(Top)
Sample 0619-MR-36
(Bottom)
M
N

Figure 2.9. Field photos from McCarty Creek (A-F), Crowfoot Point (G-H), Paskenta (I), and Grindstone Creek (J-N) measured sections. (A) Outcrop of measured section MC1, within McCarty Creek. Beds are dipping to the east and stratigraphic-up is to the east. Photo is looking north. Person for scale (yellow arrow). (B) Sandstone bed containing bivalves and shell fragments (yellow boxes); sample 0619-MR-22. (C) Sandstone bed containing bivalves (yellow arrows) and shell fragments. Pink pen for scale. (D) Sandstone bed containing bivalves (yellow arrows); sample 0619-MR-23. (E) De-watering structure in sandstone bed. Pink pen for scale. (F) Sandstone bed containing bivalves (yellow arrows); sample 0619-MR-24. White sample bag for scale. (G) Ophiolitic breccia (left) and Stony Creek Formation (right); area of measured section CP1. Bedding (solid black lines) of Stony Creek Formation are dipping to the east. Photo is looking north. Person for scale (yellow arrow). (H) Contact between Ophiolitic breccia (right; sample 0619-MR-27) and Stony Creek Formation (left; sample 0619-MR-28). Person for scale. (I) Vertical burrows in sandstone bed of measured section P01. Measuring card for scale. (J) Serpentinite mélange (left) and Stony Creek Formation (right) along Grindstone Creek. Thick black dashed line shows inferred contact between the two units. Thin black dashed line shows estimated contact of overlying alluvium (Qal). Bedding (solid black line) within Stony Creek Formation is dipping to the east. Photo is looking north. Person for scale. (K) Lower stratigraphy of measured section GC1, within Grindstone Creek. Beds are dipping to the east and stratigraphic-up is to the east. Photo is looking south. Jacob staff for scale. (L) *Top*: Sandstone bed containing bivalves (black box) within measured section GC1; sample 0619-MR-36. Pink pen for scale. *Bottom*: Close-up photo of bivalves. (M) Sandstone bed containing bivalve and shell fragments within measured section GC1. Pink pen for scale. (N) Upper stratigraphy of measured section GC1, within Grindstone Creek. Conglomeratic beds are dipping to the east and stratigraphic-up is to the east. Photo is looking north. Person and Jacob staff for scale.

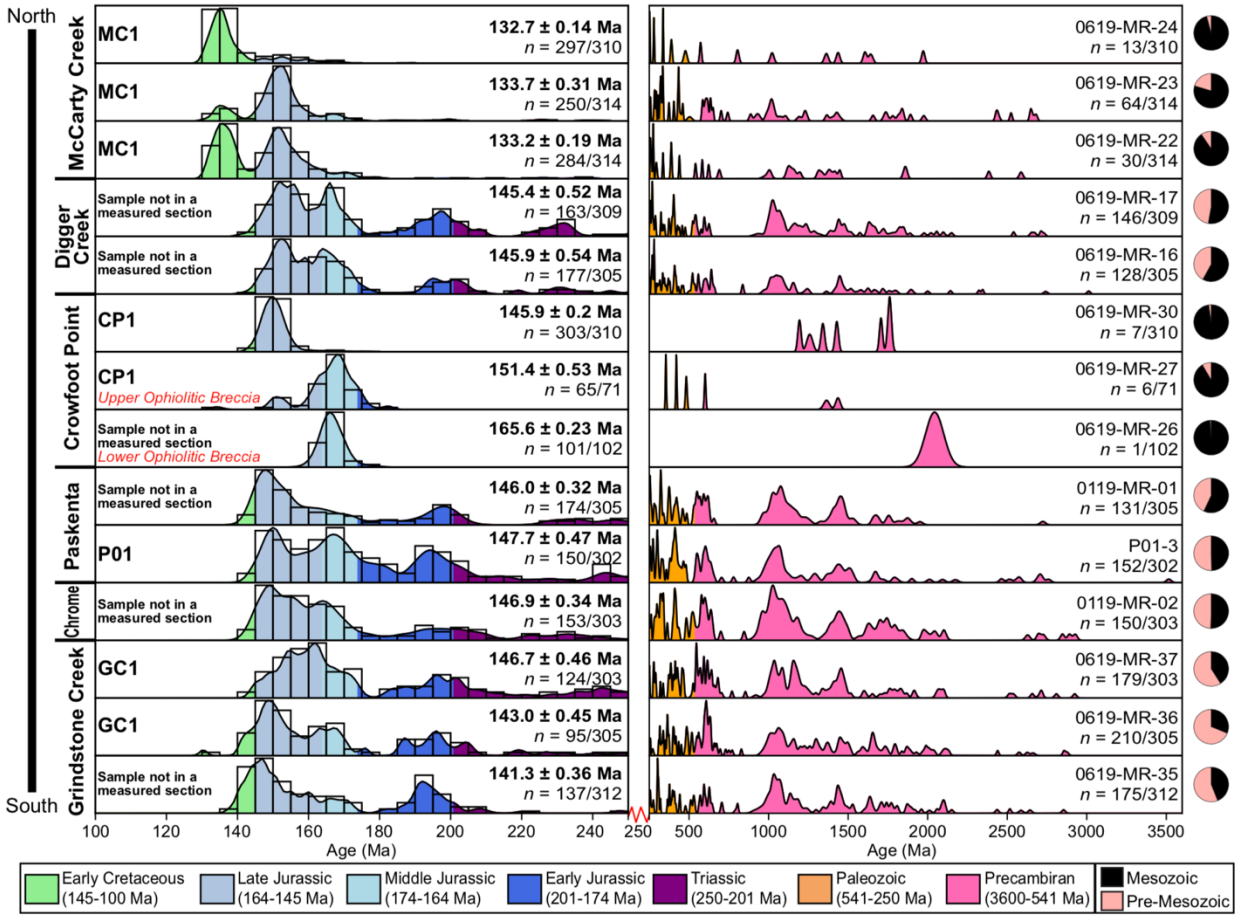
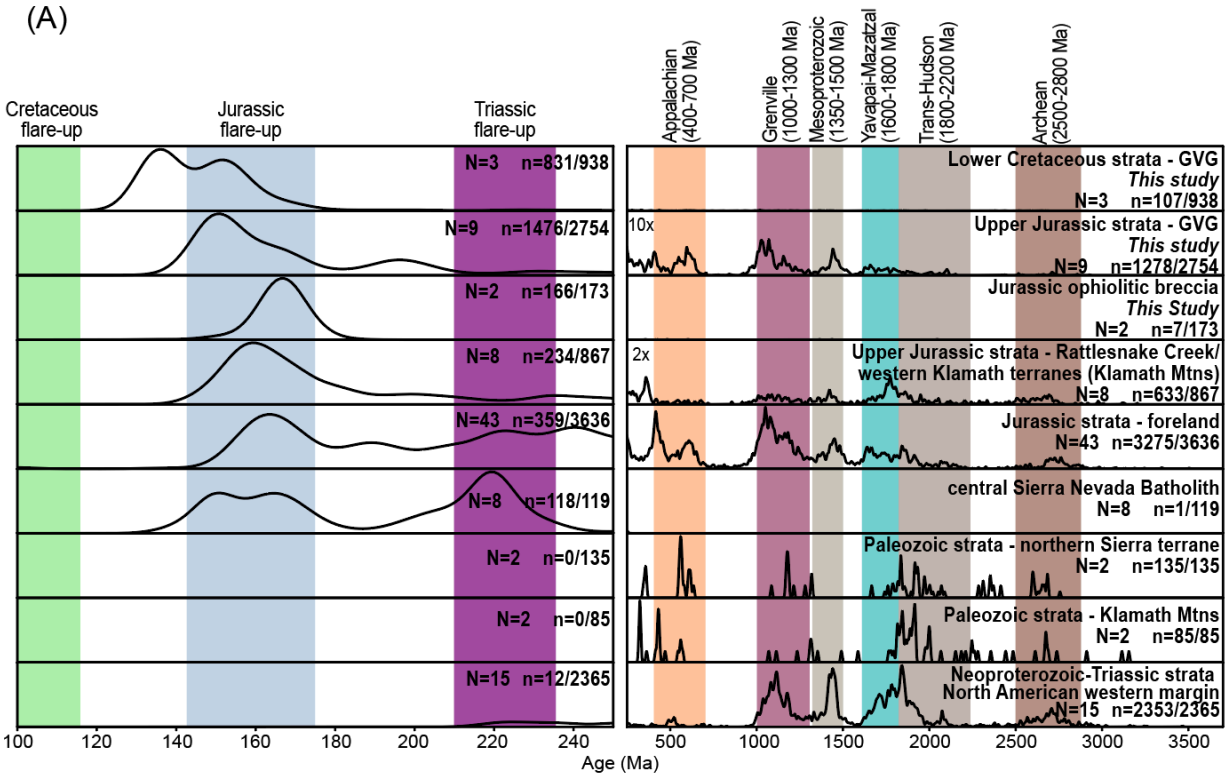


Figure 2.10. Probability distribution plots (PDPs) and histograms of the sampled regions (McCarty Creek, Digger Creek, Crowfoot Point, Paskenta, Chrome, and Grindstone Creek) from north to south. Samples are arranged in stratigraphic order within each region, with the oldest sample on bottom. Bolded maximum depositional ages (MDAs) represent the youngest cluster of three or more grains that overlap within 2σ uncertainty, YC2σ(3+). Colors are based on geologic age groupings. Pie diagrams show the relative percentage of Mesozoic (black) and Pre-Mesozoic (light pink) detrital zircon ages for each sample. Measured sections: MC1 – McCarty Creek; CP1 – Crowfoot Point; P01 – Paskenta; GC1 – Grindstone Creek.


(A)
Cretaceous flare-up
Jurassic flare-up
Triassic flare-up
Appalachian (400-700 Ma)
Grenville (1000-1300 Ma)
Mesoproterozoic (1350-1500 Ma)
Yavapai-Mazatzal (1600-1800 Ma)
Trans-Hudson (1800-2200 Ma)
Archean (2500-2800 Ma)
N=3 n=831/938
N=9 n=1476/2754
N=2 n=166/173
N=8 n=234/867
N=43 n=359/3636
N=8 n=118/119
N=2 n=0/135
N=2 n=0/85
N=15 n=12/2365
Lower Cretaceous strata - GVG
This study
N=3 n=107/938
10x
Upper Jurassic strata - GVG
This study
N=9 n=1278/2754
Jurassic ophiolitic breccia
This Study
N=2 n=7/173
2x
Upper Jurassic strata - Rattlesnake Creek/
western Klamath terranes (Klamath Mtns)
N=8 n=633/867
Jurassic strata - foreland
N=43 n=3275/3636
central Sierra Nevada Batholith
N=8 n=1/119
Paleozoic strata - northern Sierra terrane
N=2 n=135/135
Paleozoic strata - Klamath Mtns
N=2 n=85/85
Neoproterozoic-Triassic strata
North American western margin
N=15 n=2353/2365
100 120 140 160 180 200 220 240
500 1000 1500 2000 2500 3000 3500
Age (Ma)

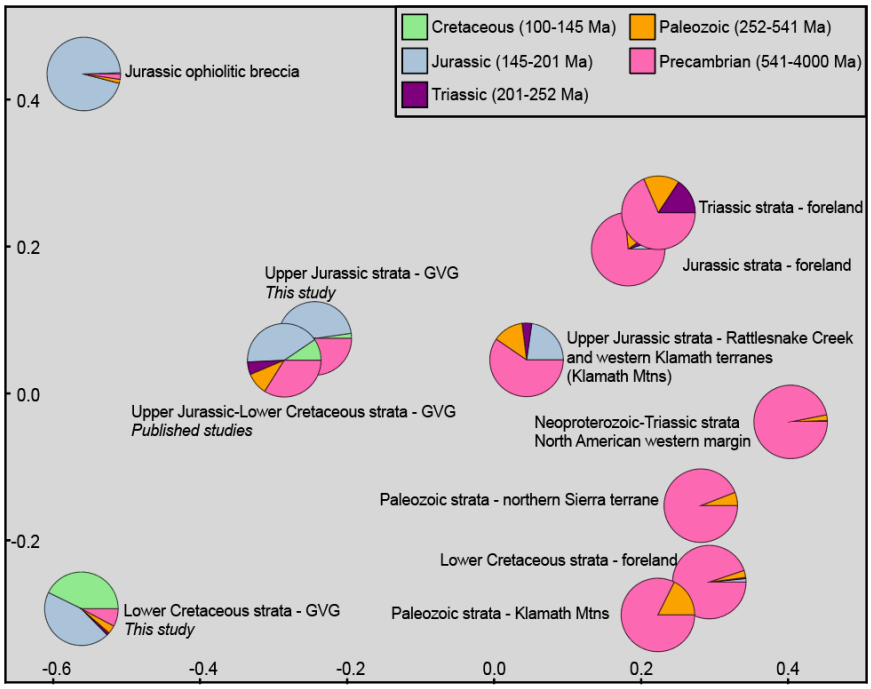

(B)
Cretaceous (100-145 Ma)
Jurassic (145-201 Ma)
Triassic (201-252 Ma)
Paleozoic (252-541 Ma)
Precambrian (541-4000 Ma)
Jurassic ophiolitic breccia
Triassic strata - foreland
Jurassic strata - foreland
Upper Jurassic strata - GVG
This study
Upper Jurassic strata - Rattlesnake Creek
and western Klamath terranes
(Klamath Mtns)
Upper Jurassic-Lower Cretaceous strata - GVG
Published studies
Neoproterozoic-Triassic strata
North American western margin
Paleozoic strata - northern Sierra terrane
Lower Cretaceous strata - foreland
Lower Cretaceous strata - GVG
This study
Paleozoic strata - Klamath Mtns
0.4
0.2
0.0
-0.2
-0.6 -0.4 -0.2 0.0 0.2 0.4

Figure 2.11. (A) Kernel density estimates (KDEs) and (B) multi-dimensional scaling (MDS) analysis for sample groups that represent sinks and sources of and neighboring the GVF. Separate KDE plots are shown for Mesozoic and Pre-Mesozoic detrital zircon age spectra (break at 250 Ma). List of samples and references are listed in Appendix A.

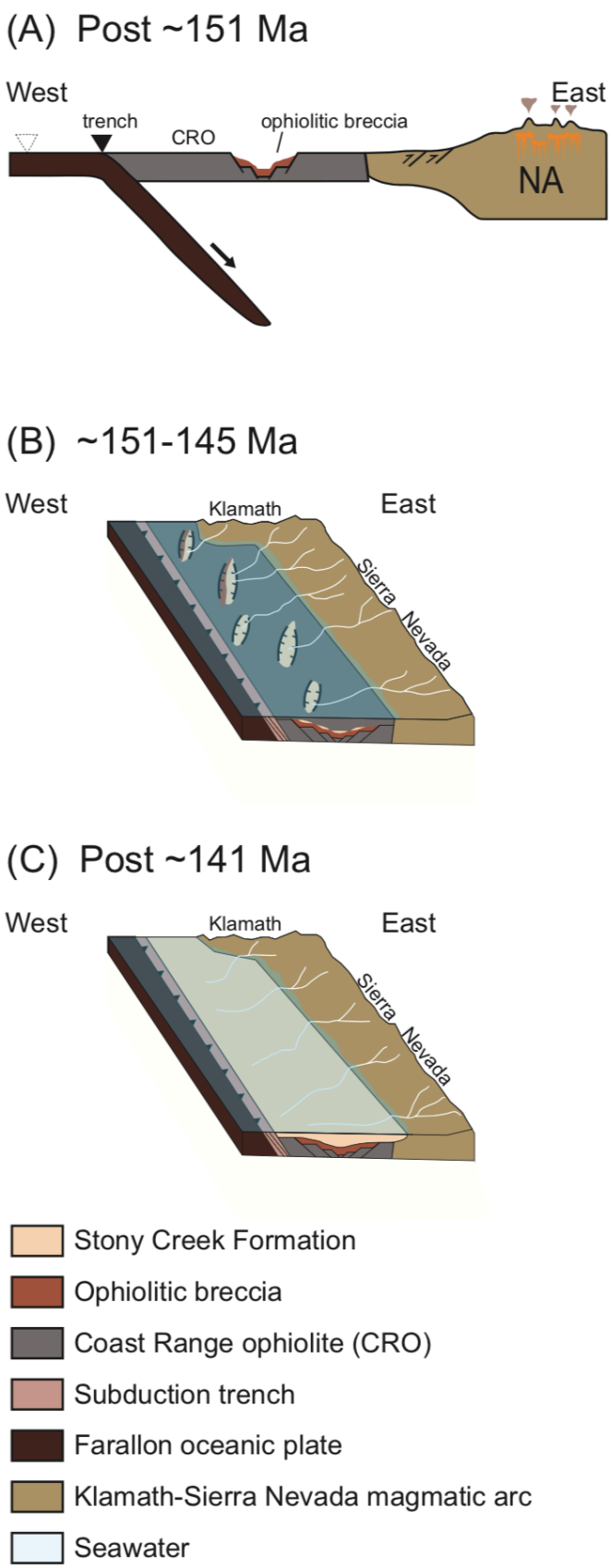

(A) Post ~151 Ma
West
East
trench
CRO
ophiolitic breccia
NA
(B) ~151-145 Ma
West
Klamath
East
Sierra Nevada
(C) Post ~141 Ma
West
Klamath
East
Sierra Nevada
Stony Creek Formation
Ophiolitic breccia
Coast Range ophiolite (CRO)
Subduction trench
Farallon oceanic plate
Klamath-Sierra Nevada magmatic arc
Seawater

Figure 2.12. Schematic tectonic model (not-to-scale) for deposition of the ophiolitic breccia and Stony Creek Formation during early stages of development of the Great Valley forearc basin. (A) Post ~151 Ma: Deposition of the ophiolitic breccia in the outer forearc region with schematic contractional structures related to the Nevadan orogeny inboard (B) ~151–145 Ma: Deposition of the Stony Creek Formation within isolated fault-bounded depocenters. (C) Post ~141 Ma: Segmented depocenters are overfilled and form a cohesive forearc basin. Modified after Ingersoll (1999) and Orme and Surpless (2019). Schematic paleobathymetric shoreline location from Williams (1997).

Table 2.1. Sample locations in the Sacramento subbasin in northern California.

SAMPLE	LITHOLOGY	UNIT	REGIONAL LOCATION	LATITUDE (°N)	LONGITUDE (°W)	MEASURED SECTION	U-Pb ANALYSIS	PETROGRAPHY
0119-MR-01	Sandstone	Great Valley Group	Paskenta	39.82008	-122.62507	----------	Detrital, n= 305	Yes
0119-MR-02	Sandstone	Great Valley Group	Chrome	39.70809	-122.58168	----------	Detrital, n= 303	Yes
P01-3	Sandstone	Great Valley Group	Paskenta	39.81484	-122.62901	P01	Detrital, n= 302	Yes
0619-MR-06	Gabbro	Coast Range Ophiolite	Eagle Point	39.92591	-122.64223	----------	Igneous, n= 34	No
0619-MR-07	Gabbro	Coast Range Ophiolite	Eagle Point	39.9267	-122.64236	----------	Igneous, n= 34	No
0619-MR-12	Breccia	Breccia	Crowfoot Point	39.88491	-122.62727	----------	No Zircon Yield	Yes
0619-MR-14	Sandstone	Great Valley Group	Digger Creek	39.89881	-122.62275	DC1	No Zircon Yield	No
0619-MR-15	Sandstone	Great Valley Group	Digger Creek	39.89881	-122.62263	DC1	No Zircon Yield	No
0619-MR-16	Sandstone	Great Valley Group	Digger Creek	39.89792	-122.61781	----------	Detrital, n= 305	Yes
0619-MR-17	Sandstone	Great Valley Group	Digger Creek	39.89853	-122.61466	----------	Detrital, n= 309	No
0619-MR-22	Sandstone	Great Valley Group	McCarthy Creek	39.91001	-122.56588	MC1	Detrital, n= 314	No
0619-MR-23	Sandstone	Great Valley Group	McCarthy Creek	39.91	-122.56568	MC1	Detrital, n= 314	No
0619-MR-24	Sandstone	Great Valley Group	McCarthy Creek	39.90994	-122.56529	MC1	Detrital, n= 310	Yes
0619-MR-26	Breccia	Breccia	Crowfoot Point	39.89569	-122.62968	----------	Detrital, n= 102	No
0619-MR-27	Breccia	Breccia	Crowfoot Point	39.88888	-122.62388	CP1	Detrital, n= 71	Yes
0619-MR-28	Sandstone	Great Valley Group	Crowfoot Point	39.88886	-122.62388	CP1	No Zircon Yield	Yes
0619-MR-29	Sandstone	Great Valley Group	Crowfoot Point	39.88889	-122.6237	CP1	No Zircon Yield	Yes
0619-MR-30	Sandstone	Great Valley Group	Crowfoot Point	39.88888	-122.6236	CP1	Detrital, n= 310	Yes
0619-MR-35	Sandstone	Great Valley Group	Grindstone Creek	39.6769	-122.59036	----------	Detrital, n= 312	Yes
0619-MR-36	Sandstone	Great Valley Group	Grindstone Creek	39.67575	-122.58553	GC1	Detrital, n= 305	Yes
0619-MR-37	Sandstone	Great Valley Group	Grindstone Creek	39.67807	-122.57995	GC1	Detrital, n= 303	Yes

Table 2.1. Sample locations in the Sacramento subbasin in northern California.

Table 2.2. Lithofacies and interpretations. Modified after Orme et al. (2015).

Lithofacies	Description		Interpretation
Gcm	Pebble conglomerate, poorly sorted, clast-supported		Clast-rich or pseudoplastic debris-flow deposits
Gcg	Granule conglomerate, poorly sorted, clast-supported		Clast-rich or pseudoplastic debris-flow deposits
Gmm	Pebble to cobble conglomerate, poorly sorted, matrix-supported		Plastic or cohesive debris-flow deposits (high-strength debris flows)
Gmb	Pebble to cobble breccia, poorly sorted, matrix-supported		Plastic or cohesive debris-flow deposits
Sm	Very fine- to very coarse-grained massive sandstone		Traction carpet during high density flow. Bouma (1962) Ta; Lowe (1982) S1; Mutti (1992) F8
Sh	Very fine-to very coarse-grained sandstone with plane-parallel laminations		Planar flow bed (upper and lower flow regime); unidirectional flow
Sr	Very fine- to fine-grained sandstone with small ripples		Lower flow regime ripples; unidirectional flow
Fsl	Laminated black or grey siltstone		Waning flood deposits
Fsm	Massive siltstone		Suspension settling

Table 2.2. Lithofacies and interpretations. Modified after Orme et al. (2015).

Table 2.3. Summary of parameters for modal point counting.	
Qt	**Total quartzose grains (Qm + Qp)**
Qm	Monocrystalline quartz
Qp	Polycrystalline quartz
F	**Total feldspar grains (K + P)**
K	Potassium feldspar (microcline, orthoclase, perthite)
P	Plagioclase (Ca and Na varieties)
Fine grain lithics	
Lm	**Total metamorphic lithic grains (Lph + Lsm)**
Lph	Phyllite
Lsm	Mica schist
Ls	**Total sedimentary lithic grains (C + S + Lc + Lsh)**
C	Chert
S	Siltsone
Lc	Carbonate lithic grains
Lsh	Mudstone
Lv	**Total volcanic lithic grains (Lvf + Lvl + Lvm + Lvv + Lvx)**
Lvf	Felsic volcanic grains (sericite + qtz + feldspar)
Lvl	Lathwork volcanic grains
Lvm	Mafic volcanic grains (epidote + pyx + plag)
Lvv	Vitric volcanic grains
Lvx	Microlitic volcanic grains
Lt	**Total lithic grains (Lm + Ls + Lv + Qp)**
L	**Total nonquartzose lithic grains (Lc + Lph + Ls + Lsm + Lv)**
Accessory Minerals	Amphibole, Apatite, Biotite, Chlorite, Epidote, Olivine, white mica, Zircon

Table 2.3. Summary of parameters for modal point counting.

Table 2.4. Calculated maximum depositional age (MDA) using multiple methods for each sample.

Sample	Method 1 Youngest Single Grain (YSG)	Method 2 Youngest Cluster of 2 or more ages at 1σ(YC1σ 2+)	Method 3 Youngest Cluster of 3 or more ages at 2σ(YC2σ 3+)	Number of grains used to calculate MDA for Method 3	Measured Section (Figure 8)
0119-MR-01	142.1 ± 1.63 Ma	143.5 ± 0.65 Ma	**146.0 ± 0.32 Ma**	37	----------
0119-MR-02	142.8 ± 2.03 Ma	145.0 ± 0.49 Ma	**146.9 ± 0.34 Ma**	29	----------
P01-3	143.9 ± 1.69 Ma	145.5 ± 0.81 Ma	**147.7 ± 0.47 Ma**	18	P01-3
0619-MR-16	142.4 ± 1.82 Ma	144.0 ± 1.14 Ma	**145.9 ± 0.54 Ma**	6	----------
0619-MR-17	141.5 ± 1.63 Ma	145.5 ± 0.61 Ma	**145.4 ± 0.52 Ma**	7	----------
0619-MR-22	131.0 ± 1.19 Ma	132.2 ± 0.29 Ma	**133.2 ± 0.19 Ma**	35	MC1
0619-MR-23	130.2 ± 1.17 Ma	130.9 ± 0.76 Ma	**133.7 ± 0.31 Ma**	16	MC1
0619-MR-24	130.8 ± 0.92 Ma	131.6 ± 0.21 Ma	**132.7 ± 0.14 Ma**	77	MC1
0619-MR-26	160.3 ± 2.59 Ma	162.9 ± 0.56 Ma	**165.6 ± 0.23 Ma**	79	----------
0619-MR-27	134.2 ± 1.67 Ma	150.1 ± 0.7 Ma	**151.4 ± 0.53 Ma**	7	CP1
0619-MR-30	143.3 ± 1.13 Ma	144.6 ± 0.32 Ma	**145.9 ± 0.2 Ma**	42	CP1
0619-MR-35	138.1 ± 1.36 Ma	141.0 ± 0.43 Ma	**141.3 ± 0.36 Ma**	14	----------
0619-MR-36	130.4 ± 1.0 Ma	142.0 ± 0.57 Ma	**143.0 ± 0.45 Ma**	8	GC1
0619-MR-37	144.5 ± 1.36 Ma	145.5 ± 0.62 Ma	**146.7 ± 0.46 Ma**	8	GC1

Table 2.4. Calculated maximum depositional age (MDA) using multiple methods for each sample.

Literature Cited

Adam, J., and Reuther, C. D., 2000, Crustal dynamics and active fault mechanics during subduction erosion. Application of frictional wedge analysis on to the North Chilean Forearc: Tectonophysics, 321, 297-325.

Almgren, A.A., and Hacker, P.D., eds., 1984, Paleogene Submarine Canyons of the Sacramento Valley, California: Bakersfield, California, Pacific Section, American Association of Petroleum Geologists, Symposium Volume 1, 187 p.

Attia, S., Cottle, J.M., and Paterson, S.R., 2020, The erupted zircon record of continental crust formation during mantle driven arc flare-ups: Geology, v. 48, no. 5, p. 446–451, https://doi.org/10.1130/G46991.1.

Attia, S., Paterson, S. R., Saleeby, J., and Cao, W., 2021, Detrital zircon provenance and depositional links of Mesozoic Sierra Nevada intra-arc strata: Geosphere, 17, 1422-1453.

Bailey, E.H., and Blake, M.C., Jr., 1974, Major chemical characteristics of Mesozoic Coast Range ophiolite in California: U.S. Geological Survey Journal of Research, v. 2, no. 6, p. 637–656.

Bailey, E.H., Blake, M.C., Jr., and Jones, D.L., 1970, On-land Mesozoic oceanic crust in California Coast Ranges, in Geological Survey Research 1970, Chapter C: U.S. Geological Survey Professional Paper 700-C, p. C70–C81.

Bailey, E. H., Irwin, W. P., and Jones, D. L., 1964, Franciscan and related rocks, and their significance in the geology of Western California: California Division of Mines and Geology Bulletin 183, 177 p.

Balgord, E.A., Yonkee, W.A., Wells, M.L., Gentry, A., and Laskowski, A.K., 2021, Arc tempos, tectonic styles, and sedimentation patterns during evolution of the North American Cordillera: Constraints from the retroarc detrital zircon archive: Earth-Science Reviews, v. 216, 103557, https://doi.org/10.1016/j.earscirev.2021.103557.

Bateman, P.C., 1983, A summary of critical relations in the central part of the Sierra Nevada batholith, California, U.S.A., in Roddick, J.A., ed., Circum-Pacific Plutonic Terranes: Geological Society of America Memoir 159, p. 241–254, doi:10.1130/MEM159-p241.

Bateman, P.C., and Dodge, F.C.W., 1970, Variations of major chemical constituents across the central Sierra Nevada batholith: Geological Society of America Bulletin, v. 81, p. 409–420, doi:10.1130/0016-7606(1970)81[409:VOMCCA]2.0.CO;2.

Bertucci, P.F., 1983, Petrology and provenance of the Stony Creek Formation, northwestern

Sacramento Valley, California, in Bertucci, P.F., and Ingersoll, R.V., eds., Guidebook to the Stony Creek Formation, Great Valley Group, Sacramento Valley, California: Los Angeles, California, Pacific Section, Society of Economic Paleontology and Mineralogy, p. 1–16.

Bezore, S.P., 1969, The Mount St. Helena ultramafic-mafic complex of the northern Coast Ranges: Geological Society of America Abstracts with Programs, v. 1, no. 3, p. 5.

Blake, M.C., Jr., Jayko, A.S., Jones, D.L., and Rogers, B.W., 1987, Unconformity between Coast Range Ophiolite and part of the lower Great Valley Sequence, South Fork of Elder Creek, Tehama County, California, in Hill, M.L., ed., Cordilleran Section of the Geological Society of America: Boulder, Colorado, Centennial field guide, v. 1, p. 279–282.

Blake, M. C., Jr., Helley, E. J., Jayko, A. S., Jones, D. L., and Ohlin, H. N., 1992, Geologic map of the Willows 1: 100,000 quadrangle, California (No. 92-271). US Geology Survey.

Bogen, N.K., 1984, Stratigraphy and sedimentary petrology of the Upper Jurassic Mariposa Formation, western Sierra Nevada, California: in Crouch, J.K., and Bachman, S.B., eds., Tectonics and sedimentation along the California margin: Pacific Section, Society of Economic Paleontologists and Mineralogists, Book 38, p. 119-134.

Bouma, A.H., 1962, Sedimentology of Some Flysch Deposits: A Graphic Approach to Facies Interpretations: Amsterdam, Elsevier, 168 p.

Cady, J.W., 1975, Magnetic and Gravity Anomalies in the Great Valley and Western Sierra Nevada Metamorphic Belt, California: Geological Society of America Special Paper 168, 56 p., https://doi.org/10.1130/SPE168-p1.

Chen, J.H., and Moore, J.G., 1982, Uranium-lead isotopic ages from the Sierra Nevada batholith, California: Journal of Geophysical Research, v. 87, p. 4761–4784, https://doi.org/10 .1029/JB087iB06p04761.

Clift, P.D., and Vannucchi, P., 2004, Controls on tectonic accretion versus erosion in subduction zones: Implications for the origin and recycling of the continental crust: Reviews of Geophysics, v. 42, RG2001, https://doi .org/10.1029/2003RG000127.

Constenius, K.N., Johnson, R.A., Dickinson, W.R., and Williams, T.A., 2000, Tectonic evolution of the Jurassic–Cretaceous Great Valley forearc, California: Implications for the Franciscan thrust-wedge hypothesis: Geo- logical Society of America Bulletin, v. 112, p. 1703–1723, https://doi .org/10.1130/0016-7606(2000)112<1703:TEOTJC>2.0.CO;2.

Coutts, D.S., Matthews, W.A., and Hubbard, S.M., 2019, Assessment of widely used methods to derive depositional ages from detrital zircon populations: Geoscience Frontiers, https://doi.org/10 .1016/j.gsf.2018.11.002.

DeGraaff-Surpless, K., Graham, S.A., Wooden, J.L., and McWilliams, M.O., 2002, Detrital zircon provenance analysis of the Great Valley Group, California: Evolution of an arc-forearc system: Geological Society of America Bulletin, v. 114, p. 1564–1580, https://doi.org/10.1130/0016-7606(2002)114<1564:DZPAOT>2.0.CO;2.

DePaolo, D.J., 1981, A neodymium and strontium isotopic study of the Mesozoic calc-alkaline granitic batholiths of the Sierra Nevada and Peninsular Ranges, California: Journal of Geophysical Research, v. 86, p. 10470–10488. doi:10.1029/ JB086iB11p10470

Dickinson, W., 1985, Interpreting provenance relations from detrital modes of sandstones, in Zuffa, G.G., ed., Provenance of Arenites: Dordrecht, Netherlands, Reidel, p. 333–361.

Dickinson, W.R., 2008, Accretionary Mesozoic–Cenozoic expansion of the Cordilleran continental margin in California and adjacent Oregon: Geosphere, v. 4, p. 329–353, https://doi.org/10.1130/GES00105.1.

Dickinson, W. R., and Gehrels, G. E., 2009, Use of U–Pb ages of detrital zircons to infer maximum depositional ages of strata: a test against a Colorado Plateau Mesozoic database. Earth and Planetary Science Letters, 288(1-2), 115-125.

Dickinson, W.R., and Rich, E.I., 1972, Petrologic intervals and petrofacies in the Great Valley sequence, Sacramento Valley, California: Geological Society of America Bulletin, v. 83, p. 3007–3024, https://doi.org/10.1130/0016-7606(1972)83[3007:PIAPIT]2.0.CO;2.

Dickinson, W.R., and Seely, D.R., 1979, Structure and stratigraphy of forearc regions: American Association of Petroleum Geologists Bulletin, v. 63, p. 2–31.

Engebretson, D.C., Cox, A., and Gordon, R.G., 1985, Relative motions between oceanic and continental plates in the Pacific Basin: Geological Society of America Special Paper 206, 59 p.

Ernst, W.G., 1970, Tectonic contact between the Franciscan mélange and the Great Valley sequence: Crustal expression of a late Mesozoic Benioff zone: Journal of Geophysical Research, v. 75, p. 886– 901, https://doi.org/10.1029/JB075i005p00886.

Ernst, W.G., 2013, Earliest Cretaceous Pacificward offset of the Klamath Mountains salient, NW California–SW Oregon: Lithosphere, v. 5, p. 151–159, https://doi.org/10.1130/L247.1.

Evarts, R. C., 1977, The geology and petrology of the Del Puerto ophiolite, Diablo Range, central California Coast Ranges, in Coleman, R. G., and Irwin, W. P., eds., North American ophiolites: Oregon Department of Geology and Mineral Industries Bulletin 95, p. 121–139.

Garzanti, E., 2016, From static to dynamic provenance analysis—sedimentary petrology upgraded: Sedimentary Geology, 336, 3–13.

Garzanti, E., 2019, Petrographic classification of sand and sandstone: Earth-Science Reviews, v. 192, p. 545–563, https://doi.org/10.1016/j.earscirev.2018.12.014.

Gazzi, P., 1966, Le arenarie del flysch sopracretaceo dell'Appennino modenese; Correlazioni coni flysch di Monghidoro. Miner Petrogr Acta, 12, 69-97.

Gehrels, G., 2012, Detrital zircon U-Pb geochronology: Current methods and new opportunities, in Busby, C., and Azor, A., eds., Tectonics of Sedimentary Basins: Recent Advances: Chichester, John Wiley & Sons, p. 47–62, doi:10.1002/9781444347166.ch2.

Gehrels, G.E., and Miller, M.M., 2000, Detrital zircon geochronologic study of upper Paleozoic strata in the eastern Klamath terrane, northern California, in Soreghan, M.J., and Gehrels, G.E., eds., Paleozoic and Triassic paleogeography and tectonics of western Nevada and northern California: Boulder, Colorado, Geological Society of America Special Paper 347, p. 99–107.

Gehrels, G.E., and Pecha, M., 2014, Detrital zircon U-Pb geochronology and Hf isotope geochemistry of Paleozoic and Triassic passive margin strata of western North America: Geosphere, v. 10, p. 49–65, https://doi.org/10.1130/GES00889.1.

Gehrels, G.E., Valencia, V.A., and Ruiz, J., 2008, Enhanced precision, accuracy, efficiency, and spatial resolution of U-Pb ages by laser ablation– multicollector–inductively coupled plasma–mass spectrometry: Geochemistry, Geophysics, Geosystems, v. 9, Q03017, https://doi.org/10.1029 /2007GC001805.

Godfrey, N.J., Beaudoin, B.C., Klemperer, S.L., and Mendocino Working Group, 1997, Ophiolitic basement to the Great Valley forearc basin, California, from seismic and gravity data: Implications for crustal growth at the North American continental margin: Geological Society of America Bulletin, v. 108, p. 1536–1562.

Goudkoff, P.P., 1945, Stratigraphic relations of Upper Cretaceous in Great Valley, California: American Association of Petroleum Geologists Bulletin, v. 29, p. 956–1007.

Graham, S.A., 1981, Stratigraphic and depositional patterns and hydrocarbon occurrence, Sacramento Valley, California, *in* Graham, S.A., ed., Field Guide to the Mesozoic–Cenozoic Convergent Margin of Northern California: Bakersfield, California, Pacific Section, American Association of Petroleum Geologists, Book 50, p. 43–58.

Greene, T.J., and Surpless, K.D., 2017, Facies architecture and provenance of a boulder-

conglomerate submarine channel system, Panoche Formation, Great Valley Group: A forearc basin response to middle Cretaceous tectonism in the California convergent margin: Geosphere, v. 13, no. 3, p. 838–869, https://doi.org/10.1130/GES01422.1.

Hackel, O., 1966, Summary of the geology of the Great Valley, *in* Bailey, E.H., ed., Geology of Northern California: California Division of Mines and Geology Bulletin 190, p. 217–238.

Hacker, B.R., Donato, M.M., Barnes, C.G., McWilliams, M.O., and Ernst, W.G., 1995, Time scales of orogeny: Jurassic construction of the Klamath Mountains: Tectonics, v. 14, p. 677–703, https://doi .org/10.1029/94TC02454.

Haeussler, P.J., and Paterson S.R., 1993, Tilting, burial, and uplift of the Guadalupe igneous complex, Sierra Nevada, California: Geological Society of America Bulletin, v. 105, p. 1310–1320, doi: 10.1130/0016-7606(1993)105<1310:TBAUOT>2.3.CO;2.

Hamilton, W., 1969, Mesozoic California and the underflow of Pacific mantle: Geological Society of America Bulletin, v. 80, p. 2409–2430.

Harding, J.P., Gehrels, G.E., Harwood, D.S., and Girty, G.H., 2000, Detrital zircon geochronology of the Shoo Fly complex, northern Sierra terrane, northeastern California, in Soreghan, M.J., and Gehrels, G.E., eds., Paleozoic and Triassic Paleogeography and Tectonics of Western Nevada and Northern California: Geological Society of America Special Paper 347, p. 43–55.

Harper, G.D., Saleeby, J.B., and Heizler, M., 1994, Formation and emplacement of the Josephine ophiolite and the Nevadan orogeny in the Klamath Mountains, California-Oregon: U/Pb zircon and 40Ar/39Ar geo- chronology: Journal of Geophysical Research, v. 99, p. 4293–4321, https://doi.org/10.1029/93JB02061.

Hitz, B., and Wakabayashi, J., 2012, Unmetamorphosed sedimentary mélange with high-pressure metamorphic blocks in a nascent forearc basin setting: Tectonophysics, v. 568–569, p. 124–134, https://doi.org/10.1016/j.tecto.2011.12.006.

Hopson, C.A., Mattinson, J.M., and Pessagno, E.A., Jr., 1981, Coast Range ophiolite, western California, in Ernst, W.G., ed., The Geotectonic Development of California: Englewood Cliffs, New Jersey, Prentice-Hall, p. 418–510.

Hopson, C.A., Mattinson, J.M., Pessagno, E.A., Jr., and Luyendyk, B.P., 2008, California Coast Range ophiolite: Composite Middle and Late Jurassic oceanic lithosphere, in Wright, J.E., and Shervais, J.W., eds., Ophiolites, Arcs, and Batholiths: A Tribute to Cliff Hopson: Geological Society of America Special Paper 438, p. 1–101, doi: 10.1130/2008.2438(01).

Ingersoll, R.V., 1976, Evolution of the Late Cretaceous Forearc Basin of Northern and Central

California [Ph.D. thesis]: Stanford, California, Stanford University, 200 p.

Ingersoll, R.V., 1978, Paleogeography and paleotectonics of the Late Mesozoic fore-arc basin of northern and central California, in Howell, D. G., and McDougall, K. A., eds., Mesozoic Paleogeography of the Western United States: Soc. Econ. Paleontologists Mineralogists, p. 471- 482.

Ingersoll, R.V., 1979, Evolution of the Late Cretaceous forearc basin, northern and central California: Geological Society of America Bulletin, v. 90, p. 813–826, https://doi.org/10 .1130/0016-7606(1979)90<813:EOTLCF>2.0.CO;2.

Ingersoll, R.V., 1982, Initiation and evolution of the Great Valley forearc basin of northern and central California, U.S.A., in Leggett, J.K., ed., Trench- Forearc Geology: Sedimentation and Tectonics on Modern and Ancient Active Plate Margins: Geological Society, London, Special Publication 10, p. 459–467, https://doi.org/10.1144/GSL.SP.1982.010.01.31.

Ingersoll, R.V., 1983, Petrofacies and provenance of late Mesozoic forearc basin: Northern and central California: American Association of Petroleum Geologists Bulletin, v. 67, p. 1125–1142.

Ingersoll, R. V., 1999, Post-1968 research on the Great Valley Group, in Moores, E. M., Sloan, D., and Stout, D. L., eds., Classic Cordilleran Concepts: A View from California: Boulder, Colorado, Geological Society of America Special Paper 338.

Ingersoll, R.V., 2012, Tectonics of sedimentary basins, with revised nomenclature, in Busby, C., and Azor-Perez, A., eds., Tectonics of Sedimentary Basins: Recent Advances: Oxford, UK, Blackwell, p. 3–43.

Ingersoll, R.V., 2019, Forearc strike-slip displacement as an alternative to subduction erosion, with examples from Mexico and California (sinistral Nacimiento fault): Canadian Journal of Earth Sciences, 56 (12), 1285–1296.

Ingersoll, R. V., Bullard, T. F., Ford, R. L., Grimm, J. P., Pickle, J. D., and Sares, S. W., 1984, The effect of grain size on detrital modes: a test of the Gazzi-Dickinson point-counting method, Journal of Sedimentary Research, v. 54, no. 1, p. 103-116.

Ingersoll, R.V., Rich, E.I., and Dickinson, W.R., 1977, Great Valley Sequence, Sacramento Valley: Geological Society of America, Cordilleran Section, Field Guidebook, p. 1-72.

Irwin, W.P., 1972, Terranes of the Western Paleozoic and Triassic Belt in the Southern Klamath Mountains, California: U.S. Geological Survey Professional Pa- per 800-C, p. C103–C111, https://doi.org/10.3133/ pp800C.

Irwin, W.P., 2003, Correlation of the Klamath Mountains and Sierra Nevada: Sheet 1; Map Showing Accreted Terranes and Plutons of the Klamath Mountains and Sierra Nevada, scale 1:1,000,000, and Sheet 2; Successive Accretionary Episodes of the Klamath Mountains and Northern Part of the Sierra Nevada: U.S. Geological Survey Open-File Report 02–490, 2 sheets, https:// pubs.usgs.gov/of/2002/0490/.

Jayko, A.S., Blake, M.C., Jr., and Harms, T.A., 1987, Attenuation of the Coast Range Ophiolite by extensional faulting, and nature of the Coast Range "thrust," California: Tectonics, v. 6, p. 475–488.

Jones, D.L., 1975, Discovery of *Buchia rugosa* of Kimmeridgian age from the base of the Great Valley sequence: Geological Society of America Abstracts with Programs, v. 7, no. 3, p. 330.

Jones, D.L., Bailey, E.H., and Imlay, R.W., 1969, Structural and Stratigraphic Significance of the Buchia Zones in the Colyear Springs–Paskenta Area, California: U.S. Geological Survey Professional Paper 647-A, 24 p.

King, P.R., Ilg, B.R., Arnot, M., Browne, G.H., Strachan, L.J., Crundwell, M., and Helle, K., 2011, Outcrop and seismic examples of mass-transport deposits from a late Miocene deep-water succession, Taranaki Basin, New Zealand, in Shipp, R.C., Weimer, P., and Posamentier, H.W., eds., Mass Transport Deposits in Deepwater Settings: SEPM (Society for Sedimentary Geology) Special Publication 96, p. 311–348.

Kirby, J.M., 1943, Upper Cretaceous stratigraphy of west side of Sacramento Valley south of Willows, Glenn County, California: American Association of Petroleum Geologists Bulletin, v. 27, p. 279–305.

Lagabrielle, Y., Roure, F., Coutelle, A., Maury, R.C., Joron, J.L., and Thonon, P., 1986, The Coast Range ophiolites (northern California): Possible arc and back-arc basin remnants; their relations with the Nevadan orogeny: Geological Society of France Bulletin, v. 8, no. 6, p. 981–999.

LaMaskin, T. A., Rivas, J. A., Barbeau, D. L., Schwartz, J. J., Russell, J. A., and Chapman, A. D., 2021, A crucial geologic test of Late Jurassic exotic collision versus endemic re-accretion in the Klamath Mountains Province, western United States, with implications for the assembly of western North America, *Geological Society of America Bulletin*, doi: https://doi.org/10.1130/B35981.1

Leary, R.J., Umhoefer, P., Smith, M.E., Smith, T.M., Saylor, J.E., Riggs, N., Burr, G., Lodes, E., Foley, D., Licht, A., Mueller, M.A., and Baird, C., 2020, Provenance of Pennsylvanian–Permian sedimentary rocks associated with the Ancestral Rocky Mountains orogeny in southwestern Laurentia: Implications for continental-scale Laurentian sediment transport systems: Lithosphere, v. 12, p. 88–121, https://doi.org/10.1130/L1115.1.

Lena, L., et al., 2019, Cross-continental age calibration of the Jurassic/Cretaceous boundary: Solid Earth, v. 10, p. 1–14, https://doi.org/10.5194/se-10-1-2019.

Linn, A. M., DePaolo, D. J., and Ingersoll, R. V., 1991, Nd-Sr isotopic provenance analysis of Upper Cretaceous Great Valley fore-arc sandstones. Geology, 19(8), 803-806.

Lowe, D.R., 1982, Sediment gravity flows II. Depositional models with special reference to the deposits of high density turbidity currents: Journal of Sedimentary Petrology, v. 52, p. 279–297.

MacDonald, J.H., Jr., Harper, G.D., and Zhu, B., 2006, Petrology, geochemistry, and provenance of the Galice Formation, Klamath Mountains, Oregon and California: in Snoke, A.W., and Barnes, C.G., eds., Geological studies in the Klamath Mountains province, California and Oregon: A volume in honor of William P. Irwin: Geological Society of America Special Paper 410, p. 1-29.

Mansfield, C.F., 1979, Upper Mesozoic subsea fan deposits in the southern Diablo Range, California: Record of the Sierra Nevada magmatic arc: Geological Society of America Bulletin, v. 90, pt. I, p. 1025–1046.

Martin, M.W., and Clemens-Knott, D., 2015, Detrital-zircon record of the early Mesozoic southwestern Sierra Nevada arc preserved in Lower Cretaceous intra-arc and forearc deposits of central California, USA, in Anderson, T.H., Didenko, A.N., Johnson, C.L., Khanchuk, A.I., and MacDonald, J.H., Jr., eds., Late Jurassic Margin of Laurasia—A Record of Faulting Accommodating Plate Rotation: Geological Society of America Special Paper 513, p. 269–284, https://doi.org/10.1130/2015.2513(06).

Mattinson, J.M., and Hopson, C.A., 1992, U/Pb ages of the Coast Range ophiolite: A critical reevaluation based on new high-precision Pb/Pb ages: American Association of Petroleum Geologists Bulletin, v. 76, p. 425.

McLaughlin, R.J., Blake, M.C., Jr., Griscom, A., Blome, C.D., and Murchey, B., 1988, Tectonics of formation, translation, and dispersal of the Coast Range ophiolite of California: Tectonics, v. 7, p. 1033–1056.

Mitchell, C., Graham, S.A., and Suek, D.H., 2010, Subduction complex uplift and exhumation and its influence on Maastrichtian forearc stratigraphy in the Great Valley Basin, northern San Joaquin Valley, California: Geological Society of America Bulletin, v. 122, p. 2063–2078, https://doi.org/10.1130/B30180.1.

Morrison, R.R., Brown, W.R., Edmonson, W.F., Thomson, J.N., and Young, R.J., 1971,

Potential of Sacramento Valley gas province, California, *in* Cram, I.H., ed., Future Petroleum Provinces of the United States—Their Geology and Potential: American Association of Petroleum Geologists Memoir 15, p. 329–338.

Moxon, I.W., 1988, Sequence stratigraphy of the Great Valley basin in the con- text of convergent margin tectonics, *in* Graham, S.A., ed., Studies of the Geology of the San Joaquin Basin: Bakersfield, California, Pacific Section, Society of Economic Paleontologists and Mineralogists, Field Trip Guidebook 60, p. 3–28.

Moxon, I.W., 1990, Stratigraphic and Structural Architecture of the San Joa- quin–Sacramento Basin [Ph.D. thesis]: Stanford, California, Stanford University, 371 p.

Mulcahy, S.R., Starnes, J.K., Day, H.W., Coble, M.A., and Vervoort, J.D., 2018, Early onset of Franciscan subduction: Tectonics, v. 37, p. 1194–1209, https://doi.org/10.1029/2017TC004753.

Mutti, E., 1992, Turbidite Sandstones. Asip, Istituto di Geologia Universita di Parma, Parma, Italy, p. 275.

Noda, A., 2016, Forearc basins: Types, geometries, and relationships to subduction zone dynamics: Geological Society of America Bulletin, v. 128, p. 879–895, https://doi.org/10.1130/B31345.1.

Ogg, J.G., and Hinnov, L.A., 2012, Jurassic, *in* Gradstein, F.M., et al., eds, The Geologic Time Scale 2012, First Edition: Amsterdam, Elsevier, p. 731– 791, https://doi.org/10.1016/B978-0-444-59425 -9.00026-3.

Ojakangas, R.W., 1968, Cretaceous sedimentation, Sacramento Valley, California: Geological Society of America Bulletin, v. 79, p. 973–1008, https://doi.org/10.1130/0016-7606(1968)79 [973:CSSVC]2.0.CO;2.

Orme, D.A., and Graham, S.A., 2018, Four-dimensional model of Cretaceous depositional geometry and sediment flux in the northern Great Valley forearc, California, in Ingersoll, R.V., Lawton, T.F., and Graham, S.A., eds., Tectonics, Sedimentary Basins, and Provenance: A Celebration of William R. Dickinson's Career: Geological Society of America Special Paper 540, https://doi.org/10.1130/2018.2540(18).

Orme, D. A., and Surpless, K. D., 2019, The birth of a forearc: The basal Great Valley Group, California, USA. Geology.

Orme, D.A., Carrapa, B., and Kapp, P., 2015, Sedimentology, provenance, and geochronology of the Upper Cretaceous–Lower Eocene western Xigaze forearc basin, southern Tibet: Basin Research, v. 27, p. 387–411, https:// doi.org/10.1111/bre.12080.

Orme, D.A., Laskowski, A.K., Zilinsky, M.F.*, Chao, W., Guo, X., Cai, F., Ding, L., 2021, Sedimentology and provenance of newly identified Upper Cretaceous trench-basin strata, Dênggar, southern Tibet: Implications for development of the Eurasian margin prior to India-Asia collision, Basin Research, doi.org/10.1111/bre.12521.

Page, B. M., 1972, Oceanic crust and mantle fragment in subduction complex near San Luis Obispo, California: Geological Society of America Bulletin, v. 83, p. 957–972.

Paterson, S. R., and Miller, R. B., 1998, Magma emplacement during arc-perpendicular shortening: An example from the Cascades crystalline core, Washington: Tectonics, 17, 571-586.

Paterson, S. R., Tobisch, O. T., and Vernon, R. H., 1991, Emplacement and deformation of granitoids during volcanic arc construction in the Foothills terrane, central Sierra Nevada, California: Tectonophysics, 191, 89-110.

Pessagno, E.A., Jr., 1977, Upper Jurassic Radiolaria and radiolarian biostratigraphy of the California Coast Ranges: Micropaleontology, v. 23, p. 56– 113, https://doi.org/10.2307/1485310.

Pullen, A., Ibáñez-Mejía, M., Gehrels, G. E., Ibáñez-Mejía, J. C., and Pecha, M., 2014, What happens when n= 1000? Creating large-n geochronological datasets with LA-ICP-MS for geologic investigations. Journal of Analytical Atomic Spectrometry, 29(6), 971-980.

Reuther, C.D., Adam, J., 1996. Forearc dynamics and neotectonic arc deformation, Central Andes, Northern Chile. Ext. Abstr. Third ISAG, St. Malo (France)., 219–222.

Robertson, A.H.F., 1990, Sedimentology and tectonic implications of ophiolite-derived clastics overlying the Jurassic Coast Range ophiolite, northern California: American Journal of Science, v. 290, p. 109–163.

Rose, R.L., and Colburn, I.P., 1963, Geology of the east-central part of the Priest Valley Quadrangle, California, in Geology of the Salinas Valley and the San Andreas Fault: American Association of Petroleum Geologists and Society of Economic Paleontologists and Mineralogists, Pacic Sections, Annual Spring Field Trip Guidebook: Los Angeles, California, Pacic Section, American Association of Petroleum Geologists, p. 38–45.

Saleeby, J.B., 1982, Polygenetic ophiolite belt of the California Sierra Nevada; Geochronological and tectonostratigraphic development: Journal of Geophysical Research, B, v. 87, no. 3, p. 1803–1824.

Saleeby, J. B., 1992, Petrotectonic and paleogeographic settings of U.S. Cordilleran ophiolites, in Burchfiel, B. C., et al., The Cordilleran orogen: Conterminous U.S.: Boulder, Colorado, Geological Society of America, Geology of North America, v. G-3, p. 653–682.

Saleeby, J.B., and Busby-Spera, C., 1992, Early Mesozoic tectonic evolution of the western U.S. Cordillera, in Burch el, B.C., Lipman, P.W., and Zoback, M.L., eds., The Cordilleran Orogen: Conterminous U.S.: Boulder, Colorado, Geological Society of America, The Geology of North America, v. G-3, p. 107–138, https://doi.org/10.1130/DNAG-GNA-G3.107.

Saleeby, J.B., and Dunne, G., 2015, Temporal and tectonic relations of early Mesozoic arc magmatism, southern Sierra Nevada, California, in Anderson, T.H., Didenko, A.N., Johnson, C.L., Khanchuk, A.I., and MacDonald, J.H., Jr., eds., Late Jurassic Margin of Laurasia— A Record of Faulting Accommodating Plate Rotation: Geological Society of America Special Paper 513, p. 223–268, https://doi.org/10.1130/2015.2513(05).

Saleeby, J.B., Geary, E.E., Paterson, S.R., and Tobisch, O.T., 1989, Isotopic systematics of Pb/U (zircon) and 40Ar/39Ar (biotite-hornblende) from rocks of the central Foothills Terrane, Sierra Nevada, California: Geological Society of America Bulletin , 101. 1481–1492.

Saylor, J.E., Jordan, J.C., Sundell, K.E., Wang, X., Wang, S., and Deng, T., 2018, Topographic growth of the Jishi Shan and its impact on basin and hydrology evolution, NE Tibetan Plateau: Basin Research, v. 30, p. 544–563, https://doi.org/10.1111/bre.12264.

Schwartz, T. M., Schwartz, R. K., and Weislogel, A. L., 2019, Orogenic recycling of detrital zircons characterizes age distributions of North American Cordilleran strata: Tectonics, 38, 4320-4334. https://doi.org/10.1029/2019TC005810

Schwartz, T.M., Surpless, K.D., Colgan, J.P., Johnstone, S.A., and Holm-Denoma, C.S., 2021, Detrital zircon record of magmatism and sediment dispersal across the North American Cordilleran arc system (28–48°N): Earth-Science Reviews, v. 220, 103734, https://doi.org/10.1016/j.earscirev.2021.103734.

Seton, M., Müller, R.D., Zahirovic, S., Gaina, C., Torsvik, T., Shephard, G., Chandler, M., 2012, Global continental and ocean basin reconstructions since 200 Ma: Earth-Science Reviews, 113, 212–270.

Sharman, G.R., and Johnstone, S.A., 2017, Sediment unmixing using detrital geochronology: Earth and Planetary Science Letters, v. 477, p. 183–194, https://doi.org/10.1016/j.epsl.2017.07.044.

Sharman, G.R., Graham, S.A., Grove, M., Kimbrough, D.L., and Wright, J.E., 2015, Detrital zircon provenance of the Late Cretaceous–Eocene California forearc: Influence of Laramide low-angle subduction on sediment dispersal and paleogeography: Geological Society of America Bulletin, v. 127, p. 38–60, https://doi.org/10.1130/B31065.1.

Sharman, G.R., Sharman, J.P., and Sylvester, Z., 2018, detritalPy: A Python-based toolset for

visualizing and analysing detrital geo-thermochronologic data: The Depositional Record, v. 4, p. 202–215, https://doi.org/10.1002/dep2.45.

Shervais, J.W., 2001, Birth, death and resurrection: The life cycle of suprasubduction zone ophiolites: Geochemistry, Geophysics, Geosystems, v. 2, 1010, https://doi.org/10.1029/2000GC000080.

Shervais, J. W., Murchey, B. L., Kimbrough, D. L., Renne, P. R., and Hanan, B., 2005, Radioisotopic and biostratigraphic age relations in the Coast Range Ophiolite, northern California: Implications for the tectonic evolution of the Western Cordillera: Geological Society of America Bulletin, v. 117, p. 633–653, https://doi.org/10.1130/B25443.1.

Shervais, J.W., Murchey, B.L., Kimbrough, D.L., Renne, P.R., and Hanan, B.B., 2002, Radiometric and biostratigraphic age relations in the Coast Range ophiolite (CRO), northern California: Implications for Jurassic tectonic evolution of the western Cordillera: Geological Society of America Abstracts with Programs, v. 34, no. 5, p. A-22–A-23.

Shultz, A., 1984, Subaerial debris-flow deposition in the Upper Paleozoic Cutler Formation, western Colorado: Journal of Sedimentary Research, v. 54, p. 759–772.

Snoke, A.W., and Barnes, C.G., 2006, The development of tectonic concepts for the Klamath Mountains Province, California and Oregon, in Snoke, A.W., and Barnes, C.G., eds., Geological Studies in the Klamath Mountains Province, California and Oregon: A Volume in Honor of William P. Irwin: Geological Society of America Special Paper 410, p. 1–29, https://doi .org/10.1130/2006.2410(01).

Snow, C.A., and Ernst, W.G., 2008, Detrital zircon constraints on sediment distribution and provenance of the Mariposa Formation, central Sierra Nevada foothills, California, in Wright, J.E., and Shervais, J.W., eds., Ophiolites, arcs, and batholiths: A tribute to Cliff Hopson: Geological Society of America Special Paper 435, p. 311–330.

Snow, C.A., and Scherer, H.H., 2006, Terranes of the western Sierra Nevada foothills metamorphic belt, California: A critical review: International Geology Review, v. 48, p. 46–62, https://doi.org/10.2747/0020- 6814.48.1.46.

Spurlin, M.S., Gehrels, G.E., and Harwood, D.S., 2000, Detrital zircon geochronology of upper Paleozoic and lower Mesozoic strata of the northern Sierra terrane, northeastern California, in Soreghan, M.J., and Gehrels, G.E., eds., Paleozoic and Triassic paleogeography and tectonics of western Nevada and northern California: Boulder, Colorado, Geological Society of America Special Paper 347, p. 89–98.

Stow, D.A., 1986, Deep clastic seas, *in* Reading, H.G., ed., Sedimentary Environments and Facies, Second Edition: Oxford, U.K., Blackwell Scientific Publications, p. 399–444.

Suchecki, R.K., 1984, Facies history of the Upper Jurassic–Lower Cretaceous Great Valley Sequence: Response to structural development of an outer-arc basin: Journal of Sedimentary Petrology, v. 54, p. 170–191.

Surpless, K.D., 2014, Geochemistry of the Great Valley Group: An integrated provenance record: International Geology Review, v. 57, p. 747–766, https://doi.org/10.1080/00206814.2014.923347.

Surpless, K.D., and Augsburger, G.A., 2009, Provenance of the Pythian Cave conglomerate, northern California: Implications for mid-Cretaceous paleogeography of the U.S. Cordillera: Cretaceous Research, v. 30, p. 1181–1192, https://doi.org/10.1016/j.cretres.2009.05.005.

Surpless, K. D., Clemens-Knott, D., Barth, A. P., and Gevedon, M., 2019, A survey of Sierra Nevada magmatism using Great Valley detrital zircon trace-element geochemistry: View from the forearc. Lithosphere.

Surpless, K.D., Graham, S.A., Covault, J.A., and Wooden, J.L., 2006, Does the Great Valley Group contain Jurassic strata? Reevaluation of the age and early evolution of a classic forearc basin: Geology, v. 34, p. 21–24, https:// doi.org/10.1130/G21940.1.

Talling, P.J., 2013, Hybrid submarine flows comprising turbidity current and cohesive debris flow: Deposits, theoretical and experimental analyses, and generalized models: Geosphere, v. 9, p. 460–488, https://doi.org/10.1130/GES00793.1.

Talling, P.J., Masson, D.G., Sumner, E.J., and Malgesini, G., 2012, Subaqueous sediment density flows: Depositional processes and deposit types: Sedimentology, v. 59, p. 1937–2003, https://doi.org/10.1111/j.1365-3091.2012.01353.x.

Vermeesch, P., 2013, Multi-sample comparison of detrital age distributions: Chemical Geology, v. 341, p. 140– 146, https://doi.org/10.1016/j.chemgeo.2013.01.010.

Vogel, K.D., 1985, Deformation in the lower Great Valley sequence: The Paskenta fault zone of northern California [M.A. thesis]: Austin, University of Texas, 129 p.

Vogel, K.D., and Cloos, M., 1985, Deformation in the lower Great Valley sequence: The Paskenta fault zone of northern California: Geological Society of America Abstracts with Programs, v. 17, p. 415.

Wakabayashi, J., 2011, Mélanges of the Franciscan Complex, California: Diverse structural settings, evidence for sedimentary mixing, and their connection to subduction processes, in Wakabayashi, J., and Dilek, Y., eds., Mélanges: Processes of Formation and Societal Significance: Geological Society of America Special Paper 480, p. 117–141, doi:10.1130/2011.2480(05).

Wallin, E.T., Noto, R.C., and Gehrels, G.E., 2000, Provenance of the Antelope Mountain Quartzite, Yreka terrane, California: Evidence for large-scale late Paleozoic sinistral displacement along the North American Cordilleran margin and implications for the mid-Paleozoic fringing-arc model, in Soreghan, M.J., and Gehrels, G.E., eds., Paleozoic and Triassic Paleogeography and Tectonics of Western Nevada and Northern California: Geological Society of America Special Paper 347, p. 119–131, https://doi.org/10.1130/0-8137-2347- 7.119.

Williams, T.A., 1997, Basin-Fill Architecture and Forearc Tectonics: Cretaceous Great Valley Group, Sacramento Basin, Northern California [Ph.D. thesis]: Stanford, California, Stanford University, 412 p.

Williams, T.A., and Graham, S.A., 2013, Controls on forearc basin architecture from seismic and sequence stratigraphy of the Upper Cretaceous Great Valley Group, central Sacramento Basin, California: International Geology Review, v. 55, p. 2030–2059, https://doi.org/10.1080/00206814.2013.817520.

Wimbledon, W.A.P., Rehakova, D., Svobodova, A., Elbra, T., Schnabl, P., Pruner, P.,Sifnerova, K., Kdyr, S., Dzyuba, O.S., Schnyder, J., Galbrun, B., Kostak, M.,Vankova, L., Copestake, P., Hunt, C., Riccardi, A., Poulton, T.P., Bulot, L.G., Frau, C.,de Lena, L., 2020, The proposal of a GSSP for the Berriasian Stage (Cretaceous System): Part 1. Volumina Jurassica, 18 (1), 53–106, https://doi.org/10.7306/vj.18.5.

Wright, J.E., and Wyld, S.J., 2007, Alternative tectonic model for Late Jurassic through Early Cretaceous evolution of the Great Valley Group, California, in Cloos, M., Carlson, W.D., Gilbert, M.C., Liou, J.G., and Sorenson, S.S., eds., Convergent Margin Terranes and Associated Regions: A Tribute to W.G. Ernst: Geological Society of America Special Paper 419, p. 81–95, https://doi.org/10.1130/2007.2419(04).

Zakharov, V.A. and Rogov, M.A., 2020, High-resolution stratigraphy of buchiid bivalves and ammonites from the Jurassic– Cretaceous boundary beds in the Paskenta area (California). Cretaceous Research, 110, https://doi.org/10.1016/j.cretres.2020.104422.

CHAPTER THREE

EVIDENCE OF LATEST CRETACEOUS AND CENOZOIC COOLING OF THE NORTHERN GREAT VALLEY FOREARC, CALIFORNIA FROM LOW-TEMPERATURE THERMOCHRONOLOGY

Contribution of Authors and Co-Authors

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Abstract

The Late Jurassic-early Cenozoic Great Valley Forearc (GVF) basin, California developed along western North America during active oceanic-continental subduction. This basin is unique as parts were heated to the oil and gas window despite being in a forearc (cold) setting and its preservation permits evaluation of its post-depositional thermal history. Few published low-temperature thermochronologic studies on GVF basin strata suggest spatially variable and localized thermal histories, while other parts of the basin remain unknown. We evaluate the thermal history of the Sacramento basin along its western outcrop belt and in the subsurface of the central-eastern margin of the basin. We report 2967 detrital zircon U-Pb ages from 10 Mesozoic GVF samples and 1 granodiorite of the underlying Sierra Nevada basement from boreholes along the central-eastern side of the basin to constrain the age of sedimentation and determine sediment provenance. In turn, we present 70 single-grain detrital apatite (U-Th)/He (AHe) ages and 47 zircon (ZHe) ages from Mesozoic GVF strata exposed at the surface and within the subsurface in northern California, as well as a total of 10 single-grain AHe and ZHe ages from the Sierra Nevada basement to constrain the post-depositional thermal history of the basin. Subsurface Great Valley Group (GVG) strata yield depositional ages between Cenomanian–Coniacian and were predominantly sourced from the Sierra Nevada magmatic arc. Post-depositional minimum burial temperatures for the western Upper Jurassic–Lower Cretaceous outcrop were >85 ºC and cooling occurred throughout the Cenozoic. Post-depositional maximum burial temperatures for the eastern subsurface GVG strata range between ~120-210 ºC during the Late Cretaceous and cooling occurred in the Late Cretaceous–Cenozoic, with basal strata in certain areas remaining in the PRZ relatively longer than others. Published

cooling ages combined with the thermal modeling of our AHe and ZHe cooling ages indicate similar cooling histories in the latest Late Cretaceous–Cenozoic between Upper Jurassic–Lower Cretaceous strata from the western outcrop belt and eastern subsurface GVG strata. This overlap in cooling histories may reflect coeval basin-wide exhumation related to regional tectonism or a response to far-field transpression induced by relative changes in Farallon and North American plate motion during the latest Cretaceous and changes along the western margin of North America as the subduction zone transitioned to a transform fault system during the earliest Oligocene.

INTRODUCTION

Forearc basins form along convergent margins, outboard of active magmatic arcs. Their accumulated successions of thick sedimentary deposits are primarily sourced from the upper plate, but the characteristics of the subducting crust can impact plate interactions, such that cold subducting crust may cause geothermal gradients within the outer forearc to be relatively lower than normal values of 20-30 °C/km (e.g., Roy et al., 1972; Heasler and Surdam, 1985; Allen and Allen, 2013). Geothermal gradients in a forearc setting are influenced by changes within the subduction zone (e.g., age of the subducting plate, pauses in subduction, and rate of subduction), resulting in variable forearc gradients over time (Cloos, 1985; Heasler and Surdam, 1985) that make determining the thermal history of a forearc basin challenging. However, constraining such histories may reveal broader plate-scale dynamics related to the evolution of the margin during and following subduction. The variability in forearc gradients due to subduction-related processes make forearc basins thermally unique, yet, forearc basins are highlighted as significant sources of petroleum (Heasler and Surdam, 1985; Hessler and Sharman, 2018).

The Great Valley Forearc (GVF) basin is a prime example to study the pre-, syn-, and post-depositional thermal history of a forearc basin because sedimentary strata are relatively intact and continuous as a result of transform faulting initiating along the California margin, which shifted the plate interactions from a former convergent phase (e.g., Graham et al., 1984). In addition, the thermal history of this basin is somewhat unique from other ancient forearc basins that were exhumed along collisional orogens (e.g., Orme, 2017; Finzel et al., 2009; Trop et al., 2005), and it was heated to the oil and gas window despite being a “cold” forearc setting (Roy et al., 1972; Heasler and Surdam, 1985). Evaluating the timing of maximum burial and

exhumation of the northern GVF basin strata is essential to constraining the thermal history and erosional processes that influenced the western margin of North America during Mesozoic–Cenozoic time.

Limited low-temperature thermochronologic studies suggest Upper Jurassic–Lower Cretaceous GVF strata of the northwestern GVF basin experienced temperatures >85 °C, prior to Late Cretaceous–Cenozoic cooling (e.g., Dumitru, 1988; Unruh et al., 2007). By contrast, other parts of the northern GVF basin experienced temperatures >120 °C to produce gas (Graham, 1987). Mechanisms driving Late Cretaceous–Cenozoic exhumation of western GVF strata are debated and include: (1) Synsubduction underplating processes (Ernst, 1975; Platt, 1975, 1986; Cowan and Silling, 1978; Jayko et al., 1987; Shreve and Cloos, 1986; Cloos and Shreve, 1988), (2) Slab window processes (Dickinson and Snyder, 1979; Johnson and O'Neil, 1984; Fox et al., 1985; Cole and Basu, 1992, 1995; Dickinson, 1997; Wilson et al., 2005; McCrory et al., 2009; Sweetkind et al., 2011), (3) Plate motions related to the Mendocino Triple Junction (MTJ) (Atwater, 1970), and/or (4) Erosion of the outer forearc region (Ring and Brandon, 1994; Brandon et al., 1998; Bolhar and Ring, 2001; Ring and Richter, 2004; Mitchell et al., 2010). In the southern GVF basin, low-angle subduction resulted in rapid exhumation and subsequent erosion of the accretionary prism (Saleeby, 2003; Sharman et al., 2015). The thermal history of the eastern margin of the basin relative to the western outcrop belt in the northern GVF remains unknown outside of general temperatures from known petroleum plays, warranting additional research to reconstruct the evolution of the basin's post-depositional burial and exhumation history, and link erosional processes of the forearc region to the broader context of the tectonic evolution of the western California margin.

This study focuses on the burial and exhumation history of the Sacramento basin along its western outcrop belt and in the subsurface of the central-eastern parts of the basin using detrital AHe and ZHe thermochronology (Figure 3.1). We constrain the depositional age of sampled strata by integrating stratigraphic observations with new maximum depositional ages (MDAs) from zircon U-Pb geochronology. In addition, we investigate the thermal history of the granitic basement underlying the eastern basin using zircon U-Pb geochronology and ZHe thermochronology. Integrating these datasets with thermal modeling indicate similar cooling histories in the latest Late Cretaceous–Cenozoic between Upper Jurassic–Lower Cretaceous strata from the western outcrop belt and Upper Cretaceous GVG strata from the eastern subsurface. Similar cooling histories between the northwestern and northeastern GVF may reflect synchronous exhumation of both sides of the basin, with each side having exhumed as a result from: (1) regional tectonism or (2) plate motion re-configuration that enabled basin-wide exhumation.

GEOLOGIC FRAMEWORK

Regional Setting

The GVF developed during Jurassic–Eocene time adjacent to the Franciscan subduction complex to the west and the Sierra Nevada magmatic arc to the east (Dickinson and Rich, 1972; Dickinson, 1995). These three petrotectonic elements are the dominant geologic regions in present-day northern California and represent late Mesozoic–early Cenozoic convergence along the western margin of North America (e.g., Hamilton, 1969; Engebretson et al., 1985). Basement rock underlying the GVF varies across the basin and includes: (1) To the north, accreted

Triassic–Jurassic intraoceanic island arc terranes in the Klamath Mountains, (2) To the east, Paleozoic–Mesozoic metamorphic and igneous rocks of the Sierra Nevada metamorphic foothills belt and batholith, and (3) the Middle Jurassic Coast Range ophiolite (CRO) along the western margin of the northern GVF basin (Figure 3.1). The crystallization age of the Upper CRO ranges between ~172–165 Ma (Shervais et al., 2005; Mattinson, 2008; Orme and Surpless, 2019; and reported in Chapter 1). The Sierra Nevada foothills belt and batholith consist of metamorphic and igneous rocks that are Paleozoic–Mesozoic in age (Bateman and Dodge, 1970; Chen and Moore, 1982; Bateman, 1983; Saleeby and Busby-Spera, 1992; Coleman and Glazner, 1997; Clemens-Knott and Saleeby, 1999; Ducea, 2001; Irwin and Wooden, 2001, and references therein; Saleeby, 2011; Lackey et al., 2012) and are described in more detail below.

The GVF is partitioned in the central region by the Cenozoic Stockton arch, separating the Sacramento and San Joaquin basins. The Sacramento basin, which extends for ~300 km from northwest to southeast in northern-central California, is the focus of this study (Figure 3.1). Along its northwestern margin, Mesozoic strata that were tilted and uplifted are now preserved within a major east dipping homocline (Kirby, 1943; Ingersoll, 1976, 1979; Ingersoll et al., 1977; Dickinson and Seely, 1979), with strata ranging in age from Tithonian to Campanian (Dumitru, 1988; Orme and Surpless, 2019; and discussed in Chapter 1). Uplift of the homocline occurred during the late early to middle Paleocene, based on an angular unconformity identified in well correlations (Almgren, 1984). Dumitru (1988) suggest initial uplift of the homocline and unroofing occurred between 65–62 Ma. Younger Cenozoic strata that dip eastward along the homocline suggest continued tilting occurred until the Pliocene (Sims et al., 1973). This deformation contributed to shortening of the GVF basin's original width to <100 km (Ingersoll,

1976, 1979; Dickinson and Seely, 1979). Along the western margin of North America, subduction of the Farallon oceanic plate ended at ~29 Ma, as the Mendocino Triple Junction (MTJ) formed and the subduction zone transitioned to the San Andreas transform fault system (Atwater, 1970; Powell et al., 1993).

Great Valley Group (GVG)

Upper Jurassic–Upper Cretaceous GVG strata in the Sacramento basin total ~7.5-12 km (Ingersoll, 1976; Moxon, 1988, 1990; Williams and Graham, 2013) and are separated into 8 formations that contain various members (Figure 3.2). Along the western homoclinal outcrop belt, Upper Jurassic–Lower Cretaceous strata comprise mudstone, sandstone, and conglomerate of the Stony Creek, Platina, and Lodoga Formations (Ingersoll, 1976, 1982) (Figure 3.2). At its most basal contact, the Stony Creek Formation is unconformably atop remnants of the CRO, Franciscan complex, and, locally, ophiolitic breccia (as described in Chapter 1) (Figure 3.2). Exposed basal Stony Creek strata that represent initial depocenters of the northern Sacramento basin yield latest Jurassic and earliest Cretaceous depositional ages, which have been interpreted to reflect diachronous initiation of sedimentation in the northwestern GVF basin during Late Jurassic–Early Cretaceous time (Orme and Surpless, 2019; and discussed in Chapter 1). The Stony Creek is overlain locally by the Platina Formation in the north and more broadly by latest Early Cretaceous (Aptian–Albian) strata of the Lodoga Formation (Figure 3.2).

Late Cretaceous sediment fluxes were variable in the GVF basin (Williams and Graham, 2013; DeCelles and Graham, 2015). Upper Cretaceous strata of the GVG comprise the Boxer, Cortina, Rumsey, Moreno, and Mokelumne River Formations, many of which contain multiple

members (Figure 3.2) that vary spatially across the basin. A succession of Cenomanian slope and slope-channel, Turonian–Coniacian inner-fan, Santonian mid-fan, and Lower Campanian basin-plain facies represent a north to south facies transition for the central region of the Sacramento basin (Ingersoll, 1976; Moxon, 1990; Nilsen, 1990). Collectively, the Venado, Yolo, Sites, Funks, Guinda, and Dobbins units represent rapid sedimentation during the Cenomanian to earliest Campanian (Moxon, 1990). Sedimentation rates peaked in the Turonian and Coniacian (Ingersoll, 1979), and backstripping calculations record four major pulses of rapid sediment accumulation in the Late Cretaceous (Williams, 1997). Volumetric sediment accumulation rates in the Sacramento basin include <2000 km^3/m.y. pre-early Turonian and increase to between 6000 and 17,000 km^3/m.y. during the late Turonian to middle Campanian (Orme and Graham, 2018). The acceleration of sediment accumulation rates and subsidence during the Late Cretaceous (100–85 Ma) in the Sacramento Basin (Moxon, 1990; Williams, 1997) is associated with an increase in plate convergence rates at ~100 Ma (Engebretson et al., 1985). Peak sedimentation within the Sacramento basin occurred between 86–78 Ma, with the highest sediment accumulation rates between 86.4 and 84.0 Ma; rates of 15,866 km^3/m.y. are suggested from the Sites Sandstone (Orme and Graham, 2018). Subsidence within the forearc had decreased by 85 Ma (Williams, 1997).

Deposition of the Forbes/Kione units, which represent progradation of a deltaic system (Garcia, 1981; Imperato et al., 1990; Nilsen, 1990; Williams, 1997), and Sacramento Shale occurred in the Campanian and filled the northern Sacramento basin (Moxon, 1988). Previous studies suggest sediment filling of the Sacramento basin was coeval with interpreted flat-slab subduction between 80 Ma and 74 Ma and an increase in plate convergence rates (120–150

km/m.y.) (Dickinson and Snyder, 1978; DeCelles and Graham, 2015). Following peak sedimentation rates in the Sacramento basin, thermal maturation occurred at ~80–70 Ma and allowed for the generation of gas (Zieglar and Spotts, 1978). In the latest Maastrichtian, deposition of the Starkey Sandstone and Mokelumne River Formation represent the latest Cretaceous deposition within the southern Sacramento basin prior to Cenozoic incision and sedimentation of paleocanyons (e.g., Princeton and Martinez Submarine Valley systems; Pepper, 1984; Redwine, 1984). Subsurface stratigraphic correlations for Upper Cretaceous formations are provided in Figure 3.3.

Thermal History of the GVF Basin

Pioneering paleothermometry studies in the GVF basin estimate paleogradients between ~5.6 °C/km and 11 °C/km during the Early Cenozoic based on vitrinite reflectance measurements and burial depths of strata from Cache Creek, Clear Lake, Putah Creek, and Wilbur Springs (Bostick, 1974; Castano and Sparks, 1974). Basal GVG strata sampled near Paskenta are suggested to have experienced maximum burial temperatures of 175-200°C and paleogradients were ~25 °C/km, based on mudstone oxygen isotope analysis; 6-7 km were suggested as the maximum burial depths for the basal strata (Suchecki and Land, 1983). A revision of burial depth using backstripping and AFT analysis of these strata indicate burial depths >6.5 km under refrigerated thermal gradients between 90–65 Ma with temperatures not exceeding >105 °C, along with geothermal gradients that were subnormal and estimated as <15 °C/km at 90 Ma and decreasing to <9 °C/km at 65 Ma (Dumitru, 1988).

South of Paskenta, remnants of the forearc and related units such as the Franciscan complex, CRO, GVG, and late Cenozoic strata are exposed in the Mount Diablo area east of San Francisco, California. Sandstone from Albian–Campanian GVG strata yield unreset Cretaceous AFT ages that are older than the estimated depositional age for the respective sample and reset Cenozoic detrital AHe ages between ~62–14 Ma (Unruh et al., 2007). Cooling ages from the GVG strata in the Mount Diablo region are interpreted to represent latest Cretaceous–early Cenozoic subsidence and extension in a graben system within the GVF basin, coeval with exhumation of the Franciscan complex (Unruh et al., 2007). In west-central California, a serpentinite body that formed a thermal halo as it approached the surface heated the intruded Mesozoic stratigraphy to temperatures sufficient to anneal apatite fission tracks (Vermeesch et al., 2006). Geothermal gradients for the GVF basin were estimated to have increased to ~8-14 °C/km in the late Cenozoic, prior to the initiation of the San Andreas fault system (Heasler and Surdam, 1985).

Despite low geothermal gradients during, and after deposition of the GVG, strata in select regions of the basin experienced sufficient burial depths and temperatures to enter the oil and gas windows. For example, the Dobbins-Forbes and the Winters-Domengine are major gas systems within the Sacramento basin (Scheirer et al., 2007), with shale in the Dobbins, Forbes, Sacramento, and Winters units serving as the source rocks for these gas systems (Graham, 1987). Burial-history analysis indicates gas generation from the Late Cretaceous (80–70 Ma) to late Miocene (10 Ma) (Zieglar and Spotts, 1978). However, the Sacramento basin did not experience sufficient heat for the entirety of the basin to be a gas/oil-producing region, given the presence of only minor oil-producing fields. Identifying and understanding the temporal and spatial extent of

the basin that experienced sufficient heat to generate oil and/or gas is beyond the scope of this study, but our results are broadly informative for these purposes.

Sierra Nevada

The present-day Sierra Nevada trends north-south along the border of eastern California and western Nevada; extending ~600 km long and ~100 km wide (Figure 3.1). The Sierra Nevada developed in the latest Triassic as a continental arc and was active through the Late Cretaceous (Ducea, 2001). Exposed igneous basement rocks in the Sierra Nevada include Permian–Triassic and Jurassic–early Cenozoic igneous rocks (Bateman and Wahrhaftig, 1966; Stone and Stevens, 1988; Dunne and Suczek, 1991; Saleeby and Busby, 1993; Schweickert and Lahren, 1993; Stevens and Greene, 1999; Stevens et al., 2005; Memeti et al., 2010; Saleeby, 2011; Chapman et al., 2012, 2015; Saleeby and Dunne, 2015; Attia et al., 2018; Cecil et al., 2019). Sierra Nevada magmatism in the Mesozoic was episodic, with increased magma addition rates in the Triassic (~220 Ma), Jurassic (~160 Ma), and Cretaceous (~100 Ma) (Bateman and Wahrhaftig, 1966; Armstrong and Ward, 1993; Paterson and Ducea, 2015; Kirsch et al., 2016; Ardill et al., 2018; Attia et al., 2020). In the Sierra Nevada, batholithic rocks exhumed between 3-20 km, with the southernmost part of the range exposing maximum paleodepths (Ague, 1997; Saleeby, 1990). (U-Th)/He thermochronologic analysis on exposed Mesozoic granodiorites and tonalites from the northern Sierra Nevada batholith (165–95 Ma; Evernden and James, 1964; Snoke et al., 1982; Saleeby et al., 1989) and Devonian Bowman Lake batholith (385–364 Ma; Hanson et al., 1988) yield apatite and zircon (U-Th)/He ages that range between 80–46 Ma and 86–64 Ma, respectively (Cecil et al., 2006). Apatite and zircon (U-Th)/He data from the northern

Sierra Nevada suggest rapid cooling rates (0.2-0.8 km/m.y.) between 90–60 Ma, followed by relatively slower exhumation (0.02-0.04 km/ m.y.) in the middle to late Cenozoic (Cecil et al., 2006). The distribution of reported apatite (U-Th)/He ages in the northern Sierra Nevada are consistent with documented apatite (U-Th)/He ages in the central and southern Sierra Nevada (House et al.,1997, 1998, 2001; Clark et al., 2005). As in the early Cenozoic forearc, deep canyons in the Sierra Nevada batholith indicate early and middle Cenozoic subnormal gradients based on minor annealing in samples analyzed for AFT (Dumitru, 1990).

METHODS

Sample Collection and Preparation

Six medium- to coarse-grained sandstones from the most basal GVG exposed along the western outcrop belt were sampled for low-temperature thermochronology. The provenance and MDAs of these samples were previously discussed in Chapter 1. A summary of locations for the outcrop samples are provided in Table 3.1.

Twelve fine-to coarse-grained sandstones from Upper Cretaceous strata and one underlying granitic basement rock of the northeastern GVF basin were sampled from multiple boreholes that are housed at the California Well Sample Repository in Bakersfield, California. The deepest sub-surface clastic horizons available were sampled. Due to limited material within the boreholes, all clastic material collected represent “composite” samples, meaning that clastic material from more than one sandstone bed was sampled. Multiple detrital composite samples were collected based on lithology. Detailed information about borehole locations, sampled depth intervals, and sample descriptions are reported in Table 3.2. A summary of stratigraphic

nomenclature of Upper Cretaceous strata of the Great Valley Group and the interpreted sampled unit in the boreholes are provided in Table 3.3. For all samples, standard mineral separation techniques were applied such that zircon grains were extracted via mechanical crushing, a water table, and heavy liquids for mineral density separation (Gehrels, 2000; Gehrels et al., 2008; Gehrels and Pecha, 2014).

Zircon U-Pb Geochronology

Zircon grains were mounted in a ~1.5 cm epoxy mount along with shards of zircon standards SL, FC-1, and R33 (Gehrels and Pecha, 2014) and each epoxy mount was polished ~10 μm deep to expose the surface of the grains. Backscattered electron (BSE) and Cathodoluminescence (CL) images of detrital and igneous samples, respectively, were used to avoid grains with cracks and/or inclusions; these images were produced using a Hitachi S3400 scanning electron microscope (SEM). Prior to analysis, laser spots were manually assigned for each sample and each spot was pre-ablated with a 'cleaning shot' which consists of a 50 μm diameter laser beam fired at 3 bursts, allowing for the removal of common Pb from the surface of the epoxy mount (Pullen et al., 2014, 2018). All U-Pb isotopic analyses were conducted by laser ablation-inductively coupled plasma-mass spectrometry (LA-ICP-MS) using a Teledyne Photon Machines Analyte G2 laser connected to a Thermo Scientific Element 2 mass spectrometer. During analysis, all grains were ablated for 15 s at 7 Hz with a 20 μm diameter laser beam which caused a pit depth of 10-12 μm. All analyses were completed using automated laser schedules with Chromium, a laser software, at the University of Arizona LaserChron Center. Data reduction was completed using an open-source program in MATLAB, AgeCalcML

(github.com/kurtsundell/AgeCalcML). U-Pb data were filtered to exclude grains with >5% reverse discordance, >10% uncertainty, >20% discordance, or high common Pb. The reported ages herein use the cutoff of $^{206}Pb/^{238}U$ ages for grains < ~1.0 Ga and the $^{206}Pb/^{207}Pb$ ages for grains > ~1.0 Ga (Gehrels et al., 2008; Gehrels, 2012). All U-Pb isotopic analyses are reported in Appendix C.

For the composite detrital zircon samples, this study reports three possible maximum depositional ages (MDAs) which include: (1) Youngest Single Grain, YSG) (2) Youngest cluster of 2 or more ages with overlapping 1σ uncertainties, YC1σ(2+), and (3) Youngest cluster of three or more ages with overlapping 2σ uncertainties, YC2σ(3+) (Dickinson and Gehrels, 2009; Coutts et al., 2019) (Table 3.4). For this study, we use the YC2σ(3+) method because it is the most conservative estimate for an MDA and assists with avoiding grains with Pb loss (Dickinson and Gehrels, 2009). DetritalPy, a software package (Sharman et al., 2018), was used to generate probability distribution plots (PDPs) for all composite detrital zircon samples.

Apatite and Zircon (U-Th)/He Thermochronology

Low-temperature thermochronologic techniques provide a cooling age of a mineral, which is defined as the time when a mineral passed through its closure temperature, T_c (Dodson, 1973). Apatite and zircon (U-Th)/He dating have closure temperatures that range between ~40-85°C (Wolf et al., 1998; Farley, 2000, 2002) and ~140-200°C (Guenthner et al., 2013), respectively. Cooling ages that are significantly younger than the stratigraphic age imply sufficient burial and heating to temperatures within the sensitivity range to reset the respective mineral thermochronometers. These thermally reset cooling ages record the post-depositional

thermal history of the basin. Alternatively, cooling ages that are older than stratigraphic age indicate insufficient burial and heating to reset the respective mineral thermochronometers after deposition, reflecting a cooling age of a source region. Factors such as grain size, chemistry of the mineral, crystal anisotropy, annealing mechanisms, and the intensity of radiation damage can influence the calculation and precision of cooling ages for apatite and zircon (Green et al., 1989; Flowers et al., 2009; Guenthner et al., 2013; Fox and Shuster, 2014).

Apatite and zircon grains were selected based on morphology, grain size (widths >60 μm), and absence of inclusions (e.g., Farley, 2002; Hourigan et al., 2005) at the Montana State University Tectonic Sedimentology and Thermochronology (TeST) Lab. The dimensions of each apatite and zircon grain were recorded and grains were imaged using a Leica M165 camera IC90. Subsequently, each apatite and zircon grain was encapsulated in a 1 mm Nb tube and analyzed using a Nd:YAG laser, cryogenic purification and quadrapole mass spectrometer for He extraction. Isotopic ratios were measured on a Thermo Finnigan Element 2 sector inductively coupled plasma-mass spectrometer (ICP-MS), following analytical procedures of Reiners et al. (2004). (U-Th)/He isotopic analyses were completed at the University of Arizona Radiogenic Helium Dating Laboratory (ARHDL). Concentrations of U, Th, and He were included in the decay-diffusion equation and then modified using the alpha-ejection correction to calculate apatite and zircon (U-Th)/He cooling ages (Farley, 2002; Hourigan et al., 2005). Fragments from Durango apatite (31.4 ± 0.18 Ma; McDowell et al., 2005) and zircon from Fish Canyon Tuff (28.48 ± 0.06 Ma; Schmitz and Bowring, 2001) were also analyzed. Apatite and zircon (U-Th)/He data are reported in Appendix D and E, respectively.

HeFTy Thermal History Modeling Set-up

Inverse thermal history modeling of AHe and ZHe ages was completed using HeFTy (v.1.9.3), a thermal modeling program that uses a Monte Carlo approach to yield independent time-temperature (*t*-*T*) paths (Ketcham, 2005). Possible *t*-*T* paths for inverse modeling are based on input parameters such as grain size, U and Th concentrations, uncorrected cooling ages, and a specified diffusion model. In HeFTy, acceptable and good *t*-*T* paths represent probable *t*-*T* paths that a sample could have experienced. Paths that have a Kolmogorov-Smirnov probability ≥0.05 are defined as acceptable fit paths while good fit paths have a probability ≥0.5. A weighted mean and best fit t-T path are also calculated for each inverse model. The weighted mean path is calculated based on goodness of fit statistics and serves as a general representative of an inverse model for a sample. The best fit path of an inverse model represents the most feasible thermal history and yields the highest goodness of fit. In each inverse model, constraint boxes outline regions in *t*-*T* space where the thermal history must pass through and *t*-*T* paths are monotonic (heating or cooling only) when passing between constraint boxes in *t*-*T* space (Ketcham, 2005). The number of times a segment between constraint boxes is halved is four. The randomizer setting for each segment is either episodic (E), gradual (G), or intermediate (I); this is specified in each thermal model. All modeling in the HeFTy program was conducted using the inverse algorithm and all models ran until at least 100 good fit *t*-*T* paths were identified.

Simultaneous modeling of two or more single-grain AHe or ZHe ages for a single sample yields no acceptable or good fit *t*-*T* paths. This outcome in HeFTy where the program is unable to generate *t*-*T* paths based on the input data and parameters for multiple AHe or ZHe ages for a single sample has been observed in other recent studies (e.g., Carrapa et al., 2019; Bhattacharya

et al., 2020, 2021) and likely reflects sources of error not considered in the thermal model, such as He implantation (e.g., Murray et al., 2014) or zonation (Hourigan et al., 2005). In this study, we use the median AHe and ZHe age from each sample as well as its corresponding grain size, U-Th-Sm concentrations, and uncorrected cooling ages as the input data along with the appropriate mineral specific diffusion model of Flowers et al. (2009) and Guenthner et al. (2013) to generate *t-T* paths. This approach permits a *t-T* model in HeFTy for each sample. Each model includes a depositional age constraint box with ± 5 Ma of the respective sample's MDA, along with a constraint box for a surface depositional temperature of 0-25 °C. For all detrital samples collected from the subsurface, a pre-depositional constraint box between 0-220 °C and 250 Ma and the depositional age constraint box was included to allow source-cooling thermal histories pertaining to ZHe ages that are older than depositional age. Inverse thermal modeling for all samples are provided in Appendix F.

RESULTS

Zircon U-Pb Geochronology

Sierra Nevada

Sample CR-27 was collected from a granodiorite in the Buttes Community C-1 borehole near the Sutter (Marysville) Buttes in the northern California (Figure 3.1). Zircon U-Pb isotopic analyses from this granodiorite yield a weighted mean age of 144.2 ± 0.27 Ma (n = 41, MSWD = 6.31) (Appendix C).

Great Valley Group

Ten composite detrital zircon samples were collected from boreholes along the eastern present-day Great Valley and analyzed for U-Pb geochronology, with n = ~300 grains per sample. One exception was sample CR-20 which had a low zircon yield of n = 157 grains. All composite detrital zircon samples contain >77% Mesozoic detrital zircon ages, with the majority of samples comprising >92% Mesozoic detrital zircon ages (Figure 3.4).

Jelly Bend 18-8 Borehole

Samples CR-18 and CR-20 yield MDAs of 89.15 ± 0.46 Ma and 134.92 ± 0.26 Ma (Table 3.4), respectively, with CR-20 sampled from the lowest interval within the Jelly Bend 18-8 borehole (Figure 3.4). Both samples comprise 92% Mesozoic detrital zircon ages. CR-18 shows Mesozoic detrital zircon age populations with dominant peaks at ~178 Ma, ~165 Ma, ~140 Ma, ~115 Ma, and ~95 Ma. By contrast, CR-20 shows a unimodal age distribution with a peak at ~137 Ma (Figure 3.4).

Gorrill Land Co. 1-29 Borehole

Within the Gorrill Land Co. 1-29 borehole, the most basal sample, CR-29, yields an MDA of 93.63 ± 0.60 Ma (Table 3.4); 81% of the grains analyzed are Mesozoic-age (Figure 3.4). Stratigraphically above in this borehole, sample CR-28 documents an MDA of 100.47 ± 0.37 Ma (Table 3.4) and 79% of the grains analyzed are Mesozoic-age. Mesozoic detrital zircon age populations display peaks at ~165 Ma, ~160 Ma, ~155 Ma, ~145 Ma, ~135 Ma, ~115 Ma,

and ~105 Ma (Figure 3.4). Sample CR-30 was not analyzed for detrital zircon U-Pb geochronology due to low zircon yield.

Dodge Land Co. 1 Borehole

Sample CR-12 yields an MDA of 135.15 ± 0.98 Ma and a unimodal age distribution with a peak at ~145 Ma (Figure 3.4, Table 3.4). This sample contains 98% Mesozoic detrital zircon ages. Sample CR-13 was not analyzed for detrital zircon U-Pb geochronology due to low zircon yield.

Martinez 25-2 Borehole

Within the Martinez 25-2 borehole, the most basal sample, CR-9, yields an MDA of 89.44 ± 0.29 Ma (Figure 3.4, Table 3.4). Samples CR-3, CR-8, and CR-2-7 are ~160 ft up-section within this borehole and yield MDAs of 88.56 ± 0.29 Ma, 85.86 ± 0.69 Ma, and 89.37 ± 0.19 Ma, respectively (Table 3.4). All samples contain >93% Mesozoic detrital zircon ages, with the exception of sample CR-9 which contains 77% Mesozoic detrital zircon ages. Sample CR-9 contains the most pre-Mesozoic grains, 23%, relative to the other samples within this borehole. Mesozoic detrital zircon age populations comprise major peaks at ~162 Ma, ~150 Ma, ~115 Ma, ~100 Ma, and ~90 Ma (Figure 3.4).

Apatite (U-Th)/He Results

We report 28 new detrital AHe ages from the basal Stony Creek Formation and, where present, underlying ophiolitic breccia from the Paskenta area of the GVF (Figure 3.5). Detrital

AHe ages from all outcrop samples yield an age distribution that ranges between 47.46 ± 2.29 Ma and 5.80 ± 0.30 Ma. The most northern GVG sample (0619MR16) yields detrital AHe ages between 36.69 ± 0.98 Ma and 21.38 ± 0.45 Ma. To the south, at Crowfoot Point, sandstone matrix of the lower ophiolitic breccia (0619MR26) yields detrital AHe ages of 11.52 ± 0.60 Ma and 7.60 ± 0.38 Ma, whereas the upper ophiolitic breccia (0619MR27) yields detrital AHe ages between of 47.24 ± 2.84 Ma and 17.86 ± 0.67 Ma. Sample 0619MR30, which overlies the upper breccia, contains detrital AHe ages between 47.46 ± 2.29 Ma and 22.29 ± 0.63 Ma. To the south, at Grindstone Creek, samples 0619MR35 and 0619MR36, with 0619MR36 being stratigraphically above, yield detrital AHe ages between 42.02 ± 0.45 Ma to 17.41 ± 0.23 Ma and 35.25 ± 0.55 Ma to 5.80 ± 0.30 Ma, respectively. All measured detrital AHe ages from the Paskenta area are younger than the corresponding detrital zircon MDA for the same sampled interval (Figure 3.5).

We report 46 new apatite AHe ages from igneous and composite detrital samples from boreholes, yielding an age distribution that ranges between 135.58 ± 1.46 Ma and 0.83 ± 0.02 Ma (Figure 3.6). From the Jelly Bend 18-8 borehole, sample CR-18 contains detrital AHe ages between 19.49 ± 0.23 Ma and 11.70 ± 0.17 Ma. Composite detrital samples (CR-28, CR-29, and CR-30) from the Gorrill Land Co. 1-29 borehole yield detrital AHe ages that range between 99.37 ± 1.17 Ma and 47.25 ± 0.66 Ma. Two composite detrital samples (CR-12 and CR-13) collected from the Dodge Land Co. 1 borehole contain detrital AHe ages that range between 72.40 ± 0.81 Ma and 12.33 ± 0.16 Ma. Sample CR-27 was collected from a granodiorite within the Buttes Community C-1 borehole and yields AHe ages that range between 10.84 ± 0.13 Ma and 0.83 ± 0.02 Ma. Composite detrital samples (CR-2, CR-3, CR-9) from the Martinez 25-2

borehole yield detrital AHe ages between 135.58 ± 1.46 Ma and 40.87 ± 0.43. Plots of AHe single-grain ages against the depth, effective uranium concentration (a proxy for radiation damage, e.g., Flowers et al., 2009), and grain radius are provided for all outcrop and subsurface samples (Appendix D).

Zircon (U-Th)/He Results

We report 52 new ZHe ages from igneous and composite detrital zircon samples obtained from boreholes, yielding an age distribution between 310.31 ± 4.49 Ma and 50.19 ± 0.83 Ma. (Figure 3.6). From the Jelly Bend 18-8 borehole, composite detrital samples (CR-18 and CR-20) contain detrital ZHe ages between 124.26 ± 1.70 Ma and 89.80 ± 1.21 Ma. Composite detrital samples (CR-28, CR-29, and CR-30) from the Gorrill Land Co. 1-29 borehole yield detrital ZHe ages that range between 135.32 ± 1.97 Ma and 97.42 ± 1.35 Ma. Two composite detrital samples (CR-12 and CR-13) collected from the Dodge Land Co. 1 borehole contain detrital ZHe ages between 310.31 ± 4.49 Ma and 50.19 ± 0.83 Ma. Sample CR-27 was collected from a granodiorite within the Buttes Community C-1 borehole and yields ZHe ages that range between 129.22 ± 1.83 Ma and 121.18 ± 1.66 Ma. Composite detrital samples (CR-2, CR-3, CR-7, CR-9) from the Martinez 25-2 borehole yield detrital ZHe ages between 161.56 ± 2.14 Ma and 75.06 ± 0.99 Ma. Plots of ZHe single-grain ages against the depth, effective uranium concentration (a proxy for radiation damage, e.g., Flowers et al., 2009), and grain radius are provided in Appendix E.

THERMAL MODELING RESULTS AND INTERPRETATIONS

GVF Outcrop Strata - Paskenta

Inverse thermal history modeling of the median AHe age uses the diffusion model of Flowers et al. (2009) for all Jurassic–Lower Cretaceous outcrop samples along the northwestern margin of the Sacramento basin.

Digger Creek

Modeled *t-T* histories using the median AHe age, 28.27 ± 0.49 Ma, for sample 0619MR16 shows linear heating until 30 Ma, followed by rapid cooling (Figure 3.7A). Minimum burial temperatures were likely >85°C between 140–30 Ma.

Crowfoot Point

Using the median AHe age, 8.78 ± 0.27 Ma, from the lower ophiolitic breccia (sample 0619MR26), modeled *t-T* histories show linear heating until 10 Ma, followed by rapid cooling in the late Cenozoic (Figure 3.7B). Post-depositional minimum burial temperatures likely exceeded 85°C between 160–10 Ma.

Median AHe ages of 45.01 ± 1.18 Ma and 34.62 ± 1.35 Ma from the upper ophiolitic breccia (sample 0619MR27) and basal Stony Creek Formation (sample 0619MR30), respectively, were combined to constrain their shared thermal history, if any. Samples 0619MR27 and 0619MR30 are relatively proximal to each other in exposed strata and are recorded in the same measured stratigraphic section at Crowfoot Point, CP1 (as described in Chapter 1). Also, sample 0619MR30 unconformably overlies sample 0619MR27, recording a

~5-6 m.y. unconformity (~151–145 Ma) (as discussed in Chapter 1). Using the median AHe age from both samples permits a well-constrained cooling history for these connected stratigraphic units. The modeled *t-T* history paths show post-depositional heating between 140–55 Ma, followed by cooling that commenced by 55 Ma. Minimum burial temperatures were likely >85°C between 140–50 Ma (Figure 3.7C).

Grindstone Creek

Using the median AHe age of 32.95 ± 0.47 Ma, from the most basal sample (0619MR35) from the Stony Creek Formation at Grindstone Creek, modeled *t-T* history paths show linear heating between 135–35 Ma, followed by cooling in the Cenozoic (Figure 3.7D). Post-depositional minimum burial temperatures were likely >85°C between 135–35 Ma. Stratigraphically up-section along Grindstone Creek, sample 0619MR36 (AHe age of 20.17 ± 0.38 Ma) shows linear heating immediately following deposition, followed by a range of cooling paths that all initiated prior to 20 Ma (Figure 3.7E). Between 140–20 Ma, minimum burial temperatures likely exceeded 85°C.

Along Grindstone Creek, sample 0619MR36 is stratigraphically up-section relative to strata containing sample 0619MR35; cooling of the stratigraphically higher sample is slightly younger, which could reflect relatively longer residence time in the partial retention zone (PRZ) before strata containing sample 0619MR35 passed through the PRZ. Younger cooling for the stratigraphically higher sample could also reflect unaccounted causes of dispersion within the AHe dataset because these samples are in conformable contact.

GVG Strata in Boreholes - Eastern Sacramento Basin

We model *t-T* histories for all subsurface samples along the northeastern margin of the GVF basin using the median AHe and ZHe age with the respective diffusion model of Flowers et al. (2009) and Guenthner et al. (2013). Individual HeFTy models for subsurface samples within a given borehole are consistent with each other, permitting one representative sample from each borehole to be discussed below (Appendix F for individual samples). As many samples contain ZHe ages older than their depositional ages, all models of detrital samples start at 250 Ma to incorporate a component of source cooling prior to deposition. Modeling median AHe and ZHe ages from the subsurface detrital samples show variation in the timing and magnitude of basin burial and initiation of post-depositional cooling along the eastern margin of the Sacramento basin. Burial temperatures range from 180-200°C and cooling initiates between 80 Ma and 20 Ma. Samples from the Community Buttes borehole are an exception to this due to proximity to late Neogene volcanism and are discussed below in more detail.

Jelly Bend 18-8 Borehole

Using the median AHe and ZHe ages of 13.95 ± 0.17 Ma and 104.79 ± 1.47 Ma, respectively, from Upper Cretaceous strata (CR-18), modeled *t-T* histories show linear heating until 20 Ma, followed by rapid cooling (Figure 3.8A). Modeling *t-T* paths indicate post-depositional maximum burial temperatures of <190°C between 85–20 Ma.

Gorrill Land Co. 1-29 Borehole

Modeled *t-T* histories using the median AHe and ZHe ages of 81.81 ± 1.00 Ma and 106.17 ± 1.55 Ma, respectively from CR-29, from Upper Cretaceous strata show heating immediately following deposition at 90 Ma to maximum burial temperatures of <120°C, followed by a continuous period where temperatures did not exceed ~60°C; *t-T* history paths suggest cooling by 80 Ma (Figure 3.8B). Inverse thermal modeling shows majority of the possible *t-T* history paths continuously reached-up to the lower-end of the PRZ post-80 Ma, likely indicating that this sample resided in the PRZ for a long time and the timing of heating and cooling is unclear post-80 Ma.

Dodge Land Co. 1 Borehole

Using the median AHe and ZHe ages of 44.28 ± 0.68 Ma and 151.08 ± 2.44 Ma, respectively, from Upper Cretaceous strata (sample CR-13), modeled *t-T* history paths show post-depositional heating between 90–50 Ma and maximum burial temperatures of <~180°C, followed by cooling that commenced by 50 Ma (Figure 3.8C).

Community Buttes C-1 Borehole

Inverse thermal modeling for sample CR-27, includes the median AHe and ZHe ages of 2.64 ± 0.04 Ma and 124.40 ± 1.78 Ma, respectively. One constraint box incorporates temperatures of 900-1000°C between 150–140 Ma, representing the zircon U-Pb crystallization age of 144.2 ± 0.27 Ma for the granodiorite and indicating that this sample was at temperatures >900°C during that time (Figure 3.8D). Modeled *t-T* histories indicate rapid cooling immediately

post-zircon crystallization and cooling continued until ~90 Ma. By ~85 Ma, this granodiorite was exposed at the surface and was overlain by the Guinda Shale (American Association of Petroleum Geologists, 1960) and continuous sediment material of the Great Valley Group. Modeled *t-T* history paths show post-depositional heating between 80–3 Ma with maximum burial temperatures of <150°C, followed by cooling that initiated by 3 Ma.

Martinez 25-2 Borehole

Modeled *t-T* histories using the median AHe and ZHe ages of 64.07 ± 0.75 Ma and 99.58 ± 1.32 Ma, respectively, from CR-9 display post-depositional heating, followed by a range of cooling paths that all initiated prior to 65 Ma (Figure 3.8E). Acceptable and good fit *t-T* paths indicate maximum burial temperatures of <~210°C between 85-65 Ma.

DISCUSSION

Stratigraphic Age

We interpret the collective sampled detrital intervals from the boreholes to be deposited during Cenomanian–Coniacian time based on detrital zircon MDAs between 93.63 ± 0.60 Ma and 85.86 ± 0.69 Ma (Figure 3.4) and stratigraphic correlations in the subsurface (Figure 3.3). We interpret the unimodal detrital zircon age distribution for samples CR-12 (Dodge Land) and CR-20 (Jelly Bend) to not represent TDAs based on the following: (1) The detrital zircon MDAs are 135.15 ± 0.98 Ma (CR-12) and 134.92 ± 0.26 Ma (CR-20), which would represent depositional ages within the Stony Creek Formation. However, these detrital zircon MDAs are inconsistent with those in the same and neighboring boreholes that have similar sampled depths

(Figure 3.4). (2) The sampled stratigraphic intervals correlate to the Dobbins Shale, Guinda, Funks, and Sites Formations, which are Late Cretaceous in age (Figure 3.3). MDAs for samples overlying these from the same borehole or from the same stratigraphic interval from a neighboring borehole (CR-12, Dodge Land and CR-20, Jelly Bend) are likely closer to the TDAs as MDAs are consistent with the interpretation age for the stratigraphic interval sampled. Therefore, we use the integrated overlying or neighboring MDAs and stratigraphic correlations to interpret the depositional age of these samples as Cenomanian–Coniacian in age. Lastly, we note that unimodal age spectra with MDAs that predate TDAs by >40 myr were found in Turonian strata of the Venado Formation in outcrop in the western belt (DeGraaff-Surpless et al., 2002), which may reflect derivation from catchments consisting entirely of earliest Cretaceous-latest Jurassic source rocks.

Provenance of Subsurface Samples

Sampled Cenomanian–Coniacian subsurface strata contain 90% Mesozoic detrital zircon ages (Figure 3.4). Potential Mesozoic sources include Late Triassic to Late Cretaceous calc-alkaline granitoid batholiths, intrusive suites, and volcanic rocks that were generated during east-dipping oceanic subduction and related magmatism of the Mesozoic Cordilleran magmatic arc system (Bateman and Dodge, 1970; Chen and Moore, 1982; Bateman, 1983; Saleeby and Busby-Spera, 1992; Coleman and Glazner, 1997; Ducea, 2001). Within the proximal Sierra Nevada, high flux periods of arc magmatism include during the Triassic (265–200 Ma), Middle and Late Jurassic (194–130 Ma), and mid-Cretaceous (124–76 Ma) (Paterson and Ducea, 2015). Interestingly, all borehole samples yield a scarcity of Triassic detrital zircon ages, which is

similar to Cenomanian–Campanian strata exposed along the western outcrop belt in the northern GVF basin (DeGraaff-Surpless et al., 2002). Comparably, Upper Jurassic–Lower Cretaceous strata of the basal GVF yield a noticeable amount of Triassic detrital zircon ages (Surpless et al., 2006; Orme and Surpless, 2019; and described in Chapter 1). This decrease in Triassic detrital zircon ages up-section within GVG strata likely indicate a shift in drainage routing systems within the developing arc to the more voluminous and available Jurassic and Cretaceous magmatic rocks, as magmatism became more abundant with episodic high flux events.

Borehole samples from Cenomanian–Coniacian strata predominantly yield Early Jurassic to Late Cretaceous detrital zircon age populations that comprise major peaks at ~178 Ma, ~165–160 Ma, ~155–145 Ma, ~137 Ma, ~115 Ma, and ~105–90 Ma, (Figure 3.4). These age peaks are within the duration of magmatic flare-ups of the Sierra Nevada arc in the Jurassic and middle Cretaceous (Paterson and Ducea, 2015), indicating local arc derivation. Specifically, two samples (CR-12, CR-20) yield distinct unimodal detrital zircon age distributions between ~150–140 Ma and ~145–135, respectively, indicating restricted derivation from nearby sources during Cenomanian–Coniacian time. Local sources may include exposed 162–140 Ma plutons in the northern Sierra Nevada (Saleeby et al., 1989; Irwin and Wooden, 2001), few 143–140 Ma plutonic rocks in the northwestern Cretaceous batholith (Saleeby et al., 1989), and undated plutons of the Sierran basement that are within the present-day subsurface (DeGraaff-Surpless et al., 2002). Plutonic rocks with ages between 162–140 Ma are less widespread and overlap in time with a lull in Cordilleran magmatism (Barton et al., 2011; Paterson and Ducea, 2015).

Detrital zircon age spectra from Cenomanian–Coniacian strata in the northern boreholes within our study region (Jelly Bend, Gorrill Land, and Dodge Land) are consistent with

documented age distributions in the Hornbrook and Sacramento basins in the northern GVF as compiled by Sharman et al. (2015, and references therein). Detrital zircon grains from Cenomanian–Coniacian forearc strata in this study and the northern GVF primarily yield Jurassic–earliest Cretaceous (200–135 Ma) ages, with relatively minor Late Cretaceous zircon ages that range between 100–85 Ma. By contrast, Turonian–Coniacian strata in the southernmost borehole (Martinez) in the Sacramento basin have abundant ages between 100–85 Ma, more consistent with GVF strata south of the Sacramento basin (e.g., Sharman et al., 2015). The overall abundant Sierra Nevadan arc-age detrital zircons from Cenomanian–Coniacian strata reported herein may suggest derivation from limited sources made available by transverse drainage systems that continued to dissect the magmatic arc, the Sierra terranes and Western Metamorphic belt as regional uplift shifted the drainage divide during Cenomanian–early Coniacian time (DeGraaff-Surpless et al., 2002).

Pre-Mesozoic aged zircon grains in the forearc indicate recycled sources, as most igneous crustal provinces in North America were overlain by Paleozoic–early Mesozoic sedimentary strata during the onset of the Cordilleran orogen (Schwartz et al., 2019). Upper Jurassic–lowest Cretaceous strata of the GVF contain a conspicuous number of pre-Mesozoic detrital zircon ages, which are interpreted as recycled North American source regions from hinterland and accreted terranes of the western Sierra Nevada foothills belt (Chapter 1; Orme and Surpless, 2019, Sharman et al., 2015, and DeGraaff-Surpless et al., 2002). By contrast, our collective subsurface samples from Cenomanian–Coniacian strata contain 10% pre-Mesozoic ages and we refer to the aforementioned studies for a discussion on the pre-Mesozoic sources for GVF strata.

Lag Time Interpretations

Lag time is the calculated difference between cooling age and depositional age (Garver et al., 1999; Bernet et al., 2001). The lag time essentially represents the estimated time for a mineral to pass through its respective closure temperature, subsequently be exhumed and eroded, then deposited. In this study, the Jelly Bend and Gorrill Land boreholes contain two detrital samples with ZHe ages that are older than the respective detrital zircon MDAs, allowing for a first-order lag time analysis. Sample CR-18 yields an MDA of 89.15 ± 0.46 Ma and ZHe ages that are >89.80 ± 1.21 Ma and sample CR-29 yields an MDA of 93.63 ± 0.60 Ma and ZHe ages that are >98.88 ± 1.41 Ma, indicating lag times as short as ~<1 to 5 m.y. and suggesting rapid exhumation rates. There is some overlap between ZHe ages from the Jelly Bend and Gorrill Land boreholes with ZHe ages reported in the northern Sierran batholith, which indicate rapid exhumation rates of 0.2-0.8 km/m.y. between 90–60 Ma (Cecil et al., 2006) and deposition on timescales <5 m.y. The estimated lag time herein of <5 m.y. is based on limited ZHe data and warrants additional low-temperature thermochronologic studies on neighboring Sacramento basin stratigraphy or the Sierra Nevada batholith to further constrain lag times.

Eastern GVF: Late Cretaceous and Cenozoic Burial and Exhumation

Maximum burial temperatures range between ~120-210 ºC during the Late Cretaceous for detrital samples from the Gorrill Land and Martinez boreholes. Specifically, multigrain thermal modeling of detrital samples from the Gorrill Land borehole show post-depositional peak burial temperatures of ~120 ºC within 5 m.y. post-deposition and remain below 60 ºC post-80 Ma (Figure 3.8B). These burial temperatures are consistent with unreset ZHe cooling ages

that are older than their respective MDA and therefore reflect source cooling; temperatures were not sufficient to fully reset the ZHe thermochronometer. Thermal history modeling of ZHe and AHe median grains from the Martinez borehole display a range of possible post-depositional peak burial temperatures, with paths mainly reaching up to ~180-210 ºC between 85–70 Ma and subsequently cooling and remaining below 80 ºC since ~65 Ma (Figure 3.8E). Modeled *t-T* paths for the Gorrill Land and Martinez boreholes show temperatures rapidly increasing for a short duration in the Late Cretaceous between 85–70 Ma; this is consistent with rapid sedimentation and burial during the Late Cretaceous and thermal maturation at 80–70 Ma in the Sacramento basin (Zieglar and Spotts, 1978).

Late Cretaceous–Cenozoic maximum burial temperatures range between ~160-180 ºC for detrital samples from the Dodge Land borehole. Thermal history modeling of AHe and ZHe median grains from the Dodge Land borehole display a range of possible post-depositional peak burial temperatures, with paths mainly reaching up to ~160-180 ºC between 90–50 Ma followed by cooling with temperatures remaining below 70 ºC since ~50 Ma (Figure 3.8C).

Immediately after deposition of the sampled stratigraphic intervals in the Gorrill Land, Martinez, and Dodge Land boreholes, peak burial temperatures were reached by the middle Late Cretaceous, with temperatures varying across the basin. Namely, peak burial temperatures were sufficient to partially reset the AHe thermochronometer in the Gorrill Land borehole, partially reset the AHe and ZHe thermochronometers for the sampled strata in the Martinez borehole, and partially reset the ZHe thermochronometer for the sampled strata in the Dodge Land borehole. Partial resetting of the ZHe ages in the sampled stratigraphic intervals in the southernmost borehole, Martinez, indicates strata were buried by a thick (perhaps as much as ~7-14 km,

assuming a geothermal gradient range of 10-20 ºC/km; Roy et al., 1972; Heasler and Surdam, 1985; Allen and Allen, 2013) stratigraphic section in the southern Sacramento basin. This observation from our thermal data is supported by varying sedimentary thicknesses and stratal geometries in the forearc basin in the middle Cretaceous that show southward deepening and development of a narrow, restricted depositional center (Moxon, 1988; Williams and Graham, 2013; Orme and Graham, 2018). The most basal sampled stratigraphic intervals in the Gorrill Land, Dodge Land and Martinez boreholes are overlain by ~1.3-2.4 km of sedimentary strata (Figure 3.3), which is not enough overburden to partially reset the ZHe thermochronometer with a geothermal gradient range of 10-20 ºC/km. Using this geothermal gradient range, we interpret missing sedimentary overburden of as much as ~4.6-12.7 km. The erosion of this missing overburden may be related to the two Cenozoic unconformities observed in the subsurface stratigraphic correlations (American Association of Petroleum Geologists, 1954, 1960) (Figure 3.3). We do not invoke a higher geothermal gradient to explain this heating pulse based on the forearc environment and previous studies on the geothermal gradient at this time, which indicate it was subdued to sub-normal gradients (Dumitru, 1988).

Thermal modeling for the Gorrill Land and Martinez boreholes show *t*-*T* paths that were primarily in the AHe PRZ throughout the latest Late Cretaceous–Cenozoic (Figure 3.8), suggesting slower cooling trajectories through the PRZ relative to other parts of the basin (e.g., Dodge Land). The spread of post-depositional Late Cretaceous–early Cenozoic cooling ages and thermal modeling for the Gorrill Land, Dodge Land, and Martinez boreholes indicate relatively slow cooling through the AHe PRZ following Late Cretaceous maximum burial.

Cooling of Cenomanian–Coniacian GVG strata along the eastern margin of the basin during the Late Cretaceous (87–69 Ma) time is coeval with exhumation of the northern Sierra Nevada batholith (Cecil et al., 2006). In the Gorrill Land and Martinez boreholes, post-depositional AHe and ZHe cooling ages primarily range between ~86–41 Ma and ~87–75 Ma, respectively. These cooling ages overlap with the documented range of AHe ages of 80–46 Ma and ZHe ages of 91–66 Ma in the northern Sierra Nevada batholith (Cecil et al., 2006). The AHe and ZHe cooling ages reported by Cecil et al. (2006) imply rapid exhumation rates between the Late Cretaceous–early Cenozoic (90–60 Ma), interpreted as an interval of erosional denudation triggered by batholithic emplacement and crustal thickening related to Cordilleran orogenic shortening. The earliest Late Cretaceous (Cenomanian–Coniacian) GVG strata studied herein onlap the flanks of the Sierra Nevada basement. Therefore, it is plausible that exhumation of the northern Sierra Nevada batholith also exhumed the eastern margin of the GVF during Late Cretaceous–earliest Cenozoic time.

Cooling of the Cenomanian–Coniacian GVG strata may also be linked to the development of low-angle (flat-slab) subduction of the Farallon plate beneath the southwestern margin of North America during the Late Cretaceous (Livaccari et al., 1981; Henderson et al., 1984; Saleeby, 2003). During the Late Cretaceous (96–86 Ma), alteration of the southern Great Valley forearc, rapid exhumation of the southern Sierra Nevada batholith, and intra-arc ductile thrusting are suggested to be related to initiation of subduction of a Shatsky conjugate (Saleeby et al., 2007; Liu et al., 2010). Therefore, it is plausible Late Cretaceous detrital AHe and ZHe cooling ages (~87–69 Ma) from Cenomanian–Coniacian GVG strata along the eastern margin of

the Sacramento basin may represent cooling in response to far-field tectonism induced by flat-slab subduction.

Basin-Wide Cenozoic Burial and Exhumation

In the northwestern Sacramento basin, basal GVF strata suggest burial depths >6.5 km under refrigerated thermal gradients (9-15 °C/km) between 90–65 Ma (Dumitru, 1988). Applying the suggested thermal gradients of 9-15 °C/km to the ~8.8 km of Upper Jurassic–Lower Cretaceous stratigraphic overburden in the Paskenta area yield burial temperatures between 79.2 °C and 135 °C, exceeding temperatures sufficient to reset the apatite (U-Th)/He thermochronometer, 40-85°C (Wolf et al., 1998; Farley, 2000, 2002). Thermal history modeling of detrital AHe median grains from the western Upper Jurassic–Lower Cretaceous outcrop, near Paskenta, display a range of possible *t-T* paths with post-depositional minimum burial temperatures exceeding that of the AHe PRZ (>85 ºC) and initial cooling to temperatures below 60 ºC during the Cenozoic, by ~40–5 Ma (Figure 3.7), consistent with previous work. All detrital AHe cooling ages from the western Upper Jurassic–Lower Cretaceous outcrop are Cenozoic and range between 47.46 ± 2.29 Ma and 5.80 ± 0.30 Ma.

Cenozoic cooling of the western outcrop post-dates the timing of initial uplift of the homocline, which subsurface regional unconformities indicate occurred during the early to middle Paleocene (~65–62 Ma) (Almgren, 1984; Dumitru, 1988). Subsequent intervals of Eocene tectonism are also observed in well correlations in the homocline area (Almgren, 1984). Specifically, deformation and uplift of the northern Sacramento basin along the Willows-Corning fault system occurred during the early Cenozoic (60–53 Ma) (Harwood and Helley, 1987).

Williams and Graham (2013) further suggest the Willow-Corning fault system to have a component of dextral strike-slip, based on similarities with other seismic profiles showing strike-slip faults (e.g., D' Onfro and Glagola, 1983; Harding, 1983; Harding et al., 1985).

The combined early–late Cenozoic cooling ages reported in Dumitru (1988, 1989), Unruh et al. (2007), and this study, reflect coeval regional exhumation of the Franciscan complex and Upper Jurassic–Lower Cretaceous GVF strata throughout the Cenozoic. Modeled *t-T* histories using the detrital median AHe age from Upper Jurassic–Lower Cretaceous GVF strata in the Paskenta region indicate cooling to have started by 55-10 Ma (Figure 3.7) and are interpreted to record continued uplift of the homocline during the Cenozoic. The timing of the onset of cooling as indicated by our thermal models is consistent with previous works documenting Cenozoic AFT cooling ages of 63–59 Ma and ~35 Ma from GVG strata in the Stonyford and Clear Lake areas, respectively, which are inferred to record uplift and cooling of the homocline (Dumitru, 1988, 1989). Cenozoic detrital AHe cooling ages and thermal histories reconstructed in this study from the Paskenta area are consistent with interpretations of the GVG strata in the Mount Diablo area, which yield detrital AHe cooling ages between ~62–14 Ma and are interpreted to represent latest Cretaceous–early Cenozoic subsidence and extension in a graben system within the western GVF basin, coeval with exhumation of the Franciscan complex (Unruh et al., 2007) (Figure 3.9). In addition, detrital median AHe cooling ages and accompanying modeled *t-T* histories from Upper Jurassic–Lower Cretaceous GVF strata in this study are consistent with early to middle Cenozoic cooling of the Franciscan complex along the northwestern margin of the GVF (Diablo Range, San Francisco, Chiles Creek, and parts of the northern Coast Ranges' Eastern and Central belts) that contain AFT ages between ~45–32 Ma (Dumitru, 1989). The

latter is interpreted to record uplift driven by synsubduction underplating of subducted sediments at the accretionary prism base, consistent with underplating models where long-term uplift occurs in various areas and generally continuous during subduction (Ernst, 1975; Platt, 1975, 1986; Cowan and Silling, 1978; Jayko et al., 1987; Shreve and Cloos, 1986; Cloos and Shreve, 1988; Dumitru, 1989).

The overlap in cooling ages and thermal histories may indicate shared exhumation histories between the Franciscan complex and Upper Jurassic–Lower Cretaceous GVF strata during the Cenozoic, although the maximum lateral extent of coeval exhumation for these units along the western GVF basin margin is uncertain. Cooling ages from GVG strata along the western GVF basin could be recording long-term uplift in various areas within the forearc that were coeval with synsubduction underplating in the early Cenozoic, similar to interpretations for uplift of the Franciscan complex described by Dumitru (1989). Alternatively, erosion may have been the driving mechanism for the exhumation of the Franciscan complex (Ring and Brandon, 1994; Brandon et al., 1998; Bolhar and Ring, 2001; Ring and Richter, 2004; Mitchell et al., 2010) (Figure 3.9). Erosion of the subaerially exposed Franciscan complex ultimately contributed sediment to a southward prograding system within the GVF basin by the end of the Maastrichtian (Mitchell et al., 2010). Hence, early Cenozoic AHe cooling ages from exposed Upper Jurassic–Lower Cretaceous strata in the Paskenta area could be recording continuous erosion-driven exhumation throughout the early Cenozoic. Finally, exhumation of Upper Jurassic–Lower Cretaceous GVF strata during the early Cenozoic could be the result of a combination of both erosion and synsubduction underplating processes.

Late Cenozoic detrital AHe cooling ages and modeled *t-T* histories from Upper Jurassic–Lower Cretaceous GVF strata in the Paskenta region indicate cooling started by 55–10 Ma. Late Cenozoic cooling may represent exhumation associated with one or a combination of the following: (1) Onset of the Mendocino Triple Junction (MTJ) (Atwater, 1970), (2) Slab window processes (Dickinson and Snyder, 1979; Johnson and O'Neil, 1984; Fox et al., 1985; Cole and Basu, 1992, 1995; Dickinson, 1997; Wilson et al., 2005; McCrory et al., 2009; Sweetkind et al., 2011), (3) Continuous synsubduction underplating (Ernst, 1975; Platt, 1975, 1986; Cowan and Silling, 1978; Jayko et al., 1987; Cloos and Shreve, 1988b), or (4) Continuous erosion of the outer forearc region (Ring and Brandon, 1994; Brandon et al., 1998; Bolhar and Ring, 2001; Ring and Richter, 2004; Mitchell et al., 2010).

Late detrital AHe cooling ages from the present-day Paskenta region may represent exhumation in response to plate motion reconstructions associated with the initiation of the MTJ by 28 Ma in the present-day northern California area (Atwater, 1970) (Figure 3.9). In the Late Cenozoic, slab windows formed beneath western California as a product of spreading ridge subduction (Dickinson and Snyder, 1979; Johnson and O'Neil, 1984; Fox et al., 1985; Cole and Basu, 1992, 1995; Dickinson, 1997; Wilson et al., 2005; McCrory et al., 2009; Sweetkind et al., 2011), as documented by late Oligocene to middle Miocene, (~27–12 Ma) igneous rocks located within the forearc and accretionary prism (Stanley, 1987; Cole and Basu, 1995; Dickinson, 1997) (Figure 3.9). Our Late Cenozoic AHe cooling ages overlap with the timing of slab window magmatism along western California and may indicate exhumation driven by mantle upwelling in a slab window (e.g., Portnyagin et al., 2005). Alternatively, late Cenozoic AHe cooling ages from exposed Upper Jurassic–Lower Cretaceous strata could be documenting continuous

exhumation driven by synsubduction extensional (e.g., Platt, 1986; Unruh et al., 2007,) and/or erosional (e.g., Mitchell et al., 2010, and references therein) processes (Figure 3.9). Latest Cenozoic detrital AHe cooling ages in this study may represent the end of exhumation, as tilting of the homocline is inferred to have continued in the Pliocene, based on eastward dipping Cenozoic strata along the homocline (Sims et al., 1973).

Interestingly, subsurface GVG strata that onlap the flanks of the Sierra Nevada basement in the Jelly Bend, Gorrill Land, Dodge Land, and Martinez boreholes along the eastern margin of the Sacramento basin yield Cenozoic detrital AHe cooling ages. These cooling ages are consistent with relatively slow exhumation (0.02–0.04 km/ m.y.) driven by erosional unroofing in the northern Sierra Nevada batholith between the middle to late Cenozoic (Cecil et al., 2006) (Figure 3.9). Late Cenozoic detrital AHe cooling ages in the subsurface GVG strata could be documenting cooling of basin strata in response to erosional processes of upper forearc strata and/or exhumation in response to far-field transpression induced by plate motion reconstructions, where the Mendocino Triple Junction (MTJ) forms and the subduction zone transitions to the San Andreas transform fault system by ~29 Ma (Atwater, 1970).

Previous low-temperature thermochronologic studies in the northwestern and west-central GVF basin are limited in spatial coverage and indicate variable cooling histories (e.g., Dumitru, 1988; Vermeesch et al., 2006; Unruh et al., 2007). These pioneering thermochronologic studies documented localized phenomena; yet, each local cooling history occurred within the broader context of a basin-wide cooling history. We note that all detrital AHe grains from the Upper Jurassic–Lower Cretaceous GVF strata in the western outcrop yield Cenozoic cooling ages that overlap detrital AHe cooling ages from the subsurface Cenomanian–Coniacian GVG

strata (Figure 3.9). This overlap in Cenozoic cooling ages between the western and eastern parts of the Sacramento basin may indicate coeval exhumation related to regional tectonism or coeval basin-wide exhumation in response to far-field transpression induced by the onset of the MTJ. Our data does not resolve the mechanism for exhumation of the northwestern and northeastern GVF strata because the timing of cooling is similar, regardless of mechanism.

Latest Cenozoic AHe cooling ages between ~11–1 Ma are reported for the granodiorite (CR-27) within the Buttes Community C-1 borehole and thermal modeling indicates post-deposition maximum burial temperatures of <150 ºC between ~80–2 Ma, followed by cooling that initiated by ~2 Ma (Figure 3.8). The borehole from which the granodiorite was sampled is proximal to Cenozoic Sutter (Marysville) Buttes, where a Pliocene–Pleistocene rhyodacitic intrusive is exposed above the present-day valley floor (Williams and Curtis, 1977). Latest Cenozoic AHe cooling ages from the subsurface granodiorite overlap with the timing of Pliocene–Pleistocene volcanism of Sutter Buttes. Therefore, we interpret volcanism to have heated the surrounding strata to temperatures sufficient to reset the AHe thermochronometer; consistent with our interpretation, the ZHe ages, ~129–121 Ma, show no indication of resetting indicating temperatures from the thermal aureole did not exceed the ZHe PRZ (< 200 ºC) (Figure 3.9).

CONCLUSIONS

We reconstruct the thermal history of the Sacramento basin along its western outcrop belt and in the subsurface of the central-eastern parts of the basin using detrital AHe and ZHe thermochronology. Subsurface GVG strata near the western flanks of the Sierra Nevada were

deposited between Cenomanian–Coniacian time and record post-depositional maximum burial temperatures that range between ~120-210 ºC during the Late Cretaceous and cooling that occurred in the Late Cretaceous and Cenozoic. Thermal modeling and the spread of post-depositional Late Cretaceous–early Cenozoic cooling ages indicate relatively slower cooling rates through the apatite PRZ for basal strata in certain areas along the eastern GVF relative to other parts of the basin. Cooling histories from subsurface GVG strata may reflect exhumation in response to (1) Erosion and/or (2) Far-field transpression related to plate motion changes. Heating and subsequent cooling related to Pliocene–Pleistocene volcanism is recorded by Cenomanian–Coniacian subsurface GVG strata near Sutter Buttes.

Thermal history modeling of detrital AHe median grains from the western Upper Jurassic–Lower Cretaceous outcrop display a range of *t-T* paths with post-depositional minimum burial temperatures exceeding that of the AHe PRZ (>85 ºC) and initial cooling to temperatures below 60 ºC during the Cenozoic, by ~40–5 Ma; our study supports the suggested subnormal geothermal gradients in the GVF basin during the Cenozoic. Upper Jurassic–Lower Cretaceous strata from the western outcrop belt reflect continued exhumation and cooling of the homocline in the Cenozoic. Our data cannot discriminate between possible mechanisms for exhumation throughout the Cenozoic, which include: (1) Onset of the MTJ, (2) Slab window magmatism, (3) Synsubduction underplating processes, and/or (4) Erosion of the outer forearc region. The documented cooling ages and thermal modeling in this study are consistent with previous studies that indicate latest Late Cretaceous–Cenozoic exhumation for Upper Jurassic–Lower Cretaceous strata in the western outcrop belt. Previous northern GVF low-temperature thermochronologic studies combined with the thermal history modeling and cooling ages of the western outcrop belt

and eastern subsurface strata indicate similar cooling histories in the latest Late Cretaceous as well as throughout the Cenozoic. Our AHe and ZHe dataset and thermal modeling document synchronous cooling histories across the basin following peak burial in during the Late Cretaceous. This overlap in cooling histories may reflect basin-wide exhumation in response to far-field transpression induced by relative changes in Farallon and North American plate motion.

Acknowledgments

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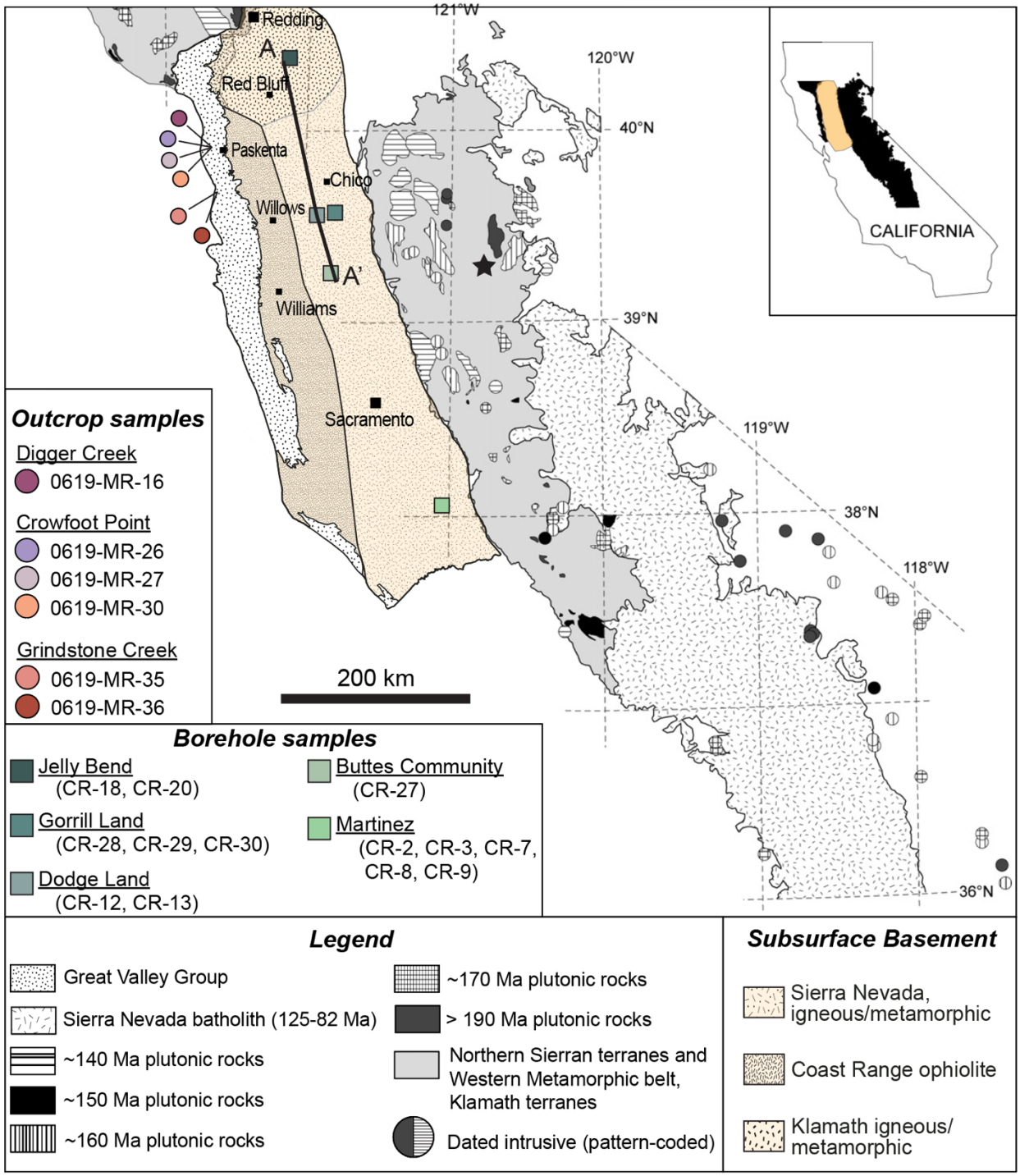

Figure 3.1. Regional geologic map of the northern Great Valley and Sierra Nevada with borehole and field sample locations. Sacramento basin outline and subsurface basement from Orme and Graham (2018). Outcrop geologic map modified from Irwin (2003) and Surpless and Augsburger (2009). Black star denotes location of AHe and ZHe samples in Cecil et al. (2006).

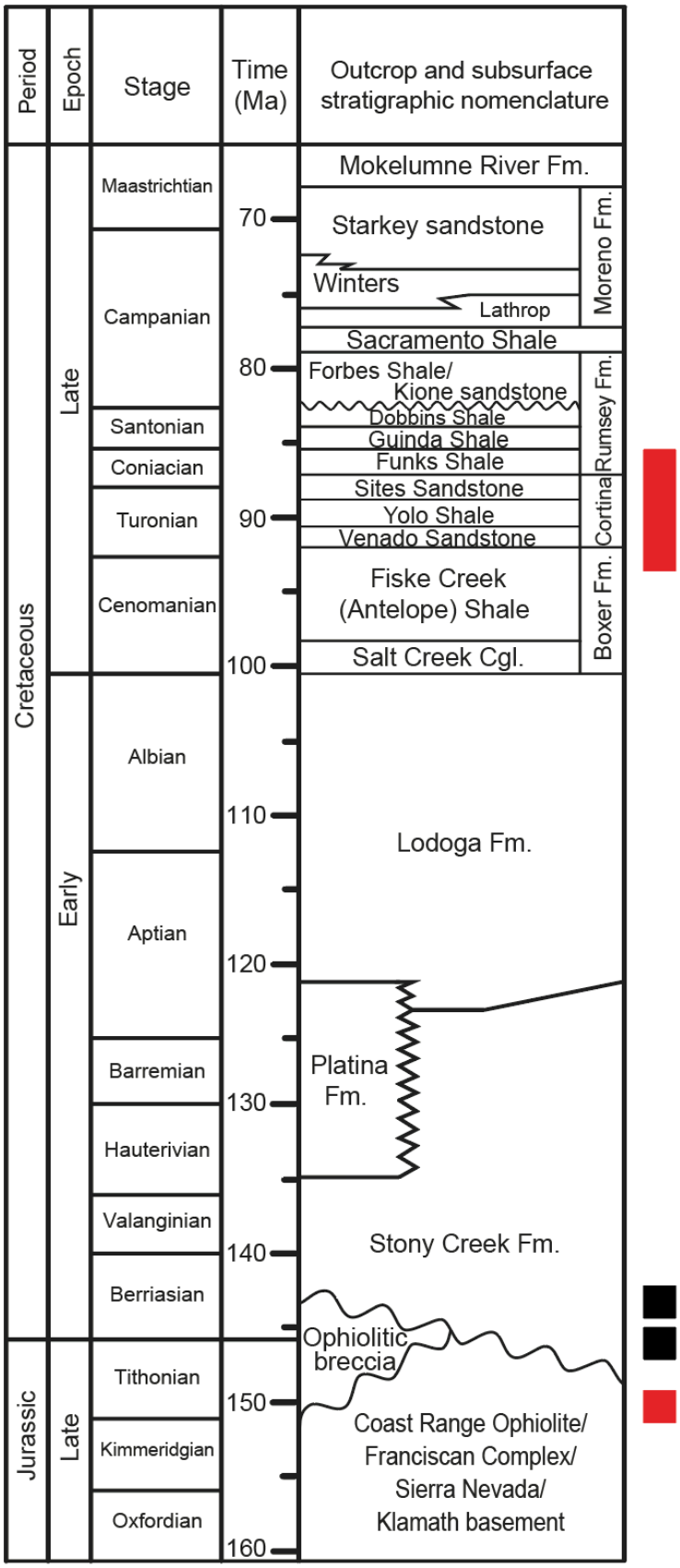
Period
Epoch
Stage
Time (Ma)
Outcrop and subsurface stratigraphic nomenclature
Cretaceous
Jurassic
Late
Early
Late
Maastrichtian
Campanian
Santonian
Coniacian
Turonian
Cenomanian
Albian
Aptian
Barremian
Hauterivian
Valanginian
Berriasian
Tithonian
Kimmeridgian
Oxfordian
70
80
90
100
110
120
130
140
150
160
Mokelumne River Fm.
Starkey sandstone
Winters
Lathrop
Moreno Fm.
Sacramento Shale
Forbes Shale/
Kione sandstone
Dobbins Shale
Guinda Shale
Funks Shale
Rumsey Fm.
Sites Sandstone
Yolo Shale
Venado Sandstone
Cortina
Fiske Creek
(Antelope) Shale
Salt Creek Cgl.
Boxer Fm.
Lodoga Fm.
Platina
Fm.
Stony Creek Fm.
Ophiolitic
breccia
Coast Range Ophiolite/
Franciscan Complex/
Sierra Nevada/
Klamath basement

Figure 3.2. Upper Jurassic–Upper Cretaceous stratigraphy of the Sacramento basin. Red boxes indicate subsurface sampled units. Black boxes indicate outcrop samples. Modified after Orme and Graham (2018, and references therein).

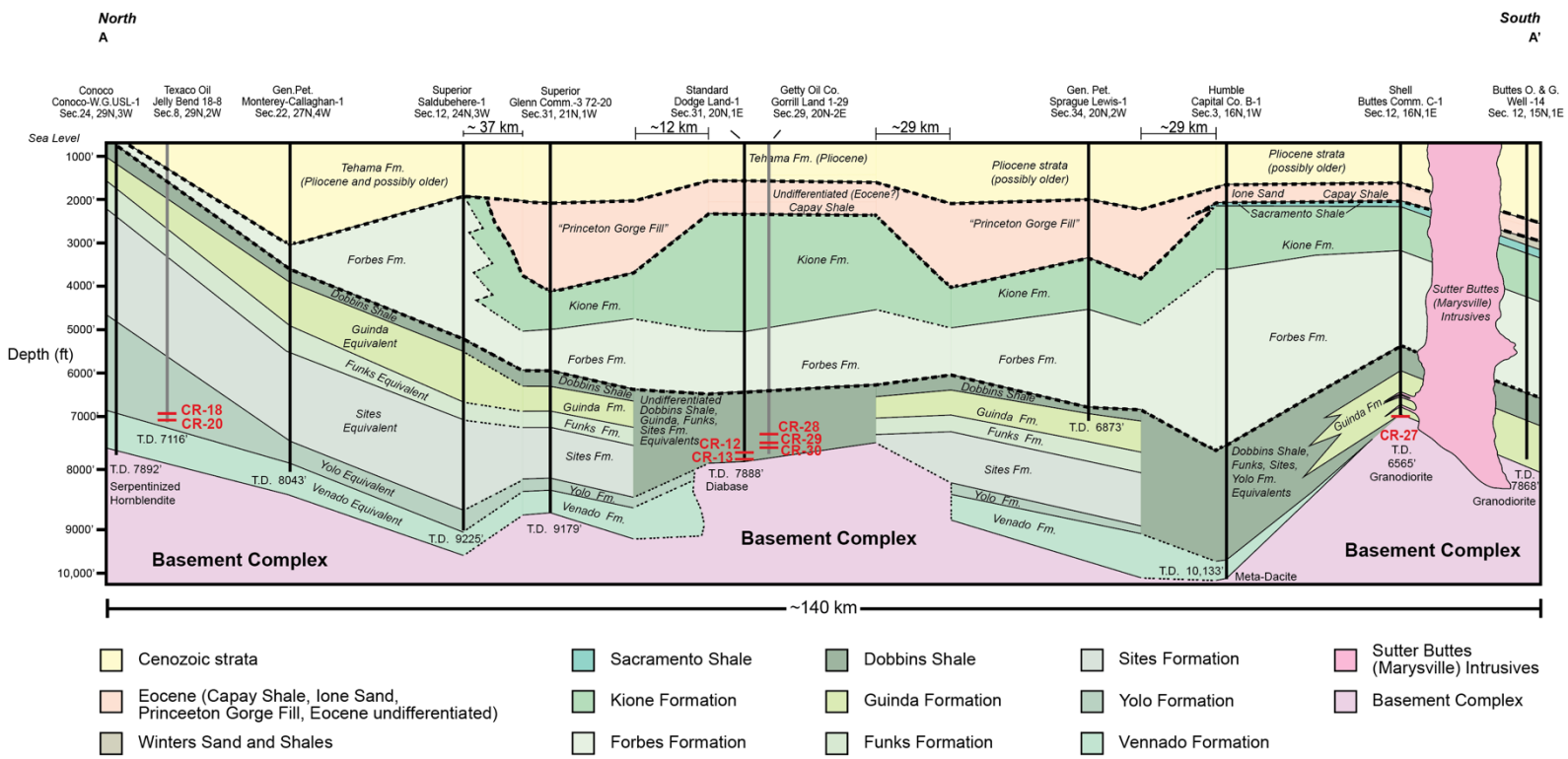
North
A
South
A'
Conoco
Conoco-W.G.USL-1
Sec.24, 29N,3W
Texaco Oil
Jelly Bend 18-8
Sec.8, 29N,2W
Gen.Pet.
Monterey-Callaghan-1
Sec.22, 27N,4W
Superior
Saldubehere-1
Sec.12, 24N,3W
Superior
Glenn Comm.-3 72-20
Sec.31, 21N,1W
Standard
Dodge Land-1
Sec.31, 20N,1E
Getty Oil Co.
Gorrill Land 1-29
Sec.29, 20N-2E
Gen. Pet.
Sprague Lewis-1
Sec.34, 20N,2W
Humble
Capital Co. B-1
Sec.3, 16N,1W
Shell
Buttes Comm. C-1
Sec.12, 16N,1E
Buttes O. & G.
Well -14
Sec. 12, 15N,1E
~ 37 km
~12 km
~29 km
~29 km
Sea Level
Depth (ft)
1000'
2000'
3000'
4000'
5000'
6000'
7000'
8000'
9000'
10,000'
Tehama Fm.
(Pliocene and possibly older)
Forbes Fm.
Dobbins Shale
Guinda
Equivalent
Funks Equivalent
Sites
Equivalent
Yolo Equivalent
Venado Equivalent
CR-18
CR-20
T.D. 7116'
T.D. 7892'
Serpentinized
Hornblendite
T.D. 8043'
T.D. 9225'
"Princeton Gorge Fill"
Kione Fm.
Forbes Fm.
Dobbins Shale
Guinda Fm.
Funks Fm.
Sites Fm.
Yolo Fm.
Venado Fm.
T.D. 9179'
Undifferentiated
Dobbins Shale,
Guinda, Funks,
Sites Fm.
Equivalents
CR-12
CR-13
CR-28
CR-29
CR-30
T.D. 7888'
Diabase
Tehama Fm. (Pliocene)
Undifferentiated (Eocene?)
Capay Shale
Kione Fm.
Forbes Fm.
Pliocene strata
(possibly older)
"Princeton Gorge Fill"
Kione Fm.
Forbes Fm.
Dobbins Shale
Guinda Fm.
Funks Fm.
Sites Fm.
Yolo Fm.
Venado Fm.
T.D. 6873'
T.D. 10,133'
Pliocene strata
(possibly older)
Ione Sand
Capay Shale
Sacramento Shale
Kione Fm.
Forbes Fm.
Dobbins Shale,
Funks, Sites,
Yolo Fm.
Equivalents
Meta-Dacite
Guinda Fm.
CR-27
T.D.
6565'
Granodiorite
Sutter Buttes
(Marysville)
Intrusives
T.D.
7868'
Granodiorite
Basement Complex
Basement Complex
Basement Complex
~140 km
Cenozoic strata
Eocene (Capay Shale, Ione Sand,
Princeeton Gorge Fill, Eocene undifferentiated)
Winters Sand and Shales
Sacramento Shale
Kione Formation
Forbes Formation
Dobbins Shale
Guinda Formation
Funks Formation
Sites Formation
Yolo Formation
Vennado Formation
Sutter Buttes
(Marysville) Intrusives
Basement Complex

Figure 3.3. Schematic north-south stratigraphic correlation along the eastern margin of the Sacramento basin modified after American Association of Petroleum Geologists (1954, 1960). Location of A-A' is shown in Figure 3.1. Thin dashed lines indicate inferred subsurface correlations where distances between the closest correlatable wells are greater than 10 km. Gorrill Land and Jelly Bend boreholes are projected onto this correlation line from the east. With Gorrill Land, the total depth, sample depths, and age equivalent strata are based on the neighboring borehole Dodge Land, which is ~10 km west. The Jelly Bend borehole is also projected onto this line from the east and sampled strata correlate well with the proximal Conoco Phillips well. The Martinez borehole, located 150 km further south, is not included in this figure due to uncertainty correlating across this distance and change in stratigraphic correlations south of Sutter Buttes, which abandon formal units in favor of biostratigraphic zones (American Association of Petroleum Geologists, 1967).

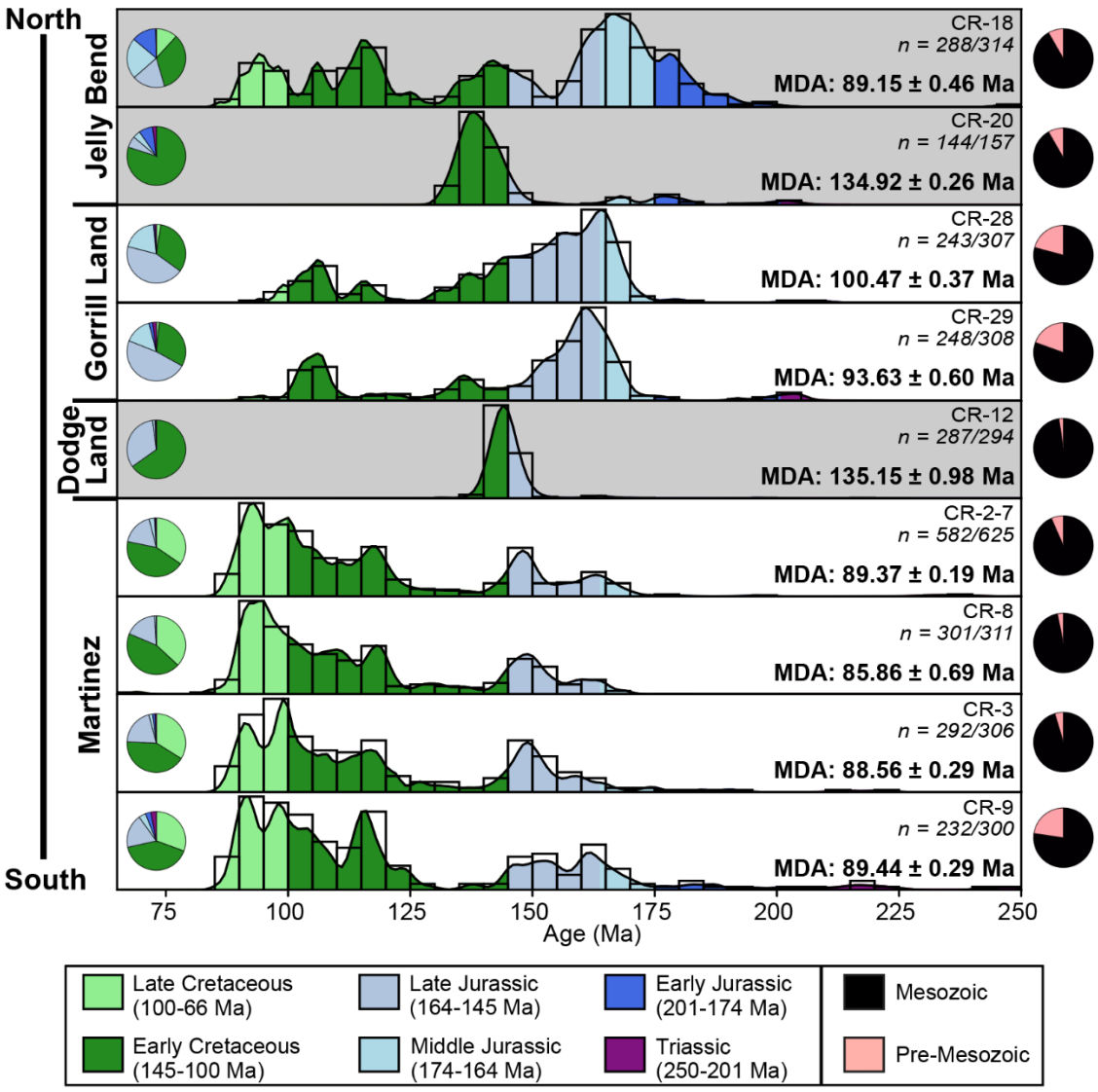

Figure 3.4. Probability distribution plots (PDPs) and histograms for detrital samples from the subsurface. Samples are arranged north to south and in stratigraphic order within each borehole. Bolded maximum depositional ages (MDAs) represent the youngest cluster of three or more grains that overlap within 2σ uncertainty, YC2σ(3+). Pie diagrams on the left show the relative percentage of Triassic–Late Cretaceous detrital zircon ages and pie diagrams on the right show Mesozoic and Pre-Mesozoic detrital zircon ages for each sample. The MDA for sample CR-12 is likely not a robust MDA, equaling TDA, based on stratigraphic designations and neighboring MDAs.

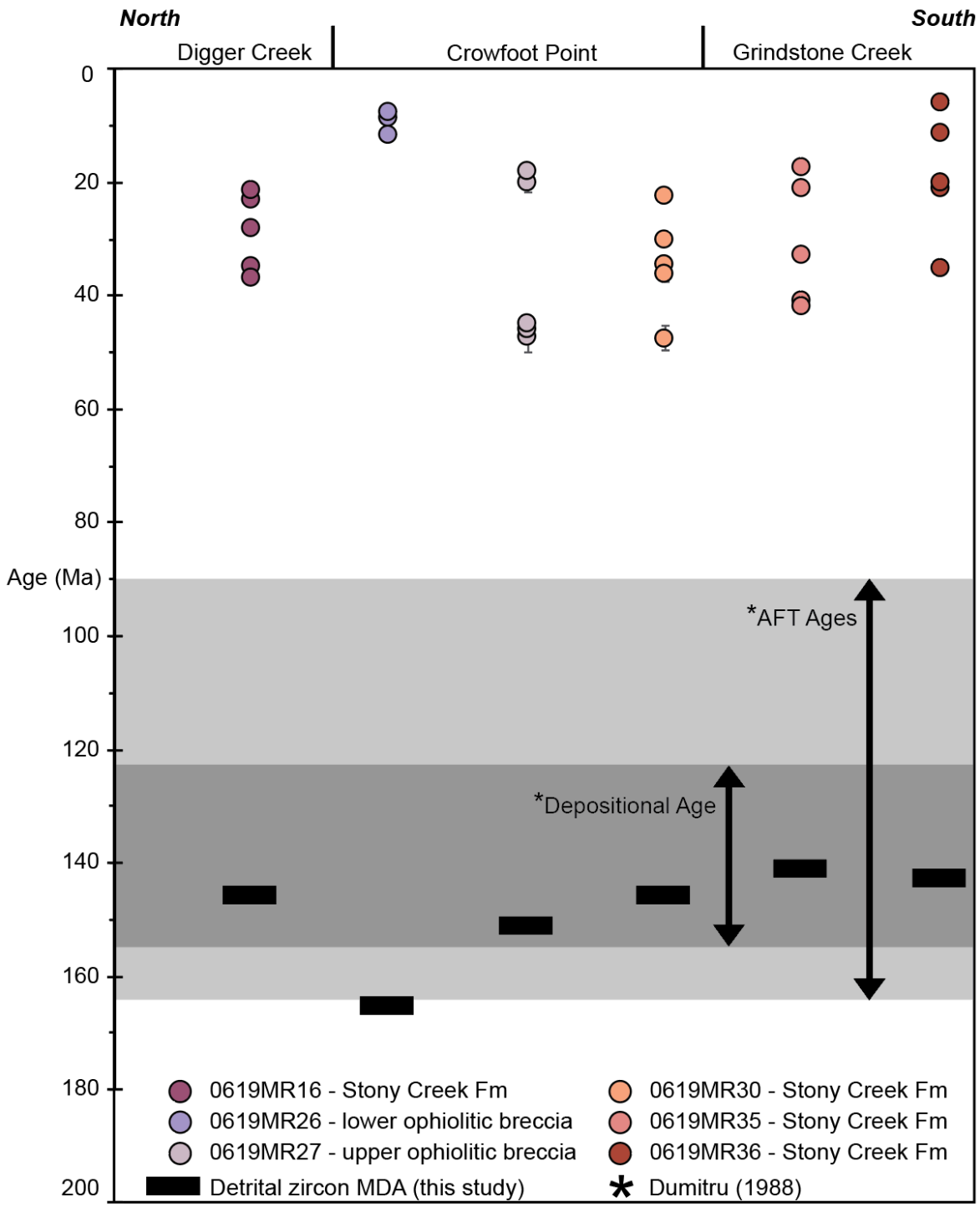

Figure 3.5. Apatite (U-Th)/He cooling ages of outcrop samples from the Paskenta area with corresponding MDAs. Samples listed from north to south. Range of AFT and depositional ages from the Paskenta area from Dumitru (1988) indicated by the black arrows and grey polygons.

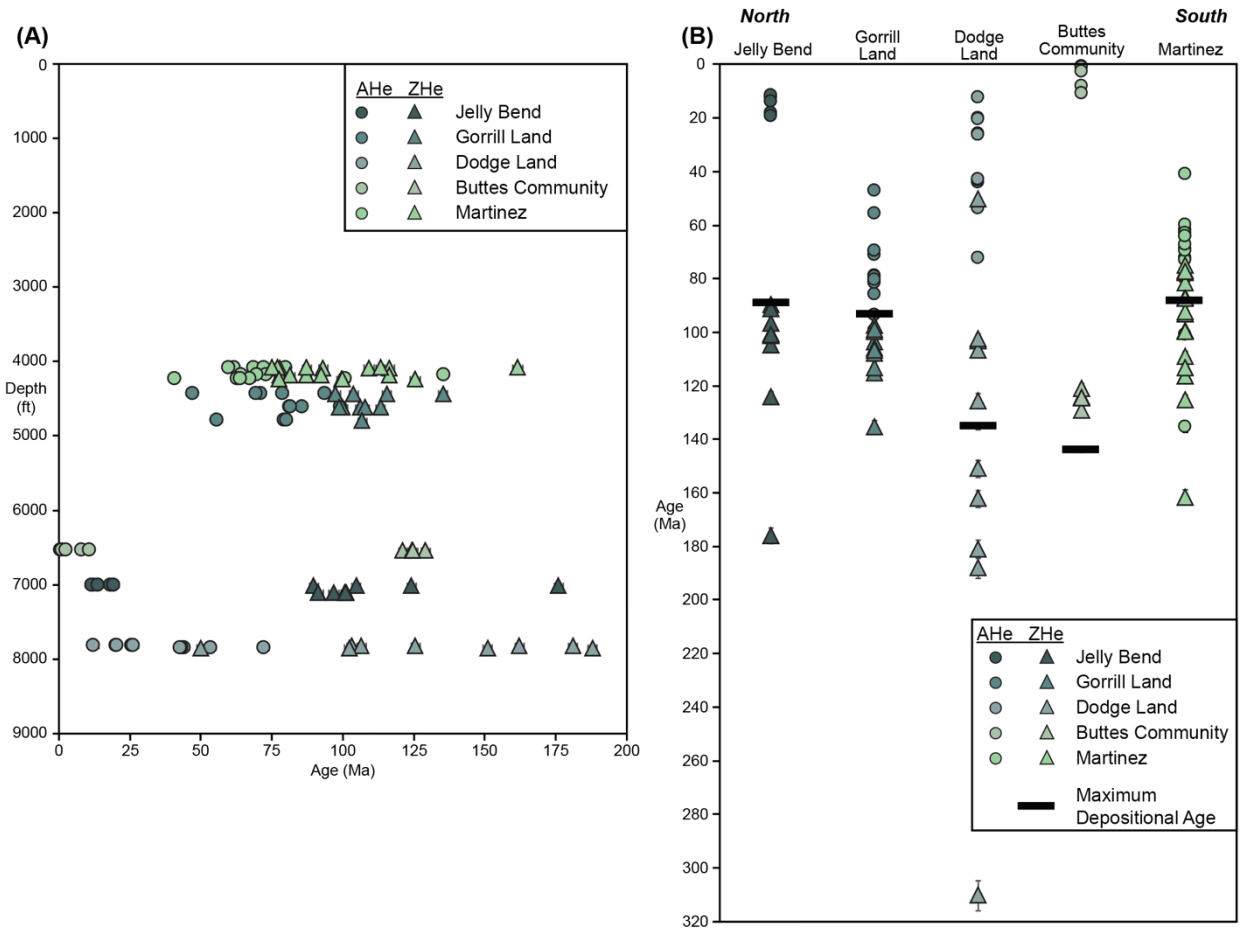

Figure 3.6. (A) Apatite and zircon (U-Th)/He cooling ages of samples from the boreholes and sampled depths. (B) Apatite and zircon (U-Th)/He cooling ages of samples from the boreholes, north to south, with corresponding MDAs.

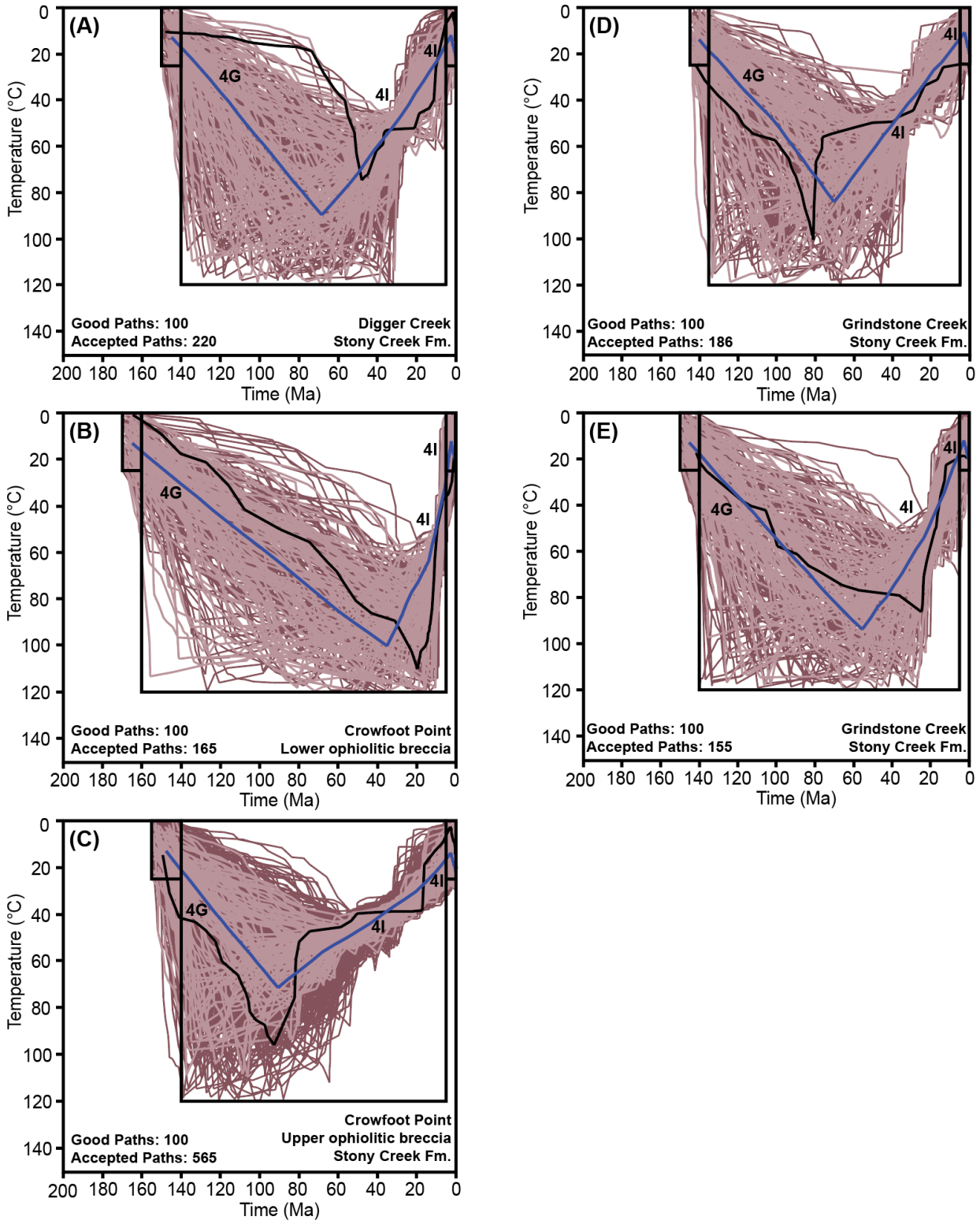
(A)
4G
4I
4I
Good Paths: 100
Accepted Paths: 220
Digger Creek
Stony Creek Fm.
(B)
4G
4I
4I
Good Paths: 100
Accepted Paths: 165
Crowfoot Point
Lower ophiolitic breccia
(C)
4G
4I
4I
Good Paths: 100
Accepted Paths: 565
Crowfoot Point
Upper ophiolitic breccia
Stony Creek Fm.
(D)
4G
4I
4I
Good Paths: 100
Accepted Paths: 186
Grindstone Creek
Stony Creek Fm.
(E)
4G
4I
4I
Good Paths: 100
Accepted Paths: 155
Grindstone Creek
Stony Creek Fm.
Temperature (°C)
Time (Ma)

Figure 3.7. Time-temperature modeling of median AHe cooling ages from Upper Jurassic–Lower Cretaceous strata in the Paskenta area using the diffusion model of Flowers et al. (2009). (A) Stony Creek Formation (0619MR16), (B) lower ophiolitic breccia (0619MR26), (C) upper ophiolitic breccia and lower Stony Creek Formation (0619MR27 and 0619MR30), (D) Stony Creek Formation (0619MR35), (E) Stony Creek Formation (0619MR36). Black *t-T* path is the best-fit *t-T* path. Blue *t-T* path is the weighted mean *t-T* path. Purple *t-T* paths indicate good-fit paths and Maroon *t-T* paths indicate acceptable-fit paths. Black boxes represent *t-T* constraints. Randomizer: E–Episodic, G–Gradual, I–Intermediate.

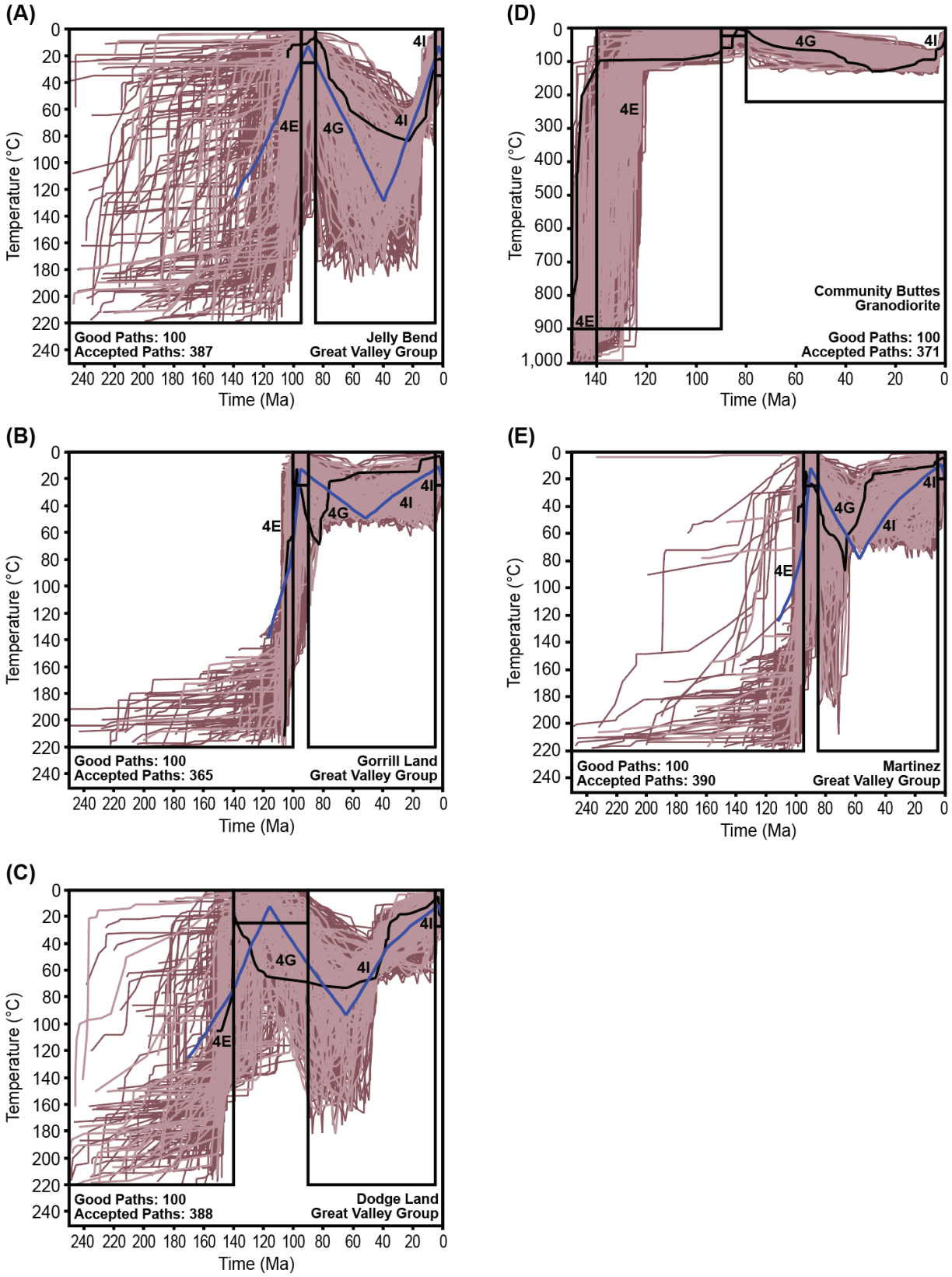
(A)
Temperature (°C)
Time (Ma)
4E
4G
4I
Good Paths: 100
Accepted Paths: 387
Jelly Bend
Great Valley Group
(B)
Temperature (°C)
Time (Ma)
4E
4G
4I
Good Paths: 100
Accepted Paths: 365
Gorrill Land
Great Valley Group
(C)
Temperature (°C)
Time (Ma)
4E
4G
4I
Good Paths: 100
Accepted Paths: 388
Dodge Land
Great Valley Group
(D)
Temperature (°C)
Time (Ma)
4E
4G
4I
Community Buttes
Granodiorite
Good Paths: 100
Accepted Paths: 371
(E)
Temperature (°C)
Time (Ma)
4E
4G
4I
Good Paths: 100
Accepted Paths: 390
Martinez
Great Valley Group

Figure 3.8. Time-temperature modeling of median AHe and ZHe cooling ages from boreholes along the central-eastern Sacramento basin. (A) GVG strata (Jelly Bend), (B) GVG strata (Gorrill Land), (C) GVG strata (Dodge Land), (D) Granodiorite (Community Buttes), (E) GVG strata (Martinez). Black *t-T* path is the best-fit *t-T* path. Blue *t-T* path is the weighted mean *t-T* path. Purple *t-T* paths indicate good-fit paths and Maroon *t-T* paths indicate acceptable-fit paths. Black boxes represent *t-T* constraints. Randomizer: E-Episodic, G-Gradual, I-Intermediate.

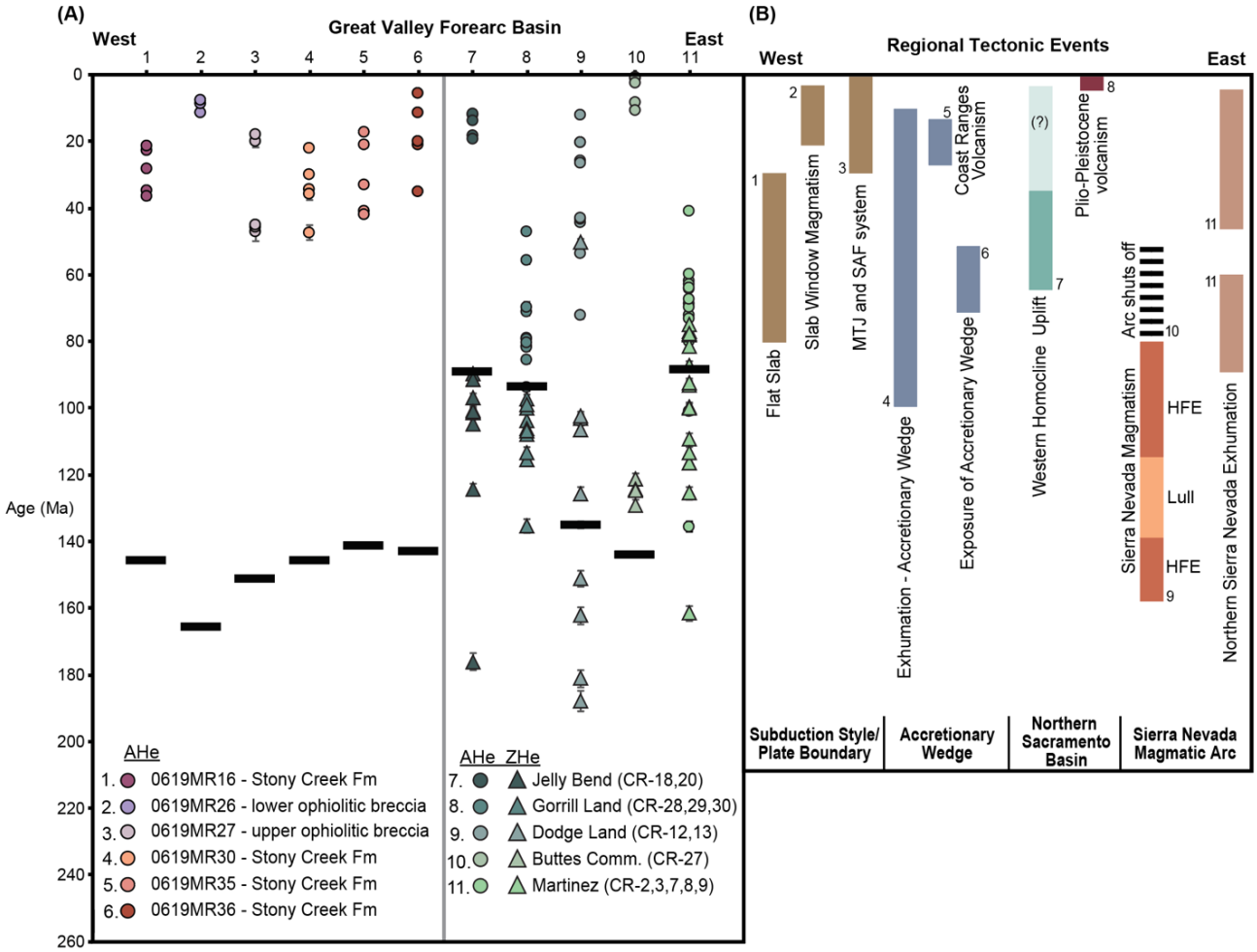

Figure 3.9. (A) Apatite and zircon (U-Th)/He cooling ages of samples from western outcrop and eastern subsurface of the Sacramento basin. Black rectangles represent MDAs. Single outlier detrital ZHe age (~310 Ma) from Dodge Land borehole is removed. (B) Schematic time-space diagram of regional tectonic events in the northern GVF. Modified after Williams and Graham (2013) and DeCelles and Graham (2015). Sources: 1—Livaccari et al. (1981), Henderson et al. (1984), Saleeby, (2003), Liu et al. (2010). 2—Dickinson and Snyder (1979), Johnson and O'Neil (1984), Fox et al. (1985), Cole and Basu (1992, 1995), Dickinson (1997), Wilson et al. (2005), McCrory et al. (2009). 3—Atwater (1970). 4—Platt (1986), Jayko et al. (1987), Dumitru (1989), Tagami and Dumitru (1996), Unruh et al. (2007). 5— Dickinson and Snyder (1979), Johnson and O'Neil (1984), Fox et al. (1985), Stanley (1987), Cole and Basu (1992, 1995), Dickinson (1997), Wilson et al. (2005), McCrory et al. (2009), Sweetkind et al. (2011). 6—Dickinson et al. (1979), McGuire (1988), Mitchell et al. (2010). 7—Sims et al. (1973), Almgren (1984), Harwood and Helley (1987), Dumitru (1988, 1989). 8—Williams and Curtis (1977). 9—Barton et al. (1988), Barton (1990), Ducea (2001), Paterson et al. (2011), Paterson and Ducea (2015). 10—Barton et al. (1988), Barton (1990), Patiño Douce et al. (1990), Cowan and Bruhn (1992), Howard et al. (2011). 11—Dumitru (1990), Cecil et al. (2006).

Table 3.1. Outcrop sample locations in the northwestern Sacramento basin, northern California.

SAMPLE	LITHOLOGY	UNIT	REGIONAL LOCATION	LATITUDE (°N)	LONGITUDE (°W)	MEASURED SECTION	U-Pb ANALYSIS
0619-MR-16	Sandstone	Great Valley Group	Digger Creek	39.8979	-122.6178	----------	Detrital, n = 305
0619-MR-26	Breccia	Breccia	Crowfoot Point	39.8957	-122.6297	----------	Detrital, n = 102
0619-MR-27	Breccia	Breccia	Crowfoot Point	39.8889	-122.6239	CP1	Detrital, n = 71
0619-MR-30	Sandstone	Great Valley Group	Crowfoot Point	39.8889	-122.6236	CP1	Detrital, n = 310
0619-MR-35	Sandstone	Great Valley Group	Grindstone Creek	39.6769	-122.5904	----------	Detrital, n = 312
0619-MR-36	Sandstone	Great Valley Group	Grindstone Creek	39.6758	-122.5855	GC1	Detrital, n = 305

Table 3.1. Outcrop sample locations in the northwestern Sacramento basin, northern California.

Table 3.2. Borehole locations in northern California and sample details.

Borehole Name	Sample Name	Sampled Depth Interval (feet)	Sample Description	Latitude (°N)	Longitude (°W)	API (Well Finder - CalGEM)	API_14 (California Well Sample Repository)	Material Sampled (California Well Sample Repository)	Box Number (California Well Sample Repository)
Martinez 25-2	CR-2	4075' - 4081'	Medium-coarse grained sandstone. Grey. Moderately sorted, subrounded. Some intervals are more mud-rich with green minerals and other lithics. Minor white shell fragments. Black fragments.	38.05290222	-121.0567551	0407700485	04077004850000	Whole Core	B3668
Martinez 25-2	CR-3	4175' - 4181'	Fine-coarse grained sandstone. Grey. Poorly sorted, subrounded.	38.05290222	-121.0567551	0407700485	04077004850000	Whole Core	B3668
Martinez 25-2	CR-7	4075' - 4077'	Very fine- coarse grained sandstone. Grey/light tan. Poorly sorted, subrounded.	38.05290222	-121.0567551	0407700485	04077004850000	Core chips	B1871
Martinez 25-2	CR-8	4107' - 4108'	Very fine -fine grained sandstone. Grey. Poorly sorted, subangular.	38.05290222	-121.0567551	0407700485	04077004850000	Core chips	B1871
Martinez 25-2	CR-9	4235' - 4236'	Fine- coarse grained sandstone. Grey. Poorly sorted, subangular.	38.05290222	-121.0567551	0407700485	04077004850000	Core chips	B1871
Dodge Land Co. 1	CR-12	7795' - 7820'	Fine- medium grained sandstone. Grey. Poorly sorted, subrounded. Shell hash. Some intervals contain more shell hash than others.	39.55045319	-121.8987503	0400700127	04007001270000	Core chips	B2020
Dodge Land Co. 1	CR-13	7820' - 7845'	Fine- medium grained sandstone. Grey. Poorly sorted, subrounded. Shell hash. Some intervals contain more shell hash than others.	39.55045319	-121.8987503	0400700127	04007001270000	Core chips	B2020
Jelly Bend 18-8	CR-18	6435' - 6445', 6750' - 6762', 6998' - 7008'	Siltstone, grey. Sporadic shell fragments, Black fragments. Opalized bits (?) have a rainbow shimmer. Very fine-grained sandstone. Crinoid or ammonite in 6435' - 6445' depth interval; bag for this depth interval.	40.37928772	-122.1166153	0410300186	04103001860000	Whole Core	A0917
Jelly Bend 18-8	CR-20	7094' - 7106'	Shale, dark grey. And very-fine grained tan sandstone.	40.37928772	-122.1166153	410300186	04103001860000	Whole Core	A0917
Buttes Community C-1	CR-27	6516' - 6534'	Granite. Quartz, biotite, feldspar grains observed.	39.25152969	-121.7991638	0410100284	04101002840000	Whole Core	B1762
Gorrill Land Co. 1-29	CR-28	4190' - 4430'	Fine grained sandstone. Grey.	39.56307602	-121.7782669	0400720061	04007200610000	Unwashed ditch samples	A1284
Gorrill Land Co. 1-29	CR-29	4430' - 4610'	Fine grained sandstone. Grey.	39.56307602	-121.7782669	0400720061	04007200610000	Unwashed ditch samples	A1284
Gorrill Land Co. 1-29	CR-30	4610' - 4790'	Fine grained sandstone. Grey.	39.56307602	-121.7782669	0400720061	04007200610000	Unwashed ditch samples	A1284

Table 3.2. Borehole locations in northern California and sample details.

Table 3.3. Summary of stratigraphic nomenclature of Upper Cretaceous strata of the Great Valley Group from previous studies and this study for borehole sampled depth intervals.

		AAPG Well Logs (1950s/60s)	*Williams (1997)*	*Orme and Graham (2018)*		*This Study*								
Sample	**Outcrop or Subsurface**	**Stratigraphic call. AAPG scanned well logs [See column A for source]**	**Williams (PhD) Strat Call [his based on Kirby (1943) and Moxon (1990)]**	**Strat Call (Orme and Graham, 2018; Figure 5)**	**Formation Tops, Surface Age (Table 1, Orme and Graham, 2018)**	**Max Sampled Depth (ft)**	**Sampled Depth Consistent with Orme and Graham?**	**U-Pb Analysis**	**Youngest Single Grain (YSG)**	**Youngest Cluster of 2 or more ages at 1σ(YC1σ 2+)**	**Youngest Cluster of 3 or more ages at 2σ(YC2σ 3+)**	**Number of grains used to calculate the MDA using the 2σ(YC2σ 3+) approach**	**Unit/Formation sampled based on DZ MDAs (This Study)**	**Likely sampled unit/formation in borehole**
Borehole samples														
Martinez borehole														
CR-2	Subsurface	Moreno Sh & Azevedo sands	Yolo Shale (Coniacian)	Dobbins (Campanian)	82.5	-4081	yes	Detrital, n= 313	43.3 ± 0.78 Ma	88.0 ± 0.37 Ma	**89.8 ± 0.22 Ma**	35	Yolo Sh/ Sites Ss/ Funks Sh/ Guinda Sh (Turonian-Coniacian-Santonian)	Yolo Sh/ Sites Ss/ Funks Sh/ Guinda Sh. (Turonian-Coniacian-Santonian)
CR-3	Subsurface	Moreno Sh & Azevedo sands	Yolo Shale (Coniacian)	Dobbins (Campanian)	82.5	-4181	yes	Detrital, n= 306	86.24 ± 1.07 Ma	87.39 ± 0.49 Ma	**88.56 ± 0.29 Ma**	12		
CR-7	Subsurface	Moreno Sh & Azevedo sands	Yolo Shale (Coniacian)	Dobbins (Campanian)	82.5	-4077	yes	Detrital, n= 312	43.2 ± 0.63 Ma	89.2 ± 0.34 Ma	**90.5 ± 0.22 Ma**	27		
CR-8	Subsurface	Moreno Sh & Azevedo sands	Funks Shale (Santonian)	Dobbins (Campanian)	82.5	-4108	yes	Detrital, n= 311	69.01 ± 1.52 Ma	84.34 ± 1.04 Ma	**85.86 ± 0.69 Ma**	4		
CR-9	Subsurface	Moreno Sh & Azevedo sands	Yolo Shale (Coniacian)	Dobbins (Campanian)	82.5	-4236	yes	Detrital, n= 300	86.01 ±. 1.32 Ma	87.62 ± 0.69 Ma	**89.44 ± 0.29 Ma**	16		
Dodge Land borehole														
CR-12	Subsurface	Unnamed. G-1 & G-2 Zones (upper K) [Yolo Sh - Sites ss - Funks sh outcrop	N/A (Williams only Upper K strata)	Sites (Coniacian)	86.4	-7820	yes	Detrital, n= 294	131.44 ± 1.56 Ma	139.59 ± 0.50 Ma	**135.15 ± 0.98 Ma**	3	Stony Creek Fm (Early Cretaceous)	Yolo Sh/ Sites Ss/ Funks Sh
CR-13	Subsurface	Unnamed. G-1 & G-2 Zones (upper K) [Yolo Sh - Sites ss - Funks sh outcrop	N/A (Williams only Upper K strata)	Sites (Coniacian)	86.4	-7845	yes	----------	----------	----------	----------	----------		Yolo Sh/ Sites Ss/ Funks Sh
Jelly Band borehole														
CR-18	Subsurface	**Venado equivalent	Yolo Shale (Coniacian)	Yolo (Turonian)	87.5	-7008	our sampled interval is deeper	Detrital, n= 314	86.18 ± 1.07 Ma	90.25 ± 0.40 Ma	**89.15 ± 0.46 Ma**	5	Yolo Sh/ Sites Ss (Turonian-Coniacian)	Yolo Sh/ Sites ss
CR-20	Subsurface	**Venado equivalent	N/A (Williams only Upper K strata)	Yolo (Turonian)	87.5	-7106	our sampled interval is deeper	Detrital, n= 157	131.84 ± 1.40 Ma	133.28 ± 0.41 Ma	**134.92 ± 0.26 Ma**	32	Stony Creek Fm (Early K)	Yolo Sh/ Sites ss
Buttes Community borehole														
CR-27	Subsurface	Guinda [overlying]	N/A	Guinda (Santonian) [overlying]	84	-6534	yes	Igneous, n= XX	----------	----------	----------	----------	Guinda Sh (Santonian)	Guinda overlying Granodiorite
Gorrill Land borehole														
CR-28	Subsurface	***Unnamed. E & E' Zones (Upper K) [unnamed Paleocene and Upper K sediments including Type "Kione" SS outcrop equivalent]	No formation name provided (Cenomanian)	Forbes (Campanian)	78.5	-4430	yes	Detrital, n= 307	94.35 ± 1.07 Ma	99.04 ± 0.49 Ma	**100.47 ± 0.37 Ma**	11	Salt Creek Cgl./ Fiske Creek/ (Antelope) Sh (Cenomanian-Turonian)	Salt Creek Cgl./ Fiske Creek/ (Antelope) Sh (Cenomanian-Turonian)
CR-29	Subsurface	***Unnamed. E & E' Zones (Upper K) [unnamed Paleocene and Upper K sediments including Type "Kione" SS outcrop equivalent]	Fiske Creek (Antelope) Shale (Turonian)	Forbes (Campanian)	78.5	-4610	yes	Detrital, n= 308	91.14 ± 1.18 Ma	94.54 ± 0.70 Ma	**93.63 ± 0.60 Ma**	3		
CR-30	Subsurface	***Unnamed. E & E' Zones (Upper K) [unnamed Paleocene and Upper K sediments including Type "Kione" SS outcrop equivalent]	N/A	Forbes (Campanian)	78.5	-4790	yes	----------	----------	----------	----------	----------		

Table 3.3. Summary of stratigraphic nomenclature of Upper Cretaceous strata of the Great Valley Group from previous studies and this study for borehole sampled depth intervals.

Table 3.4. Summary of calculated maximum depositional ages (MDAs) for outcrop and subsurface samples.

Sample	Sampled Unit	U-Pb Analysis	Youngest Single Grain (YSG)	Youngest Cluster of 2 or more ages at 1σ(YC1σ 2+)	Youngest Cluster of 3 or more ages at 2σ(YC2σ 3+)	Number of grains used to calculate the MDA using the 2σ(YC2σ 3+) approach
Borehole samples						
CR-2_7	Yolo Sh/ Sites Ss/ Funks Sh/ Guinda Sh	Detrital, n= 625	43.23 ± 0.63 Ma	43.25 ± 0.48 Ma	**89.37 ± 0.19 Ma**	39
CR-3	Yolo Sh/ Sites Ss/ Funks Sh/ Guinda Sh	Detrital, n= 306	86.24 ± 1.07 Ma	87.39 ± 0.49 Ma	**88.56 ± 0.29 Ma**	12
CR-8	Yolo Sh/ Sites Ss/ Funks Sh/ Guinda Sh	Detrital, n= 311	69.01 ± 1.52 Ma	84.34 ± 1.04 Ma	**85.86 ± 0.69 Ma**	4
CR-9	Yolo Sh/ Sites Ss/ Funks Sh/ Guinda Sh	Detrital, n= 300	86.01 ±. 1.32 Ma	87.62 ± 0.69 Ma	**89.44 ± 0.29 Ma**	16
CR-12	Yolo Sh/ Sites Ss/ Funks Sh	Detrital, n= 294	131.44 ± 1.56 Ma	139.59 ± 0.50 Ma	**135.15 ± 0.98 Ma**	3
CR-18	Yolo Sh/ Sites ss	Detrital, n= 314	86.18 ± 1.07 Ma	90.25 ± 0.40 Ma	**89.15 ± 0.46 Ma**	5
CR-20	Yolo Sh/ Sites ss	Detrital, n= 157	131.84 ± 1.40 Ma	133.28 ± 0.41 Ma	**134.92 ± 0.26 Ma**	32
CR-28	Salt Creek Cgl./ Fiske Creek/ (Antelope) Sh	Detrital, n= 307	94.35 ± 1.07 Ma	99.04 ± 0.49 Ma	**100.47 ± 0.37 Ma**	11
CR-29	Salt Creek Cgl./ Fiske Creek/ (Antelope) Sh	Detrital, n= 308	91.14 ± 1.18 Ma	94.54 ± 0.70 Ma	**93.63 ± 0.60 Ma**	3
Field samples						
0619-MR-16	Stony Creek Fm	Detrital, n= 305	142.4 ± 1.82 Ma	144.0 ± 1.14 Ma	**145.9 ± 0.54 Ma**	6
0619-MR-26	Ophiolitic breccia	Detrital, n= 102	160.3 ± 2.59 Ma	162.9 ± 0.56 Ma	**165.6 ± 0.23 Ma**	79
0619-MR-27	Ophiolitic breccia	Detrital, n= 71	134.2 ± 1.67 Ma	150.1 ± 0.7 Ma	**151.4 ± 0.53 Ma**	7
0619-MR-30	Stony Creek Fm	Detrital, n= 310	143.3 ± 1.13 Ma	144.6 ± 0.32 Ma	**145.9 ± 0.2 Ma**	42
0619-MR-35	Stony Creek Fm	Detrital, n= 312	138.1 ± 1.36 Ma	141.0 ± 0.43 Ma	**141.3 ± 0.36 Ma**	14
0619-MR-36	Stony Creek Fm	Detrital, n= 305	130.4 ± 1.0 Ma	142.0 ± 0.57 Ma	**143.0 ± 0.45 Ma**	8

Table 3.4. Summary of calculated maximum depositional ages (MDAs) for outcrop and subsurface samples.

Literature Cited

Ague, J.J., 1997, Thermodynamic calculation of emplacement pressures for batholithic rocks, California: Implications for the aluminum-in-hornblende barometer: Geology, v. 25, p. 563–566, doi: 10.1130/0091- 7613(1997)025<0563:TCOEPF>2.3.CO;2.

Allen, P. A., Allen, J. R., 2013, Basin Analysis: Principles and Application to Petroleum Play Assessment: Blackwell Publishing, Ltd., Oxford, p. 1-619.

Almgren, A.A., 1984, Timing of Tertiary submarine canyons and marine cycles of deposition in the southern Sacramento Valley, California, in Almgren, A.A., and Hacker, P.D., eds., Paleogene Submarine Canyons of the Sacramento Valley, California: Bakersfield, California, Pacific Section, American Association of Petroleum Geologists, p. 1–16.

American Association of Petroleum Geologists (Pacific Section) Committee on Stratigraphic Correlation, Sacramento Valley Subcommittee, 1954, Correlation Section Northern Sacramento Valley, California: Pacific Section American Association of Petroleum Geologists Correlation Section 6.

American Association of Petroleum Geologists (Pacific Section) Committee on Stratigraphic Correlation, Sacramento Valley Subcommittee, 1960, Correlation Section Longitudinally North–South through Sacramento Valley from Red Bluff to Rio Vista, California: Pacific Section American Association of Petroleum Geologists Correlation Section 13.

American Association of Petroleum Geologists (Pacific Section) Committee on Stratigraphic Correlation, Sacramento Valley Subcommittee, 1967, Correlation Section Sacramento Valley Winters to Modesto, California: Pacific Section American Association of Petroleum Geologists Correlation Section 16.

Ardill, K.A., Paterson, S.R., and Memeti, V., 2018, Spatiotemporal magmatic focusing in upper-mid crustal plutons of the Sierra Nevada arc: Earth and Planetary Science Letters, v. 498, p. 88–100, https://doi.org/10.1016/j.epsl.2018.06.023.

Armstrong, R.L., and Ward, P.L., 1993, Late Triassic to earliest Eocene magmatism in the North American Cordillera: Implications for the Western Interior Basin, in Caldwell, W.G.E., and Kauffman, E.G., eds., Evolution of the Western Interior Basin: Geological Association of Canada Special Paper 39, p. 49–72.

Attia, S., Paterson, S.R., Cao, W., Chapman, A.D., Saleeby, J., Dunne, G.C., Stevens, C.H., and Memeti, V., 2018, Late Paleozoic tectonic assembly of the Sierra Nevada prebatholithic framework and western Laurentian provenance links based on synthesized detrital zircon geochronology, in Ingersoll, R.V., Lawton, T.F., and Graham, S.A., eds., Tectonics, Sedimentary Basins, and Provenance: A Celebration of William R. Dickinson's Career:

Geological Society of America Special Paper 540, p. 267–295, https://doi.org/10.1130/2018.2540(12).

Attia, S., Cottle, J.M., and Paterson, S.R., 2020, The erupted zircon record of continental crust formation during mantle driven arc flare-ups: Geology, v. 48, no. 5, p. 446–451, https://doi.org/10.1130/G46991.1.

Atwater, T.M., 1970, Implications of plate tectonics for the Cenozoic tectonic evolution of western North America: Geological Society of America Bulletin, 81, 3513–3536.

Barton, M.D., 1990, Cretaceous magmatism, metamorphism, and metallogeny in the east-central Great Basin, in Anderson, J. L., editor, The Nature and Origin of Cordilleran Magmatism: Geological Society of America Memoir 174, p. 283–302.

Barton, M.D., Battles, D.A., Debout, G.E., Capo. R.C., Christensen, J.N., Davis, S.R., Hanson, R.B., Michelsen, C.J., and Trim, H.E., 1988, Mesozoic contact metamorphism in the western United States, in Ernst, W.G., ed., Metamorphism and Crustal Evolution of the Western United States, Rubey Volume 7: Englewood Cliffs, New Jersey, Prentice-Hall, p. 110–178.

Barton, M.D., Girardi, J.D., Kreiner, D.C., Seedorff, E., Zurcher, L., Dilles, J.H., Haxel, G.B., and Johnson, D.A., 2011, Jurassic igneous-related metallogeny of southwestern North America, in Steinger, R.L., and Pennell, B., eds., Great Basin Evolution and Metallogeny: Reno, Nevada, Geological Society of Nevada, p. 373–396.

Bateman, P.C., 1983, A summary of critical relations in the central part of the Sierra Nevada batholith, California, U.S.A., in Roddick, J.A., ed., Circum-Pacific Plutonic Terranes: Geological Society of America Memoir 159, p. 241–254, doi:10.1130/MEM159-p241.

Bateman, P.C., and Dodge, F.C.W., 1970, Variations of major chemical constituents across the central Sierra Nevada batholith: Geological Society of America Bulletin, v. 81, p. 409–420, doi:10.1130/0016-7606(1970)81[409:VOMCCA]2.0.CO;2.

Bateman, P.C., and Wahrhaftig, C., 1966, Geology of the Sierra Nevada, in Bailey, E.H., ed., Geology of north- ern California: California Division of Mines and Geology Bulletin, v. 190, p. 107–172.

Bernet, M., Zattin, M., Garver, J. I., Brandon, M. T., and Vance, J. A., 2001, Steady-state exhumation of the European Alps, Geology, 29, 35–38, doi:10.1130/0091-7613(2001)029<0035:sseote>2.0.co;2.

Bhattacharya, G., Robinson, D.M., and Orme, D.A., 2021, (U-Th)/He Thermochronology of the Indus Group, Ladakh, Northwest India: Is Neogene Cooling a Continental-Scale Thermal Event in the India-Asia Collision Zone?: Lithosphere, 1.

Bhattacharya, G., Robinson, D.M., and Orme, D.A., Najman, Y., and Carter, A., 2020, Low-temperature thermochronology of the Indus Basin in Central Ladakh, Northwest India: implications of Miocene-Pliocene cooling in the India-Asia collision zone: Tectonics, v. 39, no. 10, article e2020TC006333.

Bolhar, R., and Ring, U., 2001, Deformation history of the Yolla Bolly terrane at Leech Lake Mountain, Eastern Belt, Franciscan subduction complex, California Coast Ranges: Geological Society of America Bulletin, v. 113, p. 181–195, doi: 10.1130/0016-7606(2001)113<0181: DHOTYB>2.0.CO;2.

Bostick, N.H., 1974, Phytoclasts as indicators of thermal metamorphism, Franciscan assemblage and Great Valley sequence (upper Mesozoic), California: Special Paper Geological Society of America, 153, 1-17.

Brandon, M.T., Roden-Tice, M.K., and Garver, J.I., 1998, Late Cenozoic exhumation of the Cascadia accretionary wedge in the Olympic Mountains, northwest Washington State: Geological Society of America Bulletin, v. 110, p. 985–1009, doi: 10.1130/0016-7606(1998)110<0985: LCEOTC>2.3.CO;2.

Carrapa, B., DeCelles, P. G., and Romero, M., 2019, Early Inception of the Laramide Orogeny in Southwestern Montana and Northern Wyoming: Implications for Models of Flat-Slab Subduction. Journal of Geophysical Research: Solid Earth, 124(2), 2102-2123.

Castano, J. R., and Sparks, D. M., 1974, Interpretation of vitrinite reflectance measurements in sedimentary rocks and determination of burial histories using vitrinite reflectance and authigenic minerals: Special Paper Geological Society of America, 153, 31-52.

Cecil, M.R., Ducea, M.N., Reiners, P.W., and Chase, C.G., 2006, Cenozoic exhumation of the northern Sierra Nevada, California, from (U-Th)/He thermochronology: Geological Society of America Bulletin, v. 118, p. 1481–1488, doi:10.1130/B25876.1.

Cecil, M.R., Ferrer, M.A., Riggs, N.R., Marsaglia, K.M., Kylander-Clark, A., Ducea, M.N., and Stone, P., 2019, Early arc development recorded in Permian–Triassic plutons of the northern Mojave Desert region, California, USA: Geological Society of America Bulletin, v. 131, p. 749–765, https://doi.org/10.1130/B31963.1.

Chapman, A.D., Ernst, W.G., Gottlieb, E., Powerman, V., and Metzger, E.P., 2015, Detrital zircon geochronology of Neoproterozoic–Lower Cambrian passive-margin strata of the White-Inyo Range, east-central California: Implications for the Mojave–Snow Lake fault hypothesis: Geo- logical Society of America Bulletin, v. 127, no. 7–8, p. 926–944, https://doi.org/10.1130/B31142.1.

Chapman, A.D., Saleeby, J.B., Wood, D.J., Piasecki, A., Kidder, S., Ducea, M.N., and Farley,

K.A., 2012, Late Cretaceous gravitational collapse of the southern Sierra Nevada batholith, California: Geosphere, v. 8, p. 314– 341, doi:10.1130/GES00740.1.

Chen, J.H., and Moore, J.G., 1982, Uranium-lead isotopic ages from the Sierra Nevada batholith: Journal of Geophysical Research, v. 87, p. 4761–4784, doi:10.1029 /JB087iB06p04761.

Clark, M.K., Maheo, G., Saleeby, J., and Farley, K.A., 2005, The non-equilibrium landscape of the southern Sierra Nevada, California: GSA Today, v.15, no. 9, p. 4–10, doi: 10.1130/1052-5173(2005)015[4: TNLOTS]2.0.CO;2.

Clemens-Knott, D., and Saleeby, J.B., 1999, Impinging ring dike complexes in the Sierra Nevada batholith, California: Roots of the Early Cretaceous volcanic arc: Geological Society of America Bulletin, v. 111, p. 484–496. doi:10.1130/0016-7606(1999)111<0484:IRDCIT>2.3.CO;2

Cloos, M., 1985, Thermal evolution of convergent plate margins: Thermal modeling and reevaluation of isotopic Ar-ages for blueschists in the Franciscan Complex of California: Tectonics, 4, 421-433.

Cloos, M., and Shreve, R.L., 1988, Subduction-channel model of prism accretion, melange formation, sediment subduction, and subduction erosion at convergent plate margins, 1, Implications and discussion: Pure and Applied Geophysics, v. 128, p. 501–545.

Cole, R.B., and Basu, A.R., 1992, Middle Tertiary volcanism during ridge–trench interactions in western California: Science, 258, 793–796.

Cole, R.B., and Basu, A.R., 1995, Nd–Sr isotopic geochemistry and tectonics of ridge subduction and middle Cenozoic volcanism in western California: Geological Society of America Bulletin, 10, 167–179.

Coleman, D.S., and Glazner, A.F., 1997, The Sierra Crest magmatic event: Rapid formation of juvenile crust during the Late Cretaceous in California: International Geology Review, v. 39, p. 768–787, doi:10.1080 /00206819709465302.

Coutts, D.S., Matthews, W.A., and Hubbard, S.M., 2019, Assessment of widely used methods to derive depositional ages from detrital zircon populations: Geoscience Frontiers, https://doi.org/10 .1016/j.gsf.2018.11.002.

Cowan, D.S., and Bruhn, R.L., 1992, Late Jurassic to early Late Cretaceous geology of the U.S. Cordillera, in Burchfiel, B.C., Lipman, P.W., and Zoback, M.L., eds., The Cordilleran orogen: Conterminous U.S.: Boulder, Colorado, Geological Society of America, Geology of North America, v. G-3, p. 169–203.

Cowan, D.S., and Silling, R.M., 1978, A dynamic, scaled model of accretion at trenches and its

implications for the tectonic evolution of subduction complexes: Journal of Geophysical Research, v. 83, p. 5389–5396.

DeCelles, P.G., and Graham, S.A., 2015, Cyclical processes in the North American Cordilleran orogenic system: Geology, v. 43, p. 499–502, https://doi .org/10.1130/G36482.1.

DeGraaff-Surpless, K., Graham, S.A., Wooden, J.L., and McWilliams, M.O., 2002, Detrital zircon provenance analysis of the Great Valley Group, California: Evolution of an arc-forearc system: Geological Society of America Bulletin, v. 114, p. 1564–1580, https://doi.org/10.1130/0016 -7606(2002)114<1564:DZPAOT>2.0.CO;2.

Dickinson, W.R., 1995, Forearc basins, in Busby, C.J., and Ingersoll, R.V., eds., Tectonics of Sedimentary Ba- sins: Cambridge, Massachusetts, Blackwell Science, p. 221–261.

Dickinson, W.R., 1997, Tectonic implications of Cenozoic volcanism in coastal California: Geological Society of America Bulletin, 109, 936–954.

Dickinson, W.R., and Gehrels, G.E., 2009, U-Pb ages of detrital zircons in Jurassic eolian and associated sand- stones of the Colorado Plateau: Evidence for trans-continental dispersal and intraregional recycling of sediment: Geological Society of America Bulletin, v. 121, p. 408–433, doi:10.1130/B26406.1.

Dickinson, W.R., and Rich, E.I., 1972, Petrologic intervals and petrofacies in the Great Valley sequence, Sacramento Valley, California: Geological Society of America Bulletin, v. 83, p. 3007–3024, https://doi.org/10.1130/0016 -7606(1972)83[3007:PIAPIT]2.0.CO;2.

Dickinson, W.R., and Seely, D.R., 1979, Structure and stratigraphy of forearc regions: American Association of Petroleum Geologists Bulletin, v. 63, p. 2–31.

Dickinson, W.R., and Snyder, W.S., 1978, Plate tectonics of the Laramide orogeny, in Matthews, V., III, ed., Laramide Folding Associated with Basement Block Faulting in the Western United States: Geological Society of America Memoir 151, p. 355–366, https://doi.org/10.1130/MEM151-p355.

Dickinson, W.R., and Snyder, W.S., 1979, Geometry of subducted slabs related to San Andreas transform: Journal of Geology, 87, 609–627.

Dickinson, W.R., Ingersoll, R.V., and Graham, S.A., 1979, Paleogene sediment dispersal and paleotectonics in northern California: Geological Society of America Bulletin, v. 90, summary in Part I, p. 897-898, text in Part II, p. 1458-1528.

Dodson, M.H., 1973, Closure temperature in cooling geochronological and petrological systems: Contributions to Mineralogy and Petrology, v. 40, p. 259–274, doi: 10.1007/BF00373790.

Ducea, M., 2001, The California arc: Thick granitic batholiths, eclogitic residues, lithospheric-scale thrusting, and magmatic flare-ups: GSA Today, v. 11, no. 11, p. 4–10, https://doi.org/10.1130/1052-5173(2001)011<0004:TCA TGB>2.0.CO;2.

Dumitru, T. A., 1988, Subnormal geothermal gradients in the Great Valley forearc basin, California, during Franciscan subduction: A fission track study: Tectonics, 7, 1201-1221.

Dumitru, T.A., 1989, Constraints on uplift of the Franciscan subduction complex from apatite fission track analysis: Tectonics, v. 8, p. 197–220.

Dumitru, T.A., 1990, Subnormal Cenozoic geothermal gradients in the extinct Sierra Nevada magmatic arc: Consequences of Laramide and post-Laramide shallow-angle subduction: Journal of Geophysical Research, v. 95, p. 4925–4941.

Dunne, G.C., and Suczek, C.A., 1991, Early Paleozoic eugeoclinal strata in the Kern Plateau pendants, southern Sierra Nevada, California, in Cooper, J.D., and Stevens, C.H., eds., Paleozoic Paleogeography of the Western United States: Los Angeles, California, Pacific Section, Society of Economic Paleontologists and Mineralogists (Book 67), p. 677–692.

D' Onfro, P.S., and Glagola, P., 1983, Wrench fault, Southeast Asia, in Bally, A.W., ed., Seismic expression of structural styles; a picture and work atlas, v. 3: American Association of Petroleum Geologists Studies in Geology, v. 15, p. 4.2–9–4.2–12.

Engebretson, D.C., Cox, A., and Gordon, R.G., 1985, Relative motions between oceanic and continental plates in the Pacific Basin: Geological Society of America Special Paper 206, 59 p.

Ernst, W.G., 1975, Systematics of large-scale tectonics and age progressions in Alpine and circum-Pacific blueschist belts: Tectonophysics, v. 26, p. 229–246, doi: 10.1016/0040-1951(75)90092-X.

Evernden, J.F., and James, G.T., 1964, Potassium-argon dates and Tertiary flora of North America: American Journal of Science, v. 262, p. 945–974.

Farley, K.A., 2000, Helium diffusion from apatite: General behavior as illustrated by Durango fluorapatite: Journal of Geophysical Research, v. 105, p. 2903–2914, doi: 10.1029/1999JB900348.

Farley, K.A., 2002, (U-Th)/He dating: Techniques, calibrations and applications, in Porcelli, D.P., Ballentine, C.J., and Wieler, R., Noble gases in geochemistry and cosmochemistry: Reviews in Mineralogy and Geo- chemistry, v. 47, p. 819–844.

Finzel, E.S., Gillis, R.J., Ridgway, K.A., and LePain, D.L., 2009, Preliminary Evaluation of

Basin Margin Exhumation and Provenance of Cenozoic Strata, Chuitna and Beluga Rivers Area, Cook Inlet Forearc Basin, Alaska: Alaska Division of Geological and Geophysical Surveys Preliminary Interpretive Report 2009-4, p. 1–20.

Flowers, R.M., Ketcham, R.A., Shuster, D.L., Farley, K.A., 2009, apatite (U-Th)/He thermochronometry using a radiation damage accumulation and annealing model: Geochimica et Cosmochimica Acta, 73, 2347-2365.

Fox, M., and Shuster, D. L., 2014, The influence of burial heating on the (U-Th)/He system in apatite: Grand Canyon case study: Earth and Planetary Science Letters, vol. 397, pp. 174–183.

Fox, K.F., Fleck, R.J., Curtis, G.H., and Meyer, C.E., 1985, Implications of the northwestwardly younger age of the volcanic rocks of west-central California: Geological Society of America Bulletin, 96, 647–654.

Garcia, R., 1981, Depositional systems and their relationship to gas accumulation in the S acramento Valley, California: American Association of Petroleum Geologists Bulletin, v. 65, p. 653–673.

Garver, J. I., Brandon, M. T., Roden-Tice, M., and Kamp, P. J. J., 1999, Exhumation history of orogenic highlands determined by detrital fission-track thermochronology: Geological Society of London, Special Publication, 154, 283–304, doi:10.1144/gsl.sp.1999.154.01.13.

Gehrels, G.E., 2000, Introduction to the detrital zircon studies of Paleozoic and Triassic strata in western Nevada and northern California, in Soreghan, M.J., and Gehrels, G.E., eds., Paleozoic and Triassic Paleogeography and Tectonics of Western Nevada and Northern California: Geological Society of America Special Paper 347, p. 1–17, https://doi.org/10.1130/0-8137-2347-7.1.

Gehrels, G., 2012, Detrital zircon U-Pb geochronology: Current methods and new opportunities, in Busby, C., and Azor, A., eds., Tectonics of Sedimentary Basins: Recent Advances: Chichester, John Wiley & Sons, p. 47–62, doi:10.1002/9781444347166.ch2.

Gehrels, G.E., and Pecha, M., 2014, Detrital zircon U-Pb geochronology and Hf isotope geochemistry of Paleozoic and Triassic passive margin strata of western North America: Geosphere, v. 10, p. 49–65, https://doi.org/10.1130/GES00889.1.

Gehrels, G.E., Valencia, V.A., and Ruiz, J., 2008, Enhanced precision, accuracy, efficiency, and spatial resolution of U-Th-Pb ages by LA-MC-ICPMS: Geochemistry, Geophysics, Geosystems, v. 9, Q03017, doi:10.1029 /2007GC001805.

Graham, S.A., 1981, Stratigraphic and depositional patterns and hydrocarbon occurrence,

Sacramento Valley, California, in Graham, S.A., ed., Field Guide to the Mesozoic–Cenozoic Convergent Margin of Northern California: Bakersfield, California, Pacific Section, American Association of Petroleum Geologists, Book 50, p. 43–58.

Graham, S.A., 1987, Tectonic controls on petroleum occurrence in central California, in Ingersoll, R.V., and Ernst, W.G., eds., Cenozoic Basin Development of Coastal California: Englewood Cliffs, New Jersey, Prentice-Hall, p. 47–63.

Graham, S.A., McCloy, C., Hitzman, M., Ward, R., and Turner, R., 1984, Basin evolution during change from convergence to transform continental margin in central California: American Association of Petroleum Geologists Bulletin, v. 68, p. 233–349.

Green, P. F., Duddy, I. R., Gleadow, A. J., and Lovering, J. F., 1989, Apatite fission-track analysis as a paleotemperature indicator for hydrocarbon exploration. In Thermal history of sedimentary basins (pp. 181-195). Springer, New York, NY.

Guenthner, W.R., Reiners, P.W., Ketcham, R.A., Nasdala, L., Giester, G., 2013, Helium Diffusion in Natural Zircon: Radiation Damage, Anisotropy, and the Interpretation of Zircon (U-Th)/He Thermochronology: American Journal of Science, 313, 145-198.

Hamilton, W., 1969, Mesozoic California and the underflow of Pacific mantle: Geological Society of America Bulletin, v. 80, p. 2409–2430.

Hanson, R.E., Saleeby, J., and Schweickert, R.A., 1988, Composite Devonian island-arc batholith in the northern Sierra Nevada, California: Geological Society of America Bulletin, v. 100, p. 446–457, doi: 10.1130/0016-7606(1988)100<0446:CDIABI>2.3.CO;2.

Harding, T.P., 1983, Structural inversion at Rambutan oil field, South Sumatra Basin, in Bally, A.W., ed., Seismic expression of structural styles; a picture and work atlas, v. 3: American Association of Petroleum Geologists Studies in Geology, v. 15, p. 3.3-13–3.3-18.

Harding, T.P., Vierbuchen, R.C., and Christie-Blick, N., 1985, Structural styles, plate-tectonic settings, and hydrocarbon traps of divergent (transtensional) wrench faults, in Biddle, K.T., and Christie-Blick, N., eds., Strike-slip deformation, basin formation, and sedimentation: Society of Economic Paleontologists and Mineralogists Special Publication, v. 37, p. 51–77.

Harwood, D.S., and Helley, E.J., 1987, Late Cenozoic tectonism of the Sacramento Valley, California: U.S. Geological Survey Professional Paper 1359, 46 p.

Henderson, L.J., Gordon, R.G., and Engebretson, D.C., 1984, Mesozoic aseismic ridges on the

Farallon plate and southward migration of shallow subduction during the Laramide orogeny: Tectonics, v. 3, p. 121–132, doi: 10.1029/TC003i002p00121.

Heasler, H. P., and R. C. Surdam, 1985, Thermal evolution of coastal California with Application to hydrocarbon maturation: American Association of Petroleum Geologists Bulletin, 69, 1386-1400.

Hessler, A.M., and Sharman, G.R., 2018, Subduction zones and their hydrocarbon systems: Geosphere, v. 14, p. 2044–2067, https://doi.org/10.1130/GES01656.1

Hourigan, J.K., Reiners, P.W., Brandon, M.T., 2005, U-Th zonation-dependent alpha-ejection in (U-Th)/He chronometry: Geochimica et Cosmochimica Acta, 69, 3349-3365.

House, M.A., Wernicke, B.P., Farley, K.A., and Dumitru, T.A., 1997, Cenozoic thermal evolution of the central Sierra Nevada, California, from (U-Th)/He thermochronometry: Earth and Planetary Science Letters, v. 151, p. 167–179, doi: 10.1016/S0012-821X(97)81846-8.

House, M.A., Wernicke, B.P., and Farley, K.A., 1998, Dating topography of the Sierra Nevada, California, using apatite (U-Th)/He ages: Nature, v. 396, p. 66–69, doi: 10.1038/23926.

House, M.A., Wernicke, B.P., and Farley, K.A., 2001, Paleo-geomorphology of the Sierra Nevada, California, from (U-Th)/He ages in apatite: American Journal of Science, v. 301, p. 77–102, doi:10.2475/ajs.301.2.77.

Howard, K.A., Wooden, J.L., Barnes, C.G., Premo, W.R., Snoke, A.W., and Lee, S.Y., 2011, Episodic growth of a Late Cretaceous and Paleogene intrusive complex of pegmatitic leucogranite, Ruby Mountains core complex, Nevada, U.S.A.: Geological Society of America Bulletin, v. 7, p. 1220–1248, doi:10.1130/GES00668.1.

Imperato, D.P., Nilsen, T.H., and Moore, D.W., 1990, Regional stratigraphy of the mud-rich turbidite system of the Forbes Formation, Sacramento Basin, California, in Ingersoll, R.V., and Nilsen, T.H., eds., Sacramento Valley symposium and guidebook: Society of Economic Paleontologists and Mineralogists, Pacific Section, v. 65, p. 69–79.

Ingersoll, R.V., 1976, Evolution of the Late Cretaceous Forearc Basin of Northern and Central California [Ph.D. thesis]: Stanford, California, Stanford University, 200 p.

Ingersoll, R.V., 1979, Evolution of the Late Cretaceous forearc basin, northern and central California: Geological Society of America Bulletin, v. 90, p. 813–826, https://doi.org/10.1130/0016-7606(1979)90<813:EOTLCF >2.0.CO;2.

Ingersoll, R.V., 1982, Initiation and evolution of the Great Valley forearc basin of northern and

central California, U.S.A., in Leggett, J.K., ed., Trench- Forearc Geology: Sedimentation and Tectonics on Modern and Ancient Active Plate Margins: Geological Society, London, Special Publication 10, p. 459–467, https://doi.org/10.1144/GSL.SP.1982.010.01.31.

Ingersoll, R.V., Rich, E.I., and Dickinson, W.R., 1977, Great Valley Sequence, Sacramento Valley: Geological Society of America, Cordilleran Section, Field Guidebook, p. 1-72.

Irwin, W.P., and Wooden, J.L., 2001, Map Showing Plutons and Accreted Terranes of the Sierra Nevada, California with a Tabulation of U/Pb Isotopic Ages: U.S. Geological Survey Open-File Report 2001-229, scale 1:1,000,000.

Jayko, A.S., Blake, M.C., Jr., and Harms, T., 1987, Attenuation of the Coast Range ophiolite by extensional faulting, and nature of the Coast Range "thrust": Tectonics, v. 6, p. 475–488.

Johnson, C.M., and O'Neil, J.R., 1984, Triple junction magmatism: a geochemical study of Neogene volcanic rocks in western California: Earth and Planetary Science Letters, 71, 241–262.

Ketcham, R. A., 2005, Forward and inverse modeling of low-temperature thermochronometry data, in Reviews in Mineralogy and Geochemistry, Min. Soc. Am., vol. 58, edited by P. W. Reiners and T. A. Ehlers, pp. 275–314, Min. Soc. Am., Chantilly, Virginia.

Kirby, J.M., 1943, Upper Cretaceous stratigraphy of west side of Sacramento Valley south of Willows, Glenn County, California: American Association of Petroleum Geologists Bulletin, v. 27, p. 279–305.

Kirsch, M., Paterson, S.R., Wobbe, F., Ardila, A.M.M., Clausen, B.L., and Alasino, P.H., 2016, Temporal histories of Cordilleran continental arcs: Testing models for magmatic episodicity: The American Mineralogist, v. 101, p. 2133–2154, https://doi.org/10.2138/am-2016-5718.

Lackey, J.S., Cecil, M.R., Windham, C.J., Frazer, R.E., Bindeman, I.N., and Gehrels, G.E., 2012, The Fine Gold Suite: The roles of basement terranes and magma source development in the Early Cretaceous Sierra Nevada batholith: Geosphere, 8, 292–313.

Liu, L., Gurnis, M., Seton, M., Saleeby, J., Muller, R.D., and Jackson, J.M., 2010, The role of oceanic plateau subduction in the Laramide orogeny: Nature Geoscience, v. 3, p. 353–357, doi:10.1038/ngeo829.

Livaccari, R.F., Burke, K., and Sengor, A.M.C., 1981, Was the Laramide orogeny related to subduction of an oceanic plateau?: Nature, v. 289, p. 276–278, doi:10.1038 /289276a0.

Mattinson, J.M., and Hopson, C.A., 2008, this volume, New high-precision CA-TIMS U-Pb

zircon plateau ages for the Point Sal and San Simeon ophiolite remnants, California Coast Ranges, in Wright, J.E., and Shervais, J.W., eds., Ophiolites, Arcs, and Batholiths: A Tribute to Cliff Hopson: Geological Society of America Special Paper 438, doi: 10.1130/2008.2438(02).

McCrory, P.A., Wilson, D.S., and Stanley, R.G., 2009, Continuing Evolution of the Pacific-Juan de Fuca-North America Slab: Tectonophysics, 464, 30–42.

McDowell, F.W., McIntosh, W.C., Farley, K.A., 2005, A precise ^{40}Ar-^{39}Ar reference age for the Durango apatite (U-Th)/He and fission-track dating standard: Chemical Geology, 214, 249-263.

McGuire, D.J., 1988, Stratigraphy, depositional history and hydrocarbon source-rock potential of the Upper Cretaceous-Lower Tertiary Moreno Formation, central San Joaquin basin, California: Ph.D. Dissertation, Stanford University, 231 p.

Memeti, V., Gehrels, G.E., Paterson, S.R., Thompson, J.M., Mueller, R., and Pignotta, M., 2010, Evaluating the Mojave-Snow Lake fault hypothesis and origins of central Sierran metasedimentary pendant strata using detrital zircon provenance analyses: Lithosphere, v. 2, p. 341–360, https://doi.org/10.1130/L58.1.

Mitchell, C., Graham, S.A., and Suek, D.H., 2010, Subduction complex uplift and exhumation and its influence on Maastrichtian forearc stratigraphy in the Great Valley Basin, northern San Joaquin Valley, California: Geological Society of America Bulletin, v. 122, p. 2063–2078, https://doi.org/10.1130/B30180.1

Moxon, I.W., 1988, Sequence stratigraphy of the Great Valley basin in the con- text of convergent margin tectonics, in Graham, S.A., ed., Studies of the Geology of the San Joaquin Basin: Bakersfield, California, Pacific Section, Society of Economic Paleontologists and Mineralogists, Field Trip Guidebook 60, p. 3–28.

Moxon, I.W., 1990, Stratigraphic and Structural Architecture of the San Joaquin–Sacramento Basin [Ph.D. thesis]: Stanford, California, Stanford University, 371 p.

Murray, K.E., Orme, D.A., and Reiners, P.W., 2014, Effects of U-Th-rich grain boundary phases on apatite helium ages: Chemical Geology, 390, 135-151.

Nilsen, T.H., 1990, Santonian, Campanian, and Maastrichtian depositional systems, Sacramento basin, California, in Ingersoll, R.V., and Nilsen, T.H., eds., Sacramento Valley Symposium and Guidebook: Bakersfield, California, Pacific Section, Society of Economic Paleontologists and Mineralogists, Book 65, p. 95–132.

Orme, D. A., 2017, Burial and exhumation history of the Xigaze forearc basin, Yarlung suture zone, Tibet: Geoscience Frontiers, 10, 895-908.

Orme, D.A., and Graham, S.A., 2018, Four-dimensional model of Cretaceous depositional geometry and sediment flux in the northern Great Valley forearc, California, in Ingersoll, R.V., Lawton, T.F., and Graham, S.A., eds., Tectonics, Sedimentary Basins, and Provenance: A Celebration of William R. Dickinson's Career: Geological Society of America Special Paper 540, https://doi.org/10.1130/2018.2540(18).

Orme, D. A., and Surpless, K. D., 2019, The birth of a forearc: The basal Great Valley Group, California, USA. Geology.

Paterson, S.R., and Ducea, M.N., 2015, Arc magmatic tempos: Gathering the evidence: Elements, v. 11, no. 2, p. 91–98, https://doi.org/10.2113/ gselements.11.2.91.

Paterson, S.R., Okaya, D., Memeti, V., Economos, R., and Miller, R.B., 2011, Magma addition and flux calculations of incrementally constructed magma chambers in continental margin arcs: Combined field, geochronologic, and thermal modeling studies: Geosphere, v. 7, p. 1439–1468, doi:10.1130 /GES00696.1.

Patiño Douce, A.E., Humphreys, E.D. and Johnston, A.D., 1990, Anatexis and metamorphism in tectonically thickened continental crust exemplified by the Sevier hinterland, western North America: Earth and Planetary Science Letters, v. 97, p. 290– 315, doi:10.1016/0012-821X(90)90048-3.

Pepper, M. W., 1984, The Martinez Submarine Canyon Southern Sacramento Valley, California, in Almgren, A.A., and Hacker, P.D., eds., Paleogene submarine canyons of the Sacramento Valley, California: Los Angeles, California, Pacific Section, American Association of Petroleum Geologists, p. 17-25.

Platt, J.P., 1975, Metamorphic and deformational processes in the Franciscan complex, California: Some insights from the Catalina Schist terrane: Geological Society of America Bulletin, v. 86, p. 1337–1347, doi: 10.1130/0016-7606(1975)86<1337:MADPIT>2.0.CO;2.

Platt, J.P., 1986, Dynamics of orogenic wedges and uplift of high-pressure metamorphic rocks: Geological Society of America Bulletin, v. 97, p. 1037–1053, doi: 10.1130/0016-7606(1986)97<1037:DOOWAT>2.0.CO;2.

Portnyagin, M., Hoernle, K., Avdeiko, G., Hauff, F., Werner, R., Bindeman, I., Uspensky, V., Garbe-Schönberg, 2005, Transition from arc to oceanic magmatism at the Kamchatka–Aleutian junction: Geology, 33, 25–28.

Powell, R. E., Weldon, R. J., and Matti, J C., 1993, The San Andreas fault system: Displacement, palinspastic reconstruction, and geologic evolution: Geological Society of America, v. 178.

Pullen, A., Ibanez-Mejia, M., Gehrels, G., Giesler, D., and Pecha, M., 2018, Optimization of a l aser ablation–single collector–inductively coupled plasma–mass spectrometer (Thermo Element 2) for accurate, precise, and efficient zircon U-Th-Pb geochronology: Geochemistry, Geophysics, Geosystems, v. 19, p. 3689–3705, https://doi.org/10.1029/2018GC007889.

Pullen, A., Ibáñez-Mejía, M., Gehrels, G. E., Ibáñez-Mejía, J. C., and Pecha, M., 2014, What happens when n= 1000? Creating large-n geochronological datasets with LA-ICP-MS for geologic investigations. Journal of Analytical Atomic Spectrometry, 29(6), 971-980.

Redwine, L.E., 1984, Tertiary Princeton submarine valley system beneath the Sacramento Valley, California, in Almgren, A.A., and Hacker, P.D., eds., Paleogene submarine canyons of the Sacramento Valley, California: Los Angeles, California, Pacific Section, American Association of Petroleum Geologists, p. 53–80.

Reiners, P.W., Zanetti, K.A., Spell, T.L., and Nicolescu, S., 2004, Zircon (U-Th)/He thermochronometry: He diffusion and comparisons with $^{40}Ar/^{39}Ar$ dating: Geochimica et Cosmochimica Acta, v. 68, p. 1857–1887, doi: 10.1016/j.gca.2003.10.021.

Ring, U., and Brandon, M.T., 1994, Kinematic data for the Coast Range fault and implications for exhumation of the Franciscan subduction complex: Geology, v. 22, p. 735–738, doi: 10.1130/0091-7613(1994)022<0735: KDFTCR>2.3.CO;2.

Ring, U., and Richter, P.P., 2004, Normal faulting at convergent plate boundaries: Mylonitic extensional fabrics in the Franciscan subduction complex in Del Puerto Canyon, California, revisited: Tectonics, v. 23, p. TC2006, doi: 10.1029/2002TC001476.

Roy, R. F., Blackwell, D. D., and Decker, E. R., 1972, Continental heat flow: Nature of the Solid Earth, edited by Robertson, E. C., McGraw-Hill, New York, pp. 506-543.

Saleeby, J., 1990, Progress in tectonic and petrogenetic studies in an exposed cross-section of young (approximately 100Ma) continental crust, southern Sierra Nevada, California, in Salisbury, M.H., and Fountain, D.M., eds., Exposed cross-sections of the continental crust; Proceedings, North Atlantic Treaty Organization (NATO) ASI Series C: Mathematical and Physical Sciences: Dordrecht-Boston, International, D. Reidel Publishing Company, p. 137–158.

Saleeby, J., 2003, Segmentation of the Laramide slab—Evidence from the southern Sierra Nevada region: Geological Society of America Bulletin, v. 115, p. 655–668, doi:10.1130/0016-7606(2003)115<0655:SOTLSF>2.0 .CO;2.

Saleeby, J., 2011, Geochemical mapping of the Kings-Kaweah ophiolite belt, California—

Evidence for progressive mélange formation in a large offset transform-subduction initiation environment, in Wakabayashi, J., and Dilek, Y., eds., Mélanges: Processes of Formation and Societal Significance: Geological Society of America Special Paper 480, p. 31–73, https://doi.org/10.1130/2011.2480(02).

Saleeby, J.B., and Busby, C., 1993, Paleogeographic and tectonic setting of axial and western metamorphic framework rocks of the southern Sierra Nevada, California, in Dunne, G., and McDougall, K., eds., Mesozoic Paleogeography of the Western United States—II: Los Angeles, California: Pacific Section, Society of Economic Paleontologists and Mineralogists Book 71, p. 197–225.

Saleeby, J.B., and Busby-Spera, C., 1992, Early Mesozoic tectonic evolution of the western U.S. Cordillera, in Burchfiel, B.C., Lipman, P.W., and Zoback, M.L., eds., The Cordilleran orogen: Conterminous U.S.: Boulder, Colorado, Geological Society of America, Geology of North America, v. G-3, p. 107–168.

Saleeby, J.B., and Dunne, G., 2015, Temporal and tectonic relations of early Mesozoic arc magmatism, southern Sierra Nevada, California, in Anderson, T.H., Didenko, A.N., Johnson, C.L., Khanchuk, A.I., and MacDonald, J.H., Jr., eds., Late Jurassic Margin of Laurasia— A Record of Faulting Accommodating Plate Rotation: Geological Society of America Special Paper 513, p. 223–268, https://doi.org/10.1130/2015.2513(05).

Saleeby, J., Farley, K.A., Kistler, R.W., and Fleck, R., 2007, Thermal evolution and exhumation of deep-level batholithic exposures, southernmost Sierra Nevada, California, in Cloos, M., Carlson, W.D., Gilbert, M.C., Liou, J.G., and Sorensen, S.S., eds., Convergent Margin Terranes and Associated Regions: A Tribute to W.G. Ernst: Geological Society of America Special Paper 419, p. 39–66, doi:10.1130/2006.2419(01).

Saleeby, J., Geary, E.E., Paterson, S.R., and Tobisch, O.T., 1989, Isotopic systematics of Pb/U (zircon) and $^{40}Ar/^{39}Ar$ (biotite- hornblende) from rocks of the central Foothills terrane, Sierra Nevada, California: Geological Society of America Bulletin, v. 101, p. 1481–1492, doi: 10.1130/0016- 7606(1989)101<1481:ISOPUZ>2.3.CO;2.

Scheirer, A.H., Tennyson, M.E., Magoon, L.B., Charpentier, R.R., Cook, T.A., Klett, T.R., Pollastro, R.M., and Schenk, C.J., 2007, Assessment of Undiscovered Natural Gas Resources of the Sacramento Basin Province of California, 2006: U.S. Geological Survey Fact Sheet 2007-3014, 2 p.

Schmitz, M.D., Bowring, S.A., 2001, U-Pb zircon and titanite systematics of the Fish Canyon Tuff: an assessment of high precision U-Pb geochronology and its application to young volcanic rocks: Geochimica et Cosmochimica Acta, 65, 2571-2587.

Schwartz, T. M., Schwartz, R. K., and Weislogel, A. L., 2019, Orogenic recycling of detrital

zircons characterizes age distributions of North American Cordilleran strata: Tectonics, 38, 4320-4334. https://doi.org/10.1029/2019TC005810

Schweickert, R.A., and Lahren, M.M., 1993, Tectonics of the east-central Sierra Nevada-Saddle-bag Lake and northern Ritter Range pendants, in Lahren, M.M., Trexler, J.H., and Spinoza, C., eds., Crustal Evolution of the Great Basin and the Sierra Nevada: Reno, Nevada, Geological Society of America Field Trip Guidebook, May 1993, Department of Geological Sciences, University of Nevada, p. 313–352.

Sharman, G. R., Graham, S. A., Grove, M., Kimbrough, D. L., and Wright, J. E., 2015, Detrital zircon provenance of the Late Cretaceous–Eocene California forearc: Influence of Laramide low-angle subduction on sediment dispersal and paleogeography. Bulletin, 127(1-2), 38-60.

Sharman, G.R., Sharman, J.P., and Sylvester, Z., 2018, detritalPy: A Python-based toolset for visualizing and analysing detrital geo-thermochronologic data: The Depositional Record, v. 4, p. 202–215, https://doi.org/10.1002/dep2.45.

Shervais, J.W., Murchey, B.L., Kimbrough, D.L., Renne, P.R., and Hanan, B., 2005, Radioisotopic and biostratigraphic age relations in the Coast Range ophiolite, northern California: Implications for the tectonic evolution of the Western Cordillera: Geological Society of America Bulletin, v. 117, p. 633–653, https://doi.org/10.1130/B25443.1.

Shreve, R. L., and Cloos, M., 1986, Dynamics of sediment subduction, melange formation, and prism accretion: Journal of Geophysical Research: Solid Earth, 91(B10), 10229-10245.

Sims, J.D., Fox Jr, K.F., Bartow, J.A., and Helley, E.J., 1973, Preliminary geologic map of Solano County and parts of Napa, Contra Costa, Marin, and Yolo Counties, California: U.S. Geological Survey Miscellaneous Field Study Map, MF-484.

Snoke, A.W., Sharp, W.D., Wright, J.E., and Saleeby, J., 1982, Significance of mid-Mesozoic peridotitic to dioritic intrusive complexes, Klamath Mountains, western Sierra Nevada, California: Geology, v. 10, p. 160–166, doi: 10.1130/0091-7613(1982)10<160:SOMPTD>2.0.CO;2.

Stanley, R.G., 1987, Implications of the northwestwardly younger age of the volcanic rocks of west-central California: alternative interpretations: Geological Society of America Bulletin, 98, 612–614.

Stevens, C.H., and Greene, D.C., 1999, Stratigraphy, depositional history, and tectonic evolution of Paleozoic continental-margin rocks in roof pendants of the eastern Sierra Nevada, California: Geological Society of America Bulletin, v. 111, p. 919–933, https://doi.org/10.1130/0016-7606 (1999)111<0919:SDHATE>2.3.CO;2.

Stevens, C.H., Stone, P., and Miller, J.S., 2005, A new reconstruction of the Paleozoic continental margin of southwest North America: Implications for the nature and timing of continental truncation and the possible role of the Mojave-Sonora megashear, in Anderson, T.H., Nourse, J.A., McKee, J.W., and Steiner, M.B., eds., The Mojave-Sonora Megashear Hypothesis: Development, Assessment, and Alternatives: Geological Society of America Special Paper 393, p. 597–618.

Stone, P., and Stevens, C.H., 1988, An angular unconformity in the Permian section of east-central California: Geological Society of America Bulletin, v. 100, p. 547–551, https://doi.org/10.1130 /0016-7606(1988)100<0547:AAUITP>2.3.CO;2.

Suchecki, R. K., and L. S. Land, 1983. Isotopic geochemistry of burial-metamorphosed volcanogenic sediments, Great Valley sequence, northern California, Geochim. Cosmochim. Acta, 47, 1487-1499, 1983.

Surpless, K.D., Graham, S.A., Covault, J.A., and Wooden, J.L., 2006, Does the Great Valley Group contain Jurassic strata? Reevaluation of the age and early evolution of a classic forearc basin: Geology, v. 34, p. 21–24, https:// doi.org/10.1130/G21940.1.

Sweetkind, D.S., Rytuba, J.J., Langenheim, V.E., and Fleck, R.J., 2011, Geology and geochemistry of volcanic centers within the eastern half of the Sonoma volcanic field, northern San Francisco Bay region, California: Geosphere, v. 7, p. 629–657, doi:10.1130/GES00625.1.

Tagami, T., and Dumitru, T.A., 1996, Provenance and thermal history of the Franciscan accretionary complex: constraints from zircon fission track thermochronology: Journal of Geophysical Research, v. 101, p. 11,353-11,364.

Trop, J.M., Szuch, D.A., Rioux, M., and Blodgett, R.B., 2005, Sedimentology and provenance of the upper Jurassic Naknek formation, Talkeetna Mountains, Alaska: Bearings on the accretionary tectonic history of the Wrangellia composite terrane: Geological Society of America Bulletin, v. 117, no. 5–6, p. 570–588, doi:10.1130/B25575.1.

Unruh, J.R., Dumitru, T.A., and Sawyer, T.L., 2007, Coupling of early Tertiary extension in the Great Valley forearc basin with blueschist exhumation in the underlying Franciscan accretionary wedge at Mount Diablo, California: Geological Society of America Bulletin, v. 119, p. 1347–1367, doi: 10.1130/B26057.1.

Vermeesch, P., Miller, D.D., Graham, S.A., Grave, J.D., and McWilliams, M.O., 2006, Multimethod detrital thermochronology of the Great Valley Group near New Idria, California: Geological Society of America Bulletin, v. 118, p. 210–218, https://doi.org/10.1130/B25797.1.

Williams, H., and Curtis, G. H., 1977, The Sutter Buttes of California; a study of Plio-

Pleistocene volcanism: University of California Publications in Geology Series, v. 116, 56 p.

Williams, T.A., 1997, Basin-Fill Architecture and Forearc Tectonics, Cretaceous Great Valley Group, Sacramento Basin, Northern California [Ph.D. thesis]: Stanford, California, Stanford University, 412 p.

Williams, T.A., and Graham, S.A., 2013, Controls on forearc basin architecture from seismic and sequence stratigraphy of the Upper Cretaceous Great Valley Group, central Sacramento Basin, California: International Geology Review, v. 55, p. 2030–2059, https://doi.org/10.1080/00206814 .2013.817520.

Wilson, D.S., McCrory, P.A., and Stanley, R.G., 2005, Implications of volcanism in coastal California for the Neogene deformation history of western North America: Tectonics, 24, TC3008.

Wolf, R. W., Farley, K. A., and Kass, D., 1998, A sensitivity analysis of the apatite(U-Th)/He thermochronometer: Chemical Geology, 148, 105-114.

Zieglar, D. L., and Spotts, J. H., 1978, Reservoir and source-bed history of Great Valley, California: American Association of Petroleum Geologists Bulletin, 62, 813-826.

CHAPTER FOUR

QUANTIFYING RADIATION DAMAGE IN ZIRCON USING CATHODOLUMINESCENCE, PHOTOLUMINESCENCE, AND RAMAN SPECTROSCOPY: A CASE STUDY ON U-PB STANDARDS AND THE IGNEOUS BASEMENT TO THE GREAT VALLEY FOREARC, CALIFORNIA

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Abstract

Zircon, an accessory mineral in clastic sedimentary and felsic igneous rocks, is commonly used in geochronologic studies owing to the presence of radioactive U and Th. Spectroscopic techniques such as photoluminescence (PL) and Raman spectroscopy provide quantitative characterization of radiation damage from the decay of U and Th in zircon and when coupled with dating methods (e.g., geochronology and thermochronology) can provide further insight to the thermal history of a zircon grain. This study integrates U-Pb geochronology with Cathodoluminescence (CL), PL, and Raman spectroscopy of natural zircon age standards FC-1, R33, and Z1242, as well as zircon from the granitic and ophiolitic basement of the Great Valley forearc basin to examine the yellow band CL response in zircon, as well as its relationship to quantified radiation damage. Additionally, this study compares yellow emission CL intensities between natural and annealed zircon with alpha-doses that are outside of the sensitivity range for PL luminescence spectroscopic techniques. This study demonstrates that (1) yellow emission CL intensities can qualitatively equate the degree of radiation damage and (2) combining yellow emission CL intensities with calculated α-doses from U-Pb data can quantitatively compare the degree of radiation damage in zircon. Thus, CL spectroscopy can be used as an alternative spectroscopic approach to non-destructively gauge radiation damage in zircon.

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1. Introduction

Uranium (U) and Thorium (Th) bearing minerals are subject to internal structural damage that results from alpha-decay events where the recoils of heavy daughter nuclei cause atomic disorder within the crystal lattice. The accumulation of these recoils over time can alter the physical structure of a mineral from a crystalline to an amorphous state; this transformation is described as "metamictization" (e.g., Brøgger, 1893; Pabst, 1952; Ewing, 1993). The mineral zircon, $ZrSiO_4$, is a prevalent accessory mineral and can be found in various tectonic settings, residing in sedimentary, igneous, and metamorphic rocks and can contain actinides U^{4+} and Th^{4+}, which may substitute for Zr^{4+} in dodecahedral coordination (Finch et al., 2001). The radioactive decay of U and Th and their unstable daughter nuclei results in internal structural destruction of zircon over time.

Zircon radiation damage has been measured using Raman spectroscopy (Nasdala et al., 1995, 2001) and more recent spectroscopic studies have demonstrated the applicability confocal photoluminescence (PL) spectroscopy of tri-valent rare-earth elements (REE^{3+}) as a technique to measure the structural radiation damage in zircon (Lenz and Nasdala, 2015; Nasdala et al., 2018, Lenz et al., 2020). Zircon can also exhibit a distinct broad emission band in the yellow region (500-650 nm) of its cathode and photoluminescence spectra. This yellow emission in zircon is attributed to radiation-induced defects caused by the decay of U and Th (Götze et al., 1999; Gaft et al., 2002; Nasdala et al., 2002; Tsuchiya et al., 2015). Studies that have assessed a correlation between CL intensity and radiation-dose use radiation-damaged zircon, given that CL features in zircon offers insight to the presence of lattice defects as well as REE impurity centers (King et al., 2011; Kayama et al., 2014).

Assessing radiation damage and metamictization in zircon has societal significance due to its potential to serve as a waste container, permitting the immobilization of radioactive waste (e.g., nuclear waste storages) (Ewing, 2001; Lumpkin, 2006, 2018). In addition, it is important to characterize mineral grains prior to destruction (e.g., laser ablation, dissolution) (e.g. Ketcham et al., 2022), as the effects of radiation-damage in zircon has implications for the geoscience community in that the radiogenic nuclei retention within zircon may be impacted by damage in the crystal lattice, potentially resulting in erroneous isotopic dates (e.g., U-Pb geochronology and (U-Th)/He thermochronology) (Geisler et al., 2003b; Kuiper, 2005; Zamyatin et al., 2017). For example, diffusivity decreases with increasing radiation damage until a threshold cross-over, then diffusivity increases with continual increasing radiation damage (e.g., Guenthner et al., 2013; Anderson et al., 2017). Also, recent studies on radiation-damaged zircon show that the ZHe closure temperature can decrease to ~60-80 °C at relatively low α-doses, 6×10^{15} to 4×10^{16} α/g (Gérard et al., 2022).

This study examines yellow emission CL intensities for zircon from Mesozoic Coast Range Ophiolite (CRO) and Sierra Nevada basement rocks that underlie the Great Valley forearc (GVF) basin, California (Figure 4.1). These rocks have alpha-doses that are within and outside of the sensitivity range for REE^{3+} luminescence spectroscopic techniques. Igneous samples from the CRO and Sierra Nevada were selected due to their constrained igneous ages, respective simple thermal history with cooling ages that are slightly younger, ~10-15%, than their respective crystallization ages, and these grains are young which inhibits the amount of radiation damage (e.g., Ault et al., 2012; Orme et al., 2016). This study applies U-Pb geochronology along with CL, PL, and Raman spectroscopy on natural zircon and examines the yellow band CL

response in zircon, as well as its relationship to radiation damage, which is quantified from U-Pb geochronology and Raman spectroscopy. This study also compares yellow emission CL intensities between natural and annealed zircon and demonstrates that combining radionuclide content measurements with the degree of radiation damage from yellow emission CL intensities that are recorded in zircon serves as an additional non-destructive radiation damage proxy, complementary to other spectroscopic techniques that non-destructively measure radiation damage in zircon (e.g., PL and Raman spectroscopy). This study does not focus on large-scale tectonic interpretations from the dataset presented herein. However, this study provides first-order implications for the cooling history of basement rock, CRO and Sierra Nevada basement (Figure 4.1), in general terms of fast or slow cooling, as it underlies and has a temporal relationship with GVF Jurassic–Eocene sedimentary strata in northern California.

2. Background Information

2.1 Spectroscopic Framework

Spectroscopic techniques that can be used to quantify the accumulated radiation damage in zircon include infrared (IR) and nuclear magnetic resonance (NMR) spectroscopies (Wasilewski et al., 1973; Deliens et al., 1977; Farnan and Salje, 2001; Zhang and Salje, 2001; Farnan et al., 2007; Zhang et al., 2008), and X-ray diffraction (Weber, 1990; Ríos et al., 2000). Zircon radiation damage measured using Raman spectroscopy (Nasdala et al., 1995, 2001) shows that the band width of the symmetric stretching vibration B_{1g} (ν_3) of zircon's SiO_4 tetrahedrally-coordinated anionic complex varies quantitatively with radiation damage in zoned zircon. Also, confocal photoluminescence (PL) spectroscopy of tri-valent rare-earth elements (REE^{3+}) is

another technique to measure the structural radiation damage in zircon (Lenz and Nasdala, 2015; Nasdala et al., 2018, Lenz et al., 2020). Photoluminescence (Friis et al., 2010) is one of the various luminescence methods that uses different excitation mechanisms to study the emissions of REE^{3+} in zircon; other methods include thermally induced luminescence (TL) (Vaz and Senftle, 1971; Van Es et al., 2002), ionoluminescence (IL) (Yang et al., 1994; Finch et al., 2004), and cathodoluminescence (CL) (Blanc et al., 2000). Lenz and Nasdala (2015) demonstrate the applicability of REE^{3+} luminescence spectroscopy as a complementary non-destructive technique to Raman spectroscopy for quantifying radiation damage. Similar to Raman, REE^{3+} emission band widths reflect alterations from the ideal crystal structure and chemical composition of a specific mineral. Individual band widths of REE emissions (e.g., Dy^{3+} and Nd^{3+} in zircon) broaden and decrease in intensity as a result of an addition of non-formula elements (Lenz et al., 2013) or an increase in radiation damage (Jazmati and Townsend, 2000; Nasdala et al., 2002, 2013; Ruschel et al., 2010; Panczer et al., 2012; Lenz and Nasdala, 2015). Spectroscopic characteristics from the luminescence of REEs represent shielded electronic intra *f*–*f* transitions; these transitions consist of "Stark levels", sublevel-bands that are controlled by the REE ion structural setting (e.g., Lenz and Nasdala, 2015). The full-width-at-half-maximum (FWHM) of selected REE^{3+} luminescence (Dy^{3+} and Nd^{3+}) sublevels (I and II) of zircon correlates to the accumulated radiation damage, the α-dose (Lenz and Nasdala, 2015).

In experimentally irradiated zircon, Nasdala et al. (2011) document a shift in PL intensity, where the PL intensity of the yellow emission increases with increasing He-ion-induced radiation damage up to a fluence of 5×10^{16} ions/cm^2, then decreases as radiation damage increases beyond this threshold, indicating suppression of the yellow emission at high

radiation doses. Tsuchiya et al. (2017) also record that yellow emission CL intensity in zircon increases with radiation damage up to a He ion fluence of 4.29 x 10^{-4} C/cm^2, then decreases as radiation damage continues to increase. The approximate fluence ranges over which this broad yellow CL/PL signal is observed is generally lower than the fluences studied in Raman and REE-PL studies of natural samples.

2.2 Geologic Setting

2.2.1 Coast Range Ophiolite

Along the eastern GVF basin in northern California, igneous and metamorphic rocks of the Sierra Nevada foothills terrane serve as the underlying basement rock (Cady, 1975; Godfrey et al., 1997; Orme and Graham, 2018). Adjacently to the west, the Middle CRO represents underlying oceanic basement (Bailey et al., 1970; Ingersoll, 1982) (Figure 4.1). The tectonic setting in which the CRO generated remains debated. Proposed tectonic models for the origin of the CRO includes: (1) forearc spreading in response to slab rollback within the forearc region of the Sierran continental-margin arc during late Middle Jurassic time (Saleeby, 1982, 1992; Shervais, 2001; Shervais et al., 2005, and references therein), (2) at a mid-ocean ridge spreading center, at/near paleoequatorial, then transported northward and became outboard of the Sierran continental-margin arc (Hopson et al., 2008, and references therein), or (3) by backarc-interarc spreading behind an east-facing intra-oceanic island arc (Ingersoll, 2019, and references therein).

CRO remnants are exposed as a narrow outcrop belt along the northern Sacramento basin with ages that range between ~174–164 Ma for the upper CRO; zircon U-Pb ages include 172–165 Ma (Elder Creek remnant) and 172–166 Ma (Stonyford remnant) (Shervais et al., 2005)

(Figure 4.1). Also, within the northern Sacramento basin, gabbro from the upper CRO yields Middle Jurassic zircon U-Pb ages of 167.0 ± 0.3 Ma and 165.9 ± 0.3 Ma (as described in Chapter 1). Several Middle Jurassic CRO remnants are interpreted to record a Late Jurassic magmatic and hydrothermal metamorphic event based on intrusive sheets and hydrothermal metamorphic veins that display cross-cutting relationships with the collective ophiolite segments and overlying volcanopelagic strata, and locally, ophiolitic breccia (Hopson et al., 2008). Specifically, at the Del Puerto ophiolite remnant within the central GVF basin, a plagiogranite yielding zircon U-Pb ages (161.2 ± 0.1 and 161.1 ± 0.1), along with younger $^{40}Ar/^{39}Ar$ ages (157 ± 2 Ma and 156 ± 2 Ma) and zircon fission track ages (150 ± 6 Ma and 149 ± 6 Ma) is interpreted to record resetting of the $^{40}Ar/^{39}Ar$ and FT thermochronometers, reflecting a thermal event associated with Late Jurassic magmatism (Hopson et al., 2008, and references therein). The spatial and temporal extent of this Late Jurassic magmatic and hydrothermal metamorphic event in other remnants of the CRO is uncertain.

2.2.2 Sierra Nevada

The present-day Sierra Nevada is ~100 km wide and extends ~600 km along the border of eastern California and western Nevada (Figure 4.1). Exposed basement rocks in the Sierra Nevada predominantly include Neoproterozoic–Paleozoic strata that are later intruded by Permian–Triassic magmatic rocks and Jurassic–early Cenozoic tonalities and granodiorites (Bateman and Wahrhaftig, 1966; Stone and Stevens, 1988; Dunne and Suczek, 1991; Saleeby and Busby, 1993; Schweickert and Lahren, 1993; Stevens and Greene, 1999; Stevens et al., 2005; Memeti et al., 2010; Saleeby, 2011; Chapman et al., 2012, 2015; Saleeby and Dunne,

2015; Attia et al., 2018; Cecil et al., 2019). During the latest Triassic–Late Cretaceous, the Sierra Nevada developed as an active continental arc (Ducea, 2001). Magmatism in the Mesozoic was episodic with alternating flare-up events and magmatic lulls; the central Sierra Nevada records flare-up events with increased magma addition rates in the Triassic (~220 Ma), Jurassic (~160 Ma), and Cretaceous (~100 Ma) (Bateman and Wahrhaftig, 1966; Armstrong and Ward, 1993; Paterson and Ducea, 2015; Kirsch et al., 2016; Ardill et al., 2018; Attia et al., 2020). In the northern Sierra Nevada batholith, (U-Th)/He thermochronologic analysis on granodiorites and tonalites yield zircon (U-Th)/He ages that range between 86–64 Ma and apatite (U-Th)/He ages between 80–46 Ma (Cecil et al., 2006). These (U-Th)/He ages are interpreted to record relatively rapid uplift and unroofing of the Sierra Nevada in the Late Cretaceous to early Cenozoic (90–60 Ma), followed by relatively slower exhumation reflecting tectonic quiescence and erosion of the Sierra Nevada during the middle to late Cenozoic (Cecil et al., 2006).

3. Materials and Methods

3.1 Samples

Core and outcrop samples were collected from basement rock of the GVF basin in northern California (Figure 4.1). Samples 0619MR06 and 0619MR07 are from outcrop of the upper CRO and sample CR-27 is from a granodiorite of the Sierra Nevada from the Buttes Community C-1 borehole, stored at the California Core Repository. In the northern Sacramento basin, gabbro from exposed upper CRO yields Middle Jurassic zircon U-Pb crystallization ages of 167.0 ± 0.3 Ma and 165.9 ± 0.3 Ma (as described in Chapter 1). See Appendix G for GPS sample locations for GVF basement rocks.

Zircon from samples 0619MR06, 0619MR07 and CR-27 along with unannealed reference zircon FC-1 and R33 are used to obtain PL and Raman spectra. In order to investigate the CL responses of zircon that have had radiation damage annealed, grains of the zircon U-Pb standards R33 and Z1242 were isolated and subjected to heat treatment to anneal radiation damage. These grains were placed into quartz caps and heated to ~950°C for 72 h in a Thermo Scientific Lindberg/Blue M Moldatherm Box Furnace. A subset of annealed R33 (n = 20) and Z1242 (n = 10) grains were mounted in a 1-inch epoxy mount along with natural (unannealed) R33 (n = 10) and Z1242 (n = 5) zircon grains and polished to a 1 micron finish.

3.2 U-Pb Zircon Geochronology

Zircon from three samples from the basement that underlies the GVF basin, California, were analyzed for U-Pb geochronology. Sample CR-27 is a granodiorite that underlies the forearc basin along its central to eastern segments and was collected from borehole Buttes Community C-1 at a depth of 6534 ft, housed at the California Core Repository in Bakersfield, California. Samples 0619MR06 and 0619MR07 were collected from exposed outcrop of the CRO (as described in Chapter 1), which forms the western basement to the GVF. For all samples, zircon grains were extracted using standard mineral separation techniques that include mechanical crushing, a water table, and heavy liquids for mineral density separation (Gehrels, 2000; Gehrels et al., 2008; Gehrels and Pecha, 2014). Zircon grains for each sample (619MR06, 0619MR07, and CR-27) were included into 1.5 cm epoxy mounts. All igneous zircon epoxy mounts contain shards of Sri Lanka (SL), FC-1, and R33 as reference zircon for U-Pb geochronologic analysis (Gehrels et al., 2008). These mounts were polished ~10 μm deep to

expose the surface of the grains, then polished to 1 μm using diamond paste. To identify and avoid grains with fractures and/or inclusions, CL images were generated using a Hitachi S3400 scanning electron microscope (SEM). Prior to analysis, assigned laser spots on each sample were pre-ablated with a 'cleaning shot' which consists of a 50-μm-diameter laser beam fired at three bursts; this allows for the removal of common Pb from the surface of the epoxy mount (Pullen et al. 2014, 2018). U-Pb isotopic analyses were collected by laser ablation-inductively coupled plasma-mass spectrometry (LA-ICP-MS) using a Teledyne Photon Machines Analyte G2 laser connected to a Thermo Scientific Element 2 mass spectrometer. Each zircon grain was ablated for 15 s at 7 Hz with a 20 μm diameter laser beam; this resulted with a pit depth of 10-12 μm. Data reduction was conducted with AgeCalcML, an open-source data reduction program in MATLAB (github.com/kurtsundell/AgeCalcML). U-Pb data were filtered to exclude grains with >20% discordance, >10% uncertainty, >5% reverse discordance, or high common Pb. All U-Pb isotopic analyses were conducted at the University of Arizona LaserChron Center and are reported in Appendix H.

3.3 Cathodoluminescence Spectroscopy

All samples were carbon-coated with ~10 nm of C using a Leica ACE 600 coater and then imaged in backscattered electron (BSE) and panchromatic CL modes using a Hitachi SU5000 field emission scanning electron microscope (FE-SEM) operated at 15 kV at the U.S. Geological Survey (USGS) Reston Electron Microbeam Laboratory in Reston, Virginia. A Hitachi ultra variable-pressure detector operated at 0 volts bias and sensitive in the 400-800 nm range was used to collect preliminary panchromatic CL images. Subsequently, higher-quality

panchromatic and red-green-blue filtered (RGB) CL images and spot spectroscopic analyses were taken on a SPARC Spectral CL detector. The SPARC is fitted with a filter wheel and photomultiplier tube detector for fast-intensity imaging and a 150 lines/mm grating, and a Zyla 5.5 scientific complementary metal oxide semiconductor (sCMOS) camera for CL spectroscopy. Panchromatic (black and white) CL images were obtained using 60 µs per pixel dwell time, a detector gain of 600 mV, and 1024 × 768 pixel resolution for a nominal collection time of 60 s per image. RGB filtered images were obtained by serial collection of blue (<505 nm), green (505-575 nm) and red (>605 nm) channels using 105 µs per pixel dwell time per channel, a detector gain of 600 mV, and 1024 × 768 pixel resolution for a nominal collection time of 300 s.

CL spectroscopic measurements were made on the dated zircons from the GVF as well as the R33 and Z1242 standards. The location for each CL spectroscopic measurement was selected to correspond with the CL-visible zone that also contained laser ablation pits from LA-ICP-MS analysis, at least for the grains that contained ablation pits. Sixteen CL spectroscopic measurements (4 x 4 grid) were collected at each location, with the grid covering a 12 × 12 µm square (nominal pixel area = 9 μm^2) at 2000× magnification for every grain. This square size was chosen to approximate a laser ablation pit size. Input slit size was 100 µm and exposure time varied from 1-10 s to allow for inter-sample variability in CL response (1 s for 0619MR06, annealed R33 and Z1242, 4 s for CR-27 and unannealed R33, and 10 s for unannealed R33, FC-1, and Z1242).

CL measurements generally show a noticeable decrease in detector sensitivity for blue emissions in the UV range of 200-400 nm (Nasdala et al., 2003). At low (<400 nm) and high (>700 nm) wavelengths, data quality decreases and does not produce consistent CL spectra

(Figure 4.2). Due to this limitation, we apply a quantum efficiency correction for all CL spectra and use a wavelength between 400-700 nm for further analyses and figures, including supplementary figures. A quantum efficiency correction specific to the Zyla 5.5 sCMOS detector was applied prior to averaging the values of all 16 spectra per grain to generate a representative CL spectrum for CL spot locality. The area of each spectrum was normalized to account for inter-sample variabilities in exposure time and spectral intensities. Each spectrum was fit with Gaussian curves centered at 380 ± 20 nm, 450 ± 20 nm, 550 ± 20 nm, and 633 ± 20 nm (Appendix I). An alternative fit included the aforementioned curves, as well as Dy^{3+} curves centered at 478 ± 5 nm and 575 ± 5 nm. The sum of squared residuals (SSR) was calculated for each fit, and the fit with a lower SSR was used. For each used fit, the areas under the constituent Gaussian curves were calculated. Areal values are preferred to amplitude and FWHM values, as these metrics alone provide limited characterizations of curve morphology. Spectra that yield outlying curve fits with amplitudes >10× the median curve area are excluded. For radiation damage curve plots, areas of the blue curves are summed and divided by the sum of the areas of the yellow curves while excluding dysprosium curves. Prior to Raman and PL analyses, the carbon coat was removed from all igneous sample mounts by lightly polishing with 0.05 µm alumina grit.

3.4 Photoluminescence and Raman Spectroscopy

Raman and PL measurements in the visible to near infrared (NIR) range (~380-1025 nm) were collected using a Horiba Xplora Plus confocal Raman microscope at the USGS in Reston, Virginia. Raman and PL spectra were calibrated against the 520.7 cm^{-1} phonon peak from

crystalline Si. Raman and PL spot analyses were conducted using a 473 nm laser with perpendicular polarization through a 100× objective (0.9 numerical aperture), 600 or 2400 groove/mm grating, 100 μm monochromator slit, 100 μm confocal pinhole, and an acquisition time of 3 s. Spectra were fit in the Igor PRO 8 software suite using sum of Lorentzian profiles simultaneously with a linear or cubic baseline. Lorentzian profiles were chosen considering the harmonic oscillator model of molecular vibrations (Meier, 2005). Raman and PL peak parameters (e.g., wavelength and FWHM) were extracted from fits to the data. CL images were used to ensure that each Raman/PL spot analysis was conducted in the same area of the grain as its coupled CL spot analysis. It is important to note that coupled CL and Raman and PL spectra were obtained within the same domain of the ablation pit from LA-ICP-MS during U-Pb geochronologic analysis and at an adequate distance (~15) μm from the ablation pit; this allows for the avoidance of damage caused by the mass spectrometer during geochronologic analysis. Zircon from samples 0619MR06, 0619MR07 and CR-27 along with natural zircon FC-1 and R33 grains are used to obtain Raman and PL spectral measurements. A total of 30 coupled Raman/PL spectra were obtained from 13 zircon grains, with 2-3 coupled Raman/PL spectra per grain. All zircon grains analyzed for Raman/PL spectra discussed herein have a U-Pb zircon age that was obtained from LA-ICP-MS.

3.5 Alpha-dose Calculations

3.5.1 U-Pb Zircon and Raman Data

The number of α-decay events per gram for R33 and FC-1 zircon along with zircon grains from samples 0619MR06, 0619MR07, and CR-27 were calculated following the approach

and equation in Nasdala et al. (2001, 2005); these α-doses were calculated from zircon U-Pb data (U-Pb age, U and Th concentrations) that were collected during analysis via LA-ICP-MS (Table 4.1). Nasdala et al. (2001) incorporate U-Pb geochronologic data for estimating alpha-doses, noting that these values slightly overestimate the true alpha-dose of the sample. Following Nasdala et al. (2001), U-Pb ages are used, as limited published zircon (U-Th)/He (ZHe) and zircon fission track (ZFT) thermochronologic data exist for GVF basement rocks. However, new ZHe data for one sample (CR-27) yields ZHe ages that range between 129.22 ± 1.8 Ma and 121.18 ± 1.6 Ma, with a weighted mean crystallization age of 144.11 ± 0.5 Ma (as discussed in Chapter 2). This suggests that ZHe cooling ages are only ~10-15% younger than U-Pb ages, and so U-Pb calculated α-doses are sufficiently accurate for the purpose of this study. Calculated α-doses from the Raman data include the FWHM of the $\nu_3(SiO_4)$ Raman band.

3.5.2 Inferred Cooling Ages

The subset of annealed Z1242 (n = 10) and R33 (n = 20) zircon grains, which were subjected to heat treatment to anneal radiation damage, are assumed to yield alpha-doses of zero. Reference zircon Z1242 and R33 are reported to have U-Pb ages of 2681 ± 2 Ma and 418.9 ± 0.4 Ma, respectively (Mortensen and Card, 1993; Stern, 1997; Black et al., 2004). The subset of natural Z1242 (n = 5) zircon grains are inferred to have a cooling age of 975 ± 100 Ma, with an added conservative uncertainty due to the distance between Z1242 zircon and the nearest published cooling ages in McDannell et al. (2018) and Pinet and McDannell (2020). This study estimates U and U/Th values as 154 ± 12 ppm and ~1.5, respectively, for Z1242 zircon, based on unpublished SHRIMP-RG measurements of other Z1242 grains at the USGS-Stanford SHRIMP-

RG laboratory. Using these measurements in conjunction with Z1242 age data (McDannell et al., 2018; Pinet and McDannell, 2020), a Monte Carlo approach was applied to generate likely U and Th values for natural Z1242 zircon, while treating U and Th as correlated values. These values are used to calculate likely alpha-doses and their respective uncertainties for the natural Z1242 grains. R33 zircon likely experienced sufficient reheating in the Paleozoic (post-Devonian) to anneal radiation damage, based on ZHe and AHe ages that indicate regional heating at ~300-200 Ma (Turner et al., 2021). Accordingly, this study infers a cooling age of 250 ± 50 Ma for the subset of natural R33 (n = 10) zircon grains and uses U/Th measurements to calculate likely alpha-doses. To calculate likely alpha-doses for FC-1 zircon, U and Th measurements are used to infer a cooling age of 765 ± 85 Ma; this age corresponds to modeled ZHe cooling ages between 850-680 Ma for the North American craton (Delucia et al., 2018). Reference zircon FC-1 is reported to have a U-Pb age of 1099.3 ± 0.3 Ma (Paces and Miller, 1993).

4. Results

4.1 Zircon U-Pb Ages

Using AgeCalcML, reference zircon FC-1 and R33 yield U-Pb ages of 1098.8 ± 2.49 Ma and 415.04 ± 1.69 Ma, respectively, consistent with the reported ages for these zircon standards (Paces and Miller, 1993; Black et al., 2004; Mattinson, 2010). Zircon U-Pb isotopic analyses yield a weighted mean age of 144.11 ± 0.25 Ma (n=45) for sample CR-27. Samples 0619MR06 (n=34) and 0619MR07 (n = 34) yield weighted mean ages of 167.02 ± 0.29 Ma and 165.79 ± 0.27 Ma, respectively (as described in Chapter 1). Zircon grains from sample 0619MR06 yield U and Th concentrations of 409-799 ppm and 374-848 ppm, respectively. U and Th concentrations

in zircons from sample 0619MR07 include 231-1123 ppm and 167 -873 ppm, respectively. Zircon grains from sample CR-27 yield U concentrations between 114-252 ppm and Th concentrations of 60-63 ppm. Zircon from ophiolitic and granodioritic basement rock of the GVF basin yield low U/Th values (<10). All actinide concentrations were collected during U-Pb isotopic analyses (Table 4.1).

4.2 CL Spectra

CL spectroscopic measurements were collected from natural (CR-27, 0619MR06, FC-1, R33, and Z1242) and annealed (R33 and Z1242) zircon grains (Figure 4.2). CL spectra from natural zircon U-Pb standards (FC-1, R33, Z1242) and zircon in GVF basement rocks (0619MR06 and CR-27 and) generally yield emissions in the blue to yellow regions (Figure 4.2A-E). Natural zircon FC-1 and Z1242 show broadly curved spectra with no prominent peaks within the blue and yellow regions (Figure 4.2A and C). Stark Dy^{3+} emission peaks (~478 nm and ~575 nm) in the CL spectra are observed in natural R33 zircon, along with zircon in samples 0619MR06 and CR-27 (Figure 4.2B, D-E). CL spectra for annealed Z1242 and R33 zircon grains show higher apparent emissions in the blue region relative to emissions in the yellow region (Figure 4.2F-G). Zircon Z1242 and R33 is further used to compare the difference between CL spectra for annealed and natural zircon; heat treatment of annealed zircon yields an increase in response at lower wavelengths (<~500 nm) and a decrease in response at higher wavelengths (>~500 nm) (Figure 4.3).

4.3 PL and Raman Spectra

Thirty paired PL and Raman spectroscopic measurements were collected from 13 natural zircon from CR-27, 0619MR06, 0619MR07, FC-1, and R33, with 2-3 PL/Raman spectra per grain. All zircon grains analyzed for PL/Raman spectra have a U-Pb zircon age that was obtained from LA-ICP-MS. Sublevel bands of distinct luminescence Stark's levels of the $^4F_{9/2} \rightarrow {}^6H_{13/2}$ transition of Dy^{3+} (~580 nm wavelength) emission are observed in almost all PL spot-spectra analyses. The PL FWHM values for each sublevel (I and II) are provided in Table 4.2. FWHM values of the $\nu_3(SiO_4)$ Raman band range between 3-23 cm^{-1}. Spectroscopic data for all samples are provided in Table 4.2.

4.4 Calculated Alpha-dose from Zircon U-Pb and Raman Data

Calculated α-doses from zircon U-Pb and Raman data (samples 0619MR06, 0619MR07, CR-27, R33, and FC-1) range between 6.11 x 10^{16} to 2.31 x 10^{18} α−events/g and 1.26 x 10^{17} to 1.55 x 10^{18} α−events/g, respectively (Tables 4.1 and 4.2). Calculated α-doses from zircon U-Pb data (U-Pb age, U and Th concentrations) and Raman data (FWHM values of the $\nu_3(SiO_4)$ Raman band) do not show a perfect 1:1 relationship (Figure 4.4). In general, grains with relatively lower radiation damage calculated from the U-Pb data also display low radiation damage as calculated from the Raman data. There is considerably more spread for higher radiation-damaged grains. Calculated α-doses using the FWHM of the $\nu_3(SiO_4)$ Raman band yield more constrained estimates for the analyzed area of the grain compared to the calculated α-doses that solely use the U-Pb age, U and Th concentrations (Figure 4.4). There is relatively little scatter between the FWHM of the $\nu_3(SiO_4)$ Raman band from GVF basement rocks, compared to

the large scatter between the FWHM of the $\nu_3(SiO_4)$ Raman band from natural zircon U-Pb standards (R33, FC-1) (Figure 4.5).

4.5 Radiation Damage and PL FWHM of Dy^{3+}

FWHM values for each sublevel (I and II) from the Dy^{3+} PL emission and accompanying radiation damage, calculated from U-Pb and Raman data, show a range of values with an overall positive correlation (Figures 4.6 and 4.7). Natural zircon R33 and FC-1, along with natural zircon from GVF basement rocks (0619MR06, 0619MR07, CR-27) show PL FWHM values of Dy^{3+} sublevels I and II increasing with radiation damage, as calculated from U-Pb data (Figure 4.6). Additionally, the individual slopes of Dy^{3+} sublevels I and II deviate from each other as radiation damage increases (Figure 4.6). PL FWHM values of Dy^{3+} sublevels I and II increase with radiation damage, as calculated from Raman data, in natural zircon from GVF basement rocks (0619MR06, 0619MR07, CR-27) and natural zircon R33 and FC-1 (Figure 4.7). As radiation damage increases, there is less spread in PL FWHM values and radiation damage that is calculated from Raman data, compared to radiation damage calculated from U-Pb data.

4.6 Radiation Damage Curves

Alpha-doses for radiation damage curve plots are calculated from the following: U-Pb age data (0619MR06, CR-27), inferred cooling ages (natural zircon FC-1, Z1242, R33), and an assumed alpha-dose of zero for grains that underwent heat treatment (annealed Z1242 and annealed R33 zircon). It is important to note that alpha-dose values estimated based on U-Pb data are likely to be slight overestimates (e.g., Nasdala et al., 2001); alpha-dose values based on

inferred cooling ages may underestimate or overestimate true alpha-dose values. Damage curves for areas of blue emission bands ("intrinsic" defects in Cesbron et al., 1995) are described as intrinsic defect curves (Figure 4.8A-B). Damage curves for areas of yellow emission bands are shown in Figure 4.8C-D. The ratio of yellow CL curve areas to blue CL curve areas, show an increase with alpha-dose until a certain threshold (~ 0.5 x 10^{18} α−events/g), after which it decreases and approaches the ratio shown by zero-alpha-dose samples (Figure 4.8E).

5. Discussion

5.1 Radiation Damage Estimates from Raman and Dy^{3+} Peak Widths and Implications

5.1.1 GVF Ophiolitic and Granodioritic Basement Rocks

All calculated α-doses (using U-Pb data) from natural zircon in GVF basement rocks are <8 x 10^{17} α−events/g (Figure 4.5). These relatively low α-doses result in relatively little scatter among the FWHM of the $\nu_3(SiO_4)$ Raman band from GVF basement rocks, with most values at <4 x 10^{17} α−events/g and yielding the same FWHM of ~5 cm^{-1}, within limits of error. As expected, the data do show a positive correlation and generally linear relationship between FWHM of the $\nu_3(SiO_4)$ Raman band and calculated α-doses (Figure 4.5). However, the minor variation in measured FWHM of the $\nu_3(SiO_4)$ Raman band indicates the Raman response is a low precision method to determine radiation dose in the GVF basement samples. Similarly, PL FWHM of Dy^{3+} sublevels I and II increase with radiation damage, calculated from both U-Pb and spectroscopic data (Figures 4.6 and 4.7). However, at the α-doses (Raman data) of the GVF samples, the PL FWHM of Dy^{3+} sublevels I varies by <0.41 nm and by <0.22 nm for sublevel II; these values are nearly invariant for the respective sublevels. Also similar to the Raman

response, the minimal variation in measured PL FWHM of Dy^{3+} sublevels I and II indicates that using the Dy^{3+} peaks is a low precision indicator of radiation dose in the GVF basement samples. The minor variation in measured FWHM of the $v_3(SiO_4)$ Raman band and Dy^{3+} sublevels suggest that Raman and PL spectroscopy are not helpful for differentiating radiation dose in Mesozoic GVF ophiolitic and granodioritic basement samples. It is noted that the steeper slope of Dy^{3+} sublevel I compared to that of sublevel II suggests that Dy^{3+} sublevel I is more sensitive to crystal lattice disorder derived from radiation damage, consistent with Lenz and Nasdala (2015).

5.1.2 Reference Zircon FC-1 and R33

Compared to the GVF basement samples, reference zircon FC-1 and R33 yield a relatively large variation in the FWHM of the $v_3(SiO_4)$ Raman band and PL FWHM of Dy^{3+} sublevels I and I (Figure 4.5-7). This large spread in FWHM of the $v_3(SiO_4)$ Raman band and Dy^{3+} sublevels suggests that zircon in Precambrian to middle Paleozoic-age rocks with high U and Th concentrations are suitable for Raman and PL spectroscopy, as also shown in previous works of Lenz and Nasdala (2015, and references therein). Although zircon FC-1 and R33 contain relatively high alpha-doses compared to GVF basement samples, the accumulated radiation damage within the grains have not measurably altered the respective U-Pb crystallization ages. The zircon standard with the highest estimated alpha-dose (calculated from the Raman data) in this study is ~1100 Ma FC-1 and has a minimal alpha-dose of 1.01×10^{18} $\alpha-$events/g, suggesting that zircon grains with $<1.01 \times 10^{18}$ $\alpha-$events/g can quantitatively retain U and Pb in the absence of other re-setting mechanisms such as recrystallization. As additional zircon material is proposed for use as standards for U-Pb geochronology (e.g., Tanz, 566.16 ±

0.77 Ma; LKZ-1, 570.0 ± 2.5 Ma; KV01, 3233±16 Ma) (Cheong et al., 2019; Wei et al., 2020; Hu et al., 2021), such dosage estimates can be useful in striking a balance between high parent concentrations of U and Th that are required for precision, and low enough of a dosage to avoid related damaging effects to the U-Th-Pb isotopic system (e.g., Geisler et al., 2003b; Kuiper, 2005; Zamyatin et al., 2017; Anderson et al., 2020).

5.2 CL Spectra and Implications

Radiation damage increases from annealed zircon R33 and Z1242 to natural zircon FC-1, which has the relatively highest dose of radiation damage, as displayed in the CL spectra (Figure 4.2). Annealed R33 and Z1242 zircon show CL spectra with predominant emissions in the blue region, likely representing "intrinsic" defects that are associated with structural defects of the atomic-bonding in the host lattice during crystallization (Cesbron et al., 1995; Rémond et al., 1995). Tsuchiya et al. (2015, 2017) also document CL emission centers in the blue region for annealed zircon and attribute these to "intrinsic" defects. Emissions in the yellow region are detected in annealed R33 and Z1242 zircon, likely indicating local structural disorder and oxygen defects (e.g., Rémond et al., 1995; Gaft et al., 1998; Tsuchiya et al., 2017). CL spectra for natural zircon (CR-27, 0619MR06, R33) show broad-band yellow emissions as radiation damage increases; this response is recognized as a function of radiation damage (Nasdala et al., 2001). The observed trend where CL emissions are detected in the yellow region for radiation-damaged natural zircon grains, followed by a decrease in yellow emission intensities as radiation damage increases, is consistent with the suggestion that suppression of the yellow emission occurs at higher amounts of radiation damage (Nasdala et al., 2011). This trend is also observed

in the CL spectra of He^{+} ion implanted and unimplanted zircon grains in Tsuchiya et al. (2017). This suppression effect is clearly visible in the CL responses of natural FC-1 and Z1242 zircon, which have experienced the greatest radiation damage and feature CL responses that mirror those of annealed zircon.

The ratio of yellow:blue curve areas displays an increase with increasing radiation damage, followed by a decrease in the ratio as radiation damage increases beyond a certain threshold (Figure 4.8E). This pattern is consistent with the suppression of yellow emission, suggested to occur at high amounts of radiation damage in zircon (Nasdala et al., 2011). In this study, the threshold of yellow emission suppression seems to be at values ~0.5 x 10^{18} α−events/g, where CL response to radiation damage approaches a uniform value. At these high alpha-doses, the CL response becomes a less useful indicator of radiation damage (Figure 4.8E). In contrast, the preliminary data from GVF basement samples which contain low α-doses indicate that the broadband yellow response in CL can be used to assess radiation damage. The GVF basement samples have relatively low α-doses, <1 x 10^{18} α−events/g, due to their relatively young age and especially their low U and Th concentrations. It is noted that even if the zircon grains retain damage for only the last 50 My, for example, and consequentially retain nominally half as much radiation damage, the FWHM of the $\nu_3(SiO_4)$ Raman band and PL of Dy^{3+} would not be sensitive to this difference (Figures 4.6 and 4.8). However, a two-fold decrease in radiation damage would result in drastic changes in the CL proxy (Figure 4.8E).

The ratio of yellow:blue curve areas yields nearly consistent and constant values as radiation damage continually increases for natural zircon R33 and FC-1 (Figure 4.8E). These plots of damage curve areas help illustrate the relative amounts of intrinsic defects or radiation

damage in the CL response of a given zircon grain. Additionally, radiation damage estimates from CL spectroscopy are of relatively high spatial resolution (micrometer scale) and can non-destructively provide spatially constrained radiation damage estimations for various regions of a zircon grain, similar to the spatial resolution and analytical capabilities of REE^{3+} luminescence and Raman spectroscopy. Hence, CL spectroscopy and the resultant plots of damage curve areas, particularly the ratio of yellow:blue curve areas, serve as an appropriate proxy for radiation damage.

5.3 Geologic Implications

The diverse set of zircon presented herein demonstrates the utility of CL spectroscopy as an alternative technique to non-destructively measure radiation damage, as recent studies highlight the effects of radiation damage on diffusivity and closure temperature in zircon (e.g., Guenthner et al., 2013; Anderson et al., 2017; Gérard et al., 2022). This study reveals that zircon from Middle Jurassic gabbros and Early Cretaceous granodiorite of the GVF basement are relatively less damaged compared to the Neoproterozoic-Cambrian zircon studied by Lenz and Nasdala (2015). Limited studies on the thermal history of the GVF and new thermochronology (as discussed in Chapter 2) suggest that these zircon grains rapidly passed through the closure temperature windows for ZHe and ZFT not long after their magmas crystallized and have been accumulating radiation damage nearly since crystallization. CL spectroscopy is another approach to gauge radiation damage in zircon without physically damaging the grain (e.g., laser ablation, dissolution) and can provide informative information pertaining to the thermal history of a rock. For example, CL spectra can provide first-order constraints as to whether a sedimentary rock has

undergone excessive burial and heating to temperatures high enough to anneal radiation damage. If extensive radiation damage is observed, then detailed characterization could be done prior to grain destruction to determine where the damage is present (e.g., zoned or rims of a grain) and assist with post-analysis alpha dose calculations.

6. Conclusions

This study integrates U-Pb geochronology with CL, PL, and Raman spectroscopy on natural zircon FC-1, R33, and Z1242, with the former two widely used as standards for U-Pb geochronology, as well as natural zircon from the CRO and Sierra Nevada basement of the GVF basin to assess the utility of spectroscopy in assessing radiation damage. Results from the diverse zircon evaluated in this study indicate that radiation damage estimates can be simultaneously obtained from REE^{3+} luminescence and Raman spectroscopy, and these methods provide well-constrained estimates due to their high spatial resolution. This study also demonstrates that CL spectroscopy can be a powerful approach to gauge the extent of radiation damage within zircon by evaluating yellow emission CL intensities. CL spectroscopy can non-destructively estimate radiation damage in zircon as effectively as other spectroscopic techniques (e.g., PL and Raman spectroscopy), but permits a relatively quick approach to estimate radiation damage in the zircon, which can be useful for thermochronologic studies.

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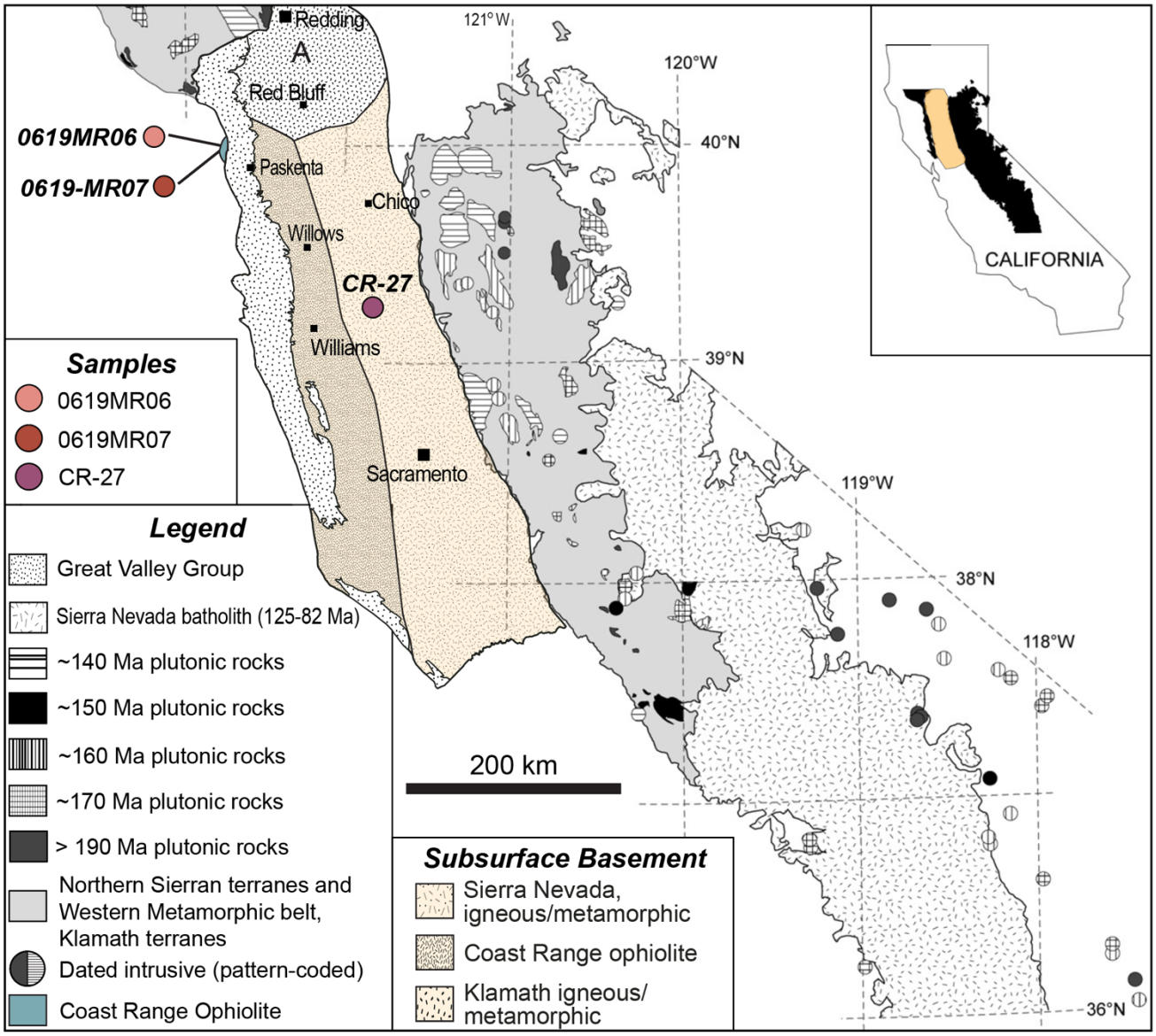


Figure 4.1. Regional geologic map with borehole and field sample locations. Modified from Irwin (2003), Surpless and Augsburger (2009), and Orme and Graham (2018).

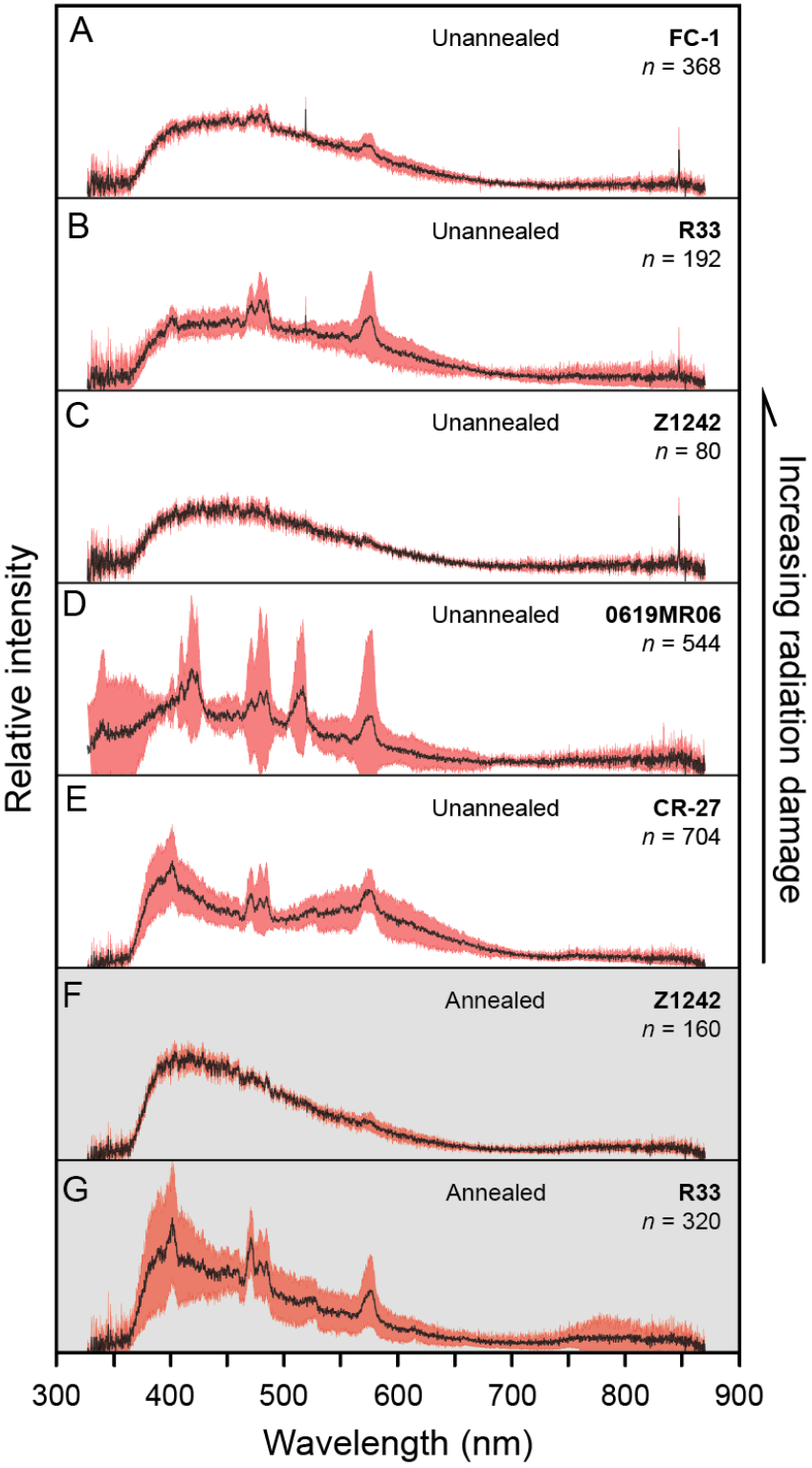

A
Unannealed
FC-1
n = 368
B
Unannealed
R33
n = 192
C
Unannealed
Z1242
n = 80
D
Unannealed
0619MR06
n = 544
E
Unannealed
CR-27
n = 704
F
Annealed
Z1242
n = 160
G
Annealed
R33
n = 320
Relative intensity
Increasing radiation damage
300
400
500
600
700
800
900
Wavelength (nm)

Figure 4.2. Normalized CL spectra for (A-E) unannealed and (F-G) annealed zircon. The average spectrum for each zircon sample is shown by a black line. Red shading represents ± 2 sigma. The total number of CL spectra for each zircon is indicated by *n*.

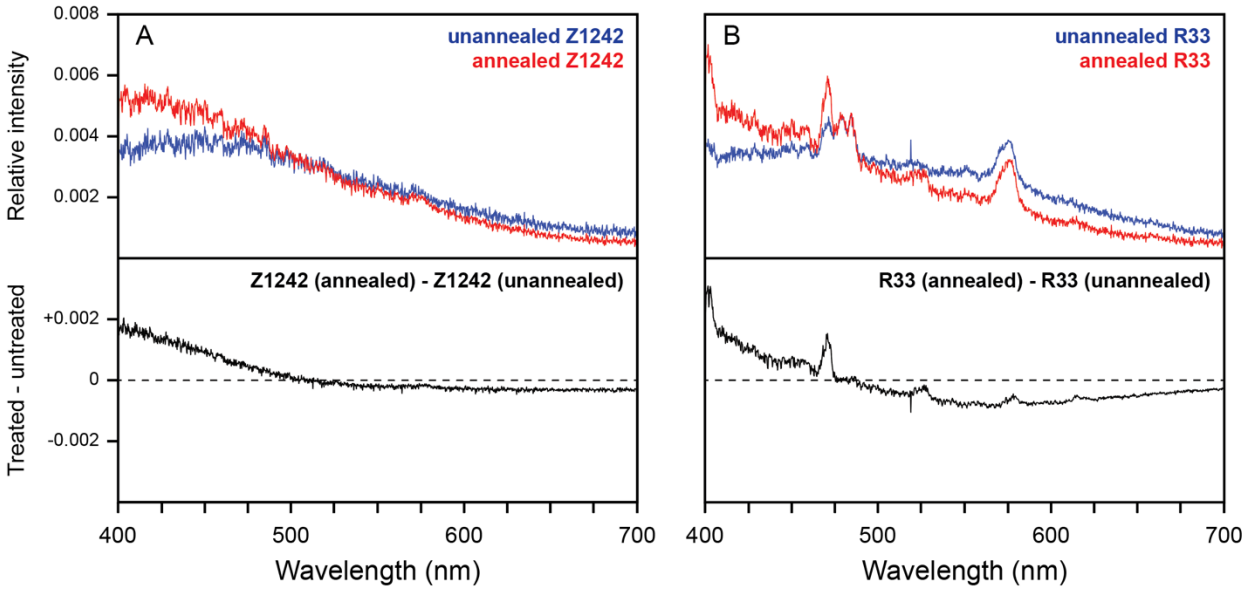


Figure 4.3. Average CL spectra for unannealed and annealed zircon and their difference for samples (A) Z1242 and (B) R33. Blue lines represent the average spectra for unannealed zircon samples and red lines represent the average spectra for annealed zircon samples. Black lines represent the differences between the averages for Z1242 and R33.

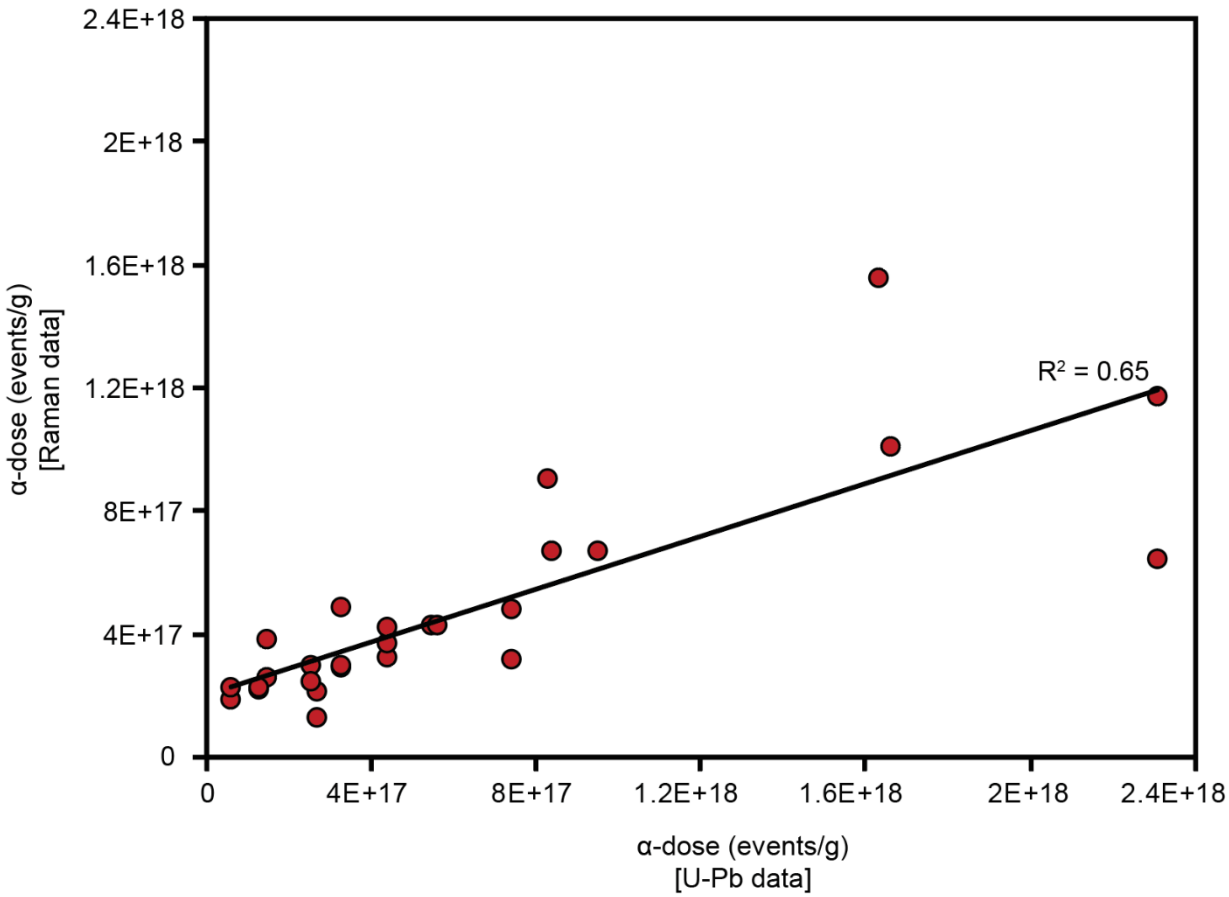


Figure 4.4: α-doses calculated from U-Pb isotopic data (U-Pb age, U and Th concentrations) vs. FWHM of the $\nu_3(SiO_4)$ Raman band for natural zircon from GVF basement rocks (gabbro and granodiorite) and natural zircon R33 and FC-1.

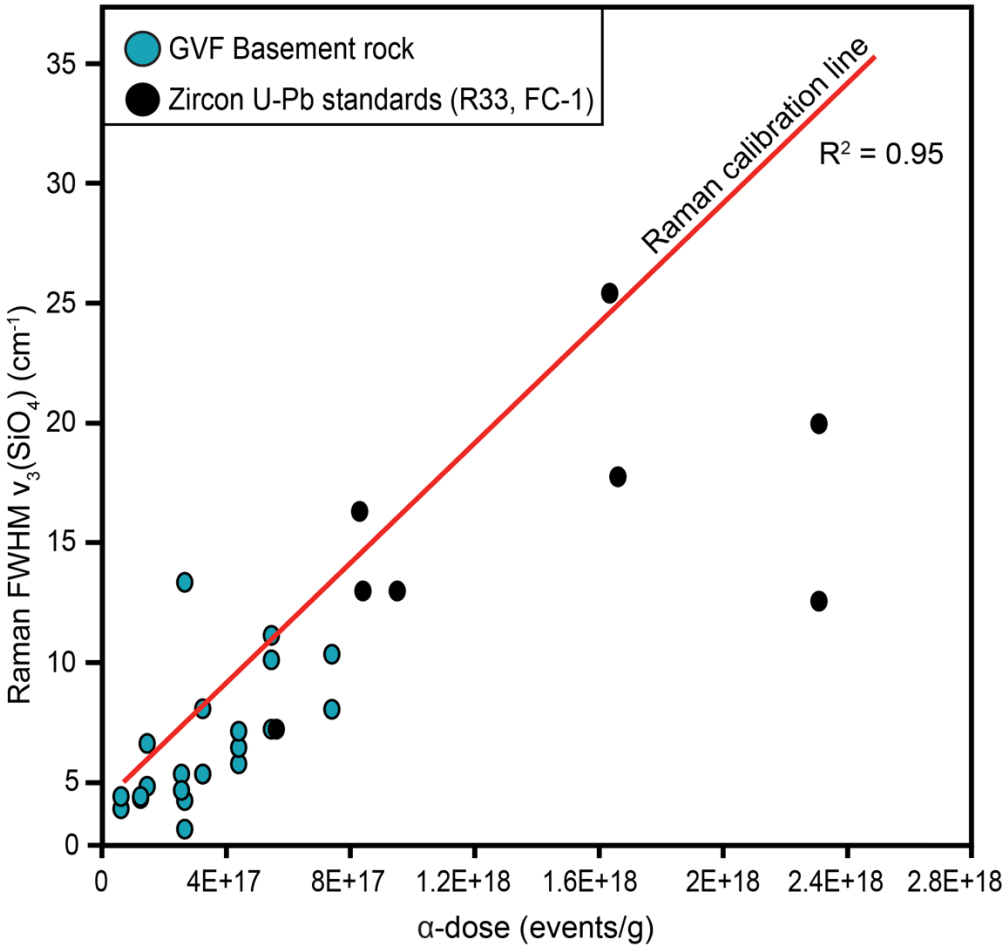


Figure 4.5. FWHM of the $\nu_3(SiO_4)$ Raman band (B_{1g} mode; antisymmetric stretching of SiO_4 tetrahedrons) vs. α-doses for natural zircon from GVF basement rocks (gabbro and granodiorite) along with natural zircon R33 and FC-1, which are used are standards for U-Pb geochronologic analysis. α-doses are calculated from the zircon U-Pb isotopic data (U-Pb age, U and Th concentrations), following the methods of Nasdala et al. (2001, 2005). Raman calibration line represents the relationship between FWHM of the $\nu_3(SiO_4)$ Raman band and radiation damage.

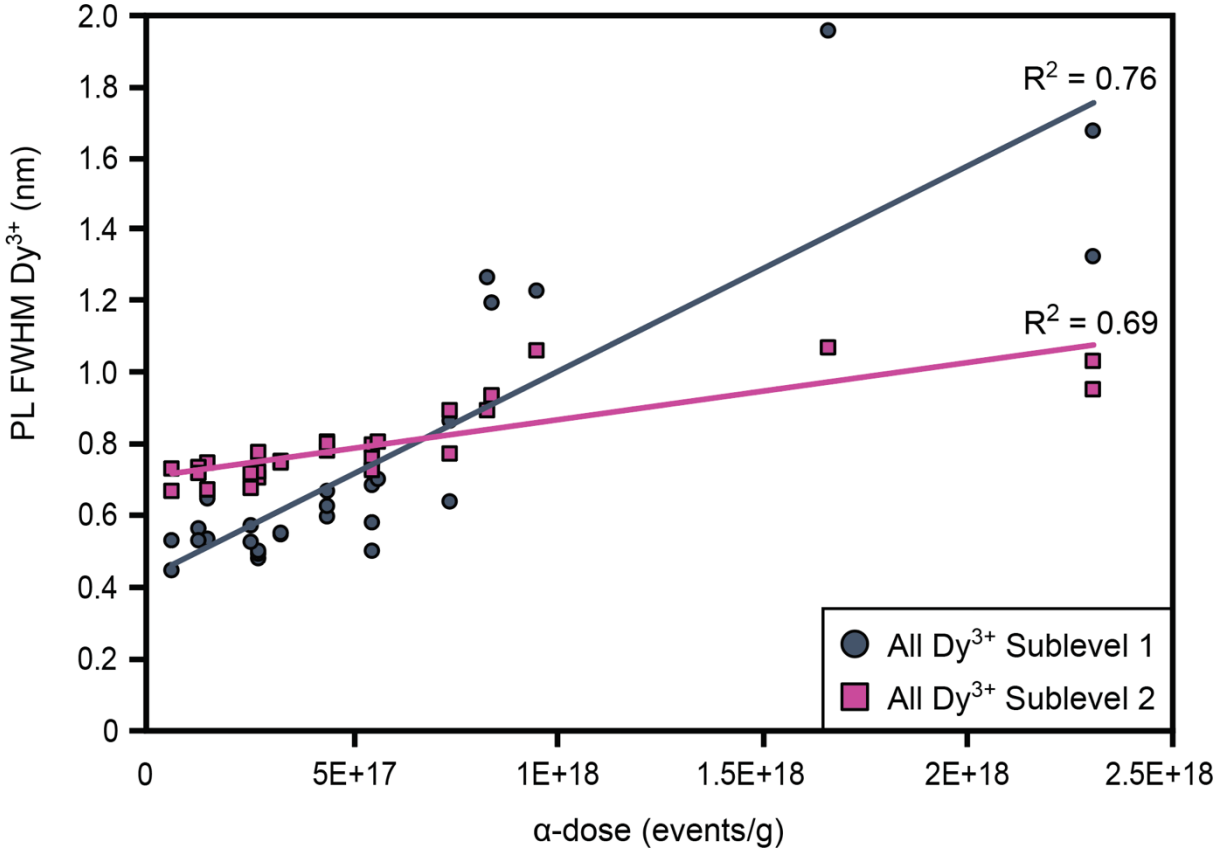


Figure 4.6. PL FWHM of sublevels I and II of the Dy^{3+} emission vs. α-doses for all natural zircon from GVF basement rocks (gabbro and granodiorite) and natural zircon standards R33 and FC-1. α-doses are calculated from the zircon U-Pb isotopic data (U-Pb age, U and Th concentrations), following the approach and equation in Nasdala et al. (2001, 2005).

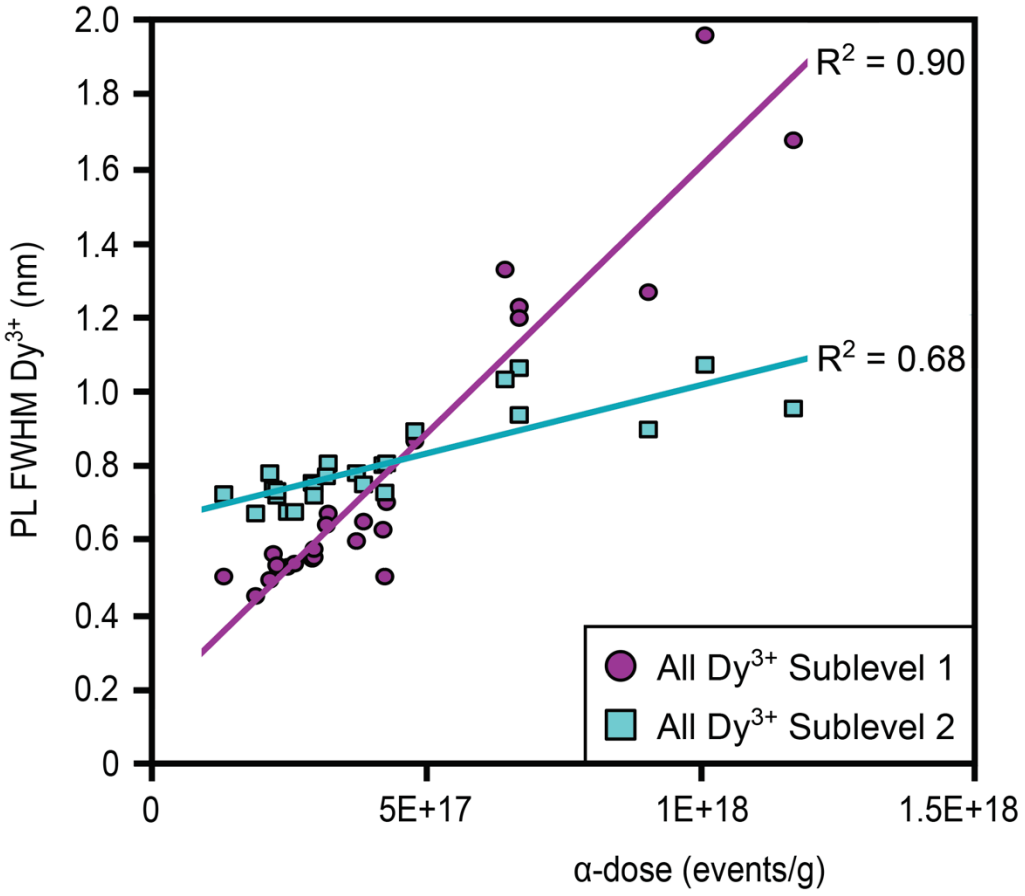


Figure 4.7. PL FWHM of sublevels I and II of the Dy^{3+} emission vs. α-doses for all natural zircon from GVF basement rocks (gabbro and granodiorite) and natural zircon R33 and FC-1. α-doses are calculated using the FWHM of the $\nu_3(SiO_4)$ Raman band.

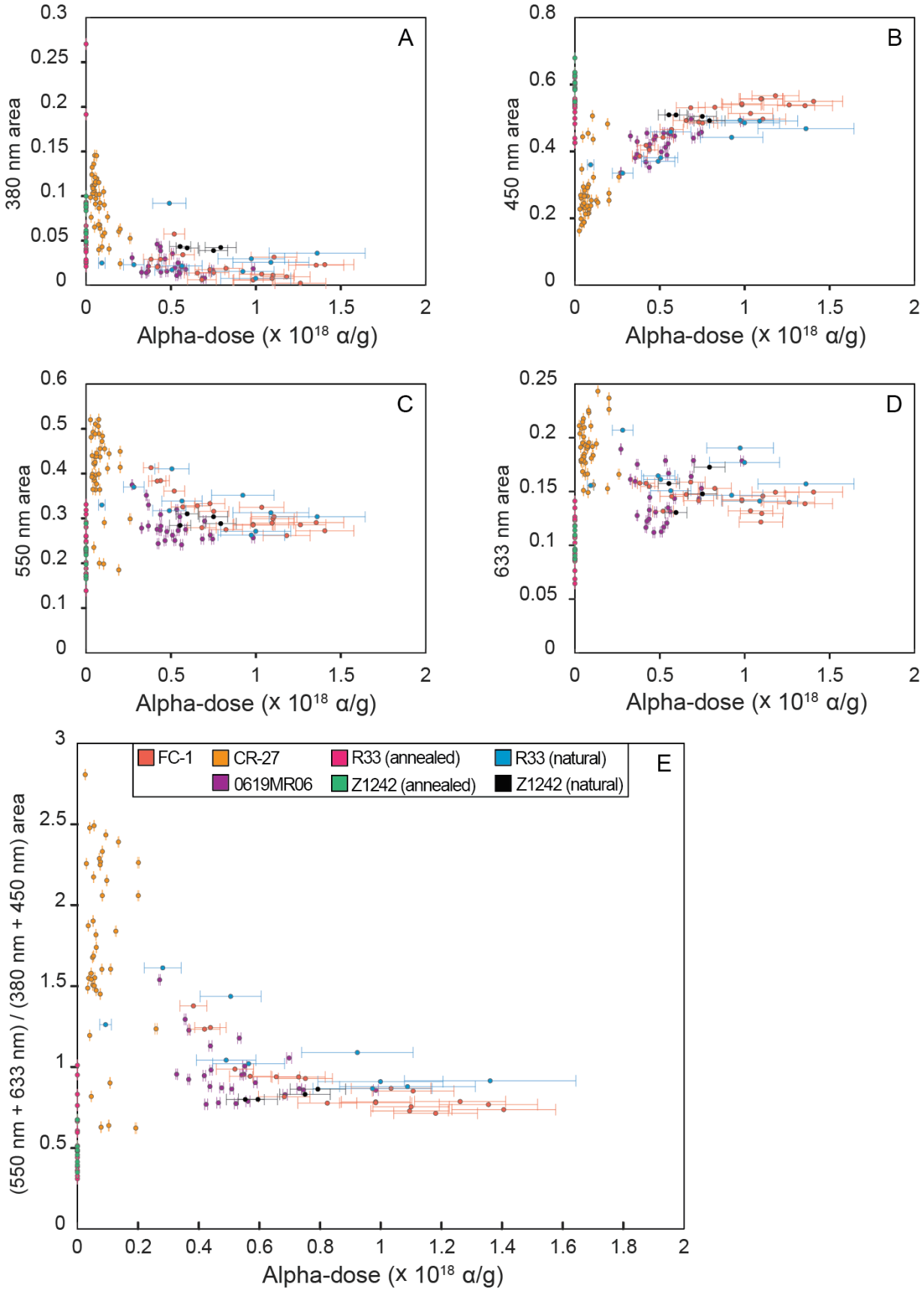

A
380 nm area
Alpha-dose (x 10¹⁸ α/g)
B
450 nm area
Alpha-dose (x 10¹⁸ α/g)
C
550 nm area
Alpha-dose (x 10¹⁸ α/g)
D
633 nm area
Alpha-dose (x 10¹⁸ α/g)
E
(550 nm + 633 nm) / (380 nm + 450 nm) area
Alpha-dose (x 10¹⁸ α/g)
FC-1
CR-27
R33 (annealed)
R33 (natural)
0619MR06
Z1242 (annealed)
Z1242 (natural)

Figure 4.8. Radiation damage curve plots for the (A-B) blue and (C-D) yellow regions along with the (E) ratio of yellow:blue curve areas plotted against α-dose. Alpha-doses were variously estimated from U-Pb age data (0619MR06, CR-27) and inferred cooling ages (natural zircon FC-1, Z1242, R33), while an assumed alpha-dose of zero was used for grains that underwent heat treatment (annealed Z1242 and annealed R33 zircon). Legend in panel E is the same for A-D.

Table 4.1. U-Pb ages, U and Th concentrations, and alpha-doses.

Sample and Grain Name	U (ppm)	Th (ppm)	U/Th	Calculated Alpha-dose (alpha decay events/g)	Best Age (Ma)	±
64-2/A (Nasdala et al., 2001)	*197*	*103*	*1.9*	*2.0E+17*	*278*	-
64-2/B (Nasdala et al., 2001)	*414*	*332*	*1.2*	*4.5E+17*	*278*	-
64-2/F (Nasdala et al., 2001)	*66*	*31*	*2.1*	*6.8E+16*	*278*	-
M144 (Nasdala et al., 2004a)	*436*	*140*	*3.1*	*8.8E+17*	*552*	*6*
G168 (Nasdala et al., 2004a)	*1499*	*257*	*5.8*	*2.9E+18*	*547*	*3*
M257 (Nasdala et al., 2008)	*840*	*235*	*3.6*	*1.7E+18*	*561.3*	*0.3*
M127 (Lenz and Nasdala, 2015)	*923*	*439*	*2.1*	*1.8E+18*	*524.3*	*0.4*
This Study						
0619-MR-06 Spot 4	496	374	1.3	3.3E+17	170.1	1.4
0619-MR-06 Spot 7	799	848	0.9	5.5E+17	166.5	1.8
0619-MR-06 Spot 12	409	386	1.1	2.7E+17	164.1	1.3
0619-MR-06 Spot 16	630	706	0.9	4.4E+17	167.3	2.1
0619-MR-07 Spot 8	366	426	0.9	2.5E+17	165.6	1.4
0619-MR-07 Spot 14	1123	873	1.3	7.4E+17	169.0	1.8
0619-MR-07 Spot 31	231	167	1.4	1.5E+17	163.6	1.4
CR-27 Spot 5	252	63	4.0	1.3E+17	144.4	1.8
CR-27 Spot 24	114	60	1.9	6.1E+16	145.5	1.4
U-Pb Zircon Standards						
R33 Spot 69	515	324	1.6	8.3E+17	417.2	4.0
R33 Spot 41	604	307	2.0	9.5E+17	416.9	4.1
R33 Spot 13	1341	1298	1.0	2.3E+18	417.2	3.7
R33 Spot 14	1341	1298	1.0	2.3E+18	417.2	3.7
FC-1 Spot 62	360	217	1.7	1.6E+18	1106.1	11.2
FC-1 Spot 46	132	45	2.9	5.6E+17	1093.5	14.7
FC-1 Spot 1	367	205	1.8	1.7E+18	1112.9	11.9
FC-1 Spot 65	190	103	1.8	8.4E+17	1091.5	11.9

Calculated alpha-doses following Holland and Gottfried (1955), Murakami et al. (1991), and Nasdala et al. (2001)

Table 4.1. U-Pb ages, U and Th concentrations, and alpha-doses.

Table 4.2. Spectroscopic data from zircon samples in this study.

Sample and Grain Name	Raman Shift $\nu_3(SiO_4)$ Band (cm^{-1})	±	$\nu_3(SiO_4)$ Raman Band FWHM (cm^{-1})	±	Calculated alpha-dose (alpha decay events/g)	Dy^{3+} (Sublevel 1) FWHM (nm)	Dy^{3+} (Sublevel 2) FWHM (nm)
0619-MR-06 Spot 4	1001.7	0.8	7.9	2.7	4.8E+17	–	–
0619-MR-06 Spot 4	1013.5	1.4	5.3	4.7	2.9E+17	0.5	0.8
0619-MR-06 Spot 4	1008.2	1.3	5.3	4.0	2.9E+17	0.6	0.7
0619-MR-06 Spot 7	1005.8	0.2	7.1	0.7	4.2E+17	0.5	0.7
0619-MR-06 Spot 12	975.1	1.2	4.1	3.8	2.1E+17	0.5	0.8
0619-MR-06 Spot 12	1006.8	0.2	3.0	0.6	1.3E+17	0.5	0.7
0619-MR-06 Spot 16	1005.2	0.3	5.6	1.0	3.2E+17	0.7	0.8
0619-MR-06 Spot 16	1004.2	0.5	6.4	1.5	3.7E+17	0.6	0.8
0619-MR-06 Spot 16	1004.7	1.0	7.0	3.1	4.2E+17	0.6	0.8
0619-MR-07 Spot 8	1007.8	0.0	5.3	0.1	2.9E+17	0.6	0.7
0619-MR-07 Spot 8	1008.0	0.0	4.6	0.1	2.4E+17	0.5	0.7
0619-MR-07 Spot 14	1005.8	0.1	7.9	0.4	4.8E+17	0.9	0.9
0619-MR-07 Spot 14	1006.6	0.1	5.6	0.2	3.2E+17	0.6	0.8
0619-MR-07 Spot 31	1008.0	0.0	4.8	0.1	2.6E+17	0.5	0.7
0619-MR-07 Spot 31	1007.3	0.1	6.5	0.3	3.8E+17	0.6	0.8
CR-27 Spot 5	1007.5	0.0	4.2	0.0	2.2E+17	0.6	0.7
CR-27 Spot 5	1007.7	0.0	4.4	0.0	2.3E+17	0.5	0.7
CR-27 Spot 24	1007.5	0.0	3.8	0.1	1.9E+17	0.4	0.7
CR-27 Spot 24	1007.0	0.1	4.3	0.3	2.2E+17	0.5	0.7
R33 Spot 69	1002.0	0.0	13.8	0.1	9.0E+17	1.3	0.9
R33 Spot 41	1002.7	0.0	10.5	0.1	6.7E+17	1.2	1.1
R33 Spot 13	1003.9	0.0	10.1	0.2	6.4E+17	1.3	1.0
R33 Spot 14	999.3	0.1	17.5	0.3	1.2E+18	1.7	1.0
FC-1 Spot 62	1000.4	0.8	23.0	3.4	1.6E+18	–	–
FC-1 Spot 46	1005.4	0.1	7.1	0.5	4.2E+17	0.7	0.8
FC-1 Spot 1	999.8	0.1	15.3	0.4	1.0E+18	2.0	1.1
FC-1 Spot 65	1002.1	0.1	10.5	0.2	6.6E+17	1.2	0.9

Calculated alpha-doses using the FWHM of the $\nu_3(SiO_4)$ Raman band.

Table 4.2. Spectroscopic data from zircon samples in this study.

Literature Cited

Anderson, A.J., Hanchar, J.M., Hodges, K.V., and van Soest, M.C., 2020, Mapping radiation damage zoning in zircon using Raman spectroscopy: Implications for zircon chronology: Chemical Geology, 538, p.119494.

Anderson, A.J., Hodges, K.V., and van Soest, M.C., 2017, Empirical constraints on the effects of radiation damage on helium diffusion in zircon: Geochimica et Cosmochimica Acta, 218, 308–322. https://doi.org/10.1016/j.gca.2017.09.006

Ardill, K.A., Paterson, S.R., and Memeti, V., 2018, Spatiotemporal magmatic focusing in upper-mid crustal plutons of the Sierra Nevada arc: Earth and Planetary Science Letters, v. 498, p. 88–100, https://doi.org/10.1016/j.epsl.2018.06.023.

Armstrong, R.L., and Ward, P.L., 1993, Late Triassic to earliest Eocene magmatism in the North American Cordillera: Implications for the Western Interior Basin, in Caldwell, W.G.E., and Kauffman, E.G., eds., Evolution of the Western Interior Basin: Geological Association of Canada Special Paper 39, p. 49–72.

Attia, S., Cottle, J.M., and Paterson, S.R., 2020, The erupted zircon record of continental crust formation during mantle driven arc flare-ups: Geology, v. 48, no. 5, p. 446–451, https://doi.org/10.1130/G46991.1.

Attia, S., Paterson, S.R., Cao, W., Chapman, A.D., Saleeby, J., Dunne, G.C., Stevens, C.H., and Memeti, V., 2018, Late Paleozoic tectonic assembly of the Sierra Nevada prebatholithic framework and western Laurentian provenance links based on synthesized detrital zircon geochronology, in Ingersoll, R.V., Lawton, T.F., and Graham, S.A., eds., Tectonics, Sedimentary Basins, and Provenance: A Celebration of William R. Dickinson's Career: Geological Society of America Special Paper 540, p. 267–295, https://doi.org/10.1130/2018.2540(12).

Ault, A.K., Flowers, R.M., Mahan, K.H., 2012, Quartz shielding of sub-10 μm zircons from radiation damage–enhanced Pb loss: An example from a metamorphosed mafic dike, northwestern Wyoming craton: Earth and Planetary Science Letters, v. 339–340, p. 57–66, doi:10.1016/j.epsl.2012.04.025.

Bailey, E.H., Blake, M.C., Jr., and Jones, D.L., 1970, On-land Mesozoic oceanic crust in California Coast Ranges, in Geological Survey Research 1970, Chapter C: U.S. Geological Survey Professional Paper 700-C, p. C70–C81.

Balan, E., Neuville, D.R., Trocellier, P., Fritsch, E., Muller, J.P., and Calas, G., 2001, Metamictization and chemical durability of detrital zircon: American Mineralogist, 86, 1025–1033.

Bateman, P.C., and Wahrhaftig, C., 1966, Geology of the Sierra Nevada, in Bailey, E.H., ed., Geology of north- ern California: California Division of Mines and Geology Bulletin, v. 190, p. 107–172.

Black, L. P., Kamo, S. L., Allen, C. M., Davis, D. W., Aleinikoff, J. N., Valley, J. W., Mundil, R., Campbell, I. H., Korsch, R. J., Williams, I. S., and Foudoulis, C., 2004, Improved $^{206}Pb/^{238}U$ microprobe geochronology by the monitoring of a trace-element-related matrix effect; SHRIMP, ID–TIMS, ELA–ICP–MS and oxygen isotope documentation for a series of zircon standards: Chemical Geology, 205, 115-140.

Blanc, P., Baumer, A., Cesbron, F., Ohnenstetter, D., Panczer, G., and Remond, G., 2000, Systematic cathodoluminescence spectral analysis of syn-thetic doped minerals: Anhydrite, apatite, calcite, fluorite, scheelite and zircon, in Cathodoluminescence in Geosciences, Pagel, M., Barbin, V., Blanc, P. & Ohnenstetter, D., Eds.: Springer, pp. 127–160.

Brøgger, W.C., 1893, Amorf: Salmonens store illustrerede Konversationslexikon, 1, 742–743.

Cady, J.W., 1975, Magnetic and Gravity Anomalies in the Great Valley and Western Sierra Nevada Metamorphic Belt, California: Geological Society of America Special Paper 168, 56 p., https://doi.org/10.1130/SPE168-p1.

Cecil, M.R., Ducea, M.N., Reiners, P.W., and Chase, C.G., 2006, Cenozoic exhumation of the northern Sierra Nevada, California, from (U-Th)/He thermochronology: Geological Society of America Bulletin, v. 118, p. 1481–1488, doi:10.1130/B25876.1

Cecil, M.R., Ferrer, M.A., Riggs, N.R., Marsaglia, K.M., Kylander-Clark, A., Ducea, M.N., and Stone, P., 2019, Early arc development recorded in Permian–Triassic plutons of the northern Mojave Desert region, California, USA: Geological Society of America Bulletin, v. 131, p. 749–765, https://doi.org/10.1130/B31963.1.

Cesbron F., Blance P., Ohnenstetter, D. and Rémond, G., 1995, Cathodoluminescence of rare earth doped zircons. I. Their possible use as reference materials. Scanning Microscopy Supplement 9: 35–56.

Chakoumakos, B.C., Oliver, B.C., Lumpkin, G.R., and Ewing, R.C., 1991, Hardness and elastic modulus of zircon as a function of heavy-particle irradiation dose. I. In situ a-decay event damage: Radiation Effects and Defects in Solids, 118, 393–403.

Chapman, A.D., Ernst, W.G., Gottlieb, E., Powerman, V., and Metzger, E.P., 2015, Detrital zircon geochronology of Neoproterozoic–Lower Cambrian passive-margin strata of the White-Inyo Range, east-central California: Implications for the Mojave–Snow Lake fault hypothesis: Geo- logical Society of America Bulletin, v. 127, no. 7–8, p. 926–944, https://doi.org/10.1130/B31142.1.

Chapman, A.D., Saleeby, J.B., Wood, D.J., Piasecki, A., Kidder, S., Ducea, M.N., and Farley, K.A., 2012, Late Cretaceous gravitational collapse of the southern Sierra Nevada batholith, California: Geosphere, v. 8, p. 314– 341, doi:10.1130/GES00740.1.

Cheong, A.C.S., Jeong, Y.J., Lee, S., Yi, K., Jo, H.J., Lee, H.S., Park, C., Kim, N.K., Li, X.H., and Kamo, S.L., 2019, LKZ- 1: A new zircon working standard for the in situ determination of U-Pb age, O-Hf Isotopes, and trace element composition: Minerals, 9, 325.

Deliens, M., Delhal, J., and Tarte, P., 1977, Metamictization and U-Pb systematics – a study by infrared absorption spectrometry of Precambrian zircons: Earth and Planetary Science Letters, 33, 331–344.

DeLucia, M. S., Guenthner, W. R., Marshak, S., Thomson, S. N., and Ault, A. K., 2018, Thermochronology links denudation of the Great Unconformity surface to the supercontinent cycle and snowball Earth: Geology, 46, 167-170.

Ducea, M., 2001, The California arc: Thick granitic batholiths, eclogitic residues, lithospheric-scale thrusting, and magmatic flare-ups: GSA Today, v. 11, no. 11, p. 4–10, https://doi.org/10.1130/1052-5173(2001)011<0004:TCA TGB>2.0.CO;2.

Dunne, G.C., and Suczek, C.A., 1991, Early Paleozoic eugeoclinal strata in the Kern Plateau pendants, southern Sierra Nevada, California, in Cooper, J.D., and Stevens, C.H., eds., Paleozoic Paleogeography of the Western United States: Los Angeles, California, Pacific Section, Society of Economic Paleontologists and Mineralogists (Book 67), p. 677–692.

Ewing, R.C., 1993, The metamict state: 1993—the centennial: Nuclear Instruments and Methods in Physics Research Section B, 91, 22–29.

Ewing, R.C., 2001, The design and evaluation of nuclear-waste forms: clues from mineralogy: Canadian Mineralogist, 39, 697–715.

Farnan, I., and Salje, E.K.H., 2001, The degree and nature of radiation damage in zircon observed by ^{29}Si nuclear magnetic resonance: Journal of Applied Physics, 89, 2084–2090.

Farnan, I., Cho, H., and Weber, W.J., 2007, Quantification of actinide α-radiation damage in minerals and ceramics: Nature, 445, 190–193.

Finch, A.A., Garcia-Guinea, J., Hole, D.E., Townsend, P.D., and Hanchar, J.M., 2004, Ionoluminescence of zircon: rare earth emissions and radiation damage, Journal of Physics D: Applied Physics 37: 2795– 2803, DOI 10.1088/0022-3727/37/20/004.

Finch, R.J., Hanchar, J.M., Hoskin, P.W.O., and Burns, P.C., 2001, Rare-earth elements in synthetic zircon: Part 2. A single-crystal X-ray study of xenotime substitution: American Mineralogist, 86, 681–689.

Friis, H., Finch, A.A., Williams, C.T., and Hanchar, J.M., 2010, Photoluminescence of zircon ($ZrSiO_4$) doped with REE^{3+} (REE= Pr, Sm, Eu, Gd, Dy, Ho, Er): Physics and Chemistry of Minerals, 37, 333–342.

Gaft, M., Reisfeld, R., Panczer, G., Blank, P., and Boulon, G., 1998, Laser-induced time-resolved luminescence of minerals: Spectrochim Acta Part A 54: 2163–2175, DOI 10.1016/S1386-1425(98)00134-6.

Gehrels, G.E., 2000, Introduction to the detrital zircon studies of Paleozoic and Triassic strata in western Nevada and northern California, in Soreghan, M.J., and Gehrels, G.E., eds., Paleozoic and Triassic Paleogeography and Tectonics of Western Nevada and Northern California: Geological Society of America Special Paper 347, p. 1–17, https://doi.org/10.1130/0-8137-2347-7.1.

Gehrels, G.E., and Pecha, M., 2014, Detrital zircon U-Pb geochronology and Hf isotope geochemistry of Paleozoic and Triassic passive margin strata of western North America: Geosphere, v. 10, p. 49–65, https://doi.org/10.1130/GES00889.1.

Gehrels, G.E., Valencia, V.A., and Ruiz, J., 2008, Enhanced precision, accuracy, efficiency, and spatial resolution of U-Pb ages by laser ablation– multicollector–inductively coupled plasma–mass spectrometry: Geochemistry, Geophysics, Geosystems, v. 9, Q03017, https://doi.org/10.1029 /2007GC001805.

Geisler, T., Pidgeon, R.T., Kurtz, R., van Bronswijk, W., and Schleicher, H., 2003b, Experimental hydrothermal alteration of partially metamict zircon: American Mineralogist, 88, 1496–1513.

Geisler, T., Trachenko, K., Ríos, S., Dove, M.T., and Salje, E.K.H., 2003a, Impact of self-irradiation damage on the aqueous durability of zircon ($ZrSiO_4$): implications for its suitability as a nuclear waste form: Journal of Physics: Condensed Matter, 15, 597–605.

Gérard, B., Robert, X., Grujic, D., Gautheron, C., Audin, L., Bernet, M., Balvay, M., 2022, Zircon (U-Th)/He Closure Temperature Lower Than Apatite Thermochronometric Systems: Reconciliation of a Paradox: Minerals, 12,145. https://doi.org/ 10.3390/min12020145

Godfrey, N.J., Beaudoin, B.C., Klemperer, S.L., and Mendocino Working Group, 1997, Ophiolitic basement to the Great Valley forearc basin, California, from seismic and gravity data: Implications for crustal growth at the North American continental margin: Geological Society of America Bulletin, v. 108, p. 1536–1562.

Guenthner, W.R., Reiners, P.W., Ketcham, R.A., Nasdala, L., Giester, G., 2013, Helium Diffusion in Natural Zircon: Radiation Damage, Anisotropy, and the Interpretation of Zircon (U-Th)/He Thermochronology: American Journal of Science, 313, 145-198.

Holland, H.D., and Gottfried, D., 1955, The effect of nuclear radiation on the structure of zircon: Acta Crystallographica, 8, 291–300.

Hopson, C.A., Mattinson, J.M., Pessagno, E.A., Jr., and Luyendyk, B.P., 2008, California Coast Range ophiolite: Composite Middle and Late Jurassic oceanic lithosphere, in Wright, J.E., and Shervais, J.W., eds., Ophiolites, Arcs, and Batholiths: A Tribute to Cliff Hopson: Geological Society of America Special Paper 438, p. 1–101, doi: 10.1130/2008.2438(01).

Hu, Z., Li, X.H., Luo, T., Zhang, W., Crowley, J., Li, Q., Ling, X., Yang, C., Li, Y., Feng, L., and Xia, X., 2021, Tanz zircon megacrysts: a new zircon reference material for the microbeam determination of U–Pb ages and Zr–O isotopes: Journal of Analytical Atomic Spectrometry, 36(12), pp. 2715-2734.

Ingersoll, R.V., 1982, Initiation and evolution of the Great Valley forearc basin of northern and central California, U.S.A., in Leggett, J.K., ed., Trench- Forearc Geology: Sedimentation and Tectonics on Modern and Ancient Active Plate Margins: Geological Society, London, Special Publication 10, p. 459–467, https://doi.org/10.1144/GSL.SP.1982.010.01.31.

Ingersoll, R.V., 2019, Forearc strike-slip displacement as an alternative to subduction erosion, with examples from Mexico and California (sinistral Nacimiento fault): Canadian Journal of Earth Sciences, 56 (12), 1285–1296.

Jazmati, A.K., and Townsend, P.D., 2000, Photoluminescence from RE doped BGO Waveguides, Nuclear Instruments and Methods in Physics Research Section B: Beam Interactions with Materials and Atoms, 166, 597–601.

Ketcham, R.A., Tremblay, M., Abbey, A., Baughman, J., Cooperdock, E., Jepson, G., Murray, K., Odlum, M., Stanley, J. and Thurston, O., 2022, Report from the 17th International Conference on Thermochronology: Earth and Space Science Open Archive, p. 1–20, doi:10.1002/essoar.10511082.1

Kirsch, M., Paterson, S.R., Wobbe, F., Ardila, A.M.M., Clausen, B.L., and Alasino, P.H., 2016, Temporal histories of Cordilleran continental arcs: Testing models for magmatic episodicity: American Mineralogist, v. 101, p. 2133–2154, https://doi.org/10.2138/am-2016-5718.

Kuiper, Y.D., 2005, Isotopic age constraints from electron microprobe U-Th-Pb dates, using a

three-dimensional concordia diagram: American Mineralogist, 90, 586–591.

Lenz, C., and Nasdala, L., 2015, A photoluminescence study of REE^{3+} emissions in radiation-damaged zircon: American Mineralogist, 100, 1123–1133.

Lenz, C., Belousova, E., and Lumpkin, G.R., 2020, The in-situ quantification of structural radiation damage in zircon using laser-induced confocal photoluminescence spectroscopy: Minerals, 10, 83.

Lenz, C., Talla, D., Ruschel, K., Skoda, R., Götze, J., and Nasdala, L., 2013, Factors affecting the Nd^{3+} (REE^{3+}) luminescence of minerals: Mineralogy and Petrology, 107, 415–428.

Lumpkin, G.R., 2006, Ceramic waste forms for actinides: Elements, 2, 365–372.

Lumpkin, G.R., 2018, Ceramic host phases for nuclear waste remediation: Experimental and Theoretical Approaches to Actinide Chemistry, Gibson, J.K., de Jong, W.A., Eds.; John Wiley and Sons: Hoboken, NJ, USA.

Mathieu, R., Zetterström, L., Cuney, M., Gauthier-Lafaye, F., and Hidaka, H., 2001, Alteration of monazite and zircon and lead migration as geochemical tracers of fluid paleocirculations around the Oklo–Okélobondo and Bangombé natural nuclear reaction zones (Franceville basin, Gabon): Chemical Geology, 171, 147–171.

Mattinson, J.M., 2010, Analysis of the relative decay constants of ^{235}U and ^{238}U by multi-step CA-TIMS measurements of closed-system natural zircon samples: Chemical Geology, 275(3-4), pp.186-198.

McDannell, K. T., Zeitler, P. K., and Schneider, D. A., 2018, Instability of the southern Canadian Shield during the late Proterozoic: Earth and Planetary Science Letters, 490, 100-109.

Meier, M.L., 2005, Measuring crystallite size using X-ray diffraction, the Williamson-Hall method: Department of Chemical Engineering and Materials Science, University of California, Oakland.

Memeti, V., Gehrels, G.E., Paterson, S.R., Thompson, J.M., Mueller, R., and Pignotta, M., 2010, Evaluating the Mojave-Snow Lake fault hypothesis and origins of central Sierran metasedimentary pendant strata using detrital zircon provenance analyses: Lithosphere, v. 2, p. 341–360, https://doi.org/10.1130/L58.1.

Mortensen, J. K., and Card, K. D., 1993, U–Pb age constraints for the magmatic and tectonic evolution of the Pontiac Subprovince, Quebec: Canadian Journal of Earth Sciences, 30, 1970-1980.

Nasdala, L., Akhmadaliev, S., Artac, A., Chanmuang, C., Habler, G., Lenz, C., 2018, Irradiation

effects in monazite–(Ce) and zircon: Raman and photoluminescence study of Au-irradiated FIB foils: Physics and Chemistry of Minerals, 45, 855–871.

Nasdala, L., Grambole, D., Götze, J., Kempe, U., Váczi, T., 2011, Helium irradiation study on zircon: Contributions to Mineralogy and Petrology, 161, 777–789.

Nasdala, L., Irmer, G., Wolf, D., 1995, The degree of metamictization in zircons: A Raman spectroscopic study: European Journal of Mineralogy, 7, 471–478.

Nasdala, L., Lengauer, C.L., Hanchar, J.M., Kronz, A., Wirth, R., Blanc, P., Kennedy, A.K., and Seydoux-Guikkaume, A.M., 2002, Annealing radiation damage and the recovery of cathodoluminescence: Chemical Geology, 191: 121–140, DOI 10.1016/S0009-2541(02)00152-3

Nasdala, L., Wenzel, M., Vavra, G., Irmer, G., Wenzel, T., and Kober, B., 2001, Metamictisation of natural zircon: accumulation versus thermal annealing of radioactivity-induced damage: Contributions to Mineralogy and Petrology, 141, 125-144.

Orme, D.A., and Graham, S.A., 2018, Four-dimensional model of Cretaceous depositional geometry and sediment flux in the northern Great Valley forearc, California, in Ingersoll, R.V., Lawton, T.F., and Graham, S.A., eds., Tectonics, Sedimentary Basins, and Provenance: A Celebration of William R. Dickinson's Career: Geological Society of America Special Paper 540, https://doi.org/10.1130/2018.2540(18).

Orme, D.A., Guenthner, W.R., Laskowski, A.K., and Reiners, P.W., 2016, Long-term tectonothermal history of Laramide basement from zircon–He age-eU correlations: Earth and Planetary Science Letters, 453, 119–130.

Pabst, A., 1952, The metamict state: American Mineralogist, 37, 137–157.

Paces, J. B., and Miller Jr, J. D., 1993, Precise U-Pb ages of Duluth complex and related mafic intrusions, northeastern Minnesota: Geochronological insights to physical, petrogenetic, paleomagnetic, and tectonomagmatic processes associated with the 1.1 Ga midcontinent rift system: Journal of Geophysical Research: Solid Earth, 98, 13997-14013.
Paterson and Ducea, 2015

Palenik, C.S., Nasdala, L., and Ewing, R.C., 2003, Radiation damage in zircon: American Mineralogist, 88, 770–781.

Panczer, G., De Ligny, D., Mendoza, C., Gaft, M., Seydoux-Guillaume, A., and Wang, X., 2012, Raman and fluorescence in J. Dubessy, M.-C. Caumon, and F. Rull, Eds., Applications of Raman Spectroscopy to Earth Sciences and Cultural Heritage: EMU Notes in Mineralogy, Eötvös University Press, Budapest, 12, p. 61–82.

Pinet, N., and McDannell, K.T., 2020, The Ups and Downs of the Canadian Shield. 3, Additional Apatite Fission-track Analyses from the Musselwhite, Roberto, Meadowbank and Raglan Mines, Ontario, Quebec, and Nunavut. Geological Survey of Canada.

Pullen, A., Ibanez-Mejia, M., Gehrels, G., Giesler, D., and Pecha, M., 2018, Optimization of a l aser ablation–single collector–inductively coupled plasma–mass spectrometer (Thermo Element 2) for accurate, precise, and efficient zircon U-Th-Pb geochronology: Geochemistry, Geophysics, Geosystems, v. 19, p. 3689–3705, https://doi.org/10.1029/2018GC007889.

Pullen, A., Ibáñez-Mejía, M., Gehrels, G. E., Ibáñez-Mejía, J. C., and Pecha, M., 2014, What happens when n= 1000? Creating large-n geochronological datasets with LA-ICP-MS for geologic investigations: Journal of Analytical Atomic Spectrometry, 29(6), 971-980.

Rémond, G., Blanc, P., Cesbron, F., Ohnenstetter, D., and Rouer, O., 1995, Cathodoluminescence of rare earth doped zircons. II. Relationship between the distribution of the doping elements and the contrasts of images: Scanning Microscopy Supplement 9: 57–76.

Ríos, S., Salje, E.K., Zhang, M., and Ewing, R.C., 2000, Amorphization in zircon: evidence for direct impact damage: Journal of Physics: Condensed Matter, 12, 2401–2412.

Ruschel, K., Nasdala, L., Rhede, D., Wirth, R., Lengauer, C.L., and Libowitzky, E., 2010, Chemical alteration patterns in metamict fergusonite: European Journal of Mineralogy, 22, 425–433.

Saleeby, J.B., 1982, Polygenetic ophiolite belt of the California Sierra Nevada; Geochronological and tectonostratigraphic development: Journal of Geophysical Research, B, v. 87, no. 3, p. 1803–1824.

Saleeby, J. B., 1992, Petrotectonic and paleogeographic settings of U.S. Cordilleran ophiolites, in Burchfiel, B. C., et al., The Cordilleran orogen: Conterminous U.S.: Boulder, Colorado, Geological Society of America, Geology of North America, v. G-3, p. 653–682.

Saleeby, J., 2011, Geochemical mapping of the Kings-Kaweah ophiolite belt, California—Evidence for progressive mélange formation in a large offset transform-subduction initiation environment, in Wakabayashi, J., and Dilek, Y., eds., Mélanges: Processes of Formation and Societal Significance: Geological Society of America Special Paper 480, p. 31–73, https://doi.org/10.1130/2011.2480(02).

Saleeby, J.B., and Busby, C., 1993, Paleogeographic and tectonic setting of axial and western metamorphic framework rocks of the southern Sierra Nevada, California, in Dunne, G., and McDougall, K., eds., Mesozoic Paleogeography of the Western United States—II:

Los Angeles, California: Pacific Section, Society of Economic Paleontologists and Mineralogists Book 71, p. 197–225.

Saleeby, J.B., and Dunne, G., 2015, Temporal and tectonic relations of early Mesozoic arc magmatism, southern Sierra Nevada, California, in Anderson, T.H., Didenko, A.N., Johnson, C.L., Khanchuk, A.I., and MacDonald, J.H., Jr., eds., Late Jurassic Margin of Laurasia— A Record of Faulting Accommodating Plate Rotation: Geological Society of America Special Paper 513, p. 223–268, https://doi.org/10.1130/2015.2513(05).

Schweickert, R.A., and Lahren, M.M., 1993, Tectonics of the east-central Sierra Nevada-Saddle-bag Lake and northern Ritter Range pendants, in Lahren, M.M., Trexler, J.H., and Spinoza, C., eds., Crustal Evolution of the Great Basin and the Sierra Nevada: Reno, Nevada, Geological Society of America Field Trip Guidebook, May 1993, Department of Geological Sciences, University of Nevada, p. 313–352.

Shervais, J.W., 2001, Birth, death and resurrection: The life cycle of suprasubduction zone ophiolites: Geochemistry, Geophysics, Geosystems, v. 2, 1010, https://doi.org/10.1029/2000GC000080.

Shervais, J. W., Murchey, B. L., Kimbrough, D. L., Renne, P. R., and Hanan, B., 2005, Radioisotopic and biostratigraphic age relations in the Coast Range Ophiolite, northern California: Implications for the tectonic evolution of the Western Cordillera: Geological Society of America Bulletin, v. 117, p. 633–653, https://doi.org/10.1130/B25443.1.

Stern, R. A., 1997, The GSC Sensitive High Resolution Ion Microprobe (SHRIMP): analytical techniques of zircon U-Th-Pb age determinations and performance evaluation: Radiogenic age and isotopic studies: Report, 10, 1-31.

Stevens, C.H., and Greene, D.C., 1999, Stratigraphy, depositional history, and tectonic evolution of Paleozoic continental-margin rocks in roof pendants of the eastern Sierra Nevada, California: Geological Society of America Bulletin, v. 111, p. 919–933, https://doi.org/10.1130/0016-7606 (1999)111<0919:SDHATE>2.3.CO;2.

Stevens, C.H., Stone, P., and Miller, J.S., 2005, A new reconstruction of the Paleozoic continental margin of southwest North America: Implications for the nature and timing of continental truncation and the possible role of the Mojave-Sonora megashear, in Anderson, T.H., Nourse, J.A., McKee, J.W., and Steiner, M.B., eds., The Mojave-Sonora Megashear Hypothesis: Development, Assessment, and Alternatives: Geological Society of America Special Paper 393, p. 597–618.

Stone, P., and Stevens, C.H., 1988, An angular unconformity in the Permian section of east-central California: Geological Society of America Bulletin, v. 100, p. 547–551, https://doi.org/10.1130 /0016-7606(1988)100<0547:AAUITP>2.3.CO;2.

Tsuchiya, Y., Kayama, M., Nishido, H., and Noumi, Y., 2015, Annealing effects on cathodoluminescence of zircon: Journal of Mineralogical and Petrological Sciences, 110, 283–292.

Tsuchiya, Y., Kayama, M., Nishido, H., and Noumi, Y., 2017, Cathodoluminescence of synthetic zircon implanted by He^+ ion: Geochronometria, 44, 129–135.

Turner, H. M., Baughman, J. S., Ault, A. K., and Thompson, M. D., 2021, Burial and exhumation of the New England Avalon terrane coincident with Alleghanian orogenesis and continental breakup documented with zircon and apatite (U-Th)/He thermochronometry. In AGU Fall Meeting 2021. AGU.

Van Es, H.J., Vainshtein, D.I., Rozendaal, A., Donoghue, J.F., De Meijer, R.J., and Den Hartog, H.W., 2002, Thermoluminescence of $ZrSiO_4$ (zircon): A new dating method?. Nuclear Instruments and Methods in Physics Research Section B: Beam Interactions with Materials and Atoms, 191, 649–652.

Vaz, J.E., and Senftle, F.E., 1971, Thermoluminescence study of the natural radiation damage in zircon: Journal of Geophysical Research, 76, 2038–2050.

Wasilewski, P.J., Senftle, F.E., Vaz, J.E., Thorpe, A.N., and Alexander, C.C., 1973, A study of the natural α-recoil damage in zircon by infrared spectra: Radiation Effects, 17, 191–199.

Weber, W.J., 1990, Radiation-induced defects and amorphization in zircon: Journal of Materials Research, 5, 2687–2697.

Wei, Q., Wang, H., Yang, Y., Yang, J., Huang, C., Wu, S., and Xie, L., 2020, KV01 zircon—A potential New Archean reference material for microbeam U-Pb age and Hf-O isotope determinations: Science China Earth Sciences, 63(11), pp.1780-1790.

Yang, C., Homman, N.O., Johansson, L., and Malmqvist, K.G., 1994, Microcharacterizing zircon mineral grain by ionoluminescence combined with PIXE. Nuclear Instruments and Methods in Physics Research Section B: Beam Interactions with Materials and Atoms, 85, 808–814.

Zamyatin, D.A.; Shchapova, Y.V.; Votyakov, S.L.; Nasdala, L.; Lenz, C., 2017, Alteration and chemical U-Th-total Pb dating of heterogeneous high-uranium zircon from a pegmatite from the Aduiskii Massif, Middle Urals, Russia: Mineralogy and Petrology, 111, 475–497.

Zhang, M., and Salje, E.K., 2001, Infrared spectroscopic analysis of zircon: Radiation damage and the metamict state: Journal of Physics: Condensed Matter, 13, 3057–3071.

Zhang, M., Boatner, L.A., Salje, E.K., Ewing, R.C., Daniel, P., Weber, W.J., Zhang, Y., and

Farnan, I., 2008, Micro-Raman and micro-infrared spectroscopic studies of Pb-and Au-irradiated $ZrSiO_4$: Optical properties, structural damage, and amorphization. Physical Review B, 77(14), 144110.

CHAPTER FIVE

CONCLUSIONS

This dissertation provides a detailed description of depositional environments, provenance, and tectonic setting during the early development of the northern Great Valley forearc (GVF) basin and its post-depositional thermal history. The conclusions of the study successfully address the objectives outlined in Chapter 1.

Deposition of sedimentary rocks in a forearc position initiated as late as ~151 Ma along the western GVF basin, as recorded by the ophiolitic breccia in northern California. This deposition was likely driven by localized faulting within a tectonic tensional setting. The ophiolitic breccia and overlying basal GVF strata yield pre-Mesozoic and Mesozoic detrital zircon ages, suggesting deposition in a forearc position that was near the Sierra Nevada-Klamath magmatic arc and sources of North American affinity. Deposition along the western Sacramento basin is interpreted to have been diachronous with segmented depocenters, based on varying maximum depositional ages between ~151–145 Ma from basal strata of the GVF at Digger Creek, Crowfoot Point, Paskenta, Chrome, and Grindstone Creek. Herein, a tectonic model is proposed, where extensional dismemberment of the (Coast Range ophiolite) CRO may have generated isolated fault-bounded depocenters; these segmented depocenters provided accommodation for sediment that was transported trench-ward to a deep-marine setting during the early development of the forearc. As this forearc system matured, these isolated depocenters became overfilled and formed a cohesive forearc basin during Early Cretaceous time.

Post-deposition, Upper Jurassic–Lower Cretaceous strata along the western outcrop belt in the Sacramento basin experienced minimum burial temperatures >85 ºC and record cooling

below 40-85 ºC during the Cenozoic. Across the Sacramento basin and along the eastern margin, Cenomanian–Coniacian subsurface GVG strata record post-depositional maximum burial temperatures that range between ~120-210 ºC during the Late Cretaceous and cooling ages of Late Cretaceous and Cenozoic in age. Published cooling ages combined with the thermal history modeling of AHe and ZHe cooling ages, documented herein, indicate similar cooling histories in the latest Late Cretaceous–Cenozoic between Upper Jurassic–Lower Cretaceous strata from the western outcrop belt and eastern subsurface GVG strata. This overlap in cooling histories may reflect coeval exhumation related to regional tectonism or coeval basin-wide exhumation associated with changes along the western margin of North America as the subduction zone transitioned to a transform fault system.

Thermal cooling histories pertaining to GVF basement rock and overlying sedimentary strata are primarily constrained using low-temperature thermochronology on minerals such as zircon. The crystal structure in zircon is damaged during radioactive decay, altering the retention of radiogenic lead and helium, which in turn may influence the determined date. Spectroscopic techniques can provide quantitative characterization of radiation damage in zircon. This study incorporates U-Pb geochronology with CL, PL, and Raman spectroscopy on natural zircon from the CRO and Sierra Nevada basement of the GVF basin and demonstrates that CL spectroscopy serves as an alternative approach to assess radiation damage in zircon.

The Great Valley Forearc basin is a world-class natural laboratory to study the early stages of development of a forearc basin as well as the geologic history between forearc strata and its substratum. Specifically, the coeval history of breccia, derived from the CRO, and forearc sedimentation during extension within a forearc setting. Forearc strata within this basin records

the thermal history, where certain areas experienced sufficient temperatures to impact the AHe and ZHe thermochronometers and generate oil and gas. Basement rock of the GVF basin serve as a type-study and assist with nondestructively gauging radiation damage, as these rocks have a "simple" cooling history. This dissertation highlights the significance of studying forearc basins along with their accompanying basement component, as the linked relationship is crucial for understanding how forearc basins evolve.

CUMULATIVE LITURATURE CITED

Adam, J., and Reuther, C. D., 2000, Crustal dynamics and active fault mechanics during subduction erosion. Application of frictional wedge analysis on to the North Chilean Forearc: Tectonophysics, 321, 297-325.

Ague, J.J., 1997, Thermodynamic calculation of emplacement pressures for batholithic rocks, California: Implications for the aluminum-in-hornblende barometer: Geology, v. 25, p. 563–566, doi: 10.1130/0091- 7613(1997)025<0563:TCOEPF>2.3.CO;2.

Allen, P. A., Allen, J. R., 2013, Basin Analysis: Principles and Application to Petroleum Play Assessment: Blackwell Publishing, Ltd., Oxford, p. 1-619.

Almgren, A.A., 1984, Timing of Tertiary submarine canyons and marine cycles of deposition in the southern Sacramento Valley, California, in Almgren, A.A., and Hacker, P.D., eds., Paleogene Submarine Canyons of the Sacramento Valley, California: Bakersfield, California, Pacific Section, American Association of Petroleum Geologists, p. 1–16.

Almgren, A.A., and Hacker, P.D., eds., 1984, Paleogene Submarine Canyons of the Sacramento Valley, California: Bakersfield, California, Pacific Section, American Association of Petroleum Geologists, Symposium Volume 1, 187 p.

American Association of Petroleum Geologists (Pacific Section) Committee on Stratigraphic Correlation, Sacramento Valley Subcommittee, 1954, Correlation Section Northern Sacramento Valley, California: Pacific Section American Association of Petroleum Geologists Correlation Section 6.

American Association of Petroleum Geologists (Pacific Section) Committee on Stratigraphic Correlation, Sacramento Valley Subcommittee, 1960, Correlation Section Longitudinally North–South through Sacramento Valley from Red Bluff to Rio Vista, California: Pacific Section American Association of Petroleum Geologists Correlation Section 13.

American Association of Petroleum Geologists (Pacific Section) Committee on Stratigraphic Correlation, Sacramento Valley Subcommittee, 1967, Correlation Section Sacramento Valley Winters to Modesto, California: Pacific Section American Association of Petroleum Geologists Correlation Section 16.

Anderson, A.J., Hanchar, J.M., Hodges, K.V., and van Soest, M.C., 2020, Mapping radiation damage zoning in zircon using Raman spectroscopy: Implications for zircon chronology: Chemical Geology, 538, p.119494.

Anderson, A.J., Hodges, K.V., and van Soest, M.C., 2017, Empirical constraints on the effects of radiation damage on helium diffusion in zircon: Geochimica et Cosmochimica Acta, 218, 308–322. https://doi.org/10.1016/j.gca.2017.09.006

Ardill, K.A., Paterson, S.R., and Memeti, V., 2018, Spatiotemporal magmatic focusing in upper-mid crustal plutons of the Sierra Nevada arc: Earth and Planetary Science Letters, v. 498, p. 88–100, https://doi.org/10.1016/j.epsl.2018.06.023.

Armstrong, R.L., and Ward, P.L., 1993, Late Triassic to earliest Eocene magmatism in the North American Cordillera: Implications for the Western Interior Basin, in Caldwell, W.G.E., and Kauffman, E.G., eds., Evolution of the Western Interior Basin: Geological Association of Canada Special Paper 39, p. 49–72.

Attia, S., Cottle, J.M., and Paterson, S.R., 2020, The erupted zircon record of continental crust formation during mantle driven arc flare-ups: Geology, v. 48, no. 5, p. 446–451, https://doi.org/10.1130/G46991.1.

Attia, S., Paterson, S.R., Cao, W., Chapman, A.D., Saleeby, J., Dunne, G.C., Stevens, C.H., and Memeti, V., 2018, Late Paleozoic tectonic assembly of the Sierra Nevada prebatholithic framework and western Laurentian provenance links based on synthesized detrital zircon geochronology, in Ingersoll, R.V., Lawton, T.F., and Graham, S.A., eds., Tectonics, Sedimentary Basins, and Provenance: A Celebration of William R. Dickinson's Career: Geological Society of America Special Paper 540, p. 267–295, https://doi.org/10.1130/2018.2540(12).

Attia, S., Paterson, S. R., Saleeby, J., and Cao, W., 2021, Detrital zircon provenance and depositional links of Mesozoic Sierra Nevada intra-arc strata: Geosphere, 17, 1422-1453.

Atwater, T.M., 1970, Implications of plate tectonics for the Cenozoic tectonic evolution of western North America: Geological Society of America Bulletin, 81, 3513–3536.

Ault, A.K., Flowers, R.M., Mahan, K.H., 2012, Quartz shielding of sub-10 μm zircons from radiation damage–enhanced Pb loss: An example from a metamorphosed mafic dike, northwestern Wyoming craton: Earth and Planetary Science Letters, v. 339–340, p. 57–66, doi:10.1016/j.epsl.2012.04.025.

Bailey, E.H., and Blake, M.C., Jr., 1974, Major chemical characteristics of Mesozoic Coast Range ophiolite in California: U.S. Geological Survey Journal of Research, v. 2, no. 6, p. 637–656.

Bailey, E.H., Blake, M.C., Jr., and Jones, D.L., 1970, On-land Mesozoic oceanic crust in California Coast Ranges, in Geological Survey Research 1970, Chapter C: U.S. Geological Survey Professional Paper 700-C, p. C70–C81.

Bailey, E. H., Irwin, W. P., and Jones, D. L., 1964, Franciscan and related rocks, and their significance in the geology of Western California: California Division of Mines and Geology Bulletin 183, 177 p.

Balan, E., Neuville, D.R., Trocellier, P., Fritsch, E., Muller, J.P., and Calas, G., 2001, Metamictization and chemical durability of detrital zircon: American Mineralogist, 86, 1025–1033.

Balgord, E.A., Yonkee, W.A., Wells, M.L., Gentry, A., and Laskowski, A.K., 2021, Arc tempos, tectonic styles, and sedimentation patterns during evolution of the North American Cordillera: Constraints from the retroarc detrital zircon archive: Earth-Science Reviews, v. 216, 103557, https://doi.org/10.1016/j.earscirev.2021.103557.

Ball, L. B., Davis, T. A., Minsley, B. J., Gillespie, J. M., and Landon, M. K., 2020, Probabilistic categorical groundwater salinity mapping from airborne electromagnetic data adjacent to California's Lost Hills and Belridge oil fields. Water Resources Research, 56, e2019WR026273. https://doi.org/ 10.1029/2019WR026273

Barton, M.D., 1990, Cretaceous magmatism, metamorphism, and metallogeny in the east-central Great Basin, in Anderson, J. L., editor, The Nature and Origin of Cordilleran Magmatism: Geological Society of America Memoir 174, p. 283–302.

Barton, M.D., Battles, D.A., Debout, G.E., Capo. R.C., Christensen, J.N., Davis, S.R., Hanson, R.B., Michelsen, C.J., and Trim, H.E., 1988, Mesozoic contact metamorphism in the western United States, in Ernst, W.G., ed., Metamorphism and Crustal Evolution of the Western United States, Rubey Volume 7: Englewood Cliffs, New Jersey, Prentice-Hall, p. 110–178.

Barton, M.D., Girardi, J.D., Kreiner, D.C., Seedorff, E., Zurcher, L., Dilles, J.H., Haxel, G.B., and Johnson, D.A., 2011, Jurassic igneous-related metallogeny of southwestern North America, in Steinger, R.L., and Pennell, B., eds., Great Basin Evolution and Metallogeny: Reno, Nevada, Geological Society of Nevada, p. 373–396.

Bateman, P.C., 1983, A summary of critical relations in the central part of the Sierra Nevada batholith, California, U.S.A., in Roddick, J.A., ed., Circum-Pacific Plutonic Terranes: Geological Society of America Memoir 159, p. 241–254, doi:10.1130/MEM159-p241.

Bateman, P.C., and Dodge, F.C.W., 1970, Variations of major chemical constituents across the central Sierra Nevada batholith: Geological Society of America Bulletin, v. 81, p. 409–420, doi:10.1130/0016-7606(1970)81[409:VOMCCA]2.0.CO;2.

Bateman, P.C., and Wahrhaftig, C., 1966, Geology of the Sierra Nevada, in Bailey, E.H., ed., Geology of northern California: California Division of Mines and Geology Bulletin, v. 190, p. 107–172.

Becerra, J., Contreras-Reyes, E., and Arriagada, C., 2013, Seismic structure and tectonics of the southern Arauco Basin, south-central Chile (~38°S): Tectonophysics, v. 592, p. 53–66, doi:10.1016/j.tecto.2013.02.012.

Bernet, M., Zattin, M., Garver, J. I., Brandon, M. T., and Vance, J. A., 2001, Steady-state exhumation of the European Alps, Geology, 29, 35–38, doi:10.1130/0091-7613(2001)029<0035:sseote>2.0.co;2.

Bertucci, P.F., 1983, Petrology and provenance of the Stony Creek Formation, northwestern Sacramento Valley, California, in Bertucci, P.F., and Ingersoll, R.V., eds., Guidebook to the Stony Creek Formation, Great Valley Group, Sacramento Valley, California: Los Angeles, California, Pacific Section, Society of Economic Paleontology and Mineralogy, p. 1–16.

Bezore, S.P., 1969, The Mount St. Helena ultramafic-mafic complex of the northern Coast Ranges: Geological Society of America Abstracts with Programs, v. 1, no. 3, p. 5.

Bhattacharya, G., Robinson, D.M., and Orme, D.A., 2021, (U-Th)/He Thermochronology of the Indus Group, Ladakh, Northwest India: Is Neogene Cooling a Continental-Scale Thermal Event in the India-Asia Collision Zone?: Lithosphere, 1.

Bhattacharya, G., Robinson, D.M., and Orme, D.A., Najman, Y., and Carter, A., 2020, Low-temperature thermochronology of the Indus Basin in Central Ladakh, Northwest India: implications of Miocene-Pliocene cooling in the India-Asia collision zone: Tectonics, v. 39, no. 10, article e2020TC006333.

Black, L. P., Kamo, S. L., Allen, C. M., Davis, D. W., Aleinikoff, J. N., Valley, J. W., Mundil, R., Campbell, I. H., Korsch, R. J., Williams, I. S., and Foudoulis, C., 2004, Improved $^{206}Pb/^{238}U$ microprobe geochronology by the monitoring of a trace-element-related matrix effect; SHRIMP, ID–TIMS, ELA–ICP–MS and oxygen isotope documentation for a series of zircon standards: Chemical Geology, 205, 115-140.

Blake, M.C., Jr., Jayko, A.S., Jones, D.L., and Rogers, B.W., 1987, Unconformity between Coast Range Ophiolite and part of the lower Great Valley Sequence, South Fork of Elder Creek, Tehama County, California, in Hill, M.L., ed., Cordilleran Section of the Geological Society of America: Boulder, Colorado, Centennial field guide, v. 1, p. 279–282.

Blake, M. C., Jr., Helley, E. J., Jayko, A. S., Jones, D. L., and Ohlin, H. N., 1992, Geologic map of the Willows 1: 100,000 quadrangle, California (No. 92-271). US Geology Survey.

Blanc, P., Baumer, A., Cesbron, F., Ohnenstetter, D., Panczer, G., and Remond, G., 2000, Systematic cathodoluminescence spectral analysis of syn-thetic doped minerals: Anhydrite, apatite, calcite, fluorite, scheelite and zircon, in Cathodoluminescence in Geosciences, Pagel, M., Barbin, V., Blanc, P. & Ohnenstetter, D., Eds.: Springer, pp. 127–160.

Bogen, N.K., 1984, Stratigraphy and sedimentary petrology of the Upper Jurassic Mariposa

Formation, western Sierra Nevada, California: in Crouch, J.K., and Bachman, S.B., eds., Tectonics and sedimentation along the California margin: Pacific Section, Society of Economic Paleontologists and Mineralogists, Book 38, p. 119-134.

Bolhar, R., and Ring, U., 2001, Deformation history of the Yolla Bolly terrane at Leech Lake Mountain, Eastern Belt, Franciscan subduction complex, California Coast Ranges: Geological Society of America Bulletin, v. 113, p. 181–195, doi: 10.1130/0016-7606(2001)113<0181: DHOTYB>2.0.CO;2.

Bostick, N.H., 1974, Phytoclasts as indicators of thermal metamorphism, Franciscan assemblage and Great Valley sequence (upper Mesozoic), California: Special Paper Geological Society of America, 153, 1-17.

Bouma, A.H., 1962, Sedimentology of Some Flysch Deposits: A Graphic Approach to Facies Interpretations: Amsterdam, Elsevier, 168 p.

Brandon, M.T., Roden-Tice, M.K., and Garver, J.I., 1998, Late Cenozoic exhumation of the Cascadia accretionary wedge in the Olympic Mountains, northwest Washington State: Geological Society of America Bulletin, v. 110, p. 985–1009, doi: 10.1130/0016-7606(1998)110<0985: LCEOTC>2.3.CO;2.

Brøgger, W.C., 1893, Amorf: Salmonens store illustrerede Konversationslexikon, 1, 742–743.

Cady, J.W., 1975, Magnetic and Gravity Anomalies in the Great Valley and Western Sierra Nevada Metamorphic Belt, California: Geological Society of America Special Paper 168, 56 p., https://doi.org/10.1130/SPE168-p1.

Carrapa, B., DeCelles, P. G., and Romero, M. (2019). Early Inception of the Laramide Orogeny in Southwestern Montana and Northern Wyoming: Implications for Models of Flat-Slab Subduction. Journal of Geophysical Research: Solid Earth, 124(2), 2102-2123.

Castano, J. R., and Sparks, D. M., 1974, Interpretation of vitrinite reflectance measurements in sedimentary rocks and determination of burial histories using vitrinite reflectance and authigenic minerals: Special Paper Geological Society of America, 153, 31-52.

Cecil, M.R., Ducea, M.N., Reiners, P.W., and Chase, C.G., 2006, Cenozoic exhumation of the northern Sierra Nevada, California, from (U-Th)/He thermochronology: Geological Society of America Bulletin, v. 118, p. 1481–1488, doi:10.1130/B25876.1.

Cecil, M.R., Ferrer, M.A., Riggs, N.R., Marsaglia, K.M., Kylander-Clark, A., Ducea, M.N., and Stone, P., 2019, Early arc development recorded in Permian–Triassic plutons of the northern Mojave Desert region, California, USA: Geological Society of America Bulletin, v. 131, p. 749–765, https://doi.org/10.1130/B31963.1.

Cesbron F., Blance P., Ohnenstetter, D. and Rémond, G., 1995, Cathodoluminescence of rare earth doped zircons. I. Their possible use as reference materials. Scanning Microscopy Supplement 9: 35–56.

Chakoumakos, B.C., Oliver, B.C., Lumpkin, G.R., and Ewing, R.C., 1991, Hardness and elastic modulus of zircon as a function of heavy-particle irradiation dose. I. In situ a-decay event damage: Radiation Effects and Defects in Solids, 118, 393–403.

Chapman, A.D., Ernst, W.G., Gottlieb, E., Powerman, V., and Metzger, E.P., 2015, Detrital zircon geochronology of Neoproterozoic–Lower Cambrian passive-margin strata of the White-Inyo Range, east-central California: Implications for the Mojave–Snow Lake fault hypothesis: Geo- logical Society of America Bulletin, v. 127, no. 7–8, p. 926–944, https://doi.org/10.1130/B31142.1.

Chapman, A.D., Saleeby, J.B., Wood, D.J., Piasecki, A., Kidder, S., Ducea, M.N., and Farley, K.A., 2012, Late Cretaceous gravitational collapse of the southern Sierra Nevada batholith, California: Geosphere, v. 8, p. 314– 341, doi:10.1130/GES00740.1.

Chen, J.H., and Moore, J.G., 1982, Uranium-lead isotopic ages from the Sierra Nevada batholith, California: Journal of Geophysical Research, v. 87, p. 4761–4784, https://doi.org/10 .1029/JB087iB06p04761.

Cheong, A.C.S., Jeong, Y.J., Lee, S., Yi, K., Jo, H.J., Lee, H.S., Park, C., Kim, N.K., Li, X.H., and Kamo, S.L., 2019, LKZ- 1: A new zircon working standard for the in situ determination of U-Pb age, O-Hf Isotopes, and trace element composition: Minerals, 9, 325.

Clark, M.K., Maheo, G., Saleeby, J., and Farley, K.A., 2005, The non-equilibrium landscape of the southern Sierra Nevada, California: GSA Today, v.15, no. 9, p. 4–10, doi: 10.1130/1052-5173(2005)015[4: TNLOTS]2.0.CO;2.

Clemens-Knott, D., and Saleeby, J.B., 1999, Impinging ring dike complexes in the Sierra Nevada batholith, California: Roots of the Early Cretaceous volcanic arc: Geological Society of America Bulletin, v. 111, p. 484–496. doi:10.1130/0016-7606(1999)111<0484:IRDCIT>2.3.CO;2

Clift, P.D., and Vannucchi, P., 2004, Controls on tectonic accretion versus erosion in subduction zones: Implications for the origin and recycling of the continental crust: Reviews of Geophysics, v. 42, RG2001, https://doi .org/10.1029/2003RG000127.

Cloos, M., 1985, Thermal evolution of convergent plate margins: Thermal modeling and reevaluation of isotopic Ar-ages for blueschists in the Franciscan Complex of California: Tectonics, 4, 421-433.

Cloos, M., and Shreve, R.L., 1988, Subduction-channel model of prism accretion, melange formation, sediment subduction, and subduction erosion at convergent plate margins, 1, Implications and discussion: Pure and Applied Geophysics, v. 128, p. 501–545.

Cole, R.B., and Basu, A.R., 1992, Middle Tertiary volcanism during ridge–trench interactions in western California: Science, 258, 793–796.

Cole, R.B., and Basu, A.R., 1995, Nd–Sr isotopic geochemistry and tectonics of ridge subduction and middle Cenozoic volcanism in western California: Geological Society of America Bulletin, 10, 167–179.

Coleman, D.S., and Glazner, A.F., 1997, The Sierra Crest magmatic event: Rapid formation of juvenile crust during the Late Cretaceous in California: International Geology Review, v. 39, p. 768–787, doi:10.1080 /00206819709465302.

Constenius, K.N., Johnson, R.A., Dickinson, W.R., and Williams, T.A., 2000, Tectonic evolution of the Jurassic–Cretaceous Great Valley forearc, California: Implications for the Franciscan thrust-wedge hypothesis: Geo- logical Society of America Bulletin, v. 112, p. 1703–1723, https://doi .org/10.1130/0016-7606(2000)112<1703:TEOTJC>2.0.CO;2.

Contreras-Reyes, E., Flueh, E.R., and Grevemeyer, I., 2010, Tectonic control on sediment accretion and subduction off south central Chile: Implications for coseismic rupture processes of the 1960 and 2010 megathrust earthquakes: Tectonics, v. 29, TC6018, doi:10.1029 /2010TC002734.

Coutts, D.S., Matthews, W.A., and Hubbard, S.M., 2019, Assessment of widely used methods to derive depositional ages from detrital zircon populations: Geoscience Frontiers, https://doi.org/10 .1016/j.gsf.2018.11.002.

Cowan, D.S., and Bruhn, R.L., 1992, Late Jurassic to early Late Cretaceous geology of the U.S. Cordillera, in Burchfiel, B.C., Lipman, P.W., and Zoback, M.L., eds., The Cordilleran orogen: Conterminous U.S.: Boulder, Colorado, Geological Society of America, Geology of North America, v. G-3, p. 169–203.

Cowan, D.S., and Silling, R.M., 1978, A dynamic, scaled model of accretion at trenches and its implications for the tectonic evolution of subduction complexes: Journal of Geophysical Research, v. 83, p. 5389–5396.

DeCelles, P.G., and Graham, S.A., 2015, Cyclical processes in the North American Cordilleran orogenic system: Geology, v. 43, p. 499–502, https://doi .org/10.1130/G36482.1.

DeGraaff-Surpless, K., Graham, S.A., Wooden, J.L., and McWilliams, M.O., 2002, Detrital

zircon provenance analysis of the Great Valley Group, California: Evolution of an arc-forearc system: Geological Society of America Bulletin, v. 114, p. 1564–1580, https://doi.org/10.1130/0016-7606(2002)114<1564:DZPAOT>2.0.CO;2.

Deliens, M., Delhal, J., and Tarte, P., 1977, Metamictization and U-Pb systematics – a study by infrared absorption spectrometry of Precambrian zircons: Earth and Planetary Science Letters, 33, 331–344.

DeLucia, M. S., Guenthner, W. R., Marshak, S., Thomson, S. N., and Ault, A. K., 2018, Thermochronology links denudation of the Great Unconformity surface to the supercontinent cycle and snowball Earth: Geology, 46, 167-170.

DePaolo, D.J., 1981, A neodymium and strontium isotopic study of the Mesozoic calc-alkaline granitic batholiths of the Sierra Nevada and Peninsular Ranges, California: Journal of Geophysical Research, v. 86, p. 10470–10488. doi:10.1029/ JB086iB11p10470

Dickinson, W., 1985, Interpreting provenance relations from detrital modes of sandstones, in Zuffa, G.G., ed., Provenance of Arenites: Dordrecht, Netherlands, Reidel, p. 333–361.

Dickinson, W.R., 1995, Forearc basins, in Busby, C.J., and Ingersoll, R.V., eds., Tectonics of Sedimentary Ba- sins: Cambridge, Massachusetts, Blackwell Science, p. 221–261.

Dickinson, W.R., 1997, Tectonic implications of Cenozoic volcanism in coastal California: Geological Society of America Bulletin, 109, 936–954.

Dickinson, W.R., 2008, Accretionary Mesozoic–Cenozoic expansion of the Cordilleran continental margin in California and adjacent Oregon: Geosphere, v. 4, p. 329–353, https://doi.org/10.1130/GES00105.1.

Dickinson, W. R., and Gehrels, G. E., 2009, Use of U–Pb ages of detrital zircons to infer maximum depositional ages of strata: a test against a Colorado Plateau Mesozoic database. Earth and Planetary Science Letters, 288(1-2), 115-125.

Dickinson, W.R., and Rich, E.I., 1972, Petrologic intervals and petrofacies in the Great Valley sequence, Sacramento Valley, California: Geological Society of America Bulletin, v. 83, p. 3007–3024, https://doi.org/10.1130/0016-7606(1972)83[3007:PIAPIT]2.0.CO;2.

Dickinson, W.R., and Seely, D.R., 1979, Structure and stratigraphy of forearc regions: American Association of Petroleum Geologists Bulletin, v. 63, p. 2–31.

Dickinson, W.R., and Snyder, W.S., 1978, Plate tectonics of the Laramide orogeny, in Matthews, V., III, ed., Laramide Folding Associated with Basement Block Faulting in the Western United States: Geological Society of America Memoir 151, p. 355–366, https://doi.org/10.1130/MEM151-p355.

Dickinson, W.R., and Snyder, W.S., 1979, Geometry of subducted slabs related to San Andreas transform: Journal of Geology, 87, 609–627.

Dickinson, W.R., Ingersoll, R.V., and Graham, S.A., 1979, Paleogene sediment dispersal and paleotectonics in northern California: Geological Society of America Bulletin, v. 90, summary in Part I, p. 897-898, text in Part II, p. 1458-1528.

Dodson, M.H., 1973, Closure temperature in cooling geochronological and petrological systems: Contributions to Mineralogy and Petrology, v. 40, p. 259–274, doi: 10.1007/BF00373790.

Ducea, M., 2001, The California arc: Thick granitic batholiths, eclogitic residues, lithospheric-scale thrusting, and magmatic flare-ups: GSA Today, v. 11, no. 11, p. 4–10, https://doi.org/10.1130/1052-5173(2001)011<0004:TCA TGB>2.0.CO;2.

Dumitru, T. A., 1988, Subnormal geothermal gradients in the Great Valley forearc basin, California, during Franciscan subduction: A fission track study: Tectonics, 7, 1201-1221.

Dumitru, T.A., 1989, Constraints on uplift of the Franciscan subduction complex from apatite fission track analysis: Tectonics, v. 8, p. 197–220.

Dumitru, T.A., 1990, Subnormal Cenozoic geothermal gradients in the extinct Sierra Nevada magmatic arc: Consequences of Laramide and post-Laramide shallow-angle subduction: Journal of Geophysical Research, v. 95, p. 4925–4941.

Dunne, G.C., and Suczek, C.A., 1991, Early Paleozoic eugeoclinal strata in the Kern Plateau pendants, southern Sierra Nevada, California, in Cooper, J.D., and Stevens, C.H., eds., Paleozoic Paleogeography of the Western United States: Los Angeles, California, Pacific Section, Society of Economic Paleontologists and Mineralogists (Book 67), p. 677–692.

D' Onfro, P.S., and Glagola, P., 1983, Wrench fault, Southeast Asia, in Bally, A.W., ed., Seismic expression of structural styles; a picture and work atlas, v. 3: American Association of Petroleum Geologists Studies in Geology, v. 15, p. 4.2–9–4.2–12.

Engebretson, D.C., Cox, A., and Gordon, R.G., 1985, Relative motions between oceanic and continental plates in the Pacific Basin: Geological Society of America Special Paper 206, 59 p.

Ernst, W.G., 1970, Tectonic contact between the Franciscan mélange and the Great Valley sequence: Crustal expression of a late Mesozoic Benioff zone: Journal of Geophysical Research, v. 75, p. 886– 901, https://doi.org/10.1029/JB075i005p00886.

Ernst, W.G., 1975, Systematics of large-scale tectonics and age progressions in Alpine and

circum-Pacific blueschist belts: Tectonophysics, v. 26, p. 229–246, doi: 10.1016/0040-1951(75)90092-X.

Ernst, W.G., 2013, Earliest Cretaceous Pacificward offset of the Klamath Mountains salient, NW California–SW Oregon: Lithosphere, v. 5, p. 151–159, https://doi.org/10.1130/L247.1.

Evarts, R. C., 1977, The geology and petrology of the Del Puerto ophiolite, Diablo Range, central California Coast Ranges, in Coleman, R. G., and Irwin, W. P., eds., North American ophiolites: Oregon Department of Geology and Mineral Industries Bulletin 95, p. 121–139.

Evernden, J.F., and James, G.T., 1964, Potassium-argon dates and Tertiary flora of North America: American Journal of Science, v. 262, p. 945–974.

Ewing, R.C., 1993, The metamict state: 1993—the centennial: Nuclear Instruments and Methods in Physics Research Section B, 91, 22–29.

Ewing, R.C., 2001, The design and evaluation of nuclear-waste forms: clues from mineralogy: Canadian Mineralogist, 39, 697–715.

Farley, K.A., 2000, Helium diffusion from apatite: General behavior as illustrated by Durango fluorapatite: Journal of Geophysical Research, v. 105, p. 2903–2914, doi: 10.1029/1999JB900348.

Farley, K.A., 2002, (U-Th)/He dating: Techniques, calibrations and applications, in Porcelli, D.P., Ballentine, C.J., and Wieler, R., Noble gases in geochemistry and cosmochemistry: Reviews in Mineralogy and Geo- chemistry, v. 47, p. 819–844.

Farnan, I., and Salje, E.K.H., 2001, The degree and nature of radiation damage in zircon observed by ^{29}Si nuclear magnetic resonance: Journal of Applied Physics, 89, 2084–2090.

Farnan, I., Cho, H., and Weber, W.J., 2007, Quantification of actinide α-radiation damage in minerals and ceramics: Nature, 445, 190–193.

Finch, A.A., Garcia-Guinea, J., Hole, D.E., Townsend, P.D., and Hanchar, J.M., 2004, Ionoluminescence of zircon: rare earth emissions and radiation damage, Journal of Physics D: Applied Physics 37: 2795– 2803, DOI 10.1088/0022-3727/37/20/004.

Finch, R.J., Hanchar, J.M., Hoskin, P.W.O., and Burns, P.C., 2001, Rare-earth elements in s ynthetic zircon: Part 2. A single-crystal X-ray study of xenotime substitution: American Mineralogist, 86, 681–689.

Finzel, E.S., Gillis, R.J., Ridgway, K.A., and LePain, D.L., 2009, Preliminary Evaluation of

Basin Margin Exhumation and Provenance of Cenozoic Strata, Chuitna and Beluga Rivers Area, Cook Inlet Forearc Basin, Alaska: Alaska Division of Geological and Geophysical Surveys Preliminary Interpretive Report 2009-4, p. 1–20.

Flowers, R.M., Ketcham, R.A., Shuster, D.L., Farley, K.A., 2009, apatite (U-Th)/He thermochronometry using a radiation damage accumulation and annealing model: Geochimica et Cosmochimica Acta, 73, 2347-2365.

Fox, M., and Shuster, D. L., 2014, The influence of burial heating on the (U-Th)/He system in apatite: Grand Canyon case study: Earth and Planetary Science Letters, vol. 397, pp. 174–183.

Fox, K.F., Fleck, R.J., Curtis, G.H., and Meyer, C.E., 1985, Implications of the northwestwardly younger age of the volcanic rocks of west-central California: Geological Society of America Bulletin, 96, 647–654.

Friis, H., Finch, A.A., Williams, C.T., and Hanchar, J.M., 2010, Photoluminescence of zircon (ZrSiO4) doped with REE3+ (REE= Pr, Sm, Eu, Gd, Dy, Ho, Er): Physics and Chemistry of Minerals, 37, 333–342.

Gaft, M., Reisfeld, R., Panczer, G., Blank, P., and Boulon, G., 1998, Laser-induced time-resolved luminescence of minerals: Spectrochim Acta Part A 54: 2163–2175, DOI 10.1016/S1386-1425(98)00134-6.

Gaft, M., Shinno, I., Panczer, G., Reisfeld, R., 2002, Laser-induced time-resolved spectroscopy of visible broad luminescence bands in zircon: Mineralogy and Petrology, 76, 235–246.

Garcia, R., 1981, Depositional systems and their relationship to gas accumulation in the S acramento Valley, California: American Association of Petroleum Geologists Bulletin, v. 65, p. 653–673.

Garver, J. I., Brandon, M. T., Roden-Tice, M., and Kamp, P. J. J., 1999, Exhumation history of orogenic highlands determined by detrital fission-track thermochronology: Geological Society of London, Special Publication, 154, 283–304, doi:10.1144/gsl.sp.1999.154.01.13.

Garzanti, E., 2016, From static to dynamic provenance analysis—sedimentary petrology upgraded: Sedimentary Geology, 336, 3–13.

Garzanti, E., 2019, Petrographic classification of sand and sandstone: Earth-Science Reviews, v. 192, p. 545–563, https://doi.org/10.1016/j.earscirev.2018.12.014.

Gautheron, C., Djimbi, D.M., Roques, J., Balout, H., Ketcham, R.A., Simoni, E., Pik, R.,

Seydoux-Guillaume, A.M., Tassan-Got, L.A, 2020, Multi-Method, Multi-Scale Theoretical Study of He and Ne Diffusion in Zircon: Geochimica et Cosmochimica Acta, 268, 348–367.

Gazzi, P., 1966, Le arenarie del flysch sopracretaceo dell'Appennino modenese; Correlazioni coni flysch di Monghidoro. Miner Petrogr Acta, 12, 69-97.

Gehrels, G.E., 2000, Introduction to the detrital zircon studies of Paleozoic and Triassic strata in western Nevada and northern California, in Soreghan, M.J., and Gehrels, G.E., eds., Paleozoic and Triassic Paleogeography and Tectonics of Western Nevada and Northern California: Geological Society of America Special Paper 347, p. 1–17, https://doi.org/10.1130/0-8137-2347-7.1.

Gehrels, G., 2012, Detrital zircon U-Pb geochronology: Current methods and new opportunities, in Busby, C., and Azor, A., eds., Tectonics of Sedimentary Basins: Recent Advances: Chichester, John Wiley & Sons, p. 47–62, doi:10.1002/9781444347166.ch2.

Gehrels, G.E., and Miller, M.M., 2000, Detrital zircon geochronologic study of upper Paleozoic strata in the eastern Klamath terrane, northern California, in Soreghan, M.J., and Gehrels, G.E., eds., Paleozoic and Triassic paleogeography and tectonics of western Nevada and northern California: Boulder, Colorado, Geological Society of America Special Paper 347, p. 99–107.

Gehrels, G.E., and Pecha, M., 2014, Detrital zircon U-Pb geochronology and Hf isotope geochemistry of Paleozoic and Triassic passive margin strata of western North America: Geosphere, v. 10, p. 49–65, https://doi.org/10.1130/GES00889.1.

Gehrels, G.E., Valencia, V.A., and Ruiz, J., 2008, Enhanced precision, accuracy, efficiency, and spatial resolution of U-Pb ages by laser ablation– multicollector–inductively coupled plasma–mass spectrometry: Geochemistry Geophysics Geo- systems, v. 9, Q03017, https://doi.org/10.1029 /2007GC001805.

Geisler, T., Pidgeon, R.T., Kurtz, R., van Bronswijk, W., and Schleicher, H., 2003b, Experimental hydrothermal alteration of partially metamict zircon: American Mineralogist, 88, 1496–1513.

Geisler, T., Trachenko, K., Ríos, S., Dove, M.T., and Salje, E.K.H., 2003a, Impact of self-irradiation damage on the aqueous durability of zircon (ZrSiO4): implications for its suitability as a nuclear waste form: Journal of Physics: Condensed Matter, 15, 597–605.

Gérard, B., Robert, X., Grujic, D., Gautheron, C., Audin, L., Bernet, M., Balvay, M., 2022, Zircon (U-Th)/He Closure Temperature Lower Than Apatite Thermochronometric Systems: Reconciliation of a Paradox: Minerals, 12,145. https://doi.org/ 10.3390/min12020145

Godfrey, N.J., Beaudoin, B.C., Klemperer, S.L., and Mendocino Working Group, 1997, Ophiolitic basement to the Great Valley forearc basin, California, from seismic and gravity data: Implications for crustal growth at the North American continental margin: Geological Society of America Bulletin, v. 108, p. 1536–1562.

Götze, J., Kempe, U., Habermann, D., Nasdala, L., Neuser, R.D., and Richer, D.K., 1999, High-resolution cathodoluminescence combined with SHRIMP ion probe measurements of detrital zircon: Mineralogical Magazine, 63, 179–187, DOI 10.1180/002646199548411

Goudkoff, P.P., 1945, Stratigraphic relations of Upper Cretaceous in Great Valley, California: American Association of Petroleum Geologists Bulletin, v. 29, p. 956–1007.

Graham, S.A., 1981, Stratigraphic and depositional patterns and hydrocarbon occurrence, Sacramento Valley, California, in Graham, S.A., ed., Field Guide to the Mesozoic–Cenozoic Convergent Margin of Northern California: Bakersfield, California, Pacific Section, American Association of Petroleum Geologists, Book 50, p. 43–58.

Graham, S.A., 1987, Tectonic controls on petroleum occurrence in central California, in Ingersoll, R.V., and Ernst, W.G., eds., Cenozoic Basin Development of Coastal California: Englewood Cliffs, New Jersey, Prentice-Hall, p. 47–63.

Graham, S.A., McCloy, C., Hitzman, M., Ward, R., and Turner, R., 1984, Basin evolution during change from convergence to transform continental margin in central California: American Association of Petroleum Geologists Bulletin, v. 68, p. 233–349.

Green, P. F., Duddy, I. R., Gleadow, A. J., & Lovering, J. F. (1989). Apatite fission-track analysis as a paleotemperature indicator for hydrocarbon exploration. In Thermal history of sedimentary basins (pp. 181-195). Springer, New York, NY.

Greene, T.J., and Surpless, K.D., 2017, Facies architecture and provenance of a boulder-conglomerate submarine channel system, Panoche Formation, Great Valley Group: A forearc basin response to middle Cretaceous tectonism in the California convergent margin: Geosphere, v. 13, no. 3, p. 838–869, https://doi.org/10.1130/GES01422.1.

Guenthner, W.R., Reiners, P.W., Ketcham, R.A., Nasdala, L., Giester, G., 2013, Helium Diffusion in Natural Zircon: Radiation Damage, Anisotropy, and the Interpretation of Zircon (U-Th)/He Thermochronology: American Journal of Science, 313, 145-198.

Hackel, O., 1966, Summary of the geology of the Great Valley, in Bailey, E.H., ed., Geology of Northern California: California Division of Mines and Geology Bulletin 190, p. 217–238.

Hacker, B.R., Donato, M.M., Barnes, C.G., McWilliams, M.O., and Ernst, W.G., 1995, Time

scales of orogeny: Jurassic construction of the Klamath Mountains: Tectonics, v. 14, p. 677–703, https://doi .org/10.1029/94TC02454.

Haeussler, P.J., and Paterson S.R., 1993, Tilting, burial, and uplift of the Guadalupe igneous complex, Sierra Nevada, California: Geological Society of America Bulletin, v. 105, p. 1310–1320, doi: 10.1130/0016-7606(1993)105<1310:TBAUOT>2.3.CO;2.

Haggart, J.W., 1986, Stratigraphy of the Redding Formation of north-central California and its bearing on Late Cretaceous paleogeography, in Abbott, P.L., ed., Cretaceous Stratigraphy, Western North America: Pacific Section, Society of Economic Paleontologists and Mineralogists Field Trip Guidebook 46, p. 161–178.

Hamilton, W., 1969, Mesozoic California and the underflow of Pacific mantle: Geological Society of America Bulletin, v. 80, p. 2409–2430.

Hanson, R.E., Saleeby, J., and Schweickert, R.A., 1988, Composite Devonian island-arc batholith in the northern Sierra Nevada, California: Geological Society of America Bulletin, v. 100, p. 446–457, doi: 10.1130/0016-7606(1988)100<0446:CDIABI>2.3.CO;2.

Harding, J.P., Gehrels, G.E., Harwood, D.S., and Girty, G.H., 2000, Detrital zircon geochronology of the Shoo Fly complex, northern Sierra terrane, northeastern California, in Soreghan, M.J., and Gehrels, G.E., eds., Paleozoic and Triassic Paleogeography and Tectonics of Western Nevada and Northern California: Geological Society of America Special Paper 347, p. 43–55.

Harding, T.P., 1983, Structural inversion at Rambutan oil field, South Sumatra Basin, in Bally, A.W., ed., Seismic expression of structural styles; a picture and work atlas, v. 3: American Association of Petroleum Geologists Studies in Geology, v. 15, p. 3.3-13–3.3-18.

Harding, T.P., Vierbuchen, R.C., and Christie-Blick, N., 1985, Structural styles, plate-tectonic settings, and hydrocarbon traps of divergent (transtensional) wrench faults, in Biddle, K.T., and Christie-Blick, N., eds., Strike-slip deformation, basin formation, and sedimentation: Society of Economic Paleontologists and Mineralogists Special Publication, v. 37, p. 51–77.

Harper, G.D., Saleeby, J.B., and Heizler, M., 1994, Formation and emplacement of the Josephine ophiolite and the Nevadan orogeny in the Klamath Mountains, California-Oregon: U/Pb zircon and 40Ar/39Ar geo- chronology: Journal of Geophysical Research, v. 99, p. 4293–4321, https://doi.org/10.1029/93JB02061.

Harwood, D.S., and Helley, E.J., 1987, Late Cenozoic tectonism of the Sacramento Valley, California: U.S. Geological Survey Professional Paper 1359, 46 p.

Henderson, L.J., Gordon, R.G., and Engebretson, D.C., 1984, Mesozoic aseismic ridges on the Farallon plate and southward migration of shallow subduction during the Laramide orogeny: Tectonics, v. 3, p. 121–132, doi: 10.1029/TC003i002p00121.

Heasler, H. P., and R. C. Surdam, 1985, Thermal evolution of coastal California with Application to hydrocarbon maturation: American Association of Petroleum Geologists Bulletin, 69, 1386-1400.

Hessler, A.M., and Sharman, G.R., 2018, Subduction zones and their hydrocarbon systems: Geosphere, v. 14, p. 2044–2067, https://doi.org/10.1130/GES01656.1

Hitz, B., and Wakabayashi, J., 2012, Unmetamorphosed sedimentary mélange with high-pressure metamorphic blocks in a nascent forearc basin setting: Tectonophysics, v. 568–569, p. 124–134, https://doi.org/10.1016/j.tecto.2011.12.006.

Holland, H.D., and Gottfried, D., 1955, The effect of nuclear radiation on the structure of zircon: Acta Crystallographica, 8, 291–300.

Hopson, C.A., Mattinson, J.M., and Pessagno, E.A., Jr., 1981, Coast Range ophiolite, western California, in Ernst, W.G., ed., The Geotectonic Development of California: Englewood Cliffs, New Jersey, Prentice-Hall, p. 418–510.

Hopson, C.A., Mattinson, J.M., Pessagno, E.A., Jr., and Luyendyk, B.P., 2008, California Coast Range ophiolite: Composite Middle and Late Jurassic oceanic lithosphere, in Wright, J.E., and Shervais, J.W., eds., Ophiolites, Arcs, and Batholiths: A Tribute to Cliff Hopson: Geological Society of America Special Paper 438, p. 1–101, doi: 10.1130/2008.2438(01).

Hourigan, J.K., Reiners, P.W., Brandon, M.T., 2005, U-Th zonation-dependent alpha-ejection in (U-Th)/He chronometry: Geochimica et Cosmochimica Acta, 69, 3349-3365.

House, M.A., Wernicke, B.P., Farley, K.A., and Dumitru, T.A., 1997, Cenozoic thermal evolution of the central Sierra Nevada, California, from (U-Th)/He thermochronometry: Earth and Planetary Science Letters, v. 151, p. 167–179, doi: 10.1016/S0012-821X(97)81846-8.

House, M.A., Wernicke, B.P., and Farley, K.A., 1998, Dating topography of the Sierra Nevada, California, using apatite (U-Th)/He ages: Nature, v. 396, p. 66–69, doi: 10.1038/23926.

House, M.A., Wernicke, B.P., and Farley, K.A., 2001, Paleo-geomorphology of the Sierra Nevada, California, from (U-Th)/He ages in apatite: American Journal of Science, v. 301, p. 77–102, doi:10.2475/ajs.301.2.77.

Howard, K.A., Wooden, J.L., Barnes, C.G., Premo, W.R., Snoke, A.W., and Lee, S.Y., 2011, Episodic growth of a Late Cretaceous and Paleogene intrusive complex of pegmatitic leucogranite, Ruby Mountains core complex, Nevada, U.S.A.: Geological Society of America Bulletin, v. 7, p. 1220–1248, doi:10.1130/GES00668.1.

Hu, Z., Li, X.H., Luo, T., Zhang, W., Crowley, J., Li, Q., Ling, X., Yang, C., Li, Y., Feng, L., and Xia, X., 2021, Tanz zircon megacrysts: a new zircon reference material for the microbeam determination of U–Pb ages and Zr–O isotopes: Journal of Analytical Atomic Spectrometry, 36(12), pp. 2715-2734.

Imperato, D.P., Nilsen, T.H., and Moore, D.W., 1990, Regional stratigraphy of the mud-rich turbidite system of the Forbes Formation, Sacramento Basin, California, in Ingersoll, R.V., and Nilsen, T.H., eds., Sacramento Valley symposium and guidebook: Society of Economic Paleontologists and Mineralogists, Pacific Section, v. 65, p. 69–79.

Ingersoll, R.V., 1976, Evolution of the Late Cretaceous Forearc Basin of Northern and Central California [Ph.D. thesis]: Stanford, California, Stanford University, 200 p.

Ingersoll, R.V., 1978, Paleogeography and paleotectonics of the Late Mesozoic fore-arc basin of northern and central California, in Howell, D. G., and McDougall, K. A., eds., Mesozoic Paleogeography of the Western United States: Soc. Econ. Paleontologists Mineralogists, p. 471- 482.

Ingersoll, R.V., 1979, Evolution of the Late Cretaceous forearc basin, northern and central California: Geological Society of America Bulletin, v. 90, p. 813–826, https://doi.org/10.1130/0016-7606(1979)90<813:EOTLCF>2.0.CO;2.

Ingersoll, R.V., 1982, Initiation and evolution of the Great Valley forearc basin of northern and central California, U.S.A., in Leggett, J.K., ed., Trench- Forearc Geology: Sedimentation and Tectonics on Modern and Ancient Active Plate Margins: Geological Society, London, Special Publication 10, p. 459–467, https://doi.org/10.1144/GSL.SP.1982.010.01.31.

Ingersoll, R.V., 1983, Petrofacies and provenance of late Mesozoic forearc basin: Northern and central California: American Association of Petroleum Geologists Bulletin, v. 67, p. 1125–1142.

Ingersoll, R. V., 1999, Post-1968 research on the Great Valley Group, in Moores, E. M., Sloan, D., and Stout, D. L., eds., Classic Cordilleran Concepts: A View from California: Boulder, Colorado, Geological Society of America Special Paper 338.

Ingersoll, R.V., 2012, Tectonics of sedimentary basins, with revised nomenclature, in Busby, C., and Azor-Perez, A., eds., Tectonics of Sedimentary Basins: Recent Advances: Oxford, UK, Blackwell, p. 3–43.

Ingersoll, R.V., 2019, Forearc strike-slip displacement as an alternative to subduction erosion, with examples from Mexico and California (sinistral Nacimiento fault): Canadian Journal of Earth Sciences, 56 (12), 1285–1296.

Ingersoll, R. V., Bullard, T. F., Ford, R. L., Grimm, J. P., Pickle, J. D., and Sares, S. W., 1984, The effect of grain size on detrital modes: a test of the Gazzi-Dickinson point-counting method, Journal of Sedimentary Research, v. 54, no. 1, p. 103-116.

Ingersoll, R.V., Rich, E.I., and Dickinson, W.R., 1977, Great Valley Sequence, Sacramento Valley: Geological Society of America, Cordilleran Section, Field Guidebook, p. 1-72.

Irwin, W.P., 1972, Terranes of the Western Paleozoic and Triassic Belt in the Southern Klamath Mountains, California: U.S. Geological Survey Professional Pa- per 800-C, p. C103–C111, https://doi.org/10.3133/ pp800C.

Irwin, W.P., 2003, Correlation of the Klamath Mountains and Sierra Nevada: Sheet 1; Map Showing Accreted Terranes and Plutons of the Klamath Mountains and Sierra Nevada, scale 1:1,000,000, and Sheet 2; Successive Accretionary Episodes of the Klamath Mountains and Northern Part of the Sierra Nevada: U.S. Geological Survey Open-File Report 02–490, 2 sheets, https:// pubs.usgs.gov/of/2002/0490/.

Irwin, W.P., and Wooden, J.L., 2001, Map Showing Plutons and Accreted Terranes of the Sierra Nevada, California with a Tabulation of U/Pb Isotopic Ages: U.S. Geological Survey Open-File Report 2001-229, scale 1:1,000,000.

Jayko, A.S., Blake, M.C., Jr., and Harms, T.A., 1987, Attenuation of the Coast Range Ophiolite by extensional faulting, and nature of the Coast Range “thrust,” California: Tectonics, v. 6, p. 475–488.

Jazmati, A.K., and Townsend, P.D., 2000, Photoluminescence from RE doped BGO Waveguides, Nuclear Instruments and Methods in Physics Research Section B: Beam Interactions with Materials and Atoms, 166, 597–601.

Johnson, C.M., and O'Neil, J.R., 1984, Triple junction magmatism: a geochemical study of Neogene volcanic rocks in western California: Earth and Planetary Science Letters, 71, 241–262.

Jones, D.L., 1975, Discovery of Buchia rugosa of Kimmeridgian age from the base of the Great Valley sequence: Geological Society of America Abstracts with Programs, v. 7, no. 3, p. 330.

Jones, D.L., Bailey, E.H., and Imlay, R.W., 1969, Structural and Stratigraphic Significance of the

Buchia Zones in the Colyear Springs–Paskenta Area, California: U.S. Geological Survey Professional Paper 647-A, 24 p.

Kayama, M., Nishido, H., Toyoda, S., Komuro, K., Finch, A.A., Lee, M.R., and Ninagawa, K., 2014, Cathodoluminescence of alkali feldspars and radiation effects on the luminescent properties: American Mineralogist, 99, p. 65–75, DOI 10.2138/am.2014.4361

Ketcham, R. A., 2005, Forward and inverse modeling of low-temperature thermochronometry data, in Reviews in Mineralogy and Geochemistry, Min. Soc. Am., vol. 58, edited by P. W. Reiners and T. A. Ehlers, pp. 275–314, Min. Soc. Am., Chantilly, Virginia.

Ketcham, R.A., Tremblay, M., Abbey, A., Baughman, J., Cooperdock, E., Jepson, G., Murray, K., Odlum, M., Stanley, J. and Thurston, O., 2022, Report from the 17th International Conference on Thermochronology: Earth and Space Science Open Archive, p. 1–20, doi:10.1002/essoar.10511082.1

King, P.R., Ilg, B.R., Arnot, M., Browne, G.H., Strachan, L.J., Crundwell, M., and Helle, K., 2011, Outcrop and seismic examples of mass-transport deposits from a late Miocene deep-water succession, Taranaki Basin, New Zealand, in Shipp, R.C., Weimer, P., and Posamentier, H.W., eds., Mass Transport Deposits in Deepwater Settings: SEPM (Society for Sedimentary Geology) Special Publication 96, p. 311–348.

Kirby, J.M., 1943, Upper Cretaceous stratigraphy of west side of Sacramento Valley south of Willows, Glenn County, California: American Association of Petroleum Geologists Bulletin, v. 27, p. 279–305.

Kirsch, M., Paterson, S.R., Wobbe, F., Ardila, A.M.M., Clausen, B.L., and Alasino, P.H., 2016, Temporal histories of Cordilleran continental arcs: Testing models for magmatic episodicity: The American Mineralogist, v. 101, p. 2133–2154, https://doi.org/10.2138/am-2016-5718.

Kuiper, Y.D., 2005, Isotopic age constraints from electron microprobe U-Th-Pb dates, using a three-dimensional concordia diagram: American Mineralogist, 90, 586–591.

Lackey, J.S., Cecil, M.R., Windham, C.J., Frazer, R.E., Bindeman, I.N., and Gehrels, G.E., 2012, The Fine Gold Suite: The roles of basement terranes and magma source development in the Early Cretaceous Sierra Nevada batholith: Geosphere, 8, 292–313.

Lagabrielle, Y., Roure, F., Coutelle, A., Maury, R.C., Joron, J.L., and Thonon, P., 1986, The Coast Range ophiolites (northern California): Possible arc and back-arc basin remnants; their relations with the Nevadan orogeny: Geological Society of France Bulletin, v. 8, no. 6, p. 981–999.

LaMaskin, T. A., Rivas, J. A., Barbeau, D. L., Schwartz, J. J., Russell, J. A., and Chapman, A.

D., 2021, A crucial geologic test of Late Jurassic exotic collision versus endemic re-accretion in the Klamath Mountains Province, western United States, with implications for the assembly of western North America, Geological Society of America Bulletin, doi: https://doi.org/10.1130/B35981.1

Leary, R.J., Umhoefer, P., Smith, M.E., Smith, T.M., Saylor, J.E., Riggs, N., Burr, G., Lodes, E., Foley, D., Licht, A., Mueller, M.A., and Baird, C., 2020, Provenance of Pennsylvanian–Permian sedimentary rocks associated with the Ancestral Rocky Mountains orogeny in southwestern Laurentia: Implications for continental-scale Laurentian sediment transport systems: Lithosphere, v. 12, p. 88–121, https://doi.org/10.1130/L1115.1.

Lena, L., et al., 2019, Cross-continental age calibration of the Jurassic/Cretaceous boundary: Solid Earth, v. 10, p. 1–14, https://doi.org/10.5194/se-10-1-2019.

Lenz, C., and Nasdala, L., 2015, A photoluminescence study of REE^{3+} emissions in radiation-damaged zircon: American Mineralogist, 100, 1123–1133.

Lenz, C., Belousova, E., and Lumpkin, G.R., 2020, The in-situ quantification of structural radiation damage in zircon using laser-induced confocal photoluminescence spectroscopy: Minerals, 10, 83.

Lenz, C., Talla, D., Ruschel, K., Skoda, R., Götze, J., and Nasdala, L., 2013, Factors affecting the Nd3+ (REE3+) luminescence of minerals: Mineralogy and Petrology, 107, 415–428.

Linn, A. M., DePaolo, D. J., and Ingersoll, R. V., 1991, Nd-Sr isotopic provenance analysis of Upper Cretaceous Great Valley fore-arc sandstones. Geology, 19(8), 803-806.

Liu, L., Gurnis, M., Seton, M., Saleeby, J., Muller, R.D., and Jackson, J.M., 2010, The role of oceanic plateau subduction in the Laramide orogeny: Nature Geoscience, v. 3, p. 353–357, doi:10.1038/ngeo829.

Livaccari, R.F., Burke, K., and Sengor, A.M.C., 1981, Was the Laramide orogeny related to subduction of an oceanic plateau?: Nature, v. 289, p. 276–278, doi:10.1038 /289276a0.

Lowe, D.R., 1982, Sediment gravity flows II. Depositional models with special reference to the deposits of high density turbidity currents: Journal of Sedimentary Petrology, v. 52, p. 279–297.

Lumpkin, G.R., 2006, Ceramic waste forms for actinides: Elements, 2, 365–372.

Lumpkin, G.R., 2018, Ceramic host phases for nuclear waste remediation: Experimental and Theoretical Approaches to Actinide Chemistry, Gibson, J.K., de Jong, W.A., Eds.; John Wiley and Sons: Hoboken, NJ, USA.

MacDonald, J.H., Jr., Harper, G.D., and Zhu, B., 2006, Petrology, geochemistry, and provenance of the Galice Formation, Klamath Mountains, Oregon and California: in Snoke, A.W., and Barnes, C.G., eds., Geological studies in the Klamath Mountains province, California and Oregon: A volume in honor of William P. Irwin: Geological Society of America Special Paper 410, p. 1-29.

Mansfield, C.F., 1979, Upper Mesozoic subsea fan deposits in the southern Diablo Range, California: Record of the Sierra Nevada magmatic arc: Geological Society of America Bulletin, v. 90, pt. I, p. 1025–1046.

Martin, M.W., and Clemens-Knott, D., 2015, Detrital-zircon record of the early Mesozoic southwestern Sierra Nevada arc preserved in Lower Cretaceous intra-arc and forearc deposits of central California, USA, in Anderson, T.H., Didenko, A.N., Johnson, C.L., Khanchuk, A.I., and MacDonald, J.H., Jr., eds., Late Jurassic Margin of Laurasia—A Record of Faulting Accommodating Plate Rotation: Geological Society of America Special Paper 513, p. 269–284, https://doi.org/10.1130/2015.2513(06).

Mathieu, R., Zetterström, L., Cuney, M., Gauthier-Lafaye, F., and Hidaka, H., 2001, Alteration of monazite and zircon and lead migration as geochemical tracers of fluid paleocirculations around the Oklo–Okélobondo and Bangombé natural nuclear reaction zones (Franceville basin, Gabon): Chemical Geology, 171, 147–171.

Mattinson, J.M., 2010, Analysis of the relative decay constants of 235U and 238U by multi-step CA-TIMS measurements of closed-system natural zircon samples: Chemical Geology, 275(3-4), pp.186-198.

Mattinson, J.M., and Hopson, C.A., 1992, U/Pb ages of the Coast Range ophiolite: A critical reevaluation based on new high-precision Pb/Pb ages: American Association of Petroleum Geologists Bulletin, v. 76, p. 425.

Mattinson, J.M., and Hopson, C.A., 2008, New high-precision CA-TIMS U-Pb zircon plateau ages for the Point Sal and San Simeon ophiolite remnants, California Coast Ranges, in Wright, J.E., and Shervais, J.W., eds., Ophiolites, Arcs, and Batholiths: A Tribute to Cliff Hopson: Geological Society of America Special Paper 438, doi: 10.1130/2008.2438(02).

McCrory, P.A., Wilson, D.S., and Stanley, R.G., 2009, Continuing Evolution of the Pacific-Juan de Fuca-North America Slab: Tectonophysics, 464, 30–42.

McDannell, K. T., Zeitler, P. K., and Schneider, D. A., 2018, Instability of the southern Canadian Shield during the late Proterozoic: Earth and Planetary Science Letters, 490, 100-109.

McDowell, F.W., McIntosh, W.C., Farley, K.A., 2005, A precise ^{40}Ar-^{39}Ar reference age for the

Durango apatite (U-Th)/He and fission-track dating standard: Chemical Geology, 214, 249-263.

McGuire, D.J., 1988, Stratigraphy, depositional history and hydrocarbon source-rock potential of the Upper Cretaceous-Lower Tertiary Moreno Formation, central San Joaquin basin, California: Ph.D. Dissertation, Stanford University, 231 p.

McLaughlin, R.J., Blake, M.C., Jr., Griscom, A., Blome, C.D., and Murchey, B., 1988, Tectonics of formation, translation, and dispersal of the Coast Range ophiolite of California: Tectonics, v. 7, p. 1033–1056.

Meier, M.L., 2005, Measuring crystallite size using X-ray diffraction, the Williamson-Hall method: Department of Chemical Engineering and Materials Science, University of California, Oakland.

Memeti, V., Gehrels, G.E., Paterson, S.R., Thompson, J.M., Mueller, R., and Pignotta, M., 2010, Evaluating the Mojave-Snow Lake fault hypothesis and origins of central Sierran metasedimentary pendant strata using detrital zircon provenance analyses: Lithosphere, v. 2, p. 341–360, https://doi.org/10.1130/L58.1.

Mitchell, C., Graham, S.A., and Suek, D.H., 2010, Subduction complex uplift and exhumation and its influence on Maastrichtian forearc stratigraphy in the Great Valley Basin, northern San Joaquin Valley, California: Geological Society of America Bulletin, v. 122, p. 2063–2078, https://doi.org/10.1130/B30180.1.

Morrison, R.R., Brown, W.R., Edmonson, W.F., Thomson, J.N., and Young, R.J., 1971, Potential of Sacramento Valley gas province, California, in Cram, I.H., ed., Future Petroleum Provinces of the United States—Their Geology and Potential: American Association of Petroleum Geologists Memoir 15, p. 329–338.

Mortensen, J. K., and Card, K. D., 1993, U–Pb age constraints for the magmatic and tectonic evolution of the Pontiac Subprovince, Quebec: Canadian Journal of Earth Sciences, 30, 1970-1980.

Moxon, I.W., 1988, Sequence stratigraphy of the Great Valley basin in the context of convergent margin tectonics, in Graham, S.A., ed., Studies of the Geology of the San Joaquin Basin: Bakersfield, California, Pacific Section, Society of Economic Paleontologists and Mineralogists, Field Trip Guidebook 60, p. 3–28.

Moxon, I.W., 1990, Stratigraphic and Structural Architecture of the San Joaquin–Sacramento Basin [Ph.D. thesis]: Stanford, California, Stanford University, 371 p.

Mulcahy, S.R., Starnes, J.K., Day, H.W., Coble, M.A., and Vervoort, J.D., 2018, Early onset of

Franciscan subduction: Tectonics, v. 37, p. 1194–1209, https://doi.org/10.1029/2017TC004753.

Murray, K.E., Orme, D.A., and Reiners, P.W., 2014, Effects of U-Th-rich grain boundary phases on apatite helium ages: Chemical Geology, 390, 135-151.

Mutti, E., 1992, Turbidite Sandstones. Asip, Istituto di Geologia Universita di Parma, Parma, Italy, p. 275.

Nasdala, L., Akhmadaliev, S., Artac, A., Chanmuang, C., Habler, G., Lenz, C., 2018, Irradiation effects in monazite–(Ce) and zircon: Raman and photoluminescence study of Au-irradiated FIB foils: Physics and Chemistry of Minerals, 45, 855–871.

Nasdala, L., Grambole, D., Götze, J., Kempe, U., Váczi, T., 2011, Helium irradiation study on zircon: Contributions to Mineralogy and Petrology, 161, 777–789.

Nasdala, L., Irmer, G., Wolf, D., 1995, The degree of metamictization in zircons: A Raman spectroscopic study: European Journal of Mineralogy, 7, 471–478.

Nasdala, L., Lengauer, C.L., Hanchar, J.M., Kronz, A., Wirth, R., Blanc, P., Kennedy, A.K., and Seydoux-Guikkaume, A.M., 2002, Annealing radiation damage and the recovery of cathodoluminescence: Chemical Geology, 191: 121–140, DOI 10.1016/S0009-2541(02)00152-3

Nasdala, L., Wenzel, M., Vavra, G., Irmer, G., Wenzel, T., and Kober, B., 2001, Metamictisation of natural zircon: accumulation versus thermal annealing of radioactivity-induced damage: Contributions to Mineralogy and Petrology, 141, 125-144.

Nilsen, T.H., 1990, Santonian, Campanian, and Maastrichtian depositional systems, Sacramento basin, California, in Ingersoll, R.V., and Nilsen, T.H., eds., Sacramento Valley Symposium and Guidebook: Bakersfield, California, Pacific Section, Society of Economic Paleontologists and Mineralogists, Book 65, p. 95–132.

Noda, A., 2016, Forearc basins: Types, geometries, and relationships to subduction zone dynamics: Geological Society of America Bulletin, v. 128, p. 879–895, https://doi.org/10.1130/B31345.1.

Ogg, J.G., and Hinnov, L.A., 2012, Jurassic, in Gradstein, F.M., et al., eds, The Geologic Time Scale 2012, First Edition: Amsterdam, Elsevier, p. 731– 791, https://doi.org/10.1016/B978-0-444-59425 -9.00026-3.

Ojakangas, R.W., 1968, Cretaceous sedimentation, Sacramento Valley, California: Geological Society of America Bulletin, v. 79, p. 973–1008, https://doi.org/10.1130/0016-7606(1968)79 [973:CSSVC]2.0.CO;2.

Orme, D. A., 2017, Burial and exhumation history of the Xigaze forearc basin, Yarlung suture zone, Tibet: Geoscience Frontiers, 10, 895-908.

Orme, D.A., and Graham, S.A., 2018, Four-dimensional model of Cretaceous depositional geometry and sediment flux in the northern Great Valley forearc, California, in Ingersoll, R.V., Lawton, T.F., and Graham, S.A., eds., Tectonics, Sedimentary Basins, and Provenance: A Celebration of William R. Dickinson's Career: Geological Society of America Special Paper 540, https://doi.org/10.1130/2018.2540(18).

Orme, D. A., and Surpless, K. D., 2019, The birth of a forearc: The basal Great Valley Group, California, USA. Geology.

Orme, D.A., Carrapa, B., and Kapp, P., 2015, Sedimentology, provenance, and geochronology of the Upper Cretaceous–Lower Eocene western Xigaze forearc basin, southern Tibet: Basin Research, v. 27, p. 387–411, https:// doi.org/10.1111/bre.12080.

Orme, D.A., Guenthner, W.R., Laskowski, A.K., and Reiners, P.W., 2016, Long-term tectonothermal history of Laramide basement from zircon–He age-eU correlations: Earth and Planetary Science Letters, 453, 119–130.

Orme, D.A., Laskowski, A.K., Zilinsky, M.F.*, Chao, W., Guo, X., Cai, F., Ding, L., 2021, Sedimentology and provenance of newly identified Upper Cretaceous trench-basin strata, Dênggar, southern Tibet: Implications for development of the Eurasian margin prior to India-Asia collision, Basin Research, doi.org/10.1111/bre.12521.

Pabst, A., 1952, The metamict state: American Mineralogist, 37, 137–157.

Paces, J. B., and Miller Jr, J. D., 1993, Precise U-Pb ages of Duluth complex and related mafic intrusions, northeastern Minnesota: Geochronological insights to physical, petrogenetic, paleomagnetic, and tectonomagmatic processes associated with the 1.1 Ga midcontinent rift system: Journal of Geophysical Research: Solid Earth, 98, 13997-14013.
Paterson and Ducea, 2015

Page, B. M., 1972, Oceanic crust and mantle fragment in subduction complex near San Luis Obispo, California: Geological Society of America Bulletin, v. 83, p. 957–972.

Palenik, C.S., Nasdala, L., and Ewing, R.C., 2003, Radiation damage in zircon: American Mineralogist, 88, 770–781.

Panczer, G., De Ligny, D., Mendoza, C., Gaft, M., Seydoux-Guillaume, A., and Wang, X., 2012, Raman and fluorescence in J. Dubessy, M.-C. Caumon, and F. Rull, Eds., Applications of Raman Spectroscopy to Earth Sciences and Cultural Heritage: EMU Notes in Mineralogy, Eötvös University Press, Budapest, 12, p. 61–82.

Paterson, S.R., and Ducea, M.N., 2015, Arc magmatic tempos: Gathering the evidence: Elements, v. 11, no. 2, p. 91–98, https://doi.org/10.2113/ gselements.11.2.91.

Paterson, S. R., and Miller, R. B., 1998, Magma emplacement during arc-perpendicular shortening: An example from the Cascades crystalline core, Washington: Tectonics, 17, 571-586.

Paterson, S.R., Okaya, D., Memeti, V., Economos, R., and Miller, R.B., 2011, Magma addition and flux calculations of incrementally constructed magma chambers in continental margin arcs: Combined field, geochronologic, and thermal modeling studies: Geosphere, v. 7, p. 1439–1468, doi:10.1130 /GES00696.1.

Paterson, S. R., Tobisch, O. T., and Vernon, R. H., 1991, Emplacement and deformation of granitoids during volcanic arc construction in the Foothills terrane, central Sierra Nevada, California: Tectonophysics, 191, 89-110.

Patiño Douce, A.E., Humphreys, E.D. and Johnston, A.D., 1990, Anatexis and metamorphism in tectonically thickened continental crust exemplified by the Sevier hinterland, western North America: Earth and Planetary Science Letters, v. 97, p. 290– 315, doi:10.1016/0012-821X(90)90048-3.

Pepper, M. W., 1984, The Martinez Submarine Canyon Southern Sacramento Valley, California, in Almgren, A.A., and Hacker, P.D., eds., Paleogene submarine canyons of the Sacramento Valley, California: Los Angeles, California, Pacific Section, American Association of Petroleum Geologists, p. 17-25.

Pessagno, E.A., Jr., 1977, Upper Jurassic Radiolaria and radiolarian biostratigraphy of the California Coast Ranges: Micropaleontology, v. 23, p. 56– 113, https://doi.org/10.2307/1485310.

Pinet, N., and McDannell, K.T., 2020, The Ups and Downs of the Canadian Shield. 3, Additional Apatite Fission-track Analyses from the Musselwhite, Roberto, Meadowbank and Raglan Mines, Ontario, Quebec, and Nunavut. Geological Survey of Canada.

Platt, J.P., 1975, Metamorphic and deformational processes in the Franciscan complex, California: Some insights from the Catalina Schist terrane: Geological Society of America Bulletin, v. 86, p. 1337–1347, doi: 10.1130/0016-7606(1975)86<1337:MADPIT>2.0.CO;2.

Platt, J.P., 1986, Dynamics of orogenic wedges and uplift of high-pressure metamorphic rocks: Geological Society of America Bulletin, v. 97, p. 1037–1053, doi: 10.1130/0016-7606(1986)97<1037:DOOWAT>2.0.CO;2.

Portnyagin, M., Hoernle, K., Avdeiko, G., Hauff, F., Werner, R., Bindeman, I., Uspensky, V., Garbe-Schönberg, 2005, Transition from arc to oceanic magmatism at the Kamchatka–Aleutian junction: Geology, 33, 25–28.

Powell, R. E., Weldon, R. J., and Matti, J C., 1993, The San Andreas fault system: Displacement, palinspastic reconstruction, and geologic evolution: Geological Society of America, v. 178.

Pullen, A., Ibanez-Mejia, M., Gehrels, G., Giesler, D., and Pecha, M., 2018, Optimization of a laser ablation–single collector–inductively coupled plasma–mass spectrometer (Thermo Element 2) for accurate, precise, and efficient zircon U-Th-Pb geochronology: Geochemistry Geophysics Geosystems , v. 19, p. 3689–3705, https://doi.org/10.1029/2018GC007889.

Pullen, A., Ibáñez-Mejía, M., Gehrels, G. E., Ibáñez-Mejía, J. C., and Pecha, M., 2014, What happens when n= 1000? Creating large-n geochronological datasets with LA-ICP-MS for geologic investigations. Journal of Analytical Atomic Spectrometry, 29(6), 971-980.

Redwine, L.E., 1984, Tertiary Princeton submarine valley system beneath the Sacramento Valley, California, in Almgren, A.A., and Hacker, P.D., eds., Paleogene submarine canyons of the Sacramento Valley, California: Los Angeles, California, Pacific Section, American Association of Petroleum Geologists, p. 53–80.

Reiners, P.W., Zanetti, K.A., Spell, T.L., and Nicolescu, S., 2004, Zircon (U-Th)/He thermochronometry: He diffusion and comparisons with $^{40}Ar/^{39}Ar$ dating: Geochimica et Cosmochimica Acta, v. 68, p. 1857–1887, doi: 10.1016/j.gca.2003.10.021.

Rémond, G., Blanc, P., Cesbron, F., Ohnenstetter, D., and Rouer, O., 1995, Cathodoluminescence of rare earth doped zircons. II. Relationship between the distribution of the doping elements and the contrasts of images: Scanning Microscopy Supplement 9: 57–76.

Reuther, C.D., Adam, J., 1996. Forearc dynamics and neotectonic arc deformation, Central Andes, Northern Chile. Ext. Abstr. Third ISAG, St. Malo (France)., 219–222.

Ring, U., and Brandon, M.T., 1994, Kinematic data for the Coast Range fault and implications for exhumation of the Franciscan subduction complex: Geology, v. 22, p. 735–738, doi: 10.1130/0091-7613(1994)022<0735: KDFTCR>2.3.CO;2.

Ring, U., and Richter, P.P., 2004, Normal faulting at convergent plate boundaries: Mylonitic extensional fabrics in the Franciscan subduction complex in Del Puerto Canyon, California, revisited: Tectonics, v. 23, p. TC2006, doi: 10.1029/2002TC001476.

Ríos, S., Salje, E.K., Zhang, M., and Ewing, R.C., 2000, Amorphization in zircon: evidence for

direct impact damage: Journal of Physics: Condensed Matter, 12, 2401–2412.

Robertson, A.H.F., 1990, Sedimentology and tectonic implications of ophiolite-derived clastics overlying the Jurassic Coast Range ophiolite, northern California: American Journal of Science, v. 290, p. 109–163.

Rose, R.L., and Colburn, I.P., 1963, Geology of the east-central part of the Priest Valley Quadrangle, California, in Geology of the Salinas Valley and the San Andreas Fault: American Association of Petroleum Geologists and Society of Economic Paleontologists and Mineralogists, Pacic Sections, Annual Spring Field Trip Guidebook: Los Angeles, California, Pacic Section, American Association of Petroleum Geologists, p. 38–45.

Roy, R. F., Blackwell, D. D., and Decker, E. R., 1972, Continental heat flow: Nature of the Solid Earth, edited by Robertson, E. C., McGraw-Hill, New York, pp. 506-543.

Ruschel, K., Nasdala, L., Rhede, D., Wirth, R., Lengauer, C.L., and Libowitzky, E., 2010, Chemical alteration patterns in metamict fergusonite: European Journal of Mineralogy, 22, 425–433.

Saleeby, J.B., 1982, Polygenetic ophiolite belt of the California Sierra Nevada; Geochronological and tectonostratigraphic development: Journal of Geophysical Research, B, v. 87, no. 3, p. 1803–1824.

Saleeby, J., 1990, Progress in tectonic and petrogenetic studies in an exposed cross-section of young (approximately 100Ma) continental crust, southern Sierra Nevada, California, in Salisbury, M.H., and Fountain, D.M., eds., Exposed cross-sections of the continental crust; Proceedings, North Atlantic Treaty Organization (NATO) ASI Series C: Mathematical and Physical Sciences: Dordrecht-Boston, International, D. Reidel Publishing Company, p. 137–158.

Saleeby, J. B., 1992, Petrotectonic and paleogeographic settings of U.S. Cordilleran ophiolites, in Burchfiel, B. C., et al., The Cordilleran orogen: Conterminous U.S.: Boulder, Colorado, Geological Society of America, Geology of North America, v. G-3, p. 653–682.

Saleeby, J., 2003, Segmentation of the Laramide slab—Evidence from the southern Sierra Nevada region: Geological Society of America Bulletin, v. 115, p. 655–668, doi:10.1130/0016-7606(2003)115<0655:SOTLSF>2.0 .CO;2.

Saleeby, J., 2011, Geochemical mapping of the Kings-Kaweah ophiolite belt, California—Evidence for progressive mélange formation in a large offset transform-subduction initiation environment, in Wakabayashi, J., and Dilek, Y., eds., Mélanges: Processes of Formation and Societal Significance: Geological Society of America Special Paper 480, p. 31–73, https://doi.org/10.1130/2011.2480(02).

Saleeby, J.B., and Busby, C., 1993, Paleogeographic and tectonic setting of axial and western metamorphic framework rocks of the southern Sierra Nevada, California, in Dunne, G., and McDougall, K., eds., Mesozoic Paleogeography of the Western United States—II: Los Angeles, California: Pacific Section, Society of Economic Paleontologists and Mineralogists Book 71, p. 197–225.

Saleeby, J.B., and Busby-Spera, C., 1992, Early Mesozoic tectonic evolution of the western U.S. Cordillera, in Burch el, B.C., Lipman, P.W., and Zoback, M.L., eds., The Cordilleran Orogen: Conterminous U.S.: Boulder, Colorado, Geological Society of America, The Geology of North America, v. G-3, p. 107–138, https://doi.org/10.1130/DNAG-GNA-G3.107.

Saleeby, J.B., and Dunne, G., 2015, Temporal and tectonic relations of early Mesozoic arc magmatism, southern Sierra Nevada, California, in Anderson, T.H., Didenko, A.N., Johnson, C.L., Khanchuk, A.I., and MacDonald, J.H., Jr., eds., Late Jurassic Margin of Laurasia— A Record of Faulting Accommodating Plate Rotation: Geological Society of America Special Paper 513, p. 223–268, https://doi.org/10.1130/2015.2513(05).

Saleeby, J., Farley, K.A., Kistler, R.W., and Fleck, R., 2007, Thermal evolution and exhumation of deep-level batholithic exposures, southernmost Sierra Nevada, California, in Cloos, M., Carlson, W.D., Gilbert, M.C., Liou, J.G., and Sorensen, S.S., eds., Convergent Margin Terranes and Associated Regions: A Tribute to W.G. Ernst: Geological Society of America Special Paper 419, p. 39–66, doi:10.1130/2006.2419(01).

Saleeby, J.B., Geary, E.E., Paterson, S.R., and Tobisch, O.T., 1989, Isotopic systematics of Pb/U (zircon) and 40Ar/39Ar (biotite-hornblende) from rocks of the central Foothills Terrane, Sierra Nevada, California: Geological Society of America Bulletin , 101. 1481–1492.

Saylor, J.E., Jordan, J.C., Sundell, K.E., Wang, X., Wang, S., and Deng, T., 2018, Topographic growth of the Jishi Shan and its impact on basin and hydrology evolution, NE Tibetan Plateau: Basin Research, v. 30, p. 544–563, https://doi.org/10.1111/bre.12264.

Scheirer, A.H., Tennyson, M.E., Magoon, L.B., Charpentier, R.R., Cook, T.A., Klett, T.R., Pollastro, R.M., and Schenk, C.J., 2007, Assessment of Undiscovered Natural Gas Resources of the Sacramento Basin Province of California, 2006: U.S. Geological Survey Fact Sheet 2007-3014, 2 p.

Schmitz, M.D., Bowring, S.A., 2001, U-Pb zircon and titanite systematics of the Fish Canyon Tuff: an assessment of high precision U-Pb geochronology and its application to young volcanic rocks: Geochimica et Cosmochimica Acta, 65, 2571-2587.

Schoenherr, A.A., 1992, A Natural History of California: University of California Press, Berkeley, USA.

Schwartz, T. M., Schwartz, R. K., and Weislogel, A. L., 2019, Orogenic recycling of detrital zircons characterizes age distributions of North American Cordilleran strata: Tectonics, 38, 4320-4334. https://doi.org/10.1029/2019TC005810

Schwartz, T.M., Surpless, K.D., Colgan, J.P., Johnstone, S.A., and Holm-Denoma, C.S., 2021, Detrital zircon record of magmatism and sediment dispersal across the North American Cordilleran arc system (28–48°N): Earth-Science Reviews, v. 220, 103734, https://doi.org/10.1016/j.earscirev.2021.103734.

Schweickert, R.A., and Lahren, M.M., 1993, Tectonics of the east-central Sierra Nevada-Saddle-bag Lake and northern Ritter Range pendants, in Lahren, M.M., Trexler, J.H., and Spinoza, C., eds., Crustal Evolution of the Great Basin and the Sierra Nevada: Reno, Nevada, Geological Society of America Field Trip Guidebook, May 1993, Department of Geological Sciences, University of Nevada, p. 313–352.

Seton, M., Müller, R.D., Zahirovic, S., Gaina, C., Torsvik, T., Shephard, G., Chandler, M., 2012, Global continental and ocean basin reconstructions since 200 Ma: Earth-Science Reviews, 113, 212–270.

Sharman, G.R., and Johnstone, S.A., 2017, Sediment unmixing using detrital geochronology: Earth and Planetary Science Letters, v. 477, p. 183–194, https://doi.org/10.1016/j.epsl.2017.07.044.

Sharman, G.R., Graham, S.A., Grove, M., Kimbrough, D.L., and Wright, J.E., 2015, Detrital zircon provenance of the Late Cretaceous–Eocene California forearc: Influence of Laramide low-angle subduction on sediment dispersal and paleogeography: Geological Society of America Bulletin, v. 127, p. 38–60, https://doi.org/10.1130/B31065.1.

Sharman, G.R., Sharman, J.P., and Sylvester, Z., 2018, detritalPy: A Python-based toolset for visualizing and analysing detrital geo-thermochronologic data: The Depositional Record, v. 4, p. 202–215, https://doi.org/10.1002/dep2.45.

Shervais, J.W., 2001, Birth, death and resurrection: The life cycle of suprasubduction zone ophiolites: Geochemistry, Geophysics, Geosystems, v. 2, 1010, https://doi.org/10.1029/2000GC000080.

Shervais, J. W., Murchey, B. L., Kimbrough, D. L., Renne, P. R., and Hanan, B., 2005, Radioisotopic and biostratigraphic age relations in the Coast Range Ophiolite, northern California: Implications for the tectonic evolution of the Western Cordillera: Geological Society of America Bulletin, v. 117, p. 633–653, https://doi.org/10.1130/B25443.1.

Shervais, J.W., Murchey, B.L., Kimbrough, D.L., Renne, P.R., and Hanan, B.B., 2002,

Radiometric and biostratigraphic age relations in the Coast Range ophiolite (CRO), northern California: Implications for Jurassic tectonic evolution of the western Cordillera: Geological Society of America Abstracts with Programs, v. 34, no. 5, p. A-22–A-23.

Shreve, R. L., and Cloos, M., 1986, Dynamics of sediment subduction, melange formation, and prism accretion: Journal of Geophysical Research: Solid Earth, 91(B10), 10229-10245.

Shultz, A., 1984, Subaerial debris-flow deposition in the Upper Paleozoic Cutler Formation, western Colorado: Journal of Sedimentary Research, v. 54, p. 759–772.

Sims, J.D., Fox Jr, K.F., Bartow, J.A., and Helley, E.J., 1973, Preliminary geologic map of Solano County and parts of Napa, Contra Costa, Marin, and Yolo Counties, California: U.S. Geological Survey Miscellaneous Field Study Map, MF-484.

Snoke, A.W., and Barnes, C.G., 2006, The development of tectonic concepts for the Klamath Mountains Province, California and Oregon, in Snoke, A.W., and Barnes, C.G., eds., Geological Studies in the Klamath Mountains Province, California and Oregon: A Volume in Honor of William P. Irwin: Geological Society of America Special Paper 410, p. 1–29, https://doi .org/10.1130/2006.2410(01).

Snoke, A.W., Sharp, W.D., Wright, J.E., and Saleeby, J., 1982, Significance of mid-Mesozoic peridotitic to dioritic intrusive complexes, Klamath Mountains, western Sierra Nevada, California: Geology, v. 10, p. 160–166, doi: 10.1130/0091-7613(1982)10<160:SOMPTD>2.0.CO;2.

Snow, C.A., and Ernst, W.G., 2008, Detrital zircon constraints on sediment distribution and provenance of the Mariposa Formation, central Sierra Nevada foothills, California, in Wright, J.E., and Shervais, J.W., eds., Ophiolites, arcs, and batholiths: A tribute to Cliff Hopson: Geological Society of America Special Paper 435, p. 311–330.

Snow, C.A., and Scherer, H.H., 2006, Terranes of the western Sierra Nevada foothills metamorphic belt, California: A critical review: International Geology Review, v. 48, p. 46–62, https://doi.org/10.2747/0020- 6814.48.1.46.

Spence, G.D., Hyndman, R.D., Langton, S., Yorath, C.J., and Davis, E.E., 1991, Multichannel seismic reflection profiles across the Vancouver Island continental shelf and slope: Geological Survey of Canada Open-File 2391, 41 p., doi:10.4095/132398.

Spurlin, M.S., Gehrels, G.E., and Harwood, D.S., 2000, Detrital zircon geochronology of upper Paleozoic and lower Mesozoic strata of the northern Sierra terrane, northeastern California, in Soreghan, M.J., and Gehrels, G.E., eds., Paleozoic and Triassic paleogeography and tectonics of western Nevada and northern California: Boulder, Colorado, Geological Society of America Special Paper 347, p. 89–98.

Stanley, R.G., 1987, Implications of the northwestwardly younger age of the volcanic rocks of west-central California: alternative interpretations: Geological Society of America Bulletin, 98, 612–614.

Stern, R. A., 1997, The GSC Sensitive High Resolution Ion Microprobe (SHRIMP): analytical techniques of zircon U-Th-Pb age determinations and performance evaluation: Radiogenic age and isotopic studies: Report, 10, 1-31.

Stevens, C.H., and Greene, D.C., 1999, Stratigraphy, depositional history, and tectonic evolution of Paleozoic continental-margin rocks in roof pendants of the eastern Sierra Nevada, California: Geological Society of America Bulletin, v. 111, p. 919–933, https://doi.org/10.1130/0016-7606 (1999)111<0919:SDHATE>2.3.CO;2.

Stevens, C.H., Stone, P., and Miller, J.S., 2005, A new reconstruction of the Paleozoic continental margin of southwest North America: Implications for the nature and timing of continental truncation and the possible role of the Mojave-Sonora megashear, in Anderson, T.H., Nourse, J.A., McKee, J.W., and Steiner, M.B., eds., The Mojave-Sonora Megashear Hypothesis: Development, Assessment, and Alternatives: Geological Society of America Special Paper 393, p. 597–618.

Stevens Goddard, A. L., Trop, J. M., and Ridgway, K. D., 2018, Detrital zircon record of a Mesozoic collisional forearc basin in south central Alaska: The tectonic transition from an oceanic to continental arc: Tectonics, 37, https:// doi.org/10.1002/2017TC004825.

Stone, P., and Stevens, C.H., 1988, An angular unconformity in the Permian section of east-central California: Geological Society of America Bulletin, v. 100, p. 547–551, https://doi.org/10.1130 /0016-7606(1988)100<0547:AAUITP>2.3.CO;2.

Stow, D.A., 1986, Deep clastic seas, in Reading, H.G., ed., Sedimentary Environments and Facies, Second Edition: Oxford, U.K., Blackwell Scientific Publications, p. 399–444.

Suchecki, R.K., 1984, Facies history of the Upper Jurassic–Lower Cretaceous Great Valley Sequence: Response to structural development of an outer-arc basin: Journal of Sedimentary Petrology, v. 54, p. 170–191.

Suchecki, R. K., and L. S. Land, 1983. Isotopic geochemistry of burial-metamorphosed volcanogenic sediments, Great Valley sequence, northern California, Geochim. Cosmochim. Acta, 47, 1487-1499, 1983.

Surpless, K.D., 2014, Geochemistry of the Great Valley Group: An integrated provenance record: International Geology Review, v. 57, p. 747–766, https://doi.org/10.1080/00206814.2014.923347.

Surpless, K.D., and Augsburger, G.A., 2009, Provenance of the Pythian Cave conglomerate,

northern California: Implications for mid-Cretaceous paleogeography of the U.S. Cordillera: Cretaceous Research, v. 30, p. 1181–1192, https://doi.org/10.1016/j.cretres.2009.05.005.

Surpless, K. D., Clemens-Knott, D., Barth, A. P., and Gevedon, M., 2019, A survey of Sierra Nevada magmatism using Great Valley detrital zircon trace-element geochemistry: View from the forearc. Lithosphere.

Surpless, K.D., Graham, S.A., Covault, J.A., and Wooden, J.L., 2006, Does the Great Valley Group contain Jurassic strata? Reevaluation of the age and early evolution of a classic forearc basin: Geology, v. 34, p. 21–24, https:// doi.org/10.1130/G21940.1.

Sweetkind, D.S., Rytuba, J.J., Langenheim, V.E., and Fleck, R.J., 2011, Geology and geochemistry of volcanic centers within the eastern half of the Sonoma volcanic field, northern San Francisco Bay region, California: Geosphere, v. 7, p. 629–657, doi:10.1130/GES00625.1.

Tagami, T., and Dumitru, T.A., 1996, Provenance and thermal history of the Franciscan accretionary complex: constraints from zircon fission track thermochronology: Journal of Geophysical Research, v. 101, p. 11,353-11,364.

Talling, P.J., 2013, Hybrid submarine flows comprising turbidity current and cohesive debris flow: Deposits, theoretical and experimental analyses, and generalized models: Geosphere, v. 9, p. 460–488, https://doi.org/10.1130/GES00793.1.

Talling, P.J., Masson, D.G., Sumner, E.J., and Malgesini, G., 2012, Subaqueous sediment density flows: Depositional processes and deposit types: Sedimentology, v. 59, p. 1937–2003, https://doi.org/10.1111/j.1365-3091.2012.01353.x.

Trop, J.M., Szuch, D.A., Rioux, M., and Blodgett, R.B., 2005, Sedimentology and provenance of the upper Jurassic Naknek formation, Talkeetna Mountains, Alaska: Bearings on the accretionary tectonic history of the Wrangellia composite terrane: Geological Society of America Bulletin, v. 117, no. 5–6, p. 570–588, doi:10.1130/B25575.1.

Tsuchiya, Y., Kayama, M., Nishido, H., and Noumi, Y., 2015, Annealing effects on cathodoluminescence of zircon: Journal of Mineralogical and Petrological Sciences, 110, 283–292.

Tsuchiya, Y., Kayama, M., Nishido, H., and Noumi, Y., 2017, Cathodoluminescence of synthetic zircon implanted by He+ ion: Geochronometria, 44, 129–135.

Turner, H. M., Baughman, J. S., Ault, A. K., and Thompson, M. D., 2021, Burial and

exhumation of the New England Avalon terrane coincident with Alleghanian orogenesis and continental breakup documented with zircon and apatite (U-Th)/He thermochronometry. In AGU Fall Meeting 2021. AGU.

Unruh, J.R., Dumitru, T.A., and Sawyer, T.L., 2007, Coupling of early Tertiary extension in the Great Valley forearc basin with blueschist exhumation in the underlying Franciscan accretionary wedge at Mount Diablo, California: Geological Society of America Bulletin, v. 119, p. 1347–1367, doi: 10.1130/B26057.1.

Van Es, H.J., Vainshtein, D.I., Rozendaal, A., Donoghue, J.F., De Meijer, R.J., and Den Hartog, H.W., 2002, Thermoluminescence of ZrSiO4 (zircon): A new dating method?. Nuclear Instruments and Methods in Physics Research Section B: Beam Interactions with Materials and Atoms, 191, 649–652.

Vaz, J.E., and Senftle, F.E., 1971, Thermoluminescence study of the natural radiation damage in zircon: Journal of Geophysical Research, 76, 2038–2050.

Vermeesch, P., 2013, Multi-sample comparison of detrital age distributions: Chemical Geology, v. 341, p. 140– 146, https://doi.org/10.1016/j.chemgeo.2013.01.010.

Vermeesch, P., Miller, D.D., Graham, S.A., Grave, J.D., and McWilliams, M.O., 2006, Multimethod detrital thermochronology of the Great Valley Group near New Idria, California: Geological Society of America Bulletin, v. 118, p. 210–218, https://doi.org/10.1130/B25797.1.

Vogel, K.D., 1985, Deformation in the lower Great Valley sequence: The Paskenta fault zone of northern California [M.A. thesis]: Austin, University of Texas, 129 p.

Vogel, K.D., and Cloos, M., 1985, Deformation in the lower Great Valley sequence: The Paskenta fault zone of northern California: Geological Society of America Abstracts with Programs, v. 17, p. 415.

von Huene, R., and Klaeschen, D., 1999, Opposing gradients of permanent strain in the aseismic zone and elastic strain across the seismogenic zone of the Kodiak shelf and slope, Alaska: Tectonics, v. 18, no. 2, p. 248–262, doi:10.1029/1998TC900022.

Wakabayashi, J., 2011, Mélanges of the Franciscan Complex, California: Diverse structural settings, evidence for sedimentary mixing, and their connection to subduction processes, in Wakabayashi, J., and Dilek, Y., eds., Mélanges: Processes of Formation and Societal Significance: Geological Society of America Special Paper 480, p. 117–141, doi:10.1130/2011.2480(05).

Wallin, E.T., Noto, R.C., and Gehrels, G.E., 2000, Provenance of the Antelope Mountain

Quartzite, Yreka terrane, California: Evidence for large-scale late Paleozoic sinistral displacement along the North American Cordilleran margin and implications for the mid-Paleozoic fringing-arc model, in Soreghan, M.J., and Gehrels, G.E., eds., Paleozoic and Triassic Paleogeography and Tectonics of Western Nevada and Northern California: Geological Society of America Special Paper 347, p. 119–131, https://doi.org/10.1130/0-8137-2347- 7.119.

Wasilewski, P.J., Senftle, F.E., Vaz, J.E., Thorpe, A.N., and Alexander, C.C., 1973, A study of the natural α-recoil damage in zircon by infrared spectra: Radiation Effects, 17, 191–199.

Weber, W.J., 1990, Radiation-induced defects and amorphization in zircon: Journal of Materials Research, 5, 2687–2697.

Wei, Q., Wang, H., Yang, Y., Yang, J., Huang, C., Wu, S., and Xie, L., 2020, KV01 zircon—A potential New Archean reference material for microbeam U-Pb age and Hf-O isotope determinations: Science China Earth Sciences, 63(11), pp.1780-1790.

Williams, T.A., 1997, Basin-Fill Architecture and Forearc Tectonics: Cretaceous Great Valley Group, Sacramento Basin, Northern California [Ph.D. thesis]: Stanford, California, Stanford University, 412 p.

Williams, H., and Curtis, G. H., 1977, The Sutter Buttes of California; a study of Plio-Pleistocene volcanism: University of California Publications in Geology Series, v. 116, 56 p.

Williams, T.A., and Graham, S.A., 2013, Controls on forearc basin architecture from seismic and sequence stratigraphy of the Upper Cretaceous Great Valley Group, central Sacramento Basin, California: International Geology Review, v. 55, p. 2030–2059, https://doi.org/10.1080/00206814.2013.817520.

Wilson, D.S., McCrory, P.A., and Stanley, R.G., 2005, Implications of volcanism in coastal California for the Neogene deformation history of western North America: Tectonics, 24, TC3008.

Wimbledon, W.A.P., Rehakova, D., Svobodova, A., Elbra, T., Schnabl, P., Pruner, P.,Sifnerova, K., Kdyr, S., Dzyuba, O.S., Schnyder, J., Galbrun, B., Kostak, M.,Vankova, L., Copestake, P., Hunt, C., Riccardi, A., Poulton, T.P., Bulot, L.G., Frau, C.,de Lena, L., 2020, The proposal of a GSSP for the Berriasian Stage (Cretaceous System): Part 1. Volumina Jurassica, 18 (1), 53–106, https://doi.org/10.7306/vj.18.5.

Wolf, R. W., Farley, K. A., and Kass, D., 1998, A sensitivity analysis of the apatite(U-Th)/He thermochronometer: Chemical Geology, 148, 105-114.

Wright, J.E., and Wyld, S.J., 2007, Alternative tectonic model for Late Jurassic through Early

Cretaceous evolution of the Great Valley Group, California, in Cloos, M., Carlson, W.D., Gilbert, M.C., Liou, J.G., and Sorenson, S.S., eds., Convergent Margin Terranes and Associated Regions: A Tribute to W.G. Ernst: Geological Society of America Special Paper 419, p. 81–95, https://doi.org/10.1130/2007.2419(04).

Yang, C., Homman, N.O., Johansson, L., and Malmqvist, K.G., 1994, Microcharacterizing zircon mineral grain by ionoluminescence combined with PIXE. Nuclear Instruments and Methods in Physics Research Section B: Beam Interactions with Materials and Atoms, 85, 808–814.

Zakharov, V.A. and Rogov, M.A., 2020, High-resolution stratigraphy of buchiid bivalves and ammonites from the Jurassic– Cretaceous boundary beds in the Paskenta area (California). Cretaceous Research, 110, https://doi.org/10.1016/j.cretres.2020.104422.

Zamyatin, D.A.; Shchapova, Y.V.; Votyakov, S.L.; Nasdala, L.; Lenz, C., 2017, Alteration and chemical U-Th-total Pb dating of heterogeneous high-uranium zircon from a pegmatite from the Aduiskii Massif, Middle Urals, Russia: Mineral. Petrol, 111, 475–497.

Zhang, M., and Salje, E.K., 2001, Infrared spectroscopic analysis of zircon: Radiation damage and the metamict state: Journal of Physics: Condensed Matter, 13, 3057–3071.

Zhang, M., Boatner, L.A., Salje, E.K., Ewing, R.C., Daniel, P., Weber, W.J., Zhang, Y., and Farnan, I., 2008, Micro-Raman and micro-infrared spectroscopic studies of Pb-and Au-irradiated $ZrSiO_4$: Optical properties, structural damage, and amorphization. Physical Review B, 77(14), 144110.

Zieglar, D. L., and Spotts, J. H., 1978, Reservoir and source-bed history of Great Valley, California: American Association of Petroleum Geologists Bulletin, 62, 813-826.

APPENDICES

APPENDIX A

MODAL DATA FOR POINT-COUNTING, U-PB DATA FROM THIS STUDY, AND U-PB DATASET REFERENCES FOR KDE AND MDS ANALYSIS

Modal Data

	Qt-F-L							
Sample	Qt (Qm + Qp)	F (K + P)	L (Lv + Ls + Lph + Lsm +Lc)	**TOTAL GRAINS**	Qt	F	L	**TOTAL PERCEN**
0119-MR-01	166	130	4	300	55	43	1	100
0119-MR-02	178	99	23	300	59	33	8	100
P01-3	201	78	21	300	67	26	7	100
0619-MR-12	9	1	63	73	12	1	86	100
0619-MR-16	88	102	110	300	29	34	37	100
0619-MR-24	31	261	8	300	10	87	3	100
0619-MR-27	3	3	42	48	6	6	88	100
0619-MR-28	24	258	18	300	8	86	6	100
0619-MR-29	101	90	109	300	34	30	36	100
0619-MR-30	88	77	135	300	29	26	45	100
0619-MR-35	81	77	142	300	27	26	47	100
0619-MR-36	82	42	176	300	27	14	59	100
0619-MR-37	77	68	155	300	26	23	52	100

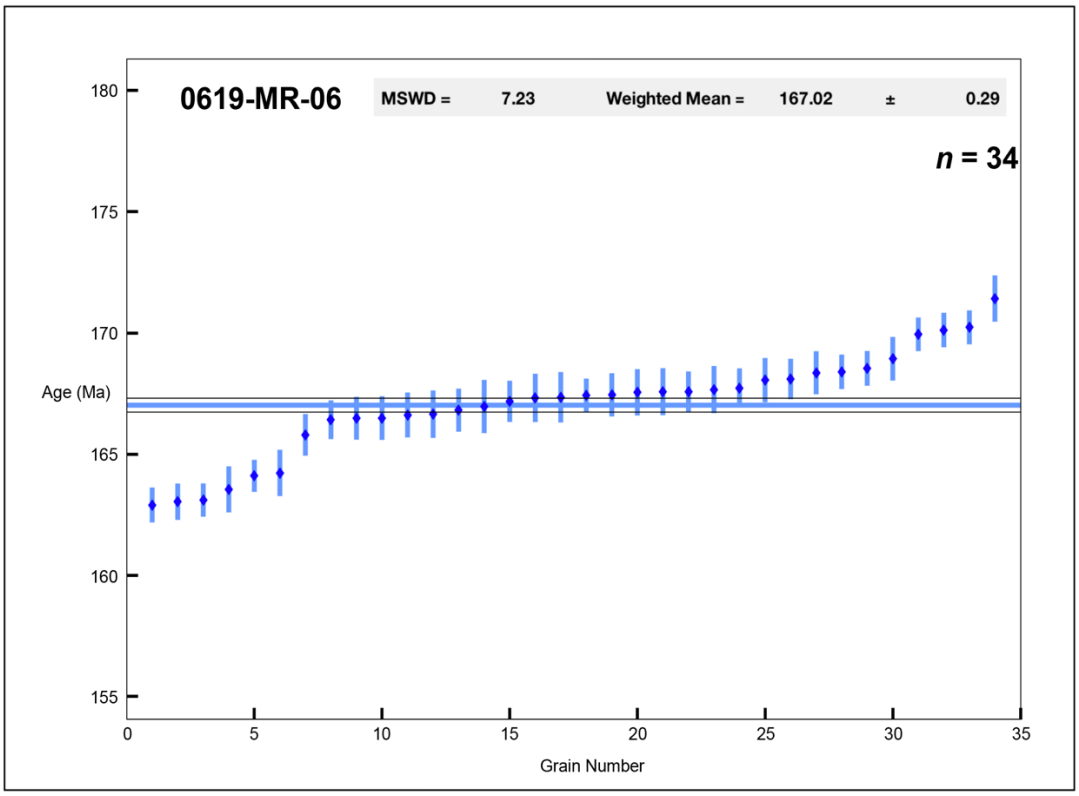
	Qm-F-Lt							
Sample	Qm	F (K + P)	Lt (Ls + Lv + Lm + Qp)	**TOTAL GRAINS**	Qm	F	Lt	**TOTAL PERCENT**
0119-MR-01	131	130	39	300	44	43	13	100
0119-MR-02	144	99	57	300	48	33	19	100
P01-3	186	78	36	300	62	26	12	100
0619-MR-12	3	1	69	73	4	1	95	100
0619-MR-16	48	102	150	300	16	34	50	100
0619-MR-24	28	261	11	300	9	87	4	100
0619-MR-27	2	3	43	48	4	6	90	100
0619-MR-28	16	258	26	300	5	86	9	100
0619-MR-29	90	90	120	300	30	30	40	100
0619-MR-30	86	77	137	300	29	26	46	100
0619-MR-35	56	77	167	300	19	26	56	100
0619-MR-36	66	42	192	300	22	14	64	100
0619-MR-37	57	68	175	300	19	23	58	100

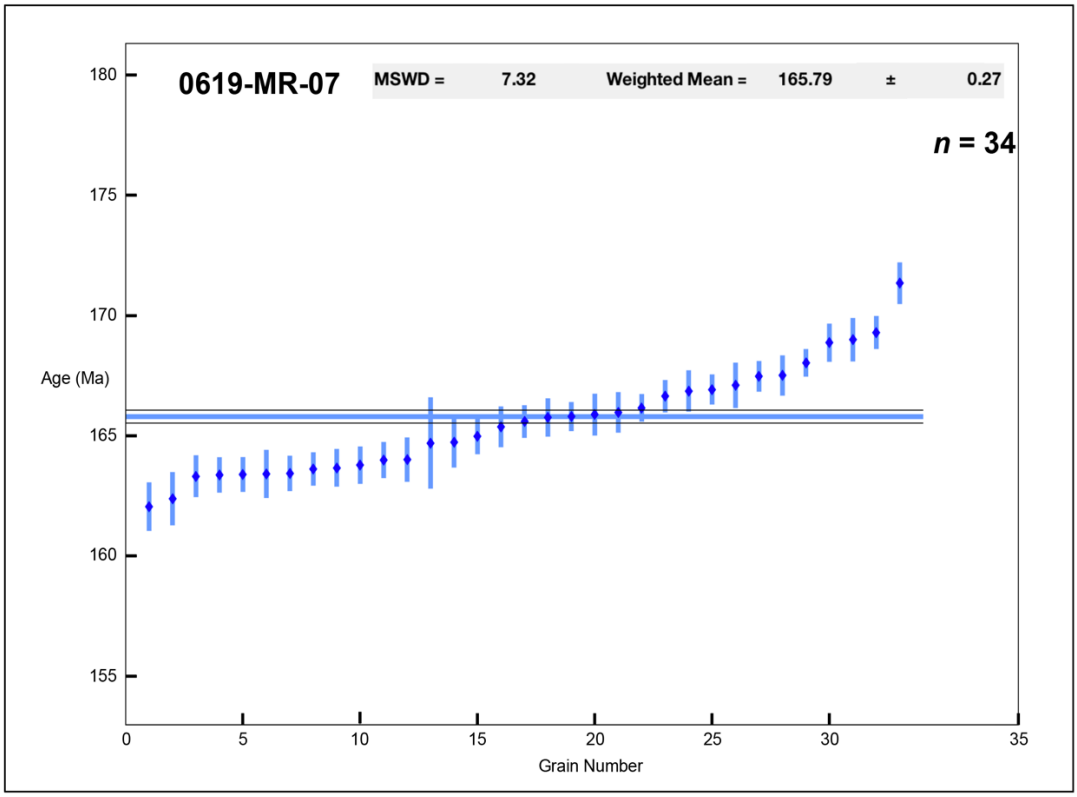
	Qt-P-K							
Sample	Qt (Qm + Qp)	P	K	**TOTAL GRAINS**	Qt	P	K	**TOTAL PERCENT**
0119-MR-01	166	105	25	296	56	35	8	100
0119-MR-02	178	70	29	277	64	25	10	100
P01-3	201	31	47	279	72	11	17	100
0619-MR-12	9	1	0	10	90	10	0	100
0619-MR-16	88	29	73	190	46	15	38	100
0619-MR-24	31	1	260	292	11	0	89	100
0619-MR-27	3	1	2	6	50	17	33	100
0619-MR-28	24	2	256	282	9	1	91	100
0619-MR-29	101	63	27	191	53	33	14	100
0619-MR-30	88	67	10	165	53	41	6	100
0619-MR-35	81	59	18	158	51	37	11	100
0619-MR-36	82	15	27	124	66	12	22	100
0619-MR-37	77	11	57	145	53	8	39	100

	Lm-Lv-Ls							
Sample	Lm	Lv	Ls	**TOTAL GRAINS**	Lm	Lv	Ls	**TOTAL PERCENT**
0119-MR-01	0	4	0	4	0	100	0	100
0119-MR-02	0	21	0	21	0	100	0	100
P01-3	8	7	0	15	53	47	0	100
0619-MR-12	0	63	0	63	0	100	0	100
0619-MR-16	0	110	0	110	0	100	0	100
0619-MR-24	0	0	0	0	0	0	0	0
0619-MR-27	0	37	0	37	0	100	0	100
0619-MR-28	1	0	0	1	100	0	0	100
0619-MR-29	1	66	0	67	1	99	0	100
0619-MR-30	0	100	0	100	0	100	0	100
0619-MR-35	0	142	0	142	0	100	0	100
0619-MR-36	0	176	0	176	0	100	0	100
0619-MR-37	2	151	0	153	1	99	0	100

U-Pb Geochronologic Analyses for Igneous Samples

	U (ppm)	206Pb 204Pb	U/Th	206Pb* 207Pb*	± (%)	207Pb* 235U*	± (%)	206Pb* 238U	± (%)	error corr.	206Pb* 238U*	± (Ma)	207Pb* 235U	± (Ma)	206Pb* 207Pb*	± (Ma)	Best age (Ma)	± (Ma)	Conc (%)
Sample 0619-MR-06																			
0619-MR-06 Spot 20	1132.01	28214.25	1.03	20.49	0.79	0.17	1.19	0.03	0.89	0.75	162.90	1.44	161.25	1.78	137.06	18.53	162.90	1.44	NA
0619-MR-06 Spot 19	1059.35	114751.29	1.08	20.28	0.74	0.17	1.19	0.03	0.93	0.78	163.04	1.50	162.95	1.80	161.62	17.41	163.04	1.50	NA
0619-MR-06 Spot 13	1602.97	131161.93	1.64	20.33	0.74	0.17	1.13	0.03	0.85	0.76	163.11	1.37	162.63	1.69	155.60	17.28	163.11	1.37	NA
0619-MR-06 Spot 14	1130.96	190100.10	1.60	20.45	0.67	0.17	1.36	0.03	1.18	0.87	163.55	1.90	162.13	2.03	141.50	15.78	163.55	1.90	NA
0619-MR-06 Spot 12	408.61	21067.78	1.06	20.33	1.34	0.17	1.57	0.03	0.82	0.52	164.11	1.32	163.53	2.37	155.23	31.30	164.11	1.32	NA
0619-MR-06 Spot 21	897.52	52223.12	1.72	20.38	0.83	0.17	1.44	0.03	1.18	0.82	164.23	1.91	163.31	2.18	150.08	19.46	164.23	1.91	NA
0619-MR-06 Spot 1	1102.20	518189.69	1.09	20.18	0.67	0.18	1.24	0.03	1.05	0.84	165.80	1.72	166.30	1.91	173.46	15.52	165.80	1.72	NA
0619-MR-06 Spot 6	606.17	100483.88	0.99	20.03	1.05	0.18	1.43	0.03	0.97	0.68	166.42	1.60	168.05	2.22	191.05	24.42	166.42	1.60	NA
0619-MR-06 Spot 7	799.47	50477.63	0.94	20.46	0.86	0.18	1.38	0.03	1.08	0.78	166.48	1.77	164.80	2.09	140.72	20.17	166.48	1.77	NA
0619-MR-06 Spot 17	812.17	53250.72	1.01	20.28	1.02	0.18	1.50	0.03	1.10	0.73	166.49	1.81	166.20	2.30	162.05	23.91	166.49	1.81	NA
0619-MR-06 Spot 31	618.25	143160.49	0.94	20.55	1.09	0.18	1.57	0.03	1.13	0.72	166.62	1.85	164.30	2.38	131.07	25.72	166.62	1.85	NA
0619-MR-06 Spot 33	818.88	87653.93	0.93	20.43	0.81	0.18	1.44	0.03	1.19	0.83	166.65	1.96	165.22	2.19	144.66	18.97	166.65	1.96	NA
0619-MR-06 Spot 5	1116.88	157034.34	2.03	20.47	0.91	0.18	1.41	0.03	1.08	0.77	166.82	1.78	165.05	2.15	139.80	21.28	166.82	1.78	NA
0619-MR-06 Spot 11	683.78	33698.09	0.89	20.09	0.78	0.18	1.54	0.03	1.33	0.86	166.97	2.20	168.07	2.39	183.64	18.22	166.97	2.20	NA
0619-MR-06 Spot 23	778.76	27204.70	1.07	20.46	0.77	0.18	1.29	0.03	1.03	0.80	167.18	1.70	165.47	1.97	141.04	18.14	167.18	1.70	NA
0619-MR-06 Spot 34	705.13	21951.21	0.98	20.44	0.98	0.18	1.56	0.03	1.21	0.77	167.32	1.99	165.72	2.38	142.86	23.09	167.32	1.99	NA
0619-MR-06 Spot 16	629.61	60163.11	0.89	20.29	0.89	0.18	1.54	0.03	1.26	0.82	167.35	2.08	166.88	2.37	160.29	20.79	167.35	2.08	NA
0619-MR-06 Spot 35	435.52	137085.06	1.82	20.00	1.22	0.18	1.47	0.03	0.83	0.56	167.44	1.37	169.23	2.30	194.38	28.35	167.44	1.37	NA
0619-MR-06 Spot 18	762.84	153448.24	0.82	20.14	0.86	0.18	1.38	0.03	1.08	0.78	167.45	1.78	168.12	2.14	177.52	20.06	167.45	1.78	NA
0619-MR-06 Spot 2	664.49	76638.13	0.88	20.17	0.82	0.18	1.42	0.03	1.16	0.82	167.55	1.91	167.99	2.19	174.18	19.08	167.55	1.91	NA
0619-MR-06 Spot 32	736.07	283269.06	0.93	20.22	1.08	0.18	1.59	0.03	1.17	0.74	167.58	1.94	167.60	2.46	167.93	25.20	167.58	1.94	NA
0619-MR-06 Spot 28	840.25	56241.38	1.55	20.12	0.79	0.18	1.28	0.03	1.01	0.79	167.58	1.66	168.42	1.98	180.23	18.33	167.58	1.66	NA
0619-MR-06 Spot 29	662.88	64090.48	1.21	20.36	0.83	0.18	1.44	0.03	1.17	0.82	167.67	1.94	166.69	2.21	152.88	19.45	167.67	1.94	NA
0619-MR-06 Spot 3	849.91	198304.42	0.94	20.19	0.82	0.18	1.28	0.03	0.98	0.77	167.73	1.62	167.98	1.98	171.47	19.15	167.73	1.62	NA
0619-MR-06 Spot 22	882.04	125209.27	1.61	20.27	0.98	0.18	1.48	0.03	1.10	0.75	168.06	1.83	167.70	2.28	162.68	23.00	168.06	1.83	NA
0619-MR-06 Spot 10	700.95	48232.46	0.95	20.13	1.08	0.18	1.47	0.03	1.01	0.68	168.10	1.67	168.80	2.29	178.56	25.07	168.10	1.67	NA
0619-MR-06 Spot 25	594.34	22077.80	0.87	20.75	0.96	0.18	1.44	0.03	1.07	0.74	168.36	1.78	164.39	2.18	107.53	22.75	168.36	1.78	NA
0619-MR-06 Spot 8	521.53	37241.17	1.37	20.15	0.97	0.18	1.30	0.03	0.86	0.66	168.40	1.42	168.96	2.02	176.79	22.70	168.40	1.42	NA
0619-MR-06 Spot 30	696.30	55333.04	1.68	20.15	0.77	0.18	1.16	0.03	0.86	0.75	168.54	1.44	169.10	1.80	176.89	17.97	168.54	1.44	NA
0619-MR-06 Spot 27	781.16	34619.26	1.38	20.44	0.86	0.18	1.38	0.03	1.08	0.78	168.94	1.80	167.23	2.13	143.13	20.12	168.94	1.80	NA
0619-MR-06 Spot 9	547.03	64329.33	1.18	20.16	0.98	0.18	1.29	0.03	0.83	0.64	169.95	1.39	170.32	2.02	175.48	22.95	169.95	1.39	NA
0619-MR-06 Spot 4	495.93	161542.03	1.33	20.18	1.01	0.18	1.32	0.03	0.85	0.64	170.12	1.42	170.36	2.07	173.62	23.65	170.12	1.42	NA
0619-MR-06 Spot 15	532.59	60494.00	1.24	20.13	1.24	0.18	1.50	0.03	0.83	0.56	170.23	1.40	170.80	2.35	178.68	28.98	170.23	1.40	NA
0619-MR-06 Spot 26	568.21	186405.04	1.62	20.24	0.87	0.18	1.42	0.03	1.13	0.79	171.42	1.91	171.08	2.24	166.38	20.32	171.42	1.91	NA
Sample 0619-MR-07																			
0619-MR-07 Spot 26	41.24	629.42	1.84	36.84	13.08	0.10	13.14	0.03	1.26	0.10	162.05	2.02	92.37	11.60	NA	NA	162.05	2.02	NA
0619-MR-07 Spot 29	171.31	7522.52	1.64	21.57	2.01	0.16	2.44	0.03	1.38	0.57	162.38	2.22	153.35	3.48	15.92	48.39	162.38	2.22	NA
0619-MR-07 Spot 32	267.15	8760.54	1.20	21.15	1.46	0.17	1.82	0.03	1.08	0.59	163.31	1.74	156.99	2.65	62.62	34.89	163.31	1.74	NA
0619-MR-07 Spot 11	358.53	685987.40	1.17	19.94	1.02	0.18	1.37	0.03	0.92	0.67	163.37	1.48	165.81	2.10	200.83	23.65	163.37	1.48	NA
0619-MR-07 Spot 10	1189.50	16209.10	0.78	20.58	0.68	0.17	1.13	0.03	0.90	0.80	163.39	1.45	161.09	1.68	127.42	16.06	163.39	1.45	NA
0619-MR-07 Spot 21	277.95	4525.33	1.61	21.98	1.55	0.16	1.98	0.03	1.24	0.63	163.41	2.00	151.53	2.79	NA	NA	163.41	2.00	NA
0619-MR-07 Spot 3	413.76	9064.58	1.25	20.99	1.75	0.17	1.97	0.03	0.91	0.46	163.43	1.47	158.22	2.89	80.79	41.47	163.43	1.47	NA
0619-MR-07 Spot 31	231.42	6970.79	1.38	21.33	1.23	0.17	1.50	0.03	0.86	0.57	163.61	1.39	156.00	2.17	41.83	29.34	163.61	1.39	NA
0619-MR-07 Spot 27	197.11	2744.58	1.39	22.49	1.35	0.16	1.66	0.03	0.97	0.58	163.66	1.57	148.61	2.30	NA	NA	163.66	1.57	NA
0619-MR-07 Spot 15	628.19	39191.30	0.84	20.12	0.95	0.18	1.35	0.03	0.96	0.71	163.77	1.56	164.83	2.06	180.07	22.09	163.77	1.56	NA
0619-MR-07 Spot 13	889.79	11160.77	0.67	20.50	0.73	0.17	1.18	0.03	0.93	0.79	163.99	1.50	162.22	1.77	136.48	17.16	163.99	1.50	NA
0619-MR-07 Spot 7	706.47	8564.61	1.20	20.69	1.06	0.17	1.56	0.03	1.14	0.73	164.00	1.85	160.88	2.32	115.14	25.07	164.00	1.85	NA
0619-MR-07 Spot 34	220.53	379491.85	1.13	20.16	1.27	0.18	2.66	0.03	2.34	0.88	164.70	3.80	165.36	4.06	174.92	29.71	164.70	3.80	NA
0619-MR-07 Spot 20	438.93	3918.41	1.19	21.96	1.06	0.16	1.67	0.03	1.29	0.77	164.72	2.10	152.85	2.37	NA	NA	164.72	2.10	NA
0619-MR-07 Spot 23	292.23	3245.26	1.08	22.32	1.28	0.16	1.57	0.03	0.91	0.58	164.97	1.48	150.74	2.19	NA	NA	164.97	1.48	NA
0619-MR-07 Spot 22	549.76	6254.51	1.00	21.04	1.09	0.17	1.51	0.03	1.04	0.69	165.37	1.70	159.61	2.22	75.01	25.89	165.37	1.70	NA
0619-MR-07 Spot 8	366.31	5630.48	0.86	21.55	1.41	0.17	1.64	0.03	0.83	0.51	165.59	1.36	156.29	2.38	17.59	33.91	165.59	1.36	NA
0619-MR-07 Spot 9	209.78	2077.46	1.13	23.09	1.34	0.16	1.66	0.03	0.97	0.59	165.76	1.59	146.72	2.27	NA	NA	165.76	1.59	NA
0619-MR-07 Spot 30	279.12	5029.74	0.64	21.79	1.42	0.16	1.60	0.03	0.74	0.46	165.79	1.21	154.86	2.29	NA	NA	165.79	1.21	NA
0619-MR-07 Spot 12	68.42	2199.56	2.01	21.43	3.68	0.17	3.84	0.03	1.06	0.28	165.87	1.74	157.35	5.59	30.83	88.32	165.87	1.74	NA
0619-MR-07 Spot 16	710.13	17409.73	0.90	20.42	1.06	0.18	1.48	0.03	1.03	0.70	165.97	1.69	164.62	2.25	145.24	24.94	165.97	1.69	NA
0619-MR-07 Spot 2	225.21	2838.56	0.94	22.71	6.04	0.16	6.08	0.03	0.70	0.12	166.16	1.15	149.33	8.45	NA	NA	166.16	1.15	NA
0619-MR-07 Spot 6	283.15	8945.52	1.24	21.28	1.31	0.17	1.54	0.03	0.82	0.53	166.64	1.35	159.10	2.27	48.29	31.23	166.64	1.35	NA
0619-MR-07 Spot 33	559.20	6753.18	1.34	21.12	0.99	0.17	1.44	0.03	1.05	0.73	166.86	1.72	160.38	2.13	65.76	23.50	166.86	1.72	NA
0619-MR-07 Spot 35	373.10	20383.97	0.88	19.97	1.19	0.18	1.41	0.03	0.76	0.54	166.92	1.25	168.93	2.19	197.21	27.55	166.92	1.25	NA
0619-MR-07 Spot 5	740.48	31377.33	1.15	20.35	0.96	0.18	1.49	0.03	1.14	0.77	167.09	1.89	166.17	2.28	153.03	22.38	167.09	1.89	NA
0619-MR-07 Spot 24	392.86	6213.88	0.95	21.42	1.31	0.17	1.53	0.03	0.77	0.51	167.47	1.28	158.82	2.24	31.69	31.48	167.47	1.28	NA
0619-MR-07 Spot 28	114.03	4779.26	1.67	21.02	1.66	0.17	1.95	0.03	1.02	0.52	167.50	1.68	161.67	2.91	76.99	39.48	167.50	1.68	NA
0619-MR-07 Spot 25	453.68	35373.85	1.19	19.94	0.74	0.18	1.01	0.03	0.69	0.69	168.03	1.15	170.20	1.58	200.45	17.08	168.03	1.15	NA
0619-MR-07 Spot 1	1821.67	60216.52	1.71	20.30	0.47	0.18	1.06	0.03	0.95	0.90	168.86	1.59	168.24	1.65	159.46	11.02	168.86	1.59	NA
0619-MR-07 Spot 14	1123.12	76867.12	1.29	20.41	0.59	0.18	1.23	0.03	1.08	0.88	168.99	1.81	167.52	1.90	146.83	13.79	168.99	1.81	NA
0619-MR-07 Spot 17	249.57	5301.61	1.11	21.77	1.13	0.17	1.40	0.03	0.82	0.59	169.29	1.37	158.08	2.05	NA	NA	169.29	1.37	NA
0619-MR-07 Spot 4	1467.17	65618.29	1.00	20.19	0.60	0.18	1.19	0.03	1.03	0.86	171.34	1.74	171.40	1.88	172.23	14.10	171.34	1.74	NA
0619-MR-07 Spot 18	81.80	3238.07	1.78	21.22	2.70	0.18	2.89	0.03	1.03	0.36	174.73	1.78	166.70	4.45	54.18	64.51	174.73	1.78	NA


0619-MR-06
MSWD = 7.23
Weighted Mean = 167.02 ± 0.29
n = 34
Age (Ma)
Grain Number


0619-MR-07
MSWD = 7.32
Weighted Mean = 165.79 ± 0.27
n = 34
Age (Ma)
Grain Number

U-Pb Geochronologic Analyses for Detrital Samples

Sample	U (ppm)	206Pb 204Pb	U/Th	206Pb* 207Pb*	± (%)	207Pb* 235U*	± (%)	206Pb* 238U	± (%)	error corr.	206Pb* 238U*	± (Ma)	207Pb* 235U	± (Ma)	206Pb* 207Pb*	± (Ma)	Best age (Ma)	± (Ma)	Conc (%)
Sample 0619-MR-16																			
0619-MR-16 Spot 112	63.94	7101.62	1.72	21.35	2.60	0.14	2.90	0.02	1.29	0.44	142.39	1.82	136.76	3.72	40.24	62.23	142.39	1.82	NA
0619-MR-16 Spot 196	68.55	2116.22	3.31	22.12	3.06	0.14	3.24	0.02	1.06	0.33	145.19	1.52	134.78	4.09	NA	NA	145.19	1.52	NA
0619-MR-16 Spot 191	107.68	7359.16	1.49	21.37	2.74	0.15	2.88	0.02	0.88	0.30	145.54	1.26	139.48	3.75	37.53	65.56	145.54	1.26	NA
0619-MR-16 Spot 137	59.74	2956.97	2.07	22.61	3.10	0.14	3.50	0.02	1.62	0.46	146.26	2.34	132.92	4.36	NA	NA	146.26	2.34	NA
0619-MR-16 Spot 226	209.88	12228.11	1.43	21.11	1.27	0.15	1.72	0.02	1.16	0.67	146.38	1.67	141.88	2.27	67.18	30.26	146.38	1.67	NA
0619-MR-16 Spot 199	308.26	4355.59	2.28	21.66	1.08	0.15	1.29	0.02	0.70	0.55	146.73	1.02	138.79	1.67	5.07	26.04	146.73	1.02	NA
0619-MR-16 Spot 105	129.29	9865.95	1.90	20.39	2.00	0.16	2.19	0.02	0.89	0.41	146.73	1.30	146.83	2.99	148.46	46.85	146.73	1.30	NA
0619-MR-16 Spot 227	49.29	2315.36	1.73	23.39	3.76	0.14	3.99	0.02	1.33	0.33	146.93	1.94	129.36	4.84	NA	NA	146.93	1.94	NA
0619-MR-16 Spot 21	36.02	11486.56	1.73	20.03	3.99	0.16	4.25	0.02	1.47	0.34	147.39	2.14	149.95	5.93	190.57	92.90	147.39	2.14	NA
0619-MR-16 Spot 136	53.40	3070.43	4.41	22.09	3.49	0.15	3.71	0.02	1.27	0.34	148.33	1.87	137.69	4.78	NA	NA	148.33	1.87	NA
0619-MR-16 Spot 197	558.22	9266211 20.51	0.69	20.22	0.98	0.16	1.27	0.02	0.80	0.64	148.41	1.18	149.59	1.76	168.40	22.86	148.41	1.18	NA
0619-MR-16 Spot 109	520.82	69943.65	1.57	19.99	1.12	0.16	1.48	0.02	0.96	0.65	148.44	1.41	151.24	2.07	195.31	26.08	148.44	1.41	NA
0619-MR-16 Spot 215	133.68	4231.43	3.60	21.22	2.17	0.15	2.40	0.02	1.04	0.43	148.49	1.52	143.09	3.21	54.58	51.74	148.49	1.52	NA
0619-MR-16 Spot 60	55.71	26543.15	2.84	21.36	3.23	0.15	3.38	0.02	1.02	0.30	148.82	1.50	142.50	4.50	38.45	77.21	148.82	1.50	NA
0619-MR-16 Spot 52	796.99	78599.77	1.31	20.43	0.96	0.16	1.61	0.02	1.29	0.80	149.04	1.89	148.76	2.22	144.33	22.55	149.04	1.89	NA
0619-MR-16 Spot 70	196.73	5416.85	2.71	21.78	2.79	0.15	2.91	0.02	0.83	0.29	149.06	1.22	140.17	3.81	NA	NA	149.06	1.22	NA
0619-MR-16 Spot 30	50.50	1802.51	1.72	23.21	10.30	0.14	10.40	0.02	1.45	0.14	149.45	2.14	132.39	12.91	NA	NA	149.45	2.14	NA
0619-MR-16 Spot 33	258.19	8665.66	1.92	16.38	1.87	0.20	2.11	0.02	0.98	0.47	149.79	1.45	183.29	3.54	640.44	40.21	149.79	1.45	NA
0619-MR-16 Spot 230	648.01	4772636.25	1.07	20.06	1.01	0.16	1.48	0.02	1.08	0.73	150.37	1.61	152.56	2.10	186.83	23.48	150.37	1.61	NA
0619-MR-16 Spot 63	98.22	25587.39	3.60	20.50	2.06	0.16	2.43	0.02	1.30	0.53	150.43	1.93	149.62	3.39	136.87	48.33	150.43	1.93	NA
0619-MR-16 Spot 206	170.41	7193.52	3.86	19.78	2.50	0.16	2.65	0.02	0.87	0.33	150.49	1.29	154.66	3.80	219.15	57.90	150.49	1.29	NA
0619-MR-16 Spot 80	351.55	54910.63	1.12	20.12	1.24	0.16	1.51	0.02	0.85	0.57	150.56	1.27	152.36	2.13	180.39	28.98	150.56	1.27	NA
0619-MR-16 Spot 255	524.73	69781.49	1.59	19.98	0.99	0.16	1.32	0.02	0.87	0.66	150.64	1.29	153.38	1.87	195.90	22.97	150.64	1.29	NA
0619-MR-16 Spot 296	196.03	22609.81	1.33	15.22	2.42	0.21	2.59	0.02	0.91	0.35	150.93	1.36	197.28	4.64	795.38	50.85	150.93	1.36	NA
0619-MR-16 Spot 249	1491.64	50089.62	2.14	20.39	0.64	0.16	1.25	0.02	1.08	0.86	150.97	1.61	150.82	1.76	148.45	15.03	150.97	1.61	NA
0619-MR-16 Spot 315	350.35	15169.26	3.38	20.79	1.23	0.16	1.45	0.02	0.76	0.52	151.00	1.13	148.16	2.00	103.06	29.18	151.00	1.13	NA
0619-MR-16 Spot 306	1236.03	162952.58	3.47	20.46	0.76	0.16	1.44	0.02	1.22	0.85	151.06	1.83	150.43	2.01	140.63	17.77	151.06	1.83	NA
0619-MR-16 Spot 86	754.42	100568.82	2.13	20.22	0.97	0.16	1.38	0.02	0.98	0.71	151.06	1.46	152.13	1.95	168.68	22.76	151.06	1.46	NA
0619-MR-16 Spot 256	66.46	2087.93	4.18	24.18	3.64	0.14	3.80	0.02	1.11	0.29	151.19	1.66	128.81	4.60	NA	NA	151.19	1.66	NA
0619-MR-16 Spot 148	396.52	37373.40	1.73	20.26	1.02	0.16	1.29	0.02	0.80	0.62	151.58	1.20	152.30	1.83	163.44	23.73	151.58	1.20	NA
0619-MR-16 Spot 114	632.64	6824060 15.94	1.29	20.41	0.98	0.16	1.48	0.02	1.12	0.75	151.77	1.67	151.46	2.09	146.59	22.99	151.77	1.67	NA
0619-MR-16 Spot 134	633.32	17009.06	1.65	20.71	0.95	0.16	1.62	0.02	1.31	0.81	151.86	1.97	149.50	2.26	112.27	22.52	151.86	1.97	NA
0619-MR-16 Spot 313	201.62	8409.95	1.44	20.64	1.59	0.16	1.83	0.02	0.90	0.49	151.99	1.35	150.06	2.55	119.77	37.48	151.99	1.35	NA
0619-MR-16 Spot 95	1005.53	41912.38	1.53	20.06	1.03	0.16	1.58	0.02	1.20	0.76	152.17	1.80	154.29	2.26	186.95	24.02	152.17	1.80	NA

0619-MR-16 Spot 67	496.86	12157.72	2.32	20.94	1.19	0.16	1.48	0.02	0.88	0.60	152.35	1.32	148.45	2.04	86.55	28.09	152.35	1.32	NA
0619-MR-16 Spot 271	757.40	21818.54	2.30	20.49	0.63	0.16	1.12	0.02	0.93	0.83	152.56	1.40	151.66	1.58	137.49	14.73	152.56	1.40	NA
0619-MR-16 Spot 31	632.77	81557.56	1.52	20.15	0.80	0.16	1.57	0.02	1.35	0.86	152.59	2.04	154.02	2.25	176.05	18.73	152.59	2.04	NA
0619-MR-16 Spot 72	63.89	2956.86	3.11	21.70	3.61	0.15	3.85	0.02	1.31	0.34	152.67	1.98	143.84	5.16	NA	NA	152.67	1.98	NA
0619-MR-16 Spot 144	693.84	50214.71	1.73	20.35	1.01	0.16	1.53	0.02	1.15	0.75	152.71	1.73	152.73	2.16	153.11	23.55	152.71	1.73	NA
0619-MR-16 Spot 156	497.87	12936.47	2.44	20.40	0.98	0.16	1.33	0.02	0.89	0.67	152.81	1.35	152.49	1.88	147.56	23.05	152.81	1.35	NA
0619-MR-16 Spot 84	61.81	2744.84	3.39	23.19	3.58	0.14	3.71	0.02	0.98	0.26	152.92	1.48	135.42	4.70	NA	NA	152.92	1.48	NA
0619-MR-16 Spot 155	57.57	4904.63	5.61	22.05	4.65	0.15	4.77	0.02	1.05	0.22	153.11	1.59	142.10	6.32	NA	NA	153.11	1.59	NA
0619-MR-16 Spot 92	253.04	42765.72	3.25	20.45	1.35	0.16	1.58	0.02	0.82	0.52	153.14	1.24	152.48	2.23	142.26	31.66	153.14	1.24	NA
0619-MR-16 Spot 79	1229.26	561690.31	0.78	20.61	0.75	0.16	1.24	0.02	0.99	0.79	153.24	1.49	151.45	1.75	123.49	17.77	153.24	1.49	NA
0619-MR-16 Spot 96	509.80	38043.63	2.48	20.57	0.97	0.16	1.28	0.02	0.85	0.66	153.29	1.28	151.77	1.81	128.07	22.77	153.29	1.28	NA
0619-MR-16 Spot 263	271.55	28271.26	3.11	20.32	1.42	0.16	1.65	0.02	0.83	0.51	153.41	1.26	153.63	2.35	156.93	33.27	153.41	1.26	NA
0619-MR-16 Spot 172	104.64	20604.95	1.51	21.07	3.03	0.16	3.15	0.02	0.86	0.27	153.59	1.31	148.72	4.36	71.71	72.15	153.59	1.31	NA
0619-MR-16 Spot 103	137.62	4168.03	2.01	21.50	2.40	0.15	2.65	0.02	1.13	0.42	153.85	1.71	146.17	3.61	23.22	57.59	153.85	1.71	NA
0619-MR-16 Spot 224	131.45	10494.02	2.23	19.90	1.75	0.17	1.97	0.02	0.92	0.47	154.14	1.40	157.33	2.88	205.63	40.53	154.14	1.40	NA
0619-MR-16 Spot 277	206.85	13154.13	1.89	20.49	1.33	0.16	1.67	0.02	1.00	0.60	154.32	1.52	153.28	2.37	137.22	31.32	154.32	1.52	NA
0619-MR-16 Spot 242	266.35	17454.89	4.48	20.35	1.80	0.16	2.00	0.02	0.87	0.44	154.61	1.34	154.53	2.86	153.29	42.09	154.61	1.34	NA
0619-MR-16 Spot 267	409.40	133437.72	3.31	20.79	1.17	0.16	1.42	0.02	0.81	0.57	154.65	1.23	151.54	2.00	103.17	27.58	154.65	1.23	NA
0619-MR-16 Spot 211	81.41	3794.66	5.15	19.36	2.80	0.17	3.00	0.02	1.08	0.36	154.68	1.65	161.94	4.49	269.44	64.14	154.68	1.65	NA
0619-MR-16 Spot 251	696.22	108210.78	2.82	20.41	1.03	0.16	1.45	0.02	1.02	0.70	154.69	1.55	154.19	2.07	146.41	24.19	154.69	1.55	NA
0619-MR-16 Spot 37	404.78	190614.43	2.49	20.36	1.04	0.16	1.33	0.02	0.84	0.63	154.70	1.28	154.59	1.91	152.82	24.26	154.70	1.28	NA
0619-MR-16 Spot 302	420.29	6711.52	3.31	21.14	1.36	0.16	1.61	0.02	0.86	0.54	155.12	1.32	149.65	2.24	63.84	32.30	155.12	1.32	NA
0619-MR-16 Spot 133	253.65	16347.38	3.43	20.78	1.56	0.16	1.74	0.02	0.76	0.43	155.42	1.16	152.30	2.46	104.10	36.99	155.42	1.16	NA
0619-MR-16 Spot 244	45.11	806.45	4.17	29.47	2.93	0.11	3.11	0.02	1.03	0.33	155.86	1.58	110.03	3.24	NA	NA	155.86	1.58	NA
0619-MR-16 Spot 98	493.52	15601.27	1.41	20.77	1.24	0.16	1.43	0.02	0.73	0.51	156.30	1.12	153.17	2.04	104.92	29.21	156.30	1.12	NA
0619-MR-16 Spot 312	587.48	21899.78	1.45	20.35	1.15	0.17	1.77	0.02	1.35	0.76	156.55	2.09	156.37	2.57	153.62	26.81	156.55	2.09	NA
0619-MR-16 Spot 204	715.76	100639.13	2.44	20.08	0.87	0.17	1.35	0.02	1.03	0.76	156.62	1.59	158.38	1.98	184.79	20.27	156.62	1.59	NA
0619-MR-16 Spot 53	157.27	10022.56	2.76	20.68	1.81	0.16	2.08	0.02	1.04	0.50	156.69	1.61	154.18	2.98	115.73	42.64	156.69	1.61	NA
0619-MR-16 Spot 245	839.37	116598.33	2.84	20.44	1.03	0.17	1.59	0.02	1.22	0.76	157.26	1.89	156.37	2.31	142.84	24.15	157.26	1.89	NA
0619-MR-16 Spot 159	404.39	22047.22	2.59	20.33	1.14	0.17	1.65	0.02	1.19	0.72	157.31	1.85	157.19	2.40	155.43	26.72	157.31	1.85	NA
0619-MR-16 Spot 66	442.73	40349.45	2.92	20.50	0.93	0.17	1.29	0.02	0.90	0.70	157.98	1.41	156.60	1.88	135.77	21.85	157.98	1.41	NA
0619-MR-16 Spot 169	178.87	9822.89	1.20	21.34	1.71	0.16	1.98	0.02	1.00	0.51	158.12	1.57	151.00	2.78	40.59	40.93	158.12	1.57	NA
0619-MR-16 Spot 250	568.17	124844.56	1.75	20.61	1.07	0.17	1.38	0.02	0.88	0.64	158.35	1.38	156.19	2.00	123.59	25.09	158.35	1.38	NA
0619-MR-16 Spot 297	146.68	2902.47	1.84	21.83	2.00	0.16	2.19	0.02	0.88	0.40	158.59	1.38	148.30	3.02	NA	NA	158.59	1.38	NA
0619-MR-16 Spot 61	838.62	98130.58	1.28	20.14	0.93	0.17	1.35	0.02	0.98	0.73	158.68	1.54	159.90	2.00	178.02	21.65	158.68	1.54	NA
0619-MR-16 Spot 35	96.57	5121.01	4.18	20.61	2.78	0.17	2.92	0.02	0.90	0.31	158.87	1.41	156.64	4.24	123.10	65.55	158.87	1.41	NA
0619-MR-16 Spot 190	1629.71	50917.64	1.11	20.44	0.60	0.17	0.97	0.02	0.77	0.79	158.93	1.21	157.93	1.42	143.09	14.00	158.93	1.21	NA
0619-MR-16 Spot 8	818.88	119333.39	1.75	20.29	0.93	0.17	1.41	0.02	1.05	0.75	159.05	1.65	159.17	2.07	160.88	21.84	159.05	1.65	NA
0619-MR-16 Spot 81	612.06	79824.17	1.03	19.99	0.96	0.17	1.50	0.02	1.15	0.77	159.07	1.81	161.39	2.24	195.65	22.25	159.07	1.81	NA
0619-MR-16 Spot 93	492.70	246569.01	2.91	20.47	1.04	0.17	1.36	0.03	0.87	0.64	159.53	1.38	158.28	1.99	139.53	24.32	159.53	1.38	NA

0619-MR-16 Spot 189	6537.56	115000.97	0.00	20.05	0.63	0.17	1.09	0.03	0.89	0.81	159.56	1.39	161.39	1.62	188.27	14.75	159.56	1.39	NA
0619-MR-16 Spot 44	199.59	11174.09	2.84	20.69	2.02	0.17	2.20	0.03	0.87	0.40	159.64	1.38	156.82	3.20	114.44	47.68	159.64	1.38	NA
0619-MR-16 Spot 118	296.93	35230.29	1.85	20.39	1.12	0.17	1.42	0.03	0.87	0.61	159.91	1.37	159.21	2.09	148.86	26.28	159.91	1.37	NA
0619-MR-16 Spot 304	320.64	9136.34	3.06	21.02	2.00	0.16	2.16	0.03	0.82	0.38	160.04	1.30	154.88	3.10	76.60	47.48	160.04	1.30	NA
0619-MR-16 Spot 29	184.90	378968.24	2.09	19.44	1.52	0.18	1.74	0.03	0.85	0.49	160.34	1.35	166.82	2.68	259.89	34.99	160.34	1.35	NA
0619-MR-16 Spot 107	1759.93	331406.25	5.31	20.55	0.78	0.17	1.36	0.03	1.12	0.82	160.66	1.78	158.76	2.00	130.46	18.35	160.66	1.78	NA
0619-MR-16 Spot 143	353.66	11965.08	4.22	20.25	1.51	0.17	1.75	0.03	0.88	0.50	161.87	1.40	162.09	2.62	165.26	35.37	161.87	1.40	NA
0619-MR-16 Spot 22	411.88	136187.55	2.86	19.77	0.95	0.18	1.26	0.03	0.83	0.66	161.95	1.32	165.81	1.93	221.27	21.98	161.95	1.32	NA
0619-MR-16 Spot 62	474.41	30634.47	2.88	20.28	0.87	0.17	1.12	0.03	0.71	0.63	162.49	1.14	162.45	1.68	161.86	20.30	162.49	1.14	NA
0619-MR-16 Spot 115	313.43	12770.69	2.11	18.61	1.85	0.19	2.03	0.03	0.82	0.41	162.65	1.32	175.99	3.27	359.17	41.80	162.65	1.32	NA
0619-MR-16 Spot 173	5475.28	85930.06	0.00	20.34	0.57	0.17	1.10	0.03	0.94	0.86	162.84	1.51	162.29	1.65	154.27	13.27	162.84	1.51	NA
0619-MR-16 Spot 14	483.35	13959.61	1.74	20.51	0.91	0.17	1.20	0.03	0.79	0.65	162.93	1.27	161.15	1.79	135.04	21.42	162.93	1.27	NA
0619-MR-16 Spot 233	608.35	38958.25	2.97	20.42	0.91	0.17	1.25	0.03	0.85	0.68	163.02	1.37	161.93	1.87	146.03	21.41	163.02	1.37	NA
0619-MR-16 Spot 223	539.97	45589.34	2.78	20.19	1.01	0.17	1.51	0.03	1.13	0.75	163.13	1.81	163.73	2.28	172.50	23.52	163.13	1.81	NA
0619-MR-16 Spot 281	1362.23	82218.91	3.05	20.10	0.67	0.18	1.20	0.03	0.99	0.83	163.52	1.60	164.72	1.82	182.00	15.65	163.52	1.60	NA
0619-MR-16 Spot 292	459.42	24737.18	3.69	20.63	1.22	0.17	1.47	0.03	0.81	0.55	163.54	1.31	160.83	2.18	121.15	28.73	163.54	1.31	NA
0619-MR-16 Spot 209	433.74	22505.05	3.48	20.20	0.95	0.18	1.26	0.03	0.83	0.66	163.65	1.35	164.15	1.92	171.34	22.20	163.65	1.35	NA
0619-MR-16 Spot 248	331.97	79414.94	1.10	20.26	1.35	0.17	1.55	0.03	0.76	0.49	163.73	1.23	163.73	2.34	163.77	31.60	163.73	1.23	NA
0619-MR-16 Spot 186	481.94	8060.54	1.44	11.03	11.48	0.32	11.81	0.03	2.77	0.23	163.82	4.49	283.17	29.20	1438.90	219.61	163.82	4.49	NA
0619-MR-16 Spot 237	503.95	24223.50	2.88	20.51	1.02	0.17	1.30	0.03	0.79	0.61	163.86	1.29	161.99	1.94	134.72	24.04	163.86	1.29	NA
0619-MR-16 Spot 295	105.88	2840.84	1.78	21.93	1.63	0.16	1.92	0.03	1.02	0.53	163.87	1.65	152.31	2.72	NA	NA	163.87	1.65	NA
0619-MR-16 Spot 301	223.45	6161.73	3.07	20.63	1.07	0.17	1.32	0.03	0.77	0.58	163.90	1.25	161.16	1.97	120.98	25.26	163.90	1.25	NA
0619-MR-16 Spot 54	230.56	37558.04	2.89	20.05	1.47	0.18	1.69	0.03	0.84	0.49	164.04	1.36	165.61	2.59	188.16	34.25	164.04	1.36	NA
0619-MR-16 Spot 100	712.92	49982.48	3.87	20.33	0.92	0.18	1.45	0.03	1.13	0.78	164.43	1.83	163.85	2.20	155.41	21.45	164.43	1.83	NA
0619-MR-16 Spot 140	415.08	13159.92	2.96	20.72	1.23	0.17	1.50	0.03	0.85	0.57	164.52	1.38	161.08	2.23	110.82	29.09	164.52	1.38	NA
0619-MR-16 Spot 200	242.76	17713.42	2.79	20.52	1.37	0.17	1.69	0.03	0.98	0.58	164.62	1.60	162.68	2.54	134.49	32.20	164.62	1.60	NA
0619-MR-16 Spot 252	514.90	93086.36	1.63	19.87	0.93	0.18	1.34	0.03	0.96	0.72	164.74	1.57	167.69	2.07	209.61	21.67	164.74	1.57	NA
0619-MR-16 Spot 27	727.45	78857.36	3.49	20.22	0.72	0.18	1.11	0.03	0.84	0.76	164.79	1.37	165.01	1.69	168.08	16.88	164.79	1.37	NA
0619-MR-16 Spot 3	434.00	15300.98	1.48	20.31	1.01	0.18	1.21	0.03	0.66	0.54	165.54	1.07	165.08	1.84	158.55	23.74	165.54	1.07	NA
0619-MR-16 Spot 229	531.83	44807.04	2.57	20.58	1.00	0.17	1.24	0.03	0.73	0.59	166.06	1.20	163.55	1.87	127.30	23.50	166.06	1.20	NA
0619-MR-16 Spot 290	247.06	22173.69	3.20	20.79	1.03	0.17	1.31	0.03	0.81	0.62	166.14	1.33	162.09	1.97	103.37	24.42	166.14	1.33	NA
0619-MR-16 Spot 101	694.10	349394.40	1.45	20.61	0.75	0.17	1.26	0.03	1.01	0.80	166.22	1.65	163.46	1.90	123.53	17.75	166.22	1.65	NA
0619-MR-16 Spot 99	233.88	46542.78	3.01	20.33	0.99	0.18	1.38	0.03	0.96	0.69	166.28	1.57	165.63	2.11	156.30	23.26	166.28	1.57	NA
0619-MR-16 Spot 160	200.91	85306.99	3.33	20.22	1.42	0.18	1.60	0.03	0.74	0.46	166.66	1.22	166.78	2.46	168.43	33.17	166.66	1.22	NA
0619-MR-16 Spot 119	613.43	103713.89	2.61	20.14	0.99	0.18	1.43	0.03	1.03	0.72	166.73	1.70	167.49	2.21	178.16	23.07	166.73	1.70	NA
0619-MR-16 Spot 213	115.67	16288.83	4.78	20.93	1.89	0.17	2.11	0.03	0.95	0.45	166.79	1.57	161.67	3.16	87.36	44.73	166.79	1.57	NA
0619-MR-16 Spot 239	393.70	14745.61	2.22	19.61	1.64	0.18	2.01	0.03	1.16	0.58	167.13	1.91	171.97	3.18	239.14	37.79	167.13	1.91	NA
0619-MR-16 Spot 141	244.85	8416.37	3.03	21.22	1.75	0.17	1.95	0.03	0.85	0.43	167.13	1.40	159.96	2.88	55.06	41.82	167.13	1.40	NA
0619-MR-16 Spot 65	262.57	81725.02	2.45	19.88	1.15	0.18	1.45	0.03	0.88	0.61	167.21	1.45	169.91	2.27	207.66	26.74	167.21	1.45	NA
0619-MR-16 Spot 280	606.05	99650.85	0.98	20.26	1.01	0.18	1.61	0.03	1.25	0.78	167.52	2.06	167.26	2.48	163.56	23.69	167.52	2.06	NA

0619-MR-16 Spot 231	195.53	45135.60	2.98	20.35	1.49	0.18	1.77	0.03	0.94	0.53	167.76	1.56	166.81	2.72	153.42	34.98	167.76	1.56	NA
0619-MR-16 Spot 164	401.27	109440.79	2.65	20.01	1.18	0.18	1.42	0.03	0.79	0.56	168.23	1.31	169.84	2.21	192.32	27.37	168.23	1.31	NA
0619-MR-16 Spot 241	194.57	11301.26	3.42	20.33	1.86	0.18	2.06	0.03	0.88	0.43	168.25	1.46	167.45	3.18	156.12	43.59	168.25	1.46	NA
0619-MR-16 Spot 24	516.58	57018.05	3.25	19.87	0.85	0.18	1.24	0.03	0.90	0.72	168.43	1.49	171.13	1.95	208.59	19.82	168.43	1.49	NA
0619-MR-16 Spot 195	32.38	33160.41	3.76	20.90	3.58	0.17	3.80	0.03	1.27	0.33	168.46	2.11	163.37	5.74	90.14	84.96	168.46	2.11	NA
0619-MR-16 Spot 268	611.52	13443.12	1.35	20.96	0.87	0.17	1.21	0.03	0.84	0.70	168.85	1.40	163.34	1.82	84.20	20.59	168.85	1.40	NA
0619-MR-16 Spot 234	1092.19	194665.57	1.38	18.83	1.53	0.20	1.86	0.03	1.05	0.57	169.49	1.76	180.92	3.08	332.93	34.78	169.49	1.76	NA
0619-MR-16 Spot 162	529.33	16847.64	0.77	20.16	1.24	0.18	1.46	0.03	0.76	0.52	169.56	1.28	169.97	2.28	175.60	28.98	169.56	1.28	NA
0619-MR-16 Spot 166	739.76	57269.01	1.75	20.21	1.20	0.18	1.64	0.03	1.12	0.68	169.72	1.87	169.74	2.57	170.05	28.12	169.72	1.87	NA
0619-MR-16 Spot 2	77.85	2064.13	2.84	25.42	3.00	0.14	3.43	0.03	1.66	0.48	169.78	2.79	137.22	4.40	NA	NA	169.78	2.79	NA
0619-MR-16 Spot 135	250.50	20011.68	3.53	20.66	1.38	0.18	1.72	0.03	1.04	0.60	170.54	1.75	167.05	2.65	117.94	32.43	170.54	1.75	NA
0619-MR-16 Spot 57	624.21	21068.13	2.37	20.29	0.93	0.18	1.65	0.03	1.37	0.83	170.59	2.30	169.93	2.59	160.73	21.65	170.59	2.30	NA
0619-MR-16 Spot 270	565.25	16365.71	1.95	20.39	1.30	0.18	1.52	0.03	0.80	0.52	170.59	1.34	169.13	2.37	148.71	30.42	170.59	1.34	NA
0619-MR-16 Spot 174	278.72	4557.99	2.98	20.82	1.38	0.18	1.53	0.03	0.66	0.43	170.91	1.11	166.18	2.34	99.37	32.65	170.91	1.11	NA
0619-MR-16 Spot 36	467.10	31870.59	2.07	20.91	1.19	0.18	1.36	0.03	0.66	0.48	171.44	1.11	166.04	2.08	89.80	28.08	171.44	1.11	NA
0619-MR-16 Spot 161	169.59	7488.83	1.70	20.57	1.63	0.18	1.80	0.03	0.77	0.43	171.89	1.30	168.94	2.80	127.85	38.25	171.89	1.30	NA
0619-MR-16 Spot 130	522.31	8540.21	3.23	20.92	1.52	0.18	1.78	0.03	0.92	0.52	171.99	1.56	166.49	2.73	88.97	36.01	171.99	1.56	NA
0619-MR-16 Spot 83	325.76	23198.78	1.54	20.19	1.50	0.18	1.65	0.03	0.69	0.42	172.10	1.17	172.11	2.61	172.22	35.00	172.10	1.17	NA
0619-MR-16 Spot 46	993.65	219695.58	1.78	20.09	0.84	0.19	1.27	0.03	0.95	0.75	173.29	1.62	173.97	2.02	183.17	19.57	173.29	1.62	NA
0619-MR-16 Spot 264	3570.66	414144.17	1.44	20.03	0.66	0.19	1.22	0.03	1.02	0.84	173.54	1.75	174.72	1.95	190.68	15.45	173.54	1.75	NA
0619-MR-16 Spot 232	955.76	65934.90	1.18	20.23	0.61	0.19	1.15	0.03	0.97	0.84	173.93	1.66	173.46	1.83	166.90	14.35	173.93	1.66	NA
0619-MR-16 Spot 50	167.13	8994.82	2.50	20.77	2.05	0.18	2.31	0.03	1.07	0.46	175.20	1.84	170.52	3.63	105.94	48.46	175.20	1.84	NA
0619-MR-16 Spot 59	582.57	25947.66	2.05	20.47	1.09	0.19	1.39	0.03	0.86	0.62	175.68	1.49	173.21	2.21	139.63	25.50	175.68	1.49	NA
0619-MR-16 Spot 78	2095.67	68015.43	1.75	20.03	0.73	0.19	1.19	0.03	0.94	0.79	178.03	1.64	178.93	1.95	190.84	17.09	178.03	1.64	NA
0619-MR-16 Spot 108	30.23	18839.39	0.74	16.63	3.83	0.24	4.26	0.03	1.86	0.44	183.43	3.37	217.75	8.35	607.25	82.83	183.43	3.37	NA
0619-MR-16 Spot 110	1101.18	242803.63	1.73	15.38	3.53	0.27	3.93	0.03	1.73	0.44	188.55	3.22	239.42	8.39	773.61	74.33	188.55	3.22	NA
0619-MR-16 Spot 287	118.60	6089.55	2.64	21.07	2.26	0.20	2.48	0.03	1.03	0.41	192.01	1.94	183.26	4.16	71.94	53.72	192.01	1.94	NA
0619-MR-16 Spot 131	265.74	9735.57	5.01	20.54	1.39	0.20	1.60	0.03	0.79	0.50	193.20	1.51	188.65	2.75	131.97	32.58	193.20	1.51	NA
0619-MR-16 Spot 127	260.22	28900.19	4.08	20.12	1.32	0.21	1.53	0.03	0.76	0.50	193.81	1.46	192.75	2.68	179.67	30.79	193.81	1.46	NA
0619-MR-16 Spot 117	164.33	22533.48	3.13	20.04	1.49	0.21	1.77	0.03	0.97	0.55	194.33	1.85	193.91	3.13	188.76	34.56	194.33	1.85	NA
0619-MR-16 Spot 113	127.07	5301.94	4.27	19.55	2.60	0.22	2.72	0.03	0.78	0.29	194.70	1.49	198.74	4.90	246.99	59.95	194.70	1.49	NA
0619-MR-16 Spot 176	246.30	38871.24	3.28	19.59	1.73	0.22	1.97	0.03	0.94	0.48	195.28	1.81	198.89	3.56	241.92	39.90	195.28	1.81	NA
0619-MR-16 Spot 203	208.57	60205.35	4.15	20.01	1.18	0.21	1.53	0.03	0.96	0.63	195.60	1.86	195.37	2.71	192.60	27.53	195.60	1.86	NA
0619-MR-16 Spot 182	178.60	13288.05	2.85	20.13	1.75	0.21	1.96	0.03	0.89	0.45	195.97	1.71	194.64	3.48	178.48	40.83	195.97	1.71	NA
0619-MR-16 Spot 305	411.94	1023109.04	3.17	19.95	0.82	0.21	1.27	0.03	0.96	0.76	195.98	1.86	196.26	2.26	199.69	19.16	195.98	1.86	NA
0619-MR-16 Spot 236	743.76	180282.90	2.47	19.90	0.73	0.21	1.38	0.03	1.17	0.85	197.02	2.26	197.67	2.47	205.38	16.93	197.02	2.26	NA
0619-MR-16 Spot 192	99.15	5696.25	2.94	20.66	3.03	0.21	3.16	0.03	0.92	0.29	197.34	1.79	191.38	5.52	118.51	71.39	197.34	1.79	NA
0619-MR-16 Spot 149	450.87	11868.39	1.83	20.36	0.87	0.21	1.29	0.03	0.95	0.74	197.55	1.85	194.07	2.27	151.99	20.32	197.55	1.85	NA
0619-MR-16 Spot 193	179.21	166713.40	3.80	19.94	1.45	0.22	1.70	0.03	0.89	0.52	199.95	1.76	200.08	3.09	201.52	33.61	199.95	1.76	NA
0619-MR-16 Spot 56	292.21	21658.94	3.01	20.18	1.01	0.22	1.40	0.03	0.98	0.69	200.65	1.93	198.47	2.53	172.72	23.59	200.65	1.93	NA

0619-MR-16 Spot 311	112.33	10713.42	3.18	20.86	1.90	0.21	2.18	0.03	1.06	0.49	200.75	2.10	192.66	3.83	94.70	45.04	200.75	2.10	NA
0619-MR-16 Spot 284	106.82	8203.31	4.80	20.76	2.54	0.21	2.86	0.03	1.32	0.46	200.82	2.60	193.63	5.04	106.96	60.00	200.82	2.60	NA
0619-MR-16 Spot 64	541.38	84919.08	2.29	19.93	0.82	0.22	1.27	0.03	0.97	0.77	200.89	1.92	200.99	2.32	202.13	18.95	200.89	1.92	NA
0619-MR-16 Spot 153	137.95	50541.32	3.48	19.86	1.66	0.22	1.86	0.03	0.83	0.45	201.47	1.65	202.20	3.41	210.74	38.59	201.47	1.65	NA
0619-MR-16 Spot 309	1088.87	70599.22	3.94	19.91	0.79	0.22	1.35	0.03	1.09	0.81	201.74	2.17	201.99	2.46	204.95	18.22	201.74	2.17	NA
0619-MR-16 Spot 68	131.30	10474.62	3.78	20.11	2.13	0.22	2.31	0.03	0.90	0.39	202.01	1.80	200.38	4.20	181.21	49.58	202.01	1.80	NA
0619-MR-16 Spot 185	229.38	3792.86	2.38	15.86	4.20	0.28	4.32	0.03	1.01	0.23	203.54	2.02	249.71	9.57	709.49	89.38	203.54	2.02	NA
0619-MR-16 Spot 94	182.90	9860.70	3.37	20.69	1.41	0.21	1.65	0.03	0.86	0.52	203.60	1.73	196.68	2.95	114.36	33.21	203.60	1.73	NA
0619-MR-16 Spot 238	417.70	30082.71	1.91	19.84	0.82	0.22	1.06	0.03	0.67	0.64	204.70	1.36	205.37	1.97	213.07	18.91	204.70	1.36	NA
0619-MR-16 Spot 217	79.97	20733.42	5.29	19.69	2.57	0.23	2.85	0.03	1.22	0.43	205.71	2.47	207.70	5.35	230.25	59.40	205.71	2.47	NA
0619-MR-16 Spot 6	330.27	13968.92	2.97	20.01	1.24	0.23	1.58	0.03	0.99	0.62	208.76	2.03	207.45	2.97	192.57	28.78	208.76	2.03	NA
0619-MR-16 Spot 154	356.27	9335.48	3.03	20.39	0.89	0.23	1.09	0.03	0.64	0.58	218.95	1.38	213.13	2.10	149.32	20.78	218.95	1.38	NA
0619-MR-16 Spot 48	182.11	30519.49	3.07	20.43	1.43	0.23	1.72	0.03	0.95	0.55	219.53	2.05	213.20	3.31	143.87	33.65	219.53	2.05	NA
0619-MR-16 Spot 90	189.84	132131.23	2.44	19.80	1.59	0.25	1.91	0.04	1.06	0.55	228.71	2.38	227.71	3.89	217.36	36.77	228.71	2.38	NA
0619-MR-16 Spot 289	79.90	9338.96	4.45	21.00	2.02	0.24	2.29	0.04	1.09	0.48	229.00	2.46	216.22	4.47	79.20	47.88	229.00	2.46	NA
0619-MR-16 Spot 254	137.58	55668.85	1.24	19.51	1.50	0.26	1.77	0.04	0.94	0.53	229.86	2.13	231.79	3.67	251.46	34.55	229.86	2.13	NA
0619-MR-16 Spot 188	51.29	5087.21	6.52	21.15	2.76	0.24	3.01	0.04	1.21	0.40	230.84	2.75	216.40	5.87	62.07	65.68	230.84	2.75	NA
0619-MR-16 Spot 286	985.00	64924.76	2.71	19.70	0.69	0.26	1.21	0.04	1.00	0.82	231.16	2.27	231.02	2.51	229.48	15.85	231.16	2.27	NA
0619-MR-16 Spot 39	1501.07	98471.94	6.53	19.64	0.61	0.26	1.01	0.04	0.81	0.80	232.99	1.85	233.27	2.11	236.10	14.02	232.99	1.85	NA
0619-MR-16 Spot 132	28.49	4217.01	4.79	19.94	3.33	0.26	3.48	0.04	1.00	0.29	235.35	2.32	232.23	7.22	200.78	77.32	235.35	2.32	NA
0619-MR-16 Spot 279	170.11	8794.36	1.20	19.92	1.26	0.26	1.45	0.04	0.73	0.50	238.59	1.71	235.34	3.06	202.96	29.18	238.59	1.71	NA
0619-MR-16 Spot 142	163.30	41846.43	2.31	19.19	1.24	0.28	1.45	0.04	0.75	0.52	244.94	1.80	249.21	3.20	289.62	28.31	244.94	1.80	NA
0619-MR-16 Spot 288	531.96	22756.96	1.47	19.67	1.04	0.27	1.38	0.04	0.90	0.66	245.04	2.17	243.85	2.99	232.39	24.04	245.04	2.17	NA
0619-MR-16 Spot 76	99.24	17899.48	1.42	19.41	1.95	0.28	2.07	0.04	0.70	0.34	250.88	1.72	252.09	4.63	263.31	44.85	250.88	1.72	NA
0619-MR-16 Spot 158	313.61	128587.84	1.74	19.58	0.95	0.29	1.28	0.04	0.85	0.67	263.17	2.19	261.11	2.94	242.62	21.99	263.17	2.19	NA
0619-MR-16 Spot 34	45.21	3862.09	4.12	21.80	3.62	0.26	3.81	0.04	1.18	0.31	264.11	3.05	238.19	8.08	NA	NA	264.11	3.05	NA
0619-MR-16 Spot 314	412.10	21847.47	2.11	19.63	0.90	0.30	1.11	0.04	0.66	0.59	268.60	1.73	265.35	2.59	236.72	20.66	268.60	1.73	NA
0619-MR-16 Spot 19	416.40	27155.28	1.01	19.56	0.98	0.30	1.26	0.04	0.80	0.63	270.61	2.12	267.97	2.98	244.88	22.52	270.61	2.12	NA
0619-MR-16 Spot 274	66.25	392251.29	3.23	19.58	2.19	0.30	2.51	0.04	1.21	0.48	270.67	3.22	267.81	5.90	242.92	50.52	270.67	3.22	NA
0619-MR-16 Spot 128	185.83	28625.01	1.53	19.47	1.35	0.31	1.62	0.04	0.90	0.56	279.00	2.46	276.55	3.93	255.78	31.04	279.00	2.46	NA
0619-MR-16 Spot 278	811.92	174143.83	4.65	19.24	0.65	0.32	1.29	0.04	1.11	0.86	279.06	3.04	279.46	3.15	282.78	14.99	279.06	3.04	NA
0619-MR-16 Spot 294	229.66	29822.81	5.39	19.44	1.09	0.31	1.28	0.04	0.67	0.52	279.92	1.83	277.74	3.10	259.44	24.96	279.92	1.83	NA
0619-MR-16 Spot 77	154.78	16357.29	0.92	19.14	1.63	0.32	1.91	0.04	1.01	0.53	280.58	2.76	282.11	4.72	294.86	37.18	280.58	2.76	NA
0619-MR-16 Spot 125	631.12	36324.53	4.91	19.44	0.77	0.32	1.32	0.04	1.06	0.81	282.56	2.94	280.06	3.22	259.18	17.80	282.56	2.94	NA
0619-MR-16 Spot 170	926.55	84200.02	26.94	18.98	0.72	0.34	1.22	0.05	0.99	0.81	297.91	2.87	299.81	3.17	314.63	16.37	297.91	2.87	NA
0619-MR-16 Spot 269	800.21	44952.19	1.17	19.31	0.75	0.35	1.38	0.05	1.16	0.84	306.60	3.46	302.93	3.61	274.69	17.14	306.60	3.46	NA
0619-MR-16 Spot 272	69.72	19923.03	0.84	19.31	2.26	0.36	2.47	0.05	1.01	0.41	316.09	3.10	311.29	6.64	275.49	51.82	316.09	3.10	NA
0619-MR-16 Spot 187	128.34	22921.37	5.69	19.29	1.94	0.36	2.99	0.05	2.28	0.76	317.84	7.08	313.07	8.07	277.71	44.43	317.84	7.08	NA
0619-MR-16 Spot 303	112.31	47291.72	4.16	19.19	1.49	0.38	1.83	0.05	1.07	0.58	333.19	3.46	327.77	5.12	289.45	33.95	333.19	3.46	NA
0619-MR-16 Spot 310	123.57	23888.41	2.48	18.80	1.13	0.39	1.34	0.05	0.72	0.53	334.92	2.35	335.07	3.83	336.10	25.71	334.92	2.35	NA

0619-MR-16 Spot 246	178.81	17135.11	4.71	18.83	1.12	0.40	1.44	0.05	0.90	0.63	342.88	3.01	341.59	4.18	332.81	25.46	342.88	3.01	NA
0619-MR-16 Spot 163	648.88	1012595.56	2.71	18.70	0.65	0.41	1.30	0.06	1.13	0.87	346.16	3.80	346.44	3.82	348.28	14.59	346.16	3.80	NA
0619-MR-16 Spot 220	1098.78	70364.51	36.62	18.68	0.61	0.42	1.19	0.06	1.03	0.86	355.30	3.56	354.61	3.57	350.13	13.68	355.30	3.56	NA
0619-MR-16 Spot 202	702.81	76113.29	1.46	18.54	0.81	0.44	1.44	0.06	1.19	0.83	369.67	4.29	369.30	4.46	366.90	18.14	369.67	4.29	NA
0619-MR-16 Spot 120	311.43	674765.96	3.32	18.31	0.89	0.45	1.30	0.06	0.94	0.73	370.41	3.40	373.91	4.05	395.68	19.90	370.41	3.40	NA
0619-MR-16 Spot 38	452.96	51823.39	1.22	18.58	0.67	0.45	0.95	0.06	0.68	0.72	379.33	2.51	377.06	3.00	363.11	14.98	379.33	2.51	NA
0619-MR-16 Spot 307	788.64	335061.05	15.22	18.31	0.81	0.49	1.49	0.06	1.25	0.84	403.66	4.89	402.48	4.94	395.64	18.14	403.66	4.89	102.03
0619-MR-16 Spot 51	186.83	37467.28	1.43	18.45	1.03	0.49	1.32	0.07	0.83	0.63	406.53	3.25	402.39	4.39	378.69	23.15	406.53	3.25	107.35
0619-MR-16 Spot 129	164.37	50875.54	5.25	18.21	0.83	0.50	1.14	0.07	0.79	0.69	409.71	3.12	409.41	3.84	407.64	18.50	409.71	3.12	100.51
0619-MR-16 Spot 88	1605.01	193748.73	2.18	18.13	0.56	0.50	1.05	0.07	0.89	0.85	410.34	3.53	411.46	3.55	417.74	12.42	410.34	3.53	98.23
0619-MR-16 Spot 26	126.33	45087.28	1.44	18.30	1.20	0.50	1.54	0.07	0.96	0.62	417.21	3.87	414.18	5.23	397.28	26.93	417.21	3.87	105.02
0619-MR-16 Spot 253	392.53	34928.54	1.11	18.10	0.93	0.51	1.24	0.07	0.82	0.66	418.02	3.30	418.57	4.25	421.56	20.77	418.02	3.30	99.16
0619-MR-16 Spot 58	120.42	58503.34	2.20	18.32	1.01	0.52	1.39	0.07	0.96	0.69	433.30	4.03	427.25	4.86	394.68	22.65	433.30	4.03	109.79
0619-MR-16 Spot 43	566.67	150085.59	2.95	17.92	0.81	0.56	1.14	0.07	0.81	0.71	453.90	3.56	452.19	4.18	443.53	17.92	453.90	3.56	102.34
0619-MR-16 Spot 152	191.98	106420.91	2.12	17.66	1.06	0.58	1.33	0.07	0.80	0.61	463.70	3.59	465.70	4.96	475.55	23.39	463.70	3.59	97.51
0619-MR-16 Spot 73	321.44	33331.36	2.42	16.72	1.24	0.67	2.31	0.08	1.95	0.84	502.85	9.44	520.03	9.40	596.24	26.81	502.85	9.44	84.34
0619-MR-16 Spot 259	234.71	196212.27	3.53	16.99	0.82	0.68	1.09	0.08	0.73	0.67	517.16	3.62	525.21	4.48	560.40	17.76	517.16	3.62	92.28
0619-MR-16 Spot 47	107.61	15784.94	4.62	17.55	1.22	0.66	1.47	0.08	0.82	0.56	522.57	4.14	516.56	5.96	490.05	26.89	522.57	4.14	106.64
0619-MR-16 Spot 261	154.44	61133.76	2.71	17.07	0.82	0.68	1.08	0.08	0.69	0.64	522.61	3.47	527.79	4.42	550.24	17.98	522.61	3.47	94.98
0619-MR-16 Spot 146	85.98	15233.88	3.07	17.13	1.13	0.69	1.53	0.09	1.03	0.67	530.85	5.27	533.07	6.36	542.59	24.79	530.85	5.27	97.83
0619-MR-16 Spot 4	134.33	98098.11	1.88	17.08	0.88	0.70	1.27	0.09	0.91	0.72	536.73	4.71	539.05	5.29	548.90	19.12	536.73	4.71	97.78
0619-MR-16 Spot 87	330.48	53647.67	1.56	17.28	0.81	0.72	1.44	0.09	1.19	0.83	554.37	6.31	548.36	6.08	523.46	17.73	554.37	6.31	105.90
0619-MR-16 Spot 266	211.29	83440.20	2.40	16.87	0.81	0.74	1.12	0.09	0.77	0.69	556.62	4.13	560.41	4.82	575.79	17.56	556.62	4.13	96.67
0619-MR-16 Spot 13	412.09	38863.32	1.19	17.14	0.58	0.73	0.92	0.09	0.71	0.77	559.32	3.78	555.98	3.92	542.31	12.75	559.32	3.78	103.14
0619-MR-16 Spot 150	562.00	93169.59	8.41	16.73	0.68	0.76	1.25	0.09	1.05	0.84	566.96	5.69	572.39	5.47	594.02	14.79	566.96	5.69	95.44
0619-MR-16 Spot 201	354.06	111003.31	2.15	16.72	0.74	0.79	1.16	0.10	0.89	0.77	588.11	5.00	589.62	5.17	595.44	15.99	588.11	5.00	98.77
0619-MR-16 Spot 168	270.68	25623.06	1.71	16.75	0.84	0.80	1.18	0.10	0.83	0.70	595.30	4.72	594.49	5.32	591.44	18.25	595.30	4.72	100.65
0619-MR-16 Spot 179	1053.57	100021.40	14.79	16.69	0.56	0.80	1.27	0.10	1.14	0.90	597.02	6.48	597.63	5.73	599.94	12.20	597.02	6.48	99.51
0619-MR-16 Spot 260	270.23	103947.33	2.27	16.76	0.94	0.81	1.20	0.10	0.74	0.62	603.06	4.27	600.50	5.44	590.84	20.41	603.06	4.27	102.07
0619-MR-16 Spot 205	114.86	110093.21	3.12	16.47	0.98	0.83	1.28	0.10	0.82	0.64	608.95	4.78	613.07	5.88	628.31	21.09	608.95	4.78	96.92
0619-MR-16 Spot 106	442.60	122601.54	1.03	16.73	0.57	0.82	0.99	0.10	0.81	0.81	612.58	4.72	608.83	4.54	594.89	12.46	612.58	4.72	102.97
0619-MR-16 Spot 121	416.24	52745.23	2.53	16.65	0.69	0.84	1.11	0.10	0.87	0.78	621.48	5.14	617.99	5.13	605.17	14.88	621.48	5.14	102.70
0619-MR-16 Spot 285	328.42	31399.81	1.13	16.42	0.59	0.88	0.96	0.10	0.76	0.79	639.46	4.62	638.55	4.54	635.37	12.62	639.46	4.62	100.64
0619-MR-16 Spot 25	138.34	50088.35	2.19	16.15	1.01	0.89	1.29	0.10	0.81	0.63	639.63	4.95	646.48	6.19	670.45	21.58	639.63	4.95	95.40
0619-MR-16 Spot 82	119.74	26903.19	2.70	16.43	0.95	0.88	1.23	0.10	0.78	0.63	639.96	4.73	638.63	5.82	633.95	20.52	639.96	4.73	100.95
0619-MR-16 Spot 243	457.59	39624.76	0.81	16.39	0.74	0.88	1.22	0.10	0.98	0.80	640.06	5.97	639.77	5.81	638.78	15.84	640.06	5.97	100.20
0619-MR-16 Spot 167	140.38	13261.29	2.06	16.70	0.85	0.88	1.16	0.11	0.78	0.68	650.16	4.85	638.72	5.48	598.47	18.39	650.16	4.85	108.64
0619-MR-16 Spot 151	121.56	46782.82	1.15	16.62	0.91	0.89	1.22	0.11	0.80	0.66	659.73	5.03	648.26	5.82	608.48	19.72	659.73	5.03	108.42
0619-MR-16 Spot 283	490.79	102483.47	1.36	14.97	0.54	1.27	0.93	0.14	0.76	0.82	835.65	5.98	834.13	5.31	830.06	11.19	835.65	5.98	100.67
0619-MR-16 Spot 222	188.30	13067.79	2.77	14.26	2.07	1.34	2.21	0.14	0.80	0.36	838.79	6.25	864.49	12.88	930.96	42.41	838.79	6.25	90.10

0619-MR-16 Spot 126	105.70	13897.18	1.73	13.98	0.86	1.62	1.33	0.16	1.02	0.76	979.48	9.25	977.03	8.36	971.53	17.55	971.53	17.55	100.82
0619-MR-16 Spot 28	161.02	97410.24	0.51	13.97	0.67	1.54	1.07	0.16	0.84	0.78	936.52	7.28	947.71	6.60	973.79	13.64	973.79	13.64	96.17
0619-MR-16 Spot 18	218.20	67040.37	10.22	13.76	0.69	1.64	1.14	0.16	0.91	0.80	979.98	8.26	987.21	7.20	1003.32	13.98	1003.32	13.98	97.67
0619-MR-16 Spot 276	213.26	93932.08	5.15	13.74	0.66	1.76	1.20	0.18	0.99	0.83	1040.25	9.55	1029.38	7.73	1006.32	13.44	1006.32	13.44	103.37
0619-MR-16 Spot 75	750.58	815971.51	41.92	13.74	0.42	1.59	1.07	0.16	0.98	0.92	947.23	8.62	965.57	6.64	1007.54	8.53	1007.54	8.53	94.01
0619-MR-16 Spot 198	846.51	483585.59	2.67	13.66	0.62	1.74	1.20	0.17	1.02	0.86	1023.31	9.69	1021.91	7.71	1018.90	12.56	1018.90	12.56	100.43
0619-MR-16 Spot 74	452.22	193481.41	4.58	13.64	0.65	1.68	1.47	0.17	1.32	0.90	991.21	12.11	1000.62	9.35	1021.27	13.14	1021.27	13.14	97.06
0619-MR-16 Spot 218	100.66	56902.05	1.86	13.61	0.78	1.67	1.20	0.16	0.91	0.76	981.47	8.33	995.50	7.63	1026.52	15.81	1026.52	15.81	95.61
0619-MR-16 Spot 17	83.93	97292.46	2.21	13.61	0.79	1.73	1.14	0.17	0.83	0.72	1017.32	7.81	1020.37	7.37	1026.90	15.97	1026.90	15.97	99.07
0619-MR-16 Spot 15	111.64	12029.45	3.53	13.60	0.95	1.76	1.28	0.17	0.86	0.67	1032.63	8.21	1031.03	8.32	1027.60	19.32	1027.60	19.32	100.49
0619-MR-16 Spot 228	62.33	32553.55	0.84	13.57	0.89	1.69	1.26	0.17	0.89	0.71	994.45	8.20	1006.50	8.03	1032.79	17.97	1032.79	17.97	96.29
0619-MR-16 Spot 71	142.14	27212.53	1.97	13.53	0.66	1.75	1.29	0.17	1.10	0.86	1021.24	10.39	1026.64	8.30	1038.13	13.42	1038.13	13.42	98.37
0619-MR-16 Spot 247	69.35	32828.32	2.83	13.49	0.75	1.79	1.11	0.18	0.81	0.73	1041.45	7.78	1042.27	7.21	1044.00	15.24	1044.00	15.24	99.76
0619-MR-16 Spot 10	82.17	23608.45	0.75	13.49	0.90	1.80	1.35	0.18	1.01	0.74	1047.66	9.74	1046.56	8.84	1044.28	18.26	1044.28	18.26	100.32
0619-MR-16 Spot 139	253.79	211050.89	1.67	13.45	0.56	1.80	0.97	0.18	0.79	0.82	1040.96	7.61	1043.78	6.32	1049.70	11.28	1049.70	11.28	99.17
0619-MR-16 Spot 69	441.39	702765.24	4.10	13.44	0.54	1.83	0.94	0.18	0.77	0.82	1057.80	7.55	1055.90	6.20	1051.99	10.93	1051.99	10.93	100.55
0619-MR-16 Spot 180	167.80	99819.89	1.32	13.39	0.70	1.75	1.18	0.17	0.94	0.80	1013.81	8.85	1028.10	7.60	1058.63	14.16	1058.63	14.16	95.77
0619-MR-16 Spot 214	534.44	132022.22	5.11	13.36	0.79	1.81	1.22	0.18	0.93	0.76	1041.25	8.95	1048.53	7.98	1063.74	15.84	1063.74	15.84	97.89
0619-MR-16 Spot 258	118.32	57926.41	2.97	13.32	0.75	1.84	1.04	0.18	0.72	0.69	1053.94	7.04	1058.97	6.87	1069.39	15.12	1069.39	15.12	98.55
0619-MR-16 Spot 145	470.32	515885.82	0.59	13.31	0.51	1.80	0.99	0.17	0.85	0.85	1034.04	8.08	1045.93	6.46	1070.89	10.29	1070.89	10.29	96.56
0619-MR-16 Spot 171	246.31	256921.48	2.82	13.30	0.63	1.85	1.05	0.18	0.84	0.80	1060.72	8.25	1064.68	6.96	1072.83	12.71	1072.83	12.71	98.87
0619-MR-16 Spot 85	385.66	158294.12	1.73	13.25	0.61	1.93	0.93	0.19	0.70	0.75	1097.33	7.04	1091.58	6.22	1080.14	12.33	1080.14	12.33	101.59
0619-MR-16 Spot 240	152.43	40940.44	3.60	13.20	0.53	1.91	0.87	0.18	0.69	0.79	1080.71	6.87	1083.11	5.78	1087.93	10.55	1087.93	10.55	99.34
0619-MR-16 Spot 12	196.10	28308.04	1.62	13.18	0.68	1.89	0.96	0.18	0.68	0.71	1069.01	6.70	1075.98	6.39	1090.10	13.67	1090.10	13.67	98.07
0619-MR-16 Spot 216	199.37	116684.71	1.19	13.17	0.66	1.97	1.21	0.19	1.02	0.84	1109.80	10.39	1103.97	8.18	1092.52	13.23	1092.52	13.23	101.58
0619-MR-16 Spot 16	49.32	16919.36	2.94	13.16	1.08	1.93	1.45	0.18	0.97	0.67	1090.53	9.69	1091.60	9.68	1093.72	21.59	1093.72	21.59	99.71
0619-MR-16 Spot 178	127.96	383877.96	6.87	13.05	0.77	1.97	1.11	0.19	0.81	0.72	1102.19	8.16	1105.06	7.51	1110.70	15.37	1110.70	15.37	99.23
0619-MR-16 Spot 207	78.93	22950.43	4.34	13.05	0.67	2.08	1.02	0.20	0.77	0.75	1157.83	8.16	1141.67	7.01	1111.07	13.42	1111.07	13.42	104.21
0619-MR-16 Spot 5	171.34	90540.67	3.77	12.79	0.64	2.16	1.22	0.20	1.03	0.85	1178.79	11.14	1168.81	8.45	1150.37	12.76	1150.37	12.76	102.47
0619-MR-16 Spot 55	843.81	726478.91	4.87	12.78	0.56	2.10	1.14	0.19	0.99	0.87	1144.58	10.38	1147.35	7.80	1152.57	11.04	1152.57	11.04	99.31
0619-MR-16 Spot 225	123.91	27380.24	1.86	12.76	0.61	2.18	1.07	0.20	0.88	0.82	1186.84	9.49	1175.60	7.43	1154.93	12.06	1154.93	12.06	102.76
0619-MR-16 Spot 104	399.63	61993.20	2.19	12.76	0.65	2.01	1.04	0.19	0.81	0.78	1099.78	8.18	1118.59	7.04	1155.29	12.96	1155.29	12.96	95.20
0619-MR-16 Spot 165	407.47	298292.20	2.22	12.69	0.60	2.21	1.07	0.20	0.89	0.83	1194.49	9.68	1184.26	7.50	1165.59	11.95	1165.59	11.95	102.48
0619-MR-16 Spot 20	41.35	98402.40	2.35	12.34	0.98	2.26	1.30	0.20	0.86	0.66	1189.13	9.39	1200.87	9.19	1222.03	19.22	1222.03	19.22	97.31
0619-MR-16 Spot 273	164.27	98853.08	2.79	12.23	0.60	2.29	1.01	0.20	0.82	0.80	1194.50	8.89	1210.52	7.17	1239.24	11.78	1239.24	11.78	96.39
0619-MR-16 Spot 138	141.57	155950.66	1.20	12.16	0.60	2.42	0.92	0.21	0.69	0.76	1246.35	7.86	1247.95	6.60	1250.69	11.76	1250.69	11.76	99.65
0619-MR-16 Spot 111	426.79	120840.65	2.66	11.47	0.57	2.76	1.06	0.23	0.89	0.84	1333.09	10.76	1344.63	7.89	1363.03	10.93	1363.03	10.93	97.80
0619-MR-16 Spot 124	84.33	23450.15	1.07	11.16	0.92	3.10	1.30	0.25	0.92	0.71	1442.65	11.86	1431.72	9.95	1415.49	17.53	1415.49	17.53	101.92
0619-MR-16 Spot 262	244.21	367068.05	4.68	11.15	0.54	3.08	0.88	0.25	0.69	0.79	1431.93	8.90	1426.65	6.75	1418.75	10.38	1418.75	10.38	100.93
0619-MR-16 Spot 181	335.18	124994.44	5.20	11.03	0.55	3.07	0.92	0.25	0.74	0.80	1418.08	9.42	1426.41	7.04	1438.85	10.40	1438.85	10.40	98.56

0619-MR-16 Spot 275	368.29	102733.02	1.83	11.00	0.59	3.12	1.05	0.25	0.87	0.83	1433.09	11.20	1437.15	8.09	1443.14	11.23	1443.14	11.23	99.30
0619-MR-16 Spot 308	428.48	136667.87	3.06	10.99	0.64	3.15	0.97	0.25	0.73	0.75	1445.74	9.45	1445.38	7.47	1444.83	12.14	1444.83	12.14	100.06
0619-MR-16 Spot 221	181.58	355975.40	1.50	10.99	0.55	3.19	0.91	0.25	0.73	0.80	1461.20	9.53	1455.01	7.06	1445.97	10.49	1445.97	10.49	101.05
0619-MR-16 Spot 282	421.61	193695.16	7.15	10.98	0.58	3.06	0.94	0.24	0.74	0.79	1407.98	9.36	1423.67	7.19	1447.20	11.01	1447.20	11.01	97.29
0619-MR-16 Spot 40	1787.32	7257399.05	4.54	10.96	0.55	3.12	1.02	0.25	0.86	0.84	1430.19	11.01	1438.72	7.84	1451.33	10.48	1451.33	10.48	98.54
0619-MR-16 Spot 45	167.94	455386.37	1.52	10.91	0.60	3.21	1.00	0.25	0.80	0.80	1458.47	10.44	1458.59	7.74	1458.75	11.42	1458.75	11.42	99.98
0619-MR-16 Spot 194	71.84	90637.10	0.90	10.85	0.84	3.23	1.22	0.25	0.89	0.73	1461.76	11.58	1465.20	9.47	1470.18	15.95	1470.18	15.95	99.43
0619-MR-16 Spot 299	208.02	183505.15	1.56	10.84	0.60	3.28	0.94	0.26	0.73	0.77	1478.18	9.62	1475.66	7.32	1472.02	11.32	1472.02	11.32	100.42
0619-MR-16 Spot 42	887.25	44437.09	2.38	10.73	0.91	3.28	1.38	0.26	1.04	0.75	1464.92	13.69	1475.46	10.77	1490.63	17.20	1490.63	17.20	98.28
0619-MR-16 Spot 123	221.38	61957.33	3.49	10.58	0.61	3.36	1.02	0.26	0.82	0.80	1478.78	10.78	1494.51	7.96	1516.88	11.48	1516.88	11.48	97.49
0619-MR-16 Spot 49	117.01	25766.96	2.26	10.57	0.72	3.41	1.00	0.26	0.70	0.70	1499.66	9.34	1507.57	7.86	1518.68	13.53	1518.68	13.53	98.75
0619-MR-16 Spot 210	79.80	48267.76	1.87	10.38	0.81	3.49	1.18	0.26	0.86	0.73	1504.89	11.59	1525.36	9.34	1553.87	15.18	1553.87	15.18	96.85
0619-MR-16 Spot 9	415.49	9501423.14	1.88	10.23	0.57	3.32	1.00	0.25	0.82	0.82	1421.15	10.45	1486.16	7.80	1580.18	10.70	1580.18	10.70	89.94
0619-MR-16 Spot 212	27.45	23738.49	6.43	10.13	1.26	3.27	1.59	0.24	0.98	0.61	1387.71	12.19	1473.16	12.37	1598.52	23.44	1598.52	23.44	86.81
0619-MR-16 Spot 122	138.76	94892.92	1.20	9.99	0.59	3.94	0.98	0.29	0.78	0.80	1621.66	11.19	1622.78	7.94	1624.22	11.04	1624.22	11.04	99.84
0619-MR-16 Spot 235	193.09	60397.33	1.01	9.97	0.65	4.10	1.10	0.30	0.89	0.81	1673.61	13.14	1653.51	9.00	1628.05	12.06	1628.05	12.06	102.80
0619-MR-16 Spot 293	262.23	80549.83	3.47	9.80	0.48	3.86	0.96	0.27	0.83	0.87	1564.74	11.57	1606.32	7.74	1661.26	8.84	1661.26	8.84	94.19
0619-MR-16 Spot 89	136.90	116170.62	2.67	9.70	0.57	4.34	0.98	0.31	0.79	0.81	1717.98	11.96	1700.65	8.07	1679.33	10.55	1679.33	10.55	102.30
0619-MR-16 Spot 91	724.25	10288489.63	4.45	9.52	0.48	4.41	1.14	0.30	1.04	0.91	1713.88	15.59	1713.81	9.43	1713.70	8.76	1713.70	8.76	100.01
0619-MR-16 Spot 157	339.62	717829.64	3.22	9.46	0.54	4.49	0.85	0.31	0.66	0.78	1731.98	10.05	1728.92	7.08	1725.21	9.88	1725.21	9.88	100.39
0619-MR-16 Spot 184	377.55	125835.20	2.04	9.30	0.56	4.64	0.97	0.31	0.79	0.81	1756.47	12.16	1756.51	8.12	1756.54	10.32	1756.54	10.32	100.00
0619-MR-16 Spot 291	74.60	66444.02	0.70	9.16	0.79	4.69	1.21	0.31	0.93	0.76	1750.62	14.18	1766.27	10.16	1784.81	14.32	1784.81	14.32	98.08
0619-MR-16 Spot 147	200.80	231320.05	1.23	9.07	0.68	4.99	1.01	0.33	0.74	0.74	1831.16	11.83	1818.06	8.54	1803.07	12.44	1803.07	12.44	101.56
0619-MR-16 Spot 219	96.53	379058.09	1.48	8.64	0.63	5.46	1.08	0.34	0.87	0.81	1897.07	14.32	1893.87	9.24	1890.35	11.37	1890.35	11.37	100.36
0619-MR-16 Spot 11	199.66	112795.56	1.10	8.58	0.69	5.61	1.12	0.35	0.88	0.79	1933.07	14.75	1918.34	9.63	1902.44	12.31	1902.44	12.31	101.61
0619-MR-16 Spot 7	352.34	166337.47	1.68	8.13	0.59	5.93	0.94	0.35	0.73	0.78	1932.62	12.18	1965.32	8.14	1999.91	10.45	1999.91	10.45	96.64
0619-MR-16 Spot 298	123.16	60122.74	1.22	7.49	0.53	6.74	1.10	0.37	0.97	0.88	2012.95	16.76	2078.00	9.75	2143.10	9.18	2143.10	9.18	93.93
0619-MR-16 Spot 175	246.63	426203.11	1.90	6.75	0.47	8.85	0.90	0.43	0.77	0.85	2322.71	14.96	2322.75	8.22	2322.78	8.12	2322.78	8.12	100.00
0619-MR-16 Spot 300	103.99	97412.48	1.50	6.66	0.40	8.79	0.80	0.42	0.70	0.87	2282.34	13.40	2316.02	7.33	2345.83	6.85	2345.83	6.85	97.29
0619-MR-16 Spot 1	83.34	589058.01	2.30	5.26	0.71	13.68	1.09	0.52	0.82	0.76	2709.14	18.18	2727.64	10.28	2741.35	11.69	2741.35	11.69	98.83
0619-MR-16 Spot 183	224.69	100646.35	2.46	4.45	0.63	17.07	1.04	0.55	0.82	0.79	2832.94	18.87	2939.00	9.95	3012.43	10.14	3012.43	10.14	94.04
Sample 0619-MR-17																			
0619-MR-17 Spot 125	755.56	273667.71	1.83	19.42	0.98	0.16	1.52	0.02	1.16	0.77	141.50	1.63	148.53	2.10	262.26	22.41	141.50	1.63	NA
0619-MR-17 Spot 219	390.83	92163.00	1.85	20.49	1.38	0.15	1.54	0.02	0.70	0.45	144.56	1.00	144.18	2.08	137.94	32.32	144.56	1.00	NA
0619-MR-17 Spot 45	229.14	30142.79	1.96	20.62	1.61	0.15	1.85	0.02	0.90	0.49	145.36	1.29	144.03	2.48	122.23	38.01	145.36	1.29	NA
0619-MR-17 Spot 251	207.22	28872.11	2.34	20.47	1.90	0.15	2.32	0.02	1.33	0.57	145.89	1.92	145.56	3.15	140.24	44.61	145.89	1.92	NA
0619-MR-17 Spot 126	79.41	8343.22	6.38	22.41	2.58	0.14	2.87	0.02	1.25	0.44	146.76	1.81	134.47	3.61	NA	NA	146.76	1.81	NA
0619-MR-17 Spot 116	67.34	16163.66	4.75	22.03	2.53	0.14	2.75	0.02	1.07	0.39	147.11	1.56	136.99	3.52	NA	NA	147.11	1.56	NA

0619-MR-17 Spot 169	265.92	13751.18	1.89	20.47	1.51	0.16	1.78	0.02	0.94	0.53	147.47	1.38	147.05	2.43	140.23	35.39	147.47	1.38	NA
0619-MR-17 Spot 273	104.56	45669.46	3.19	19.82	2.56	0.16	2.80	0.02	1.12	0.40	147.95	1.63	151.94	3.94	214.77	59.34	147.95	1.63	NA
0619-MR-17 Spot 91	90.65	10063.32	1.85	21.89	2.47	0.15	2.73	0.02	1.15	0.42	148.09	1.69	138.68	3.54	NA	NA	148.09	1.69	NA
0619-MR-17 Spot 291	109.02	472532.46	3.38	20.77	2.29	0.15	2.50	0.02	1.00	0.40	148.27	1.47	145.77	3.39	105.38	54.06	148.27	1.47	NA
0619-MR-17 Spot 127	245.16	20890.49	2.95	20.42	1.46	0.16	1.67	0.02	0.81	0.49	148.35	1.19	148.16	2.30	145.04	34.25	148.35	1.19	NA
0619-MR-17 Spot 279	44.77	6612.00	5.25	23.26	4.29	0.14	4.58	0.02	1.60	0.35	148.81	2.35	131.58	5.65	NA	NA	148.81	2.35	NA
0619-MR-17 Spot 230	170.64	60664.96	4.74	21.64	1.69	0.15	1.97	0.02	1.01	0.51	148.81	1.49	140.77	2.58	7.29	40.59	148.81	1.49	NA
0619-MR-17 Spot 98	349.71	16860.58	4.82	21.17	1.78	0.15	3.17	0.02	2.62	0.83	149.28	3.87	144.15	4.26	60.46	42.43	149.28	3.87	NA
0619-MR-17 Spot 1	210.69	162995.20	4.17	20.39	1.60	0.16	1.95	0.02	1.11	0.57	149.41	1.64	149.39	2.71	148.92	37.52	149.41	1.64	NA
0619-MR-17 Spot 134	1331.89	116490.55	3.37	20.48	0.77	0.16	1.33	0.02	1.08	0.82	149.54	1.60	148.89	1.84	138.50	18.05	149.54	1.60	NA
0619-MR-17 Spot 68	536.75	188155.67	1.90	20.40	1.02	0.16	1.65	0.02	1.30	0.79	149.78	1.93	149.69	2.30	148.16	23.82	149.78	1.93	NA
0619-MR-17 Spot 257	64.25	7488.41	4.35	21.52	3.29	0.15	3.47	0.02	1.10	0.32	150.91	1.64	143.41	4.64	20.96	79.06	150.91	1.64	NA
0619-MR-17 Spot 232	48.45	3980.44	2.79	22.94	5.41	0.14	5.54	0.02	1.18	0.21	150.92	1.76	135.10	7.01	NA	NA	150.92	1.76	NA
0619-MR-17 Spot 261	1058.31	97288.82	2.17	20.18	0.99	0.16	1.71	0.02	1.39	0.82	151.19	2.08	152.53	2.42	173.29	23.03	151.19	2.08	NA
0619-MR-17 Spot 56	210.58	17345.86	3.55	19.81	1.50	0.17	1.71	0.02	0.82	0.48	151.21	1.22	155.17	2.46	216.03	34.78	151.21	1.22	NA
0619-MR-17 Spot 298	1027.37	738965.17	2.83	20.13	0.81	0.16	1.45	0.02	1.20	0.83	151.28	1.80	152.96	2.06	178.99	18.81	151.28	1.80	NA
0619-MR-17 Spot 278	190.36	62467.60	2.72	20.58	1.88	0.16	2.08	0.02	0.88	0.42	151.32	1.31	149.87	2.89	127.09	44.29	151.32	1.31	NA
0619-MR-17 Spot 268	98.24	5280.65	5.40	21.25	2.08	0.15	2.44	0.02	1.26	0.52	151.42	1.89	145.55	3.30	50.90	49.74	151.42	1.89	NA
0619-MR-17 Spot 299	341.19	21771.07	2.57	20.55	1.38	0.16	1.66	0.02	0.91	0.55	151.43	1.36	150.20	2.31	130.87	32.54	151.43	1.36	NA
0619-MR-17 Spot 34	1742.88	95634.33	4.00	20.49	0.87	0.16	1.42	0.02	1.12	0.79	151.44	1.67	150.57	1.98	136.90	20.47	151.44	1.67	NA
0619-MR-17 Spot 137	1739.62	155021.62	2.30	20.57	0.81	0.16	1.41	0.02	1.16	0.82	151.52	1.74	150.15	1.97	128.58	18.99	151.52	1.74	NA
0619-MR-17 Spot 165	150.28	21641.63	6.23	20.58	1.39	0.16	1.62	0.02	0.83	0.51	151.59	1.24	150.11	2.26	126.95	32.72	151.59	1.24	NA
0619-MR-17 Spot 144	298.72	31705.43	2.06	20.37	1.39	0.16	1.69	0.02	0.96	0.57	151.76	1.44	151.74	2.38	151.46	32.54	151.76	1.44	NA
0619-MR-17 Spot 223	97.38	8890.90	5.98	20.90	2.68	0.16	2.94	0.02	1.21	0.41	151.79	1.81	148.16	4.06	90.52	63.62	151.79	1.81	NA
0619-MR-17 Spot 109	793.09	42461.57	1.73	20.16	1.16	0.16	1.73	0.02	1.28	0.74	151.88	1.93	153.30	2.46	175.18	27.01	151.88	1.93	NA
0619-MR-17 Spot 81	343.49	62121.90	1.36	20.31	1.22	0.16	1.48	0.02	0.84	0.57	152.68	1.27	152.99	2.11	157.94	28.60	152.68	1.27	NA
0619-MR-17 Spot 44	383.88	69084.79	2.01	19.93	1.11	0.17	1.46	0.02	0.94	0.64	152.71	1.42	155.70	2.10	201.55	25.86	152.71	1.42	NA
0619-MR-17 Spot 162	501.28	20397.45	1.61	20.62	1.07	0.16	1.41	0.02	0.93	0.66	152.77	1.40	150.95	1.98	122.34	25.12	152.77	1.40	NA
0619-MR-17 Spot 20	562.58	33311.00	2.81	20.32	0.86	0.16	1.43	0.02	1.15	0.80	153.07	1.74	153.34	2.04	157.49	20.05	153.07	1.74	NA
0619-MR-17 Spot 189	178.82	4452.97	2.52	22.10	1.43	0.15	1.75	0.02	1.01	0.58	153.12	1.53	141.82	2.32	NA	NA	153.12	1.53	NA
0619-MR-17 Spot 314	39.32	4384.97	1.87	24.51	5.23	0.14	5.40	0.02	1.36	0.25	153.25	2.06	128.83	6.54	NA	NA	153.25	2.06	NA
0619-MR-17 Spot 203	841.88	123706.86	1.20	20.34	0.72	0.16	1.51	0.02	1.32	0.88	153.73	2.01	153.80	2.15	155.03	16.76	153.73	2.01	NA
0619-MR-17 Spot 51	737.11	283165.25	1.94	20.38	1.15	0.16	1.59	0.02	1.10	0.69	154.42	1.68	154.19	2.28	150.63	26.94	154.42	1.68	NA
0619-MR-17 Spot 140	159.93	17911.99	3.11	19.86	2.22	0.17	2.36	0.02	0.82	0.35	154.53	1.24	158.03	3.46	210.86	51.39	154.53	1.24	NA
0619-MR-17 Spot 207	2002.23	488313.67	1.60	20.45	0.68	0.16	1.35	0.02	1.16	0.86	154.58	1.78	153.79	1.92	141.62	15.94	154.58	1.78	NA
0619-MR-17 Spot 149	867.79	197710.24	1.91	20.37	0.93	0.16	1.42	0.02	1.07	0.75	154.60	1.63	154.41	2.03	151.48	21.81	154.60	1.63	NA
0619-MR-17 Spot 313	47.76	12739.16	3.83	16.30	6.36	0.21	6.51	0.02	1.41	0.22	154.71	2.16	189.69	11.27	650.88	136.65	154.71	2.16	NA
0619-MR-17 Spot 184	75.88	30934.40	3.52	22.01	3.05	0.15	3.21	0.02	0.99	0.31	155.16	1.52	144.15	4.31	NA	NA	155.16	1.52	NA
0619-MR-17 Spot 13	444.67	19836.34	4.94	20.75	1.43	0.16	1.63	0.02	0.77	0.47	155.18	1.18	152.31	2.30	107.91	33.82	155.18	1.18	NA
0619-MR-17 Spot 73	667.40	33520.34	1.63	20.14	0.88	0.17	1.49	0.02	1.20	0.81	155.44	1.85	156.84	2.16	177.92	20.46	155.44	1.85	NA

0619-MR-17 Spot 62	443.49	168820.57	2.63	20.02	1.01	0.17	1.32	0.02	0.85	0.64	155.65	1.31	157.92	1.93	192.15	23.55	155.65	1.31	NA
0619-MR-17 Spot 108	362.17	7611.03	3.21	21.38	1.25	0.16	1.67	0.02	1.10	0.66	155.96	1.70	148.83	2.31	36.66	29.83	155.96	1.70	NA
0619-MR-17 Spot 55	421.48	9698.60	2.31	20.98	1.24	0.16	1.45	0.02	0.75	0.52	156.04	1.16	151.52	2.04	81.28	29.46	156.04	1.16	NA
0619-MR-17 Spot 130	1930.84	71470.65	1.82	20.12	0.81	0.17	1.45	0.02	1.21	0.83	156.19	1.86	157.66	2.12	179.68	18.80	156.19	1.86	NA
0619-MR-17 Spot 86	222.09	12166.39	4.63	20.98	1.71	0.16	2.00	0.02	1.04	0.52	156.21	1.60	151.67	2.82	81.26	40.65	156.21	1.60	NA
0619-MR-17 Spot 8	780.83	68024.05	1.74	20.22	1.11	0.17	1.44	0.02	0.92	0.64	156.36	1.43	157.09	2.10	168.10	25.95	156.36	1.43	NA
0619-MR-17 Spot 186	768.64	685042.90	3.04	20.58	0.92	0.16	1.39	0.02	1.05	0.75	156.42	1.62	154.61	2.00	126.97	21.68	156.42	1.62	NA
0619-MR-17 Spot 63	191.34	19703.74	4.03	21.09	1.68	0.16	1.88	0.02	0.86	0.46	156.43	1.33	151.13	2.65	68.67	39.88	156.43	1.33	NA
0619-MR-17 Spot 157	1072.13	134009.03	5.15	20.45	0.97	0.17	1.36	0.02	0.95	0.70	156.46	1.48	155.59	1.96	142.48	22.69	156.46	1.48	NA
0619-MR-17 Spot 267	375.00	63042.55	3.01	20.62	1.28	0.16	1.50	0.02	0.79	0.53	156.92	1.23	154.79	2.16	122.37	30.06	156.92	1.23	NA
0619-MR-17 Spot 64	701.93	179843.62	1.93	20.25	1.00	0.17	1.65	0.02	1.32	0.80	156.99	2.04	157.50	2.41	165.12	23.31	156.99	2.04	NA
0619-MR-17 Spot 48	485.53	200695.75	1.93	20.37	1.08	0.17	1.29	0.02	0.70	0.54	157.31	1.09	156.93	1.87	151.11	25.25	157.31	1.09	NA
0619-MR-17 Spot 172	227.12	11122.08	1.27	20.67	1.63	0.17	1.83	0.02	0.85	0.46	157.66	1.32	155.17	2.64	117.28	38.34	157.66	1.32	NA
0619-MR-17 Spot 239	719.37	48051.16	2.67	19.97	1.06	0.17	1.77	0.02	1.42	0.80	158.14	2.22	160.66	2.63	197.92	24.64	158.14	2.22	NA
0619-MR-17 Spot 147	290.50	11235.81	2.08	20.44	1.19	0.17	1.77	0.02	1.31	0.74	158.77	2.06	157.83	2.59	143.62	27.90	158.77	2.06	NA
0619-MR-17 Spot 97	190.08	7374.84	2.10	20.64	1.44	0.17	1.74	0.02	0.98	0.56	158.91	1.54	156.51	2.52	120.40	33.86	158.91	1.54	NA
0619-MR-17 Spot 38	1257.66	175506.94	2.72	20.38	0.70	0.17	1.23	0.03	1.01	0.82	159.71	1.59	159.13	1.81	150.50	16.37	159.71	1.59	NA
0619-MR-17 Spot 16	420.29	48328.07	1.54	20.45	1.16	0.17	1.48	0.03	0.92	0.62	160.09	1.45	158.97	2.17	142.26	27.17	160.09	1.45	NA
0619-MR-17 Spot 135	503.10	42037.17	2.03	20.67	0.96	0.17	1.24	0.03	0.78	0.63	160.18	1.24	157.45	1.81	116.47	22.69	160.18	1.24	NA
0619-MR-17 Spot 25	568.65	29951.52	3.53	20.47	0.98	0.17	1.29	0.03	0.84	0.65	160.33	1.33	159.05	1.90	139.98	23.00	160.33	1.33	NA
0619-MR-17 Spot 70	47.34	26316.43	4.01	21.62	3.58	0.16	3.85	0.03	1.43	0.37	160.36	2.26	151.20	5.41	9.84	86.06	160.36	2.26	NA
0619-MR-17 Spot 280	489.98	192349.90	2.66	20.36	0.91	0.17	1.24	0.03	0.85	0.68	161.11	1.34	160.53	1.84	151.97	21.25	161.11	1.34	NA
0619-MR-17 Spot 4	223.32	53256.61	1.87	20.05	1.55	0.17	1.68	0.03	0.66	0.39	161.58	1.05	163.32	2.54	188.57	36.08	161.58	1.05	NA
0619-MR-17 Spot 277	469.46	56642.30	1.87	20.17	0.93	0.17	1.19	0.03	0.75	0.63	162.14	1.20	162.88	1.79	173.74	21.65	162.14	1.20	NA
0619-MR-17 Spot 217	179.11	28057.20	1.45	20.39	1.96	0.17	2.12	0.03	0.79	0.37	162.27	1.26	161.39	3.16	148.45	46.07	162.27	1.26	NA
0619-MR-17 Spot 36	115.03	21144.79	3.21	20.48	2.35	0.17	2.57	0.03	1.03	0.40	163.53	1.67	161.96	3.85	139.08	55.32	163.53	1.67	NA
0619-MR-17 Spot 74	354.88	47053.91	2.04	20.40	1.08	0.17	1.37	0.03	0.85	0.62	163.88	1.37	162.86	2.06	147.96	25.28	163.88	1.37	NA
0619-MR-17 Spot 143	616.83	108163.92	3.02	20.19	0.84	0.18	1.49	0.03	1.23	0.82	164.05	1.99	164.54	2.26	171.64	19.65	164.05	1.99	NA
0619-MR-17 Spot 220	366.77	21156.10	2.22	20.24	1.56	0.18	1.73	0.03	0.75	0.44	164.11	1.22	164.28	2.63	166.65	36.45	164.11	1.22	NA
0619-MR-17 Spot 297	266.31	12686.27	0.89	20.26	2.00	0.18	2.33	0.03	1.20	0.51	164.45	1.95	164.45	3.54	164.39	46.82	164.45	1.95	NA
0619-MR-17 Spot 154	789.32	102794.61	2.01	20.01	0.91	0.18	1.45	0.03	1.13	0.78	164.83	1.84	166.63	2.22	192.26	21.12	164.83	1.84	NA
0619-MR-17 Spot 284	264.51	11111.54	3.23	20.63	1.54	0.17	1.74	0.03	0.80	0.46	164.99	1.30	162.18	2.60	121.44	36.36	164.99	1.30	NA
0619-MR-17 Spot 90	250.39	156619.94	4.37	20.75	1.56	0.17	1.83	0.03	0.95	0.52	165.16	1.55	161.45	2.73	107.34	36.80	165.16	1.55	NA
0619-MR-17 Spot 5	985.79	131465.67	1.59	20.30	0.96	0.18	1.55	0.03	1.22	0.79	165.27	1.99	164.90	2.36	159.63	22.42	165.27	1.99	NA
0619-MR-17 Spot 112	290.94	39093.46	1.95	20.00	1.31	0.18	1.69	0.03	1.07	0.63	165.36	1.75	167.26	2.60	194.37	30.35	165.36	1.75	NA
0619-MR-17 Spot 53	356.33	62762.09	3.51	20.27	1.25	0.18	1.56	0.03	0.95	0.60	165.48	1.54	165.29	2.39	162.53	29.14	165.48	1.54	NA
0619-MR-17 Spot 275	909.25	246751.92	2.09	20.07	0.99	0.18	1.48	0.03	1.11	0.75	165.56	1.81	166.90	2.28	185.87	22.98	165.56	1.81	NA
0619-MR-17 Spot 180	408.73	28056.16	2.25	20.41	1.13	0.18	1.35	0.03	0.74	0.55	165.66	1.22	164.39	2.05	146.10	26.50	165.66	1.22	NA
0619-MR-17 Spot 201	819.79	136033.76	1.71	19.95	0.94	0.18	1.38	0.03	1.01	0.73	165.70	1.65	167.95	2.13	199.76	21.82	165.70	1.65	NA
0619-MR-17 Spot 243	297.82	32574.82	5.19	20.82	1.54	0.17	1.90	0.03	1.12	0.59	165.88	1.84	161.64	2.84	99.89	36.32	165.88	1.84	NA

0619-MR-17 Spot 266	181.88	17002.38	1.53	20.60	1.38	0.17	1.75	0.03	1.08	0.62	166.01	1.77	163.32	2.64	124.56	32.38	166.01	1.77	NA
0619-MR-17 Spot 139	461.78	47154.52	2.99	19.96	1.03	0.18	1.31	0.03	0.80	0.61	166.06	1.31	168.20	2.02	198.42	23.96	166.06	1.31	NA
0619-MR-17 Spot 300	328.66	20728.96	1.96	20.45	1.15	0.18	1.49	0.03	0.96	0.64	166.34	1.57	164.77	2.27	142.22	26.92	166.34	1.57	NA
0619-MR-17 Spot 6	345.13	85155.19	2.99	20.15	1.18	0.18	1.37	0.03	0.70	0.51	166.40	1.14	167.06	2.12	176.34	27.61	166.40	1.14	NA
0619-MR-17 Spot 14	547.47	55640.00	2.81	20.58	0.87	0.18	1.09	0.03	0.66	0.60	166.44	1.08	163.92	1.65	127.68	20.45	166.44	1.08	NA
0619-MR-17 Spot 67	2158.21	197717.74	1.97	20.18	0.60	0.18	1.09	0.03	0.91	0.83	166.45	1.50	166.87	1.68	172.77	13.99	166.45	1.50	NA
0619-MR-17 Spot 78	953.72	415662.75	5.06	19.97	0.98	0.18	1.55	0.03	1.20	0.77	166.48	1.97	168.52	2.41	197.25	22.82	166.48	1.97	NA
0619-MR-17 Spot 282	635.77	181659.42	14.10	20.34	0.93	0.18	1.26	0.03	0.86	0.68	166.97	1.42	166.16	1.94	154.70	21.68	166.97	1.42	NA
0619-MR-17 Spot 122	214.64	13735.35	3.11	20.06	1.55	0.18	1.82	0.03	0.96	0.53	167.56	1.59	168.87	2.83	187.18	36.04	167.56	1.59	NA
0619-MR-17 Spot 205	522.44	21988.37	36.58	21.00	1.16	0.17	1.45	0.03	0.86	0.60	167.70	1.43	162.01	2.17	79.52	27.63	167.70	1.43	NA
0619-MR-17 Spot 42	719.65	693054.01	2.91	20.25	0.75	0.18	1.30	0.03	1.06	0.81	168.46	1.76	168.23	2.01	165.05	17.60	168.46	1.76	NA
0619-MR-17 Spot 128	618.19	261295.00	2.18	19.53	0.92	0.19	1.47	0.03	1.15	0.78	168.77	1.91	174.21	2.35	248.67	21.09	168.77	1.91	NA
0619-MR-17 Spot 187	193.26	11634.43	3.00	20.83	2.02	0.18	2.17	0.03	0.80	0.37	169.57	1.34	164.92	3.31	98.75	47.85	169.57	1.34	NA
0619-MR-17 Spot 225	679.45	53499.34	6.70	20.14	1.00	0.18	1.67	0.03	1.33	0.80	169.67	2.23	170.24	2.61	178.12	23.26	169.67	2.23	NA
0619-MR-17 Spot 240	865.07	170464.35	2.00	20.02	0.98	0.18	1.50	0.03	1.14	0.76	169.93	1.91	171.37	2.37	191.32	22.89	169.93	1.91	NA
0619-MR-17 Spot 155	849.33	67305.71	2.07	20.33	0.94	0.18	1.42	0.03	1.07	0.75	170.06	1.79	169.14	2.22	156.33	22.04	170.06	1.79	NA
0619-MR-17 Spot 197	207.06	17529.98	2.16	20.99	1.18	0.18	1.42	0.03	0.80	0.56	170.36	1.34	164.44	2.16	80.07	27.99	170.36	1.34	NA
0619-MR-17 Spot 308	140.71	8223.11	1.66	19.52	2.39	0.19	2.64	0.03	1.11	0.42	170.76	1.87	176.23	4.27	250.18	55.10	170.76	1.87	NA
0619-MR-17 Spot 171	203.64	78927.74	2.95	20.50	1.54	0.18	1.79	0.03	0.90	0.51	171.33	1.53	169.02	2.79	136.76	36.27	171.33	1.53	NA
0619-MR-17 Spot 80	51.60	170075.25	1.44	10.62	10.59	0.35	10.72	0.03	1.68	0.16	171.49	2.84	304.71	28.22	1511.18	200.40	171.49	2.84	NA
0619-MR-17 Spot 160	125.13	13741.98	2.45	20.54	1.95	0.18	2.20	0.03	1.02	0.46	171.70	1.73	168.99	3.43	131.22	45.89	171.70	1.73	NA
0619-MR-17 Spot 129	461.94	27442.98	2.00	20.23	0.82	0.19	1.12	0.03	0.77	0.69	173.65	1.32	173.23	1.79	167.39	19.06	173.65	1.32	NA
0619-MR-17 Spot 271	211.07	54197.84	1.34	19.70	1.41	0.19	1.70	0.03	0.95	0.56	173.86	1.63	177.69	2.77	228.89	32.51	173.86	1.63	NA
0619-MR-17 Spot 10	360.22	22703.94	12.74	20.56	1.19	0.19	1.48	0.03	0.88	0.60	178.22	1.55	174.83	2.38	129.17	27.95	178.22	1.55	NA
0619-MR-17 Spot 163	138.70	33765.73	2.45	21.42	1.53	0.18	1.74	0.03	0.84	0.48	181.01	1.50	170.86	2.74	32.51	36.59	181.01	1.50	NA
0619-MR-17 Spot 242	745.13	82524.29	2.84	19.95	0.97	0.20	1.46	0.03	1.09	0.75	184.13	1.98	185.25	2.47	199.56	22.55	184.13	1.98	NA
0619-MR-17 Spot 142	291.73	56668.17	1.97	19.64	0.97	0.20	1.19	0.03	0.68	0.57	185.23	1.24	188.99	2.05	236.24	22.41	185.23	1.24	NA
0619-MR-17 Spot 99	1564.08	793582.57	27.06	20.04	0.75	0.20	1.36	0.03	1.14	0.84	187.12	2.10	187.32	2.33	189.81	17.40	187.12	2.10	NA
0619-MR-17 Spot 21	212.81	25394.00	2.43	19.87	1.85	0.21	2.30	0.03	1.36	0.59	189.53	2.54	191.01	4.00	209.38	42.91	189.53	2.54	NA
0619-MR-17 Spot 26	353.95	28061.35	2.49	19.85	1.05	0.21	1.32	0.03	0.80	0.61	189.85	1.51	191.42	2.31	210.94	24.38	189.85	1.51	NA
0619-MR-17 Spot 216	193.00	22191.53	3.86	20.51	1.65	0.20	1.97	0.03	1.09	0.55	191.14	2.05	186.99	3.37	134.88	38.67	191.14	2.05	NA
0619-MR-17 Spot 151	563.39	131716.92	3.47	19.96	0.95	0.21	1.58	0.03	1.27	0.80	191.39	2.39	191.91	2.77	198.31	22.07	191.39	2.39	NA
0619-MR-17 Spot 114	529.99	36041.67	2.12	20.04	1.01	0.21	1.45	0.03	1.04	0.72	191.42	1.96	191.28	2.52	189.58	23.45	191.42	1.96	NA
0619-MR-17 Spot 309	192.44	39466.36	3.01	19.79	1.42	0.21	1.84	0.03	1.18	0.64	192.33	2.23	194.35	3.26	218.85	32.82	192.33	2.23	NA
0619-MR-17 Spot 46	115.78	5845.39	4.83	20.98	2.70	0.20	2.88	0.03	1.01	0.35	192.50	1.92	184.41	4.86	82.05	63.98	192.50	1.92	NA
0619-MR-17 Spot 183	565.10	62929.67	5.71	20.44	1.07	0.20	1.53	0.03	1.10	0.72	192.78	2.09	189.05	2.64	142.62	24.99	192.78	2.09	NA
0619-MR-17 Spot 262	297.41	42626.47	2.89	19.79	1.29	0.21	1.61	0.03	0.96	0.60	193.48	1.83	195.40	2.85	218.62	29.80	193.48	1.83	NA
0619-MR-17 Spot 289	106.61	6504.49	3.40	21.41	2.24	0.20	2.53	0.03	1.16	0.46	194.99	2.23	183.18	4.24	33.45	53.74	194.99	2.23	NA
0619-MR-17 Spot 200	139.73	11501.84	3.94	19.98	1.55	0.21	1.83	0.03	0.98	0.53	195.48	1.88	195.57	3.26	196.65	36.03	195.48	1.88	NA
0619-MR-17 Spot 247	298.65	30763.09	2.55	20.07	1.14	0.21	1.41	0.03	0.84	0.59	196.04	1.62	195.24	2.51	185.58	26.52	196.04	1.62	NA

0619-MR-17 Spot 94	345.86	152516.33	4.08	19.71	1.09	0.22	1.55	0.03	1.10	0.71	196.43	2.13	198.89	2.79	228.19	25.10	196.43	2.13	NA
0619-MR-17 Spot 110	303.16	367894.20	3.28	19.51	1.13	0.22	1.47	0.03	0.95	0.64	196.56	1.83	200.82	2.69	251.14	26.01	196.56	1.83	NA
0619-MR-17 Spot 83	128.60	83058.30	2.52	20.08	2.01	0.21	2.32	0.03	1.14	0.49	197.15	2.22	196.21	4.13	184.88	46.87	197.15	2.22	NA
0619-MR-17 Spot 196	379.16	54304.36	3.28	20.29	1.14	0.21	1.59	0.03	1.11	0.70	197.31	2.15	194.52	2.81	160.86	26.67	197.31	2.15	NA
0619-MR-17 Spot 66	302.55	20640.04	3.78	20.04	1.25	0.21	1.60	0.03	1.00	0.63	197.32	1.95	196.71	2.86	189.34	29.04	197.32	1.95	NA
0619-MR-17 Spot 146	207.57	156732.34	3.49	19.88	1.56	0.22	1.82	0.03	0.93	0.51	197.44	1.82	198.21	3.27	207.40	36.17	197.44	1.82	NA
0619-MR-17 Spot 311	618.71	61177.60	2.66	20.11	0.84	0.21	1.11	0.03	0.72	0.65	197.57	1.41	196.35	1.97	181.66	19.49	197.57	1.41	NA
0619-MR-17 Spot 58	119.92	2021959.81	4.93	19.77	2.25	0.22	2.44	0.03	0.93	0.38	198.34	1.81	200.07	4.43	220.41	52.15	198.34	1.81	NA
0619-MR-17 Spot 47	185.47	26870.41	2.35	20.70	1.50	0.21	1.66	0.03	0.72	0.43	198.43	1.41	191.98	2.91	113.34	35.33	198.43	1.41	NA
0619-MR-17 Spot 12	118.69	9029.82	3.59	20.39	1.68	0.21	1.94	0.03	0.97	0.50	199.08	1.89	195.19	3.44	148.42	39.41	199.08	1.89	NA
0619-MR-17 Spot 286	304.06	18636.38	2.61	20.38	1.34	0.21	1.66	0.03	0.99	0.59	199.47	1.94	195.71	2.96	150.63	31.39	199.47	1.94	NA
0619-MR-17 Spot 88	340.40	198863.36	3.12	20.10	0.87	0.22	1.13	0.03	0.73	0.64	200.81	1.44	199.38	2.05	182.39	20.21	200.81	1.44	NA
0619-MR-17 Spot 89	150.77	15790.57	4.34	20.37	2.04	0.21	2.23	0.03	0.90	0.41	201.44	1.79	197.51	4.00	150.85	47.72	201.44	1.79	NA
0619-MR-17 Spot 256	277.73	73768.36	2.79	20.19	1.15	0.22	1.45	0.03	0.88	0.61	201.94	1.74	199.55	2.62	171.37	26.91	201.94	1.74	NA
0619-MR-17 Spot 176	292.30	59095.98	2.08	19.77	1.06	0.22	1.32	0.03	0.79	0.60	202.53	1.58	204.02	2.44	221.18	24.47	202.53	1.58	NA
0619-MR-17 Spot 106	404.18	34649.90	2.69	19.76	1.07	0.22	1.32	0.03	0.78	0.59	203.79	1.57	205.29	2.46	222.56	24.72	203.79	1.57	NA
0619-MR-17 Spot 84	110.05	9609.26	3.91	21.16	2.62	0.21	2.75	0.03	0.86	0.31	204.03	1.72	193.11	4.84	61.65	62.30	204.03	1.72	NA
0619-MR-17 Spot 288	83.95	6421.77	1.79	20.17	1.88	0.22	2.11	0.03	0.97	0.46	204.34	1.96	201.92	3.87	173.71	43.83	204.34	1.96	NA
0619-MR-17 Spot 32	187.51	60701.21	3.53	20.14	1.22	0.22	1.67	0.03	1.14	0.68	208.18	2.33	205.76	3.10	178.11	28.40	208.18	2.33	NA
0619-MR-17 Spot 315	497.59	27499.52	2.67	19.97	1.08	0.23	1.33	0.03	0.78	0.58	208.33	1.60	207.40	2.50	196.91	25.16	208.33	1.60	NA
0619-MR-17 Spot 202	307.08	62941.11	2.34	20.62	1.15	0.22	1.32	0.03	0.66	0.50	208.42	1.35	201.60	2.42	122.56	27.05	208.42	1.35	NA
0619-MR-17 Spot 195	119.41	200761.29	3.80	20.24	1.49	0.24	1.80	0.04	1.01	0.56	222.05	2.20	217.30	3.52	166.13	34.88	222.05	2.20	NA
0619-MR-17 Spot 145	124.29	7890.81	6.07	19.97	1.36	0.24	1.69	0.04	1.00	0.59	224.02	2.20	221.71	3.36	197.32	31.60	224.02	2.20	NA
0619-MR-17 Spot 198	93.55	8844.14	6.19	20.11	2.82	0.24	3.07	0.04	1.21	0.39	225.47	2.67	221.62	6.11	180.92	65.73	225.47	2.67	NA
0619-MR-17 Spot 148	80.20	12055.47	3.52	20.15	2.18	0.25	2.41	0.04	1.04	0.43	227.14	2.31	222.73	4.83	176.32	50.81	227.14	2.31	NA
0619-MR-17 Spot 283	44.12	5427.91	5.19	20.84	3.26	0.24	3.52	0.04	1.33	0.38	227.54	2.97	216.45	6.87	97.38	77.26	227.54	2.97	NA
0619-MR-17 Spot 40	508.18	36854.95	4.79	19.92	0.70	0.25	1.06	0.04	0.80	0.75	229.39	1.79	227.08	2.16	203.30	16.33	229.39	1.79	NA
0619-MR-17 Spot 93	553.99	128780.64	7.58	19.48	1.08	0.26	1.47	0.04	0.99	0.67	230.59	2.24	232.78	3.05	254.87	24.89	230.59	2.24	NA
0619-MR-17 Spot 241	703.72	24731.29	2.62	19.81	0.69	0.25	1.34	0.04	1.14	0.85	231.05	2.59	229.74	2.75	216.30	16.02	231.05	2.59	NA
0619-MR-17 Spot 188	19.66	10518.72	10.54	22.18	4.02	0.23	4.29	0.04	1.52	0.35	231.32	3.45	207.71	8.07	NA	NA	231.32	3.45	NA
0619-MR-17 Spot 141	916.07	1563917.28	40.16	19.62	1.00	0.26	1.54	0.04	1.17	0.76	231.38	2.66	232.03	3.20	238.65	23.03	231.38	2.66	NA
0619-MR-17 Spot 215	97.23	7211.37	0.69	20.86	1.78	0.24	1.98	0.04	0.87	0.44	232.64	1.99	220.72	3.94	95.46	42.21	232.64	1.99	NA
0619-MR-17 Spot 301	311.94	19821.17	2.79	19.89	1.33	0.25	1.49	0.04	0.66	0.44	232.76	1.51	230.41	3.07	206.54	30.94	232.76	1.51	NA
0619-MR-17 Spot 222	37.43	4022.38	5.67	19.83	3.99	0.26	4.20	0.04	1.30	0.31	232.79	2.98	231.08	8.68	213.67	92.48	232.79	2.98	NA
0619-MR-17 Spot 19	368.70	76758.36	2.26	19.41	0.78	0.26	1.16	0.04	0.86	0.74	233.82	1.96	236.46	2.45	262.79	17.99	233.82	1.96	NA
0619-MR-17 Spot 236	1030.87	4653139.05	3.07	19.45	0.68	0.27	1.35	0.04	1.16	0.86	242.95	2.77	244.46	2.92	259.01	15.63	242.95	2.77	NA
0619-MR-17 Spot 100	631.53	87754.94	1.54	19.71	0.74	0.28	1.32	0.04	1.09	0.83	249.59	2.67	247.53	2.89	228.03	17.10	249.59	2.67	NA
0619-MR-17 Spot 272	269.56	342241.52	1.69	20.12	1.24	0.27	1.66	0.04	1.10	0.66	252.82	2.72	245.85	3.61	179.82	28.86	252.82	2.72	NA
0619-MR-17 Spot 170	819.57	398335.10	8.34	19.17	0.88	0.29	1.35	0.04	1.03	0.76	256.16	2.58	259.68	3.10	291.58	20.07	256.16	2.58	NA
0619-MR-17 Spot 206	654.99	171903.09	2.76	19.70	0.75	0.28	1.19	0.04	0.92	0.78	256.91	2.32	254.19	2.67	229.21	17.34	256.91	2.32	NA

0619-MR-17 Spot 33	8.11	1073.45	4.16	24.13	17.83	0.24	17.92	0.04	1.74	0.10	265.30	4.53	218.39	35.23	NA	NA	265.30	4.53	NA
0619-MR-17 Spot 103	218.44	12432.51	2.53	19.75	1.18	0.29	1.55	0.04	1.01	0.65	266.71	2.63	262.30	3.59	223.02	27.27	266.71	2.63	NA
0619-MR-17 Spot 265	878.34	131502.64	1.95	19.66	0.76	0.30	1.44	0.04	1.23	0.85	267.87	3.22	264.40	3.36	233.80	17.50	267.87	3.22	NA
0619-MR-17 Spot 166	199.71	53115.74	3.90	19.39	1.18	0.30	1.39	0.04	0.74	0.53	269.54	1.96	269.13	3.29	265.60	27.10	269.54	1.96	NA
0619-MR-17 Spot 208	1230.04	64286.52	2.90	19.55	0.79	0.30	1.32	0.04	1.06	0.80	270.32	2.81	267.90	3.12	246.88	18.25	270.32	2.81	NA
0619-MR-17 Spot 167	482.47	54271.35	2.57	10.76	0.97	0.56	1.41	0.04	1.03	0.73	276.68	2.79	452.49	5.17	1485.03	18.41	276.68	2.79	NA
0619-MR-17 Spot 71	866.22	149871.30	1.17	19.34	0.84	0.32	1.51	0.05	1.25	0.83	286.84	3.52	285.14	3.75	271.13	19.18	286.84	3.52	NA
0619-MR-17 Spot 39	536.71	89671.47	7.24	13.49	1.08	0.47	1.49	0.05	1.03	0.69	289.37	2.92	390.52	4.83	1044.05	21.73	289.37	2.92	NA
0619-MR-17 Spot 209	153.01	101694.11	1.51	18.74	1.46	0.38	1.68	0.05	0.83	0.50	323.31	2.62	325.82	4.67	343.79	32.93	323.31	2.62	NA
0619-MR-17 Spot 69	246.78	32811.92	0.85	19.39	1.27	0.37	1.62	0.05	1.02	0.63	324.23	3.22	317.21	4.43	265.97	29.09	324.23	3.22	NA
0619-MR-17 Spot 65	117.05	644681.35	2.82	18.58	1.43	0.40	1.70	0.05	0.92	0.54	335.17	2.99	338.58	4.89	362.06	32.28	335.17	2.99	NA
0619-MR-17 Spot 212	444.65	45820.74	2.24	18.76	0.73	0.40	1.18	0.06	0.92	0.78	345.30	3.10	344.76	3.44	341.10	16.53	345.30	3.10	NA
0619-MR-17 Spot 43	389.45	187499.74	0.67	18.79	0.80	0.44	1.05	0.06	0.68	0.65	372.28	2.45	367.46	3.23	337.14	18.03	372.28	2.45	NA
0619-MR-17 Spot 191	292.91	115448.27	1.60	18.20	0.81	0.46	1.14	0.06	0.81	0.70	377.49	2.95	381.97	3.64	409.23	18.13	377.49	2.95	NA
0619-MR-17 Spot 107	279.98	34334.54	2.57	18.22	0.93	0.48	1.36	0.06	0.99	0.73	393.58	3.76	395.41	4.45	406.13	20.89	393.58	3.76	NA
0619-MR-17 Spot 252	79.14	7521.05	1.78	19.01	1.57	0.46	1.88	0.06	1.03	0.55	393.82	3.94	381.96	5.97	310.71	35.69	393.82	3.94	NA
0619-MR-17 Spot 312	291.64	156644.71	10.90	18.38	0.94	0.48	1.19	0.06	0.73	0.61	402.26	2.85	399.95	3.93	386.57	21.05	402.26	2.85	104.06
0619-MR-17 Spot 9	239.35	352961.75	3.38	18.41	0.86	0.48	1.24	0.06	0.89	0.72	402.27	3.46	399.39	4.09	382.77	19.39	402.27	3.46	105.10
0619-MR-17 Spot 193	236.13	126181.27	5.13	18.19	0.99	0.49	1.40	0.06	0.99	0.71	405.63	3.90	406.38	4.70	410.59	22.18	405.63	3.90	98.79
0619-MR-17 Spot 82	281.93	42653.94	1.41	18.29	1.04	0.49	1.39	0.06	0.93	0.67	405.82	3.64	404.74	4.64	398.55	23.27	405.82	3.64	101.83
0619-MR-17 Spot 111	97.85	24439.29	1.47	17.55	1.50	0.51	1.88	0.07	1.14	0.60	408.85	4.51	421.32	6.49	490.14	33.08	408.85	4.51	83.41
0619-MR-17 Spot 224	297.76	143959.42	5.91	17.76	0.74	0.53	1.09	0.07	0.80	0.73	427.36	3.29	432.98	3.83	462.98	16.46	427.36	3.29	92.31
0619-MR-17 Spot 294	504.19	140441.24	3.30	18.23	0.79	0.53	1.21	0.07	0.92	0.76	438.08	3.90	432.82	4.27	404.96	17.68	438.08	3.90	108.18
0619-MR-17 Spot 210	512.50	218157.64	1.68	17.88	0.65	0.57	0.99	0.07	0.75	0.75	456.98	3.29	455.61	3.62	448.66	14.41	456.98	3.29	101.86
0619-MR-17 Spot 292	483.78	376007.16	5.19	17.52	0.58	0.60	1.03	0.08	0.85	0.82	475.53	3.89	478.70	3.93	493.89	12.82	475.53	3.89	96.28
0619-MR-17 Spot 190	117.21	150513.44	6.74	17.32	1.08	0.67	1.33	0.08	0.78	0.58	520.60	3.88	520.24	5.42	518.61	23.75	520.60	3.88	100.38
0619-MR-17 Spot 159	276.89	950481.70	2.88	17.29	0.96	0.68	1.30	0.08	0.88	0.67	525.51	4.43	525.05	5.34	523.02	21.10	525.51	4.43	100.48
0619-MR-17 Spot 76	763.18	144028.09	1.61	16.99	0.66	0.70	1.41	0.09	1.25	0.88	536.93	6.43	541.53	5.94	560.92	14.48	536.93	6.43	95.72
0619-MR-17 Spot 178	865.51	206280.71	2.60	17.21	0.56	0.70	1.17	0.09	1.02	0.88	537.14	5.27	536.34	4.86	532.93	12.31	537.14	5.27	100.79
0619-MR-17 Spot 231	140.13	38871.41	1.64	17.46	1.10	0.69	1.45	0.09	0.95	0.66	538.27	4.92	531.21	6.00	500.99	24.13	538.27	4.92	107.44
0619-MR-17 Spot 179	211.16	170489.18	2.29	17.00	0.86	0.72	1.11	0.09	0.69	0.63	545.26	3.63	547.96	4.70	559.23	18.85	545.26	3.63	97.50
0619-MR-17 Spot 253	137.97	154153.33	1.78	17.16	0.91	0.72	1.37	0.09	1.02	0.75	552.95	5.43	550.25	5.81	539.11	19.87	552.95	5.43	102.57
0619-MR-17 Spot 174	147.79	81614.93	1.52	17.03	1.13	0.76	1.45	0.09	0.91	0.63	575.61	5.01	571.56	6.35	555.51	24.70	575.61	5.01	103.62
0619-MR-17 Spot 194	600.09	170042.92	5.48	16.44	0.53	0.81	0.93	0.10	0.77	0.83	592.90	4.37	601.11	4.24	632.21	11.38	592.90	4.37	93.78
0619-MR-17 Spot 218	270.83	238068.86	5.91	15.75	0.94	0.85	1.33	0.10	0.94	0.71	596.28	5.33	623.45	6.17	723.29	19.90	596.28	5.33	82.44
0619-MR-17 Spot 52	242.78	105585.10	1.42	16.76	0.74	0.80	1.18	0.10	0.91	0.77	599.08	5.21	597.19	5.31	590.07	16.10	599.08	5.21	101.53
0619-MR-17 Spot 87	751.93	212342.00	2.60	16.40	0.69	0.84	1.41	0.10	1.23	0.87	611.75	7.20	617.10	6.54	636.83	14.84	611.75	7.20	96.06
0619-MR-17 Spot 27	439.95	72290.74	1.42	16.41	0.66	0.85	1.01	0.10	0.76	0.75	624.26	4.53	626.71	4.72	635.58	14.27	624.26	4.53	98.22
0619-MR-17 Spot 229	85.50	18922.09	1.81	16.78	1.34	0.84	1.70	0.10	1.05	0.62	630.21	6.33	621.13	7.92	588.18	29.06	630.21	6.33	107.15
0619-MR-17 Spot 49	73.01	35501.24	3.61	14.34	1.10	1.53	1.51	0.16	1.03	0.68	953.35	9.15	943.16	9.27	919.45	22.65	919.45	22.65	103.69

0619-MR-17 Spot 57	53.84	17175.65	1.92	14.15	0.95	1.57	1.23	0.16	0.78	0.63	965.03	7.01	959.63	7.66	947.28	19.55	947.28	19.55	101.87
0619-MR-17 Spot 199	1308.69	361587.04	13.50	13.86	0.49	1.61	1.26	0.16	1.16	0.92	966.49	10.37	973.32	7.87	988.79	10.05	988.79	10.05	97.74
0619-MR-17 Spot 204	120.36	92722.52	3.06	13.77	0.92	1.72	1.27	0.17	0.87	0.69	1024.49	8.25	1017.32	8.14	1001.89	18.64	1001.89	18.64	102.26
0619-MR-17 Spot 182	239.63	307107.95	1.47	13.77	0.70	1.65	1.01	0.16	0.73	0.72	982.36	6.64	988.73	6.38	1002.87	14.20	1002.87	14.20	97.96
0619-MR-17 Spot 244	236.56	88954.17	0.55	13.72	0.76	1.69	1.11	0.17	0.82	0.73	1001.21	7.57	1003.71	7.11	1009.16	15.37	1009.16	15.37	99.21
0619-MR-17 Spot 118	626.82	64507.14	5.20	13.72	0.83	1.75	1.61	0.17	1.38	0.86	1033.59	13.14	1026.16	10.37	1010.32	16.81	1010.32	16.81	102.30
0619-MR-17 Spot 305	134.18	92075.34	4.62	13.71	0.87	1.73	1.26	0.17	0.92	0.73	1024.00	8.70	1020.07	8.13	1011.63	17.54	1011.63	17.54	101.22
0619-MR-17 Spot 164	359.14	196885.92	3.89	13.69	0.63	1.66	1.05	0.16	0.84	0.80	983.04	7.66	992.62	6.67	1013.84	12.87	1013.84	12.87	96.96
0619-MR-17 Spot 249	32.95	25040.70	2.85	13.66	1.30	1.73	1.69	0.17	1.08	0.64	1022.59	10.23	1021.34	10.91	1018.62	26.41	1018.62	26.41	100.39
0619-MR-17 Spot 269	76.56	86739.15	2.32	13.66	0.94	1.72	1.41	0.17	1.05	0.75	1013.51	9.88	1015.36	9.04	1019.33	18.95	1019.33	18.95	99.43
0619-MR-17 Spot 150	218.11	119636.75	3.34	13.64	0.60	1.74	1.03	0.17	0.83	0.81	1022.65	7.86	1022.35	6.61	1021.68	12.16	1021.68	12.16	100.10
0619-MR-17 Spot 18	298.02	5833975.59	8.91	13.63	0.66	1.72	0.85	0.17	0.54	0.63	1011.28	5.06	1015.02	5.47	1023.08	13.33	1023.08	13.33	98.85
0619-MR-17 Spot 158	72.76	31327.39	1.42	13.63	0.94	1.79	1.25	0.18	0.82	0.66	1053.25	8.01	1043.52	8.16	1023.18	19.06	1023.18	19.06	102.94
0619-MR-17 Spot 92	192.55	165046.51	2.18	13.62	0.71	1.84	1.00	0.18	0.70	0.70	1075.07	6.95	1058.51	6.57	1024.50	14.41	1024.50	14.41	104.94
0619-MR-17 Spot 281	178.49	183615.46	2.64	13.62	0.67	1.77	1.05	0.17	0.81	0.77	1036.50	7.76	1032.88	6.82	1025.22	13.59	1025.22	13.59	101.10
0619-MR-17 Spot 37	220.96	212491.58	3.31	13.59	0.75	1.74	1.11	0.17	0.82	0.74	1020.68	7.75	1023.17	7.15	1028.50	15.10	1028.50	15.10	99.24
0619-MR-17 Spot 168	168.98	150233.00	3.01	13.57	0.66	1.81	0.97	0.18	0.71	0.73	1056.93	6.91	1048.78	6.31	1031.82	13.26	1031.82	13.26	102.43
0619-MR-17 Spot 161	221.28	71702.26	2.18	13.55	0.59	1.82	1.03	0.18	0.84	0.82	1060.68	8.24	1052.54	6.73	1035.68	11.88	1035.68	11.88	102.41
0619-MR-17 Spot 250	127.48	50584.33	3.78	13.53	0.87	1.80	1.18	0.18	0.81	0.68	1051.55	7.83	1047.21	7.73	1038.12	17.49	1038.12	17.49	101.29
0619-MR-17 Spot 41	164.94	88872.26	1.95	13.52	0.70	1.83	1.00	0.18	0.72	0.72	1061.73	7.05	1054.51	6.58	1039.57	14.09	1039.57	14.09	102.13
0619-MR-17 Spot 102	158.89	53084.79	4.51	13.48	0.73	1.82	1.22	0.18	0.97	0.80	1056.04	9.49	1052.55	7.98	1045.35	14.72	1045.35	14.72	101.02
0619-MR-17 Spot 235	201.90	159777.78	6.25	13.48	0.75	1.82	1.26	0.18	1.01	0.80	1056.26	9.79	1052.94	8.24	1046.06	15.22	1046.06	15.22	100.98
0619-MR-17 Spot 254	66.14	128354.43	2.17	13.46	1.03	1.84	1.32	0.18	0.83	0.62	1063.26	8.09	1058.52	8.70	1048.76	20.86	1048.76	20.86	101.38
0619-MR-17 Spot 177	353.94	261776.58	4.34	13.41	0.63	1.82	1.07	0.18	0.87	0.81	1053.11	8.45	1054.17	7.03	1056.39	12.64	1056.39	12.64	99.69
0619-MR-17 Spot 7	483.40	511528.90	4.22	13.36	0.53	1.86	0.91	0.18	0.74	0.81	1069.74	7.29	1067.82	6.02	1063.92	10.74	1063.92	10.74	100.55
0619-MR-17 Spot 228	295.02	6075201.62	0.85	13.36	0.78	1.80	1.10	0.17	0.77	0.70	1038.36	7.39	1046.70	7.16	1064.17	15.66	1064.17	15.66	97.58
0619-MR-17 Spot 132	374.66	1144415.15	1.73	13.32	0.58	1.82	0.89	0.18	0.68	0.76	1044.75	6.52	1052.77	5.84	1069.48	11.66	1069.48	11.66	97.69
0619-MR-17 Spot 213	354.15	166766.02	3.34	13.32	0.55	1.82	1.05	0.18	0.90	0.85	1045.19	8.66	1053.32	6.91	1070.22	11.11	1070.22	11.11	97.66
0619-MR-17 Spot 214	170.22	164082.32	3.54	13.29	0.74	1.88	1.04	0.18	0.72	0.70	1074.84	7.15	1074.74	6.88	1074.57	14.93	1074.57	14.93	100.03
0619-MR-17 Spot 285	110.46	859342.09	2.03	13.26	0.82	1.95	1.21	0.19	0.89	0.74	1110.08	9.11	1099.52	8.15	1078.70	16.47	1078.70	16.47	102.91
0619-MR-17 Spot 95	167.36	180181.49	2.38	13.22	0.73	1.86	1.32	0.18	1.10	0.83	1058.73	10.78	1067.20	8.75	1084.56	14.65	1084.56	14.65	97.62
0619-MR-17 Spot 101	523.59	26469021.56	4.68	13.22	0.63	1.84	1.20	0.18	1.03	0.85	1048.66	9.93	1060.42	7.92	1084.71	12.62	1084.71	12.62	96.68
0619-MR-17 Spot 259	122.39	126687.51	2.18	13.18	0.82	1.89	1.24	0.18	0.94	0.75	1068.84	9.23	1076.17	8.26	1091.07	16.39	1091.07	16.39	97.96
0619-MR-17 Spot 2	53.25	14955.89	3.03	13.15	1.06	1.93	1.45	0.18	0.99	0.68	1087.67	9.88	1090.33	9.67	1095.60	21.17	1095.60	21.17	99.28
0619-MR-17 Spot 59	430.05	436413.65	3.75	13.13	0.55	1.94	0.89	0.18	0.69	0.78	1091.78	6.95	1094.25	5.93	1099.12	11.05	1099.12	11.05	99.33
0619-MR-17 Spot 175	239.03	345372.52	1.69	13.13	0.70	1.79	1.19	0.17	0.97	0.81	1016.68	9.10	1043.20	7.78	1099.16	13.97	1099.16	13.97	92.50
0619-MR-17 Spot 133	138.71	75349.00	3.35	12.88	0.85	2.02	1.15	0.19	0.78	0.67	1113.31	7.95	1121.09	7.83	1136.21	16.94	1136.21	16.94	97.98
0619-MR-17 Spot 303	308.26	395381.89	2.09	12.86	0.62	2.09	0.86	0.19	0.59	0.69	1147.15	6.23	1144.53	5.87	1139.56	12.24	1139.56	12.24	100.67
0619-MR-17 Spot 293	304.73	1104072.61	2.59	12.80	0.74	2.11	1.12	0.20	0.83	0.75	1153.51	8.79	1152.08	7.69	1149.35	14.75	1149.35	14.75	100.36
0619-MR-17 Spot 255	310.18	171409.69	3.40	12.74	0.73	2.03	1.01	0.19	0.70	0.69	1108.67	7.10	1125.74	6.88	1158.80	14.54	1158.80	14.54	95.67

0619-MR-17 Spot 61	249.67	1138520.62	2.26	12.69	0.62	2.13	1.12	0.20	0.93	0.84	1152.43	9.87	1157.01	7.73	1165.58	12.22	1165.58	12.22	98.87
0619-MR-17 Spot 211	171.99	239811.26	5.72	12.67	0.79	2.17	1.18	0.20	0.88	0.74	1172.63	9.43	1171.56	8.23	1169.61	15.71	1169.61	15.71	100.26
0619-MR-17 Spot 185	283.77	235145.48	3.69	12.67	0.59	2.18	1.04	0.20	0.85	0.82	1175.24	9.17	1173.47	7.23	1170.22	11.78	1170.22	11.78	100.43
0619-MR-17 Spot 276	377.83	240720.65	3.76	12.55	0.62	2.19	0.97	0.20	0.75	0.77	1172.80	8.07	1178.25	6.79	1188.28	12.19	1188.28	12.19	98.70
0619-MR-17 Spot 54	831.74	580710.38	98.21	12.50	0.58	2.17	1.30	0.20	1.16	0.89	1156.36	12.28	1170.29	9.02	1196.14	11.51	1196.14	11.51	96.67
0619-MR-17 Spot 296	161.89	47054.84	2.90	12.44	0.69	2.06	1.16	0.19	0.94	0.81	1101.90	9.51	1137.09	7.96	1204.91	13.58	1204.91	13.58	91.45
0619-MR-17 Spot 295	207.76	245773.93	1.99	12.38	0.69	2.22	1.15	0.20	0.92	0.80	1172.32	9.83	1187.65	8.04	1215.68	13.62	1215.68	13.62	96.43
0619-MR-17 Spot 115	44.77	32786.48	4.94	12.35	1.17	2.35	1.44	0.21	0.84	0.58	1232.13	9.44	1227.55	10.25	1219.48	22.94	1219.48	22.94	101.04
0619-MR-17 Spot 248	121.64	60052.29	1.77	12.27	0.59	2.34	0.89	0.21	0.67	0.75	1218.75	7.44	1223.87	6.35	1232.94	11.59	1232.94	11.59	98.85
0619-MR-17 Spot 124	220.87	201879.01	2.38	12.25	0.57	2.41	0.94	0.21	0.74	0.79	1252.09	8.44	1245.95	6.73	1235.37	11.29	1235.37	11.29	101.35
0619-MR-17 Spot 264	175.41	249241.07	1.30	12.21	0.63	2.38	1.15	0.21	0.96	0.84	1234.65	10.75	1237.54	8.20	1242.55	12.35	1242.55	12.35	99.36
0619-MR-17 Spot 258	315.47	97927.55	3.22	12.16	0.97	2.12	1.72	0.19	1.42	0.83	1105.30	14.41	1155.06	11.84	1249.64	18.94	1249.64	18.94	88.45
0619-MR-17 Spot 306	39.96	343912.42	1.04	11.95	1.03	2.64	1.46	0.23	1.04	0.71	1326.57	12.45	1310.75	10.77	1284.94	20.05	1284.94	20.05	103.24
0619-MR-17 Spot 227	272.93	86046.35	2.02	11.94	0.63	2.49	1.12	0.22	0.93	0.83	1260.94	10.62	1269.98	8.11	1285.30	12.19	1285.30	12.19	98.11
0619-MR-17 Spot 24	95.49	73200.17	2.97	11.72	0.90	2.66	1.23	0.23	0.83	0.68	1313.92	9.90	1316.99	9.06	1321.97	17.49	1321.97	17.49	99.39
0619-MR-17 Spot 60	348.44	412767.02	1.98	11.37	0.61	2.89	1.01	0.24	0.81	0.80	1379.42	10.02	1379.89	7.62	1380.61	11.65	1380.61	11.65	99.91
0619-MR-17 Spot 79	358.44	389844.01	8.02	11.29	0.69	2.84	1.03	0.23	0.76	0.74	1349.90	9.31	1367.40	7.73	1394.83	13.22	1394.83	13.22	96.78
0619-MR-17 Spot 138	104.30	107769.83	1.61	11.20	0.75	3.01	1.20	0.24	0.94	0.78	1408.88	11.87	1409.32	9.16	1409.97	14.39	1409.97	14.39	99.92
0619-MR-17 Spot 23	411.82	6510706.87	3.54	11.08	0.54	2.83	0.88	0.23	0.69	0.79	1321.30	8.26	1363.08	6.59	1429.18	10.34	1429.18	10.34	92.45
0619-MR-17 Spot 173	317.11	401791.90	2.43	11.02	0.45	3.03	0.87	0.24	0.74	0.86	1399.33	9.32	1415.89	6.61	1440.88	8.55	1440.88	8.55	97.12
0619-MR-17 Spot 75	131.50	104417.36	3.10	11.01	0.56	3.30	1.06	0.26	0.89	0.85	1508.76	12.03	1481.41	8.24	1442.43	10.73	1442.43	10.73	104.60
0619-MR-17 Spot 274	167.06	117198.48	1.86	11.00	0.65	3.14	1.02	0.25	0.79	0.77	1439.70	10.14	1441.44	7.86	1443.99	12.42	1443.99	12.42	99.70
0619-MR-17 Spot 237	243.49	257245.11	3.57	10.99	0.77	3.11	1.12	0.25	0.82	0.73	1429.18	10.54	1435.58	8.64	1445.05	14.63	1445.05	14.63	98.90
0619-MR-17 Spot 136	62.61	93907.16	3.16	10.97	0.85	3.14	1.33	0.25	1.02	0.77	1439.41	13.11	1443.29	10.21	1449.00	16.21	1449.00	16.21	99.34
0619-MR-17 Spot 121	272.10	537183.71	2.49	10.85	0.75	3.10	1.23	0.24	0.97	0.79	1406.38	12.31	1432.03	9.46	1470.34	14.33	1470.34	14.33	95.65
0619-MR-17 Spot 119	717.07	660300.97	2.51	10.84	0.65	3.08	1.45	0.24	1.30	0.89	1398.55	16.29	1427.89	11.11	1471.89	12.32	1471.89	12.32	95.02
0619-MR-17 Spot 28	472.75	228082.72	2.13	10.81	0.59	3.21	0.98	0.25	0.78	0.80	1447.61	10.11	1459.79	7.56	1477.55	11.12	1477.55	11.12	97.97
0619-MR-17 Spot 11	234.42	287834.75	1.44	10.80	0.60	3.36	0.93	0.26	0.71	0.76	1506.65	9.53	1495.37	7.25	1479.40	11.32	1479.40	11.32	101.84
0619-MR-17 Spot 120	223.90	137678.83	2.52	10.66	0.66	3.30	1.01	0.26	0.77	0.76	1464.68	10.08	1480.76	7.90	1503.85	12.49	1503.85	12.49	97.39
0619-MR-17 Spot 260	1169.08	5636169.79	17.56	10.56	0.63	3.41	1.49	0.26	1.34	0.90	1496.45	17.95	1506.56	11.67	1520.77	11.95	1520.77	11.95	98.40
0619-MR-17 Spot 246	150.91	139337.56	2.25	10.27	0.51	3.63	0.98	0.27	0.84	0.86	1543.37	11.56	1556.27	7.83	1573.81	9.52	1573.81	9.52	98.07
0619-MR-17 Spot 234	161.49	68293.33	1.37	10.01	0.67	3.31	1.17	0.24	0.96	0.82	1386.76	12.02	1482.46	9.13	1622.20	12.38	1622.20	12.38	85.49
0619-MR-17 Spot 3	873.31	795075.95	4.01	10.00	0.52	4.01	1.33	0.29	1.23	0.92	1647.28	17.85	1636.98	10.83	1623.74	9.65	1623.74	9.65	101.45
0619-MR-17 Spot 156	307.05	116069.87	8.61	9.96	0.50	4.03	0.74	0.29	0.54	0.73	1647.85	7.90	1640.20	6.02	1630.39	9.35	1630.39	9.35	101.07
0619-MR-17 Spot 152	348.50	259369.30	2.38	9.92	0.66	4.17	0.99	0.30	0.75	0.75	1690.42	11.09	1667.39	8.15	1638.50	12.22	1638.50	12.22	103.17
0619-MR-17 Spot 85	140.30	231205.71	1.76	9.91	0.59	4.00	1.02	0.29	0.84	0.82	1628.73	12.05	1633.54	8.30	1639.72	10.87	1639.72	10.87	99.33
0619-MR-17 Spot 131	243.66	1776778.50	3.63	9.85	0.52	4.08	0.94	0.29	0.79	0.83	1651.32	11.48	1651.22	7.71	1651.07	9.66	1651.07	9.66	100.01
0619-MR-17 Spot 123	306.96	180009.50	3.92	9.79	0.76	4.02	1.05	0.29	0.73	0.69	1619.58	10.42	1638.67	8.57	1663.23	14.11	1663.23	14.11	97.38
0619-MR-17 Spot 226	117.07	165775.80	6.00	9.76	0.64	4.28	1.03	0.30	0.81	0.79	1707.16	12.17	1689.93	8.50	1668.59	11.80	1668.59	11.80	102.31
0619-MR-17 Spot 304	557.78	169533.04	3.87	9.74	0.57	4.15	0.93	0.29	0.73	0.79	1657.89	10.71	1664.31	7.61	1672.41	10.59	1672.41	10.59	99.13

0619-MR-17 Spot 310	524.74	1312455.27	3.37	9.57	0.58	4.17	0.86	0.29	0.64	0.74	1637.98	9.28	1667.37	7.07	1704.56	10.66	1704.56	10.66	96.09
0619-MR-17 Spot 77	182.42	90833.53	1.23	9.49	0.55	4.34	0.94	0.30	0.77	0.81	1684.56	11.35	1700.68	7.77	1720.58	10.06	1720.58	10.06	97.91
0619-MR-17 Spot 238	335.92	2829554.14	5.46	9.45	0.57	4.29	0.90	0.29	0.70	0.77	1662.02	10.20	1691.10	7.40	1727.34	10.45	1727.34	10.45	96.22
0619-MR-17 Spot 290	54.08	92405675.61	4.07	9.30	0.89	4.54	1.24	0.31	0.87	0.70	1724.01	13.13	1738.92	10.32	1756.90	16.20	1756.90	16.20	98.13
0619-MR-17 Spot 263	397.19	169029.17	3.47	9.17	0.78	4.82	1.33	0.32	1.08	0.81	1791.79	16.97	1787.75	11.21	1783.02	14.14	1783.02	14.14	100.49
0619-MR-17 Spot 31	177.74	469511.47	1.52	9.03	0.83	4.37	1.48	0.29	1.22	0.82	1622.62	17.45	1706.15	12.19	1810.29	15.16	1810.29	15.16	89.63
0619-MR-17 Spot 35	67.16	32504.22	2.07	8.96	0.60	5.19	0.90	0.34	0.67	0.75	1873.97	10.97	1851.25	7.69	1825.80	10.87	1825.80	10.87	102.64
0619-MR-17 Spot 96	250.71	92783.14	2.91	8.96	0.95	4.27	1.30	0.28	0.88	0.68	1579.19	12.39	1687.96	10.70	1825.85	17.29	1825.85	17.29	86.49
0619-MR-17 Spot 105	57.36	133648.91	1.19	8.94	0.87	4.90	1.33	0.32	1.01	0.76	1778.94	15.72	1802.19	11.22	1829.17	15.69	1829.17	15.69	97.25
0619-MR-17 Spot 181	312.86	683711.22	2.07	8.84	0.51	5.13	0.97	0.33	0.83	0.85	1834.08	13.18	1841.19	8.24	1849.23	9.17	1849.23	9.17	99.18
0619-MR-17 Spot 104	362.54	273200.16	3.54	8.83	0.63	5.04	1.03	0.32	0.82	0.79	1802.97	12.88	1825.88	8.74	1852.09	11.35	1852.09	11.35	97.35
0619-MR-17 Spot 30	211.54	112557.92	2.18	8.65	0.63	5.47	1.05	0.34	0.85	0.80	1901.77	13.94	1895.55	9.04	1888.73	11.26	1888.73	11.26	100.69
0619-MR-17 Spot 50	433.05	193830.41	2.86	8.23	0.62	5.88	0.97	0.35	0.75	0.77	1941.06	12.62	1958.57	8.46	1977.10	11.03	1977.10	11.03	98.18
0619-MR-17 Spot 307	109.86	133351.76	2.45	8.03	0.66	6.35	1.07	0.37	0.84	0.79	2028.85	14.62	2024.75	9.35	2020.56	11.64	2020.56	11.64	100.41
0619-MR-17 Spot 22	177.79	202833.81	1.82	7.87	0.46	6.63	0.73	0.38	0.56	0.77	2070.85	9.91	2063.70	6.41	2056.56	8.18	2056.56	8.18	100.69
0619-MR-17 Spot 113	225.29	331742.29	3.72	7.79	2.78	6.90	4.30	0.39	3.28	0.76	2123.83	59.35	2098.67	38.13	2074.07	48.91	2074.07	48.91	102.40
0619-MR-17 Spot 287	206.61	175229.98	9.10	7.69	0.56	7.13	1.00	0.40	0.83	0.83	2158.83	15.25	2127.82	8.93	2097.97	9.86	2097.97	9.86	102.90
0619-MR-17 Spot 17	239.88	171760.99	3.01	7.46	0.62	7.21	0.97	0.39	0.75	0.77	2124.55	13.53	2137.49	8.67	2149.94	10.87	2149.94	10.87	98.82
0619-MR-17 Spot 153	243.44	239643.91	1.06	5.94	0.48	11.11	0.97	0.48	0.85	0.87	2521.53	17.64	2532.02	9.07	2540.43	8.11	2540.43	8.11	99.26
0619-MR-17 Spot 233	390.62	508592.21	0.75	5.56	0.61	12.32	1.08	0.50	0.89	0.83	2600.15	19.06	2629.32	10.12	2651.83	10.05	2651.83	10.05	98.05
0619-MR-17 Spot 15	771.16	36319992.29	2.19	5.49	0.63	12.80	1.28	0.51	1.11	0.87	2653.56	24.18	2664.77	12.02	2673.28	10.38	2673.28	10.38	99.26
0619-MR-17 Spot 302	100.56	185524.14	1.77	5.36	0.48	13.51	0.94	0.53	0.81	0.86	2723.28	18.01	2716.24	8.92	2711.01	7.96	2711.01	7.96	100.45
0619-MR-17 Spot 270	249.51	173995.33	1.36	5.30	0.65	13.53	1.09	0.52	0.88	0.80	2700.16	19.40	2717.25	10.34	2729.96	10.71	2729.96	10.71	98.91

Sample 0619-MR-22

0619-MR-22 Spot 207	142.80	9895.14	3.81	21.57	1.76	0.13	1.99	0.02	0.92	0.46	130.96	1.19	125.10	2.34	15.24	42.39	130.96	1.19	104.68
0619-MR-22 Spot 165	265.93	23686.95	1.64	20.96	1.19	0.14	1.48	0.02	0.88	0.59	131.54	1.15	129.06	1.80	83.69	28.33	131.54	1.15	101.92
0619-MR-22 Spot 218	186.36	14293.75	3.15	21.23	2.39	0.13	2.64	0.02	1.12	0.42	131.69	1.46	127.69	3.17	53.86	57.07	131.69	1.46	103.13
0619-MR-22 Spot 187	126.66	13905.92	3.09	19.97	1.97	0.14	2.19	0.02	0.95	0.44	131.76	1.24	135.25	2.77	197.03	45.72	131.76	1.24	97.42
0619-MR-22 Spot 51	167.80	13779.57	3.15	21.68	1.42	0.13	1.69	0.02	0.92	0.55	131.87	1.20	125.34	1.99	3.14	34.09	131.87	1.20	105.21
0619-MR-22 Spot 170	147.17	8981.88	3.16	21.28	2.35	0.13	2.50	0.02	0.82	0.33	131.95	1.08	127.61	2.99	47.48	56.25	131.95	1.08	103.40
0619-MR-22 Spot 219	104.06	6651.82	3.05	21.74	2.68	0.13	2.82	0.02	0.85	0.30	132.03	1.11	125.14	3.31	NA	NA	132.03	1.11	105.51
0619-MR-22 Spot 133	146.24	16080.35	3.25	21.45	1.78	0.13	1.96	0.02	0.82	0.42	132.09	1.07	126.81	2.34	28.86	42.74	132.09	1.07	104.17
0619-MR-22 Spot 210	191.00	10421.80	2.49	20.69	1.56	0.14	1.76	0.02	0.81	0.46	132.13	1.06	131.19	2.17	114.23	36.84	132.13	1.06	100.71
0619-MR-22 Spot 241	88.54	2590.58	2.62	24.40	3.30	0.12	3.48	0.02	1.10	0.32	132.16	1.45	112.34	3.70	NA	NA	132.16	1.45	117.64
0619-MR-22 Spot 260	212.13	23895.78	3.04	20.84	1.64	0.14	1.83	0.02	0.81	0.44	132.22	1.06	130.38	2.24	97.06	38.85	132.22	1.06	101.41
0619-MR-22 Spot 216	111.93	12553.85	4.20	19.95	2.20	0.14	2.37	0.02	0.87	0.37	132.63	1.14	136.23	3.02	199.42	51.20	132.63	1.14	97.36
0619-MR-22 Spot 222	121.98	9635.13	3.51	21.70	1.98	0.13	2.24	0.02	1.05	0.47	132.71	1.38	126.00	2.66	1.34	47.73	132.71	1.38	105.32
0619-MR-22 Spot 104	131.49	9483.58	2.62	21.33	2.43	0.13	2.55	0.02	0.79	0.31	132.81	1.03	128.12	3.07	42.13	58.09	132.81	1.03	103.65

0619-MR-22 Spot 157	129.68	10893.52	3.39	20.91	2.16	0.14	2.39	0.02	1.02	0.43	132.89	1.34	130.62	2.92	89.55	51.15	132.89	1.34	101.74
0619-MR-22 Spot 269	102.44	7082.43	2.15	20.57	2.28	0.14	2.52	0.02	1.06	0.42	133.10	1.39	132.85	3.13	128.41	53.75	133.10	1.39	100.19
0619-MR-22 Spot 297	159.56	5901.20	3.04	21.58	1.83	0.13	2.05	0.02	0.92	0.45	133.23	1.22	127.10	2.45	14.07	44.11	133.23	1.22	104.82
0619-MR-22 Spot 139	123.61	16364.03	3.05	19.46	1.87	0.15	2.14	0.02	1.04	0.49	133.27	1.38	140.12	2.80	257.66	42.94	133.27	1.38	95.12
0619-MR-22 Spot 156	324.59	57405.69	3.19	20.40	1.00	0.14	1.27	0.02	0.79	0.62	133.41	1.04	134.19	1.60	148.16	23.41	133.41	1.04	99.41
0619-MR-22 Spot 240	171.60	157801.69	3.82	20.06	1.49	0.14	1.77	0.02	0.95	0.54	133.42	1.26	136.30	2.26	186.67	34.74	133.42	1.26	97.89
0619-MR-22 Spot 12	272.63	10982.43	2.21	21.18	1.13	0.14	1.36	0.02	0.76	0.56	133.51	1.00	129.63	1.66	59.09	27.07	133.51	1.00	102.99
0619-MR-22 Spot 147	71.13	13774.49	4.59	21.01	2.32	0.14	2.48	0.02	0.89	0.36	133.57	1.18	130.66	3.04	77.90	54.99	133.57	1.18	102.23
0619-MR-22 Spot 299	78.75	3029.51	3.48	23.16	4.22	0.12	4.32	0.02	0.91	0.21	133.59	1.20	119.22	4.86	NA	NA	133.59	1.20	112.05
0619-MR-22 Spot 14	271.64	115230.79	2.42	20.84	1.17	0.14	1.49	0.02	0.93	0.62	133.63	1.23	131.71	1.84	97.31	27.62	133.63	1.23	101.45
0619-MR-22 Spot 272	130.64	10528.56	3.69	20.58	2.49	0.14	2.67	0.02	0.95	0.36	133.65	1.26	133.28	3.33	126.57	58.64	133.65	1.26	100.28
0619-MR-22 Spot 3	110.72	155747.10	3.55	20.10	2.39	0.14	2.63	0.02	1.10	0.42	133.78	1.46	136.42	3.36	182.56	55.70	133.78	1.46	98.07
0619-MR-22 Spot 217	141.94	8259.67	3.68	21.66	2.78	0.13	2.97	0.02	1.05	0.35	133.83	1.39	127.21	3.55	5.18	67.00	133.83	1.39	105.21
0619-MR-22 Spot 265	128.02	85645.96	3.28	21.01	1.73	0.14	1.94	0.02	0.87	0.45	134.24	1.16	131.31	2.39	78.57	41.14	134.24	1.16	102.23
0619-MR-22 Spot 38	172.55	42589.06	2.74	20.50	1.97	0.14	2.09	0.02	0.69	0.33	134.45	0.91	134.56	2.63	136.53	46.34	134.45	0.91	99.92
0619-MR-22 Spot 202	201.98	38574.38	3.79	20.35	1.42	0.14	1.67	0.02	0.87	0.52	134.55	1.16	135.60	2.11	153.97	33.19	134.55	1.16	99.23
0619-MR-22 Spot 152	122.89	11027.68	5.13	22.13	2.49	0.13	2.63	0.02	0.85	0.32	134.57	1.13	125.31	3.10	NA	NA	134.57	1.13	107.39
0619-MR-22 Spot 224	168.61	21878.86	2.74	20.11	1.18	0.14	1.38	0.02	0.71	0.52	134.59	0.95	137.11	1.76	180.88	27.41	134.59	0.95	98.16
0619-MR-22 Spot 108	122.08	15130.77	2.39	20.37	1.90	0.14	2.10	0.02	0.90	0.43	134.63	1.20	135.50	2.66	150.73	44.43	134.63	1.20	99.36
0619-MR-22 Spot 53	146.27	7833.14	3.56	21.84	2.78	0.13	2.98	0.02	1.07	0.36	134.66	1.43	126.99	3.56	NA	NA	134.66	1.43	106.04
0619-MR-22 Spot 271	127.16	8886.87	3.99	19.56	2.41	0.15	2.58	0.02	0.94	0.36	134.68	1.25	140.79	3.40	245.14	55.46	134.68	1.25	95.66
0619-MR-22 Spot 155	106.52	5900.48	3.85	21.33	2.41	0.14	2.62	0.02	1.03	0.39	134.76	1.38	129.94	3.20	42.74	57.58	134.76	1.38	103.71
0619-MR-22 Spot 255	140.20	5025.73	4.25	22.18	1.52	0.13	1.79	0.02	0.95	0.53	134.77	1.27	125.25	2.11	NA	NA	134.77	1.27	107.60
0619-MR-22 Spot 252	115.15	12324.25	3.77	21.73	2.66	0.13	2.79	0.02	0.85	0.31	134.78	1.14	127.69	3.35	NA	NA	134.78	1.14	105.55
0619-MR-22 Spot 262	72.12	5819.73	4.23	21.19	2.85	0.14	3.06	0.02	1.12	0.37	134.81	1.50	130.78	3.75	58.09	67.84	134.81	1.50	103.08
0619-MR-22 Spot 57	107.09	6868.76	3.52	21.50	2.47	0.14	2.62	0.02	0.88	0.34	134.82	1.18	128.99	3.18	22.98	59.22	134.82	1.18	104.51
0619-MR-22 Spot 89	131.81	1186042.76	2.93	20.56	1.95	0.14	2.11	0.02	0.79	0.38	134.88	1.06	134.58	2.65	129.25	45.92	134.88	1.06	100.22
0619-MR-22 Spot 112	68.97	11616.98	4.01	20.11	2.78	0.15	2.91	0.02	0.84	0.29	135.03	1.12	137.53	3.74	180.90	64.83	135.03	1.12	98.18
0619-MR-22 Spot 287	105.07	11184.08	3.86	21.56	2.41	0.14	2.62	0.02	1.03	0.39	135.06	1.38	128.87	3.17	16.32	57.79	135.06	1.38	104.80
0619-MR-22 Spot 96	139.75	19546.74	3.47	20.22	2.07	0.14	2.29	0.02	0.97	0.43	135.23	1.30	137.02	2.93	168.03	48.40	135.23	1.30	98.70
0619-MR-22 Spot 52	144.70	9863.48	3.97	21.49	2.06	0.14	2.25	0.02	0.90	0.40	135.26	1.20	129.48	2.73	24.75	49.36	135.26	1.20	104.46
0619-MR-22 Spot 114	100.54	61370.51	3.17	19.91	2.07	0.15	2.39	0.02	1.20	0.50	135.33	1.60	139.10	3.11	203.99	48.07	135.33	1.60	97.29
0619-MR-22 Spot 153	110.91	5088.77	3.94	20.86	2.06	0.14	2.31	0.02	1.04	0.45	135.35	1.39	133.22	2.88	95.31	48.86	135.35	1.39	101.60
0619-MR-22 Spot 90	118.07	11223.85	4.89	20.81	1.66	0.14	1.89	0.02	0.90	0.48	135.38	1.21	133.52	2.36	100.51	39.21	135.38	1.21	101.39
0619-MR-22 Spot 315	141.81	16086.95	3.77	20.54	2.09	0.14	2.19	0.02	0.63	0.29	135.45	0.85	135.23	2.77	131.37	49.22	135.45	0.85	100.16
0619-MR-22 Spot 134	103.77	23717.94	3.87	19.84	2.29	0.15	2.56	0.02	1.14	0.44	135.52	1.53	139.77	3.34	212.52	53.09	135.52	1.53	96.96
0619-MR-22 Spot 212	58.29	1733.50	4.68	23.51	2.65	0.12	2.82	0.02	0.98	0.35	135.52	1.31	119.18	3.18	NA	NA	135.52	1.31	113.71
0619-MR-22 Spot 28	134.37	6833.37	3.67	21.14	1.76	0.14	2.05	0.02	1.05	0.51	135.53	1.41	131.73	2.53	63.83	41.88	135.53	1.41	102.88
0619-MR-22 Spot 87	93.74	69508.54	3.75	20.58	2.02	0.14	2.22	0.02	0.93	0.42	135.81	1.25	135.36	2.82	127.56	47.56	135.81	1.25	100.33
0619-MR-22 Spot 121	126.47	47925.65	3.91	19.98	1.98	0.15	2.26	0.02	1.08	0.48	135.96	1.46	139.28	2.94	196.30	46.05	135.96	1.46	97.61

0619-MR-22 Spot 263	119.55	13864.97	3.18	20.70	2.14	0.14	2.43	0.02	1.16	0.48	135.98	1.56	134.79	3.07	113.86	50.40	135.98	1.56	100.88
0619-MR-22 Spot 19	169.42	22326.51	3.25	21.23	1.39	0.14	1.66	0.02	0.90	0.55	136.03	1.22	131.64	2.04	53.11	33.11	136.03	1.22	103.33
0619-MR-22 Spot 178	121.64	6733.89	4.36	20.92	2.45	0.14	3.00	0.02	1.73	0.58	136.06	2.33	133.49	3.75	87.98	58.04	136.06	2.33	101.93
0619-MR-22 Spot 211	242.37	18750.81	3.42	20.74	1.16	0.14	1.42	0.02	0.82	0.58	136.07	1.10	134.58	1.79	108.39	27.47	136.07	1.10	101.11
0619-MR-22 Spot 195	98.06	2843.55	4.09	22.84	2.31	0.13	2.54	0.02	1.04	0.41	136.08	1.40	122.94	2.94	NA	NA	136.08	1.40	110.69
0619-MR-22 Spot 136	45.93	2857.61	4.34	21.05	5.24	0.14	5.38	0.02	1.20	0.22	136.09	1.62	132.75	6.69	73.45	124.66	136.09	1.62	102.51
0619-MR-22 Spot 95	245.19	138995.61	2.45	20.98	1.23	0.14	1.40	0.02	0.68	0.48	136.11	0.91	133.18	1.75	81.33	29.15	136.11	0.91	102.20
0619-MR-22 Spot 166	352.50	20662.55	3.87	20.93	0.92	0.14	1.24	0.02	0.83	0.67	136.13	1.12	133.49	1.55	86.81	21.84	136.13	1.12	101.98
0619-MR-22 Spot 100	101.04	21175.24	3.63	20.02	2.30	0.15	2.63	0.02	1.28	0.49	136.16	1.72	139.23	3.42	191.99	53.42	136.16	1.72	97.79
0619-MR-22 Spot 281	121.85	23300.12	3.00	20.84	2.07	0.14	2.32	0.02	1.05	0.45	136.26	1.41	134.20	2.91	97.94	48.95	136.26	1.41	101.53
0619-MR-22 Spot 266	77.57	8366.21	4.12	21.41	2.38	0.14	2.58	0.02	1.01	0.39	136.35	1.36	130.90	3.17	33.04	56.96	136.35	1.36	104.16
0619-MR-22 Spot 141	187.21	24243.45	3.62	18.88	2.02	0.16	2.22	0.02	0.93	0.42	136.45	1.25	147.34	3.05	326.35	45.86	136.45	1.25	92.61
0619-MR-22 Spot 23	72.79	2885.41	3.25	22.72	2.79	0.13	3.00	0.02	1.11	0.37	136.57	1.50	123.99	3.50	NA	NA	136.57	1.50	110.15
0619-MR-22 Spot 43	119.41	22871.55	4.30	21.51	1.57	0.14	1.84	0.02	0.96	0.52	136.64	1.30	130.61	2.25	22.39	37.60	136.64	1.30	104.61
0619-MR-22 Spot 189	137.98	6899.40	6.41	21.06	1.82	0.14	2.04	0.02	0.91	0.45	136.69	1.23	133.28	2.54	72.84	43.31	136.69	1.23	102.56
0619-MR-22 Spot 85	232.17	133719.64	4.11	20.07	1.22	0.15	1.56	0.02	0.97	0.62	136.80	1.31	139.51	2.03	185.89	28.49	136.80	1.31	98.06
0619-MR-22 Spot 42	109.27	22520.59	2.89	20.54	2.19	0.14	2.77	0.02	1.69	0.61	136.80	2.29	136.51	3.54	131.46	51.55	136.80	2.29	100.21
0619-MR-22 Spot 145	80.46	58423.50	4.25	19.56	2.87	0.15	2.94	0.02	0.66	0.22	136.92	0.89	143.00	3.92	245.10	66.03	136.92	0.89	95.75
0619-MR-22 Spot 245	85.62	4830.54	3.91	21.41	2.48	0.14	2.75	0.02	1.19	0.43	136.96	1.62	131.46	3.40	33.17	59.43	136.96	1.62	104.18
0619-MR-22 Spot 184	65.14	4487.84	4.57	25.02	2.78	0.12	2.96	0.02	1.02	0.34	136.99	1.38	113.53	3.18	NA	NA	136.99	1.38	120.67
0619-MR-22 Spot 37	75.30	5581.21	4.00	21.47	1.96	0.14	2.22	0.02	1.05	0.47	137.02	1.42	131.18	2.74	26.68	47.09	137.02	1.42	104.45
0619-MR-22 Spot 36	67.24	29955.72	3.05	19.67	3.02	0.15	3.21	0.02	1.07	0.33	137.43	1.46	142.78	4.27	232.50	69.81	137.43	1.46	96.26
0619-MR-22 Spot 2	79.93	5282.66	5.06	21.99	3.17	0.14	3.38	0.02	1.17	0.35	137.50	1.59	128.70	4.08	NA	NA	137.50	1.59	106.84
0619-MR-22 Spot 254	108.39	8644.12	4.06	21.09	2.53	0.14	2.67	0.02	0.86	0.32	137.51	1.16	133.81	3.35	68.69	60.26	137.51	1.16	102.76
0619-MR-22 Spot 244	56.86	61632.73	3.96	20.68	2.98	0.14	3.26	0.02	1.31	0.40	137.51	1.78	136.32	4.15	115.66	70.33	137.51	1.78	100.87
0619-MR-22 Spot 284	73.59	24882.13	4.98	20.61	2.69	0.14	2.91	0.02	1.10	0.38	137.63	1.50	136.87	3.72	123.71	63.36	137.63	1.50	100.55
0619-MR-22 Spot 293	154.74	12131.78	5.55	15.22	3.17	0.20	3.35	0.02	1.08	0.32	137.63	1.47	181.21	5.56	795.68	66.46	137.63	1.47	75.95
0619-MR-22 Spot 39	124.50	11618.56	3.58	20.49	1.84	0.15	2.02	0.02	0.84	0.41	137.68	1.14	137.66	2.60	137.34	43.28	137.68	1.14	100.01
0619-MR-22 Spot 235	44.88	10670.41	4.82	19.78	3.51	0.15	3.77	0.02	1.36	0.36	137.75	1.85	142.32	5.00	219.08	81.28	137.75	1.85	96.79
0619-MR-22 Spot 200	134.15	10463.14	2.65	21.22	1.73	0.14	1.91	0.02	0.82	0.43	137.89	1.11	133.42	2.39	54.62	41.25	137.89	1.11	103.35
0619-MR-22 Spot 86	111.29	7450.57	3.78	20.94	1.75	0.14	2.00	0.02	0.97	0.48	137.90	1.32	135.08	2.54	85.92	41.62	137.90	1.32	102.08
0619-MR-22 Spot 73	103.17	8923.90	3.75	21.15	2.14	0.14	2.27	0.02	0.76	0.34	137.92	1.04	133.88	2.85	62.94	51.02	137.92	1.04	103.01
0619-MR-22 Spot 13	150.14	31095.05	2.95	20.23	1.65	0.15	1.91	0.02	0.97	0.51	137.98	1.33	139.62	2.49	167.56	38.45	137.98	1.33	98.83
0619-MR-22 Spot 273	80.52	12517.23	6.10	21.74	1.76	0.14	1.89	0.02	0.69	0.37	137.99	0.95	130.50	2.32	NA	NA	137.99	0.95	105.74
0619-MR-22 Spot 78	230.44	30592.83	2.93	20.20	1.42	0.15	1.65	0.02	0.84	0.51	138.02	1.14	139.82	2.15	170.45	33.17	138.02	1.14	98.71
0619-MR-22 Spot 16	64.90	26083.42	4.23	19.55	2.18	0.15	2.41	0.02	1.03	0.43	138.29	1.40	144.44	3.24	246.71	50.16	138.29	1.40	95.74
0619-MR-22 Spot 177	61.59	17629.55	4.33	19.83	2.13	0.15	2.34	0.02	0.96	0.41	138.30	1.32	142.54	3.12	213.75	49.45	138.30	1.32	97.03
0619-MR-22 Spot 259	99.47	7596.36	4.27	21.49	2.62	0.14	2.78	0.02	0.93	0.34	138.44	1.28	132.37	3.45	24.75	62.83	138.44	1.28	104.59
0619-MR-22 Spot 91	86.25	6761.37	3.77	21.43	2.15	0.14	2.48	0.02	1.24	0.50	138.45	1.70	132.72	3.09	31.47	51.51	138.45	1.70	104.31
0619-MR-22 Spot 225	139.06	14663.21	3.97	20.56	2.06	0.15	2.21	0.02	0.81	0.37	138.55	1.11	138.03	2.85	129.02	48.45	138.55	1.11	100.38

0619-MR-22 Spot 137	99.95	16897.90	4.17	22.80	2.38	0.13	2.62	0.02	1.08	0.41	138.56	1.48	125.31	3.08	NA	NA	138.56	1.48	110.58
0619-MR-22 Spot 92	392.76	42119.23	2.25	20.57	1.11	0.15	1.48	0.02	0.98	0.66	138.61	1.34	138.02	1.91	127.94	26.16	138.61	1.34	100.43
0619-MR-22 Spot 21	72.09	9421.09	4.35	21.06	2.43	0.14	2.65	0.02	1.05	0.40	138.68	1.45	135.08	3.35	72.19	57.84	138.68	1.45	102.67
0619-MR-22 Spot 150	127.01	10181.69	3.66	21.28	2.01	0.14	2.19	0.02	0.89	0.40	138.78	1.22	133.89	2.75	47.95	47.94	138.78	1.22	103.65
0619-MR-22 Spot 59	87.57	23791.35	3.85	20.25	2.51	0.15	2.76	0.02	1.15	0.42	138.80	1.59	140.26	3.61	164.88	58.55	138.80	1.59	98.96
0619-MR-22 Spot 25	55.15	6802.14	4.61	22.64	2.97	0.13	3.16	0.02	1.08	0.34	138.81	1.49	126.35	3.76	NA	NA	138.81	1.49	109.86
0619-MR-22 Spot 26	94.09	6270.25	2.99	22.49	1.92	0.13	2.30	0.02	1.27	0.55	139.05	1.74	127.36	2.75	NA	NA	139.05	1.74	109.17
0619-MR-22 Spot 203	69.05	9697.05	4.36	22.82	2.22	0.13	2.53	0.02	1.21	0.48	139.08	1.67	125.62	2.99	NA	NA	139.08	1.67	110.72
0619-MR-22 Spot 124	104.48	11332.82	4.88	20.21	2.48	0.15	2.85	0.02	1.40	0.49	139.17	1.93	140.88	3.75	169.78	57.95	139.17	1.93	98.79
0619-MR-22 Spot 64	58.68	4142.82	5.59	22.23	3.48	0.14	3.64	0.02	1.05	0.29	139.18	1.45	128.85	4.40	NA	NA	139.18	1.45	108.01
0619-MR-22 Spot 22	92.42	21200.06	4.51	20.34	1.90	0.15	2.14	0.02	0.99	0.46	139.29	1.36	140.14	2.81	154.50	44.56	139.29	1.36	99.40
0619-MR-22 Spot 44	43.34	2275.54	4.27	21.96	3.23	0.14	3.42	0.02	1.11	0.33	139.29	1.53	130.42	4.18	NA	NA	139.29	1.53	106.80
0619-MR-22 Spot 198	148.06	22900.93	3.51	20.36	1.60	0.15	1.84	0.02	0.91	0.50	139.47	1.26	140.19	2.41	152.54	37.48	139.47	1.26	99.48
0619-MR-22 Spot 46	107.33	5514.73	3.35	17.49	3.55	0.17	3.71	0.02	1.05	0.28	139.80	1.45	161.84	5.54	497.90	78.32	139.80	1.45	86.38
0619-MR-22 Spot 288	149.05	7154.33	2.64	21.11	1.96	0.14	2.13	0.02	0.83	0.39	139.98	1.15	135.99	2.70	66.84	46.53	139.98	1.15	102.93
0619-MR-22 Spot 105	185.67	151835.09	3.14	20.48	1.65	0.15	1.79	0.02	0.69	0.39	140.08	0.96	139.97	2.34	138.16	38.81	140.08	0.96	100.08
0619-MR-22 Spot 27	87.41	7692.55	4.18	20.99	2.99	0.14	3.10	0.02	0.83	0.27	140.26	1.15	137.01	3.97	80.99	70.90	140.26	1.15	102.37
0619-MR-22 Spot 79	47.88	20588.30	4.95	18.78	3.13	0.16	3.55	0.02	1.67	0.47	140.36	2.32	152.05	5.01	338.31	70.99	140.36	2.32	92.31
0619-MR-22 Spot 115	62.42	3884.55	5.02	21.33	4.71	0.14	4.80	0.02	0.93	0.19	140.70	1.29	135.35	6.08	42.44	112.62	140.70	1.29	103.95
0619-MR-22 Spot 125	100.39	36938.32	4.12	21.50	1.98	0.14	2.23	0.02	1.02	0.46	141.27	1.43	134.82	2.81	22.72	47.55	141.27	1.43	104.78
0619-MR-22 Spot 146	46.85	3804.31	4.40	22.37	4.95	0.14	5.08	0.02	1.14	0.22	141.29	1.60	129.97	6.19	NA	NA	141.29	1.60	108.71
0619-MR-22 Spot 48	98.67	28725.05	3.18	20.55	2.30	0.15	2.54	0.02	1.06	0.42	142.22	1.49	141.58	3.35	130.88	54.21	142.22	1.49	100.45
0619-MR-22 Spot 277	50.67	11720.35	3.78	22.39	2.93	0.14	3.13	0.02	1.10	0.35	142.84	1.55	131.20	3.85	NA	NA	142.84	1.55	108.87
0619-MR-22 Spot 180	107.75	21627.96	1.75	21.34	2.13	0.14	2.33	0.02	0.95	0.41	142.96	1.34	137.31	3.00	40.76	50.99	142.96	1.34	104.11
0619-MR-22 Spot 99	130.70	12236.72	2.27	20.55	1.94	0.15	2.22	0.02	1.08	0.49	143.82	1.54	143.04	2.96	130.20	45.57	143.82	1.54	100.54
0619-MR-22 Spot 238	161.81	177220.86	1.70	20.47	1.46	0.15	1.68	0.02	0.84	0.50	144.10	1.20	143.82	2.25	139.27	34.19	144.10	1.20	100.19
0619-MR-22 Spot 201	126.90	8513.79	2.55	22.11	2.31	0.14	2.48	0.02	0.91	0.37	144.75	1.30	134.43	3.12	NA	NA	144.75	1.30	107.68
0619-MR-22 Spot 101	919.61	139174.76	3.42	19.91	0.85	0.16	1.31	0.02	1.00	0.76	145.06	1.43	148.56	1.81	204.75	19.72	145.06	1.43	97.65
0619-MR-22 Spot 138	232.89	159785.13	0.97	20.50	1.34	0.15	1.68	0.02	1.01	0.60	146.09	1.47	145.50	2.27	135.91	31.39	146.09	1.47	100.40
0619-MR-22 Spot 206	186.00	20878.69	2.02	20.70	1.53	0.15	1.76	0.02	0.87	0.49	146.31	1.26	144.41	2.37	113.29	36.06	146.31	1.26	101.32
0619-MR-22 Spot 148	180.49	10432.20	1.83	20.96	1.92	0.15	2.11	0.02	0.88	0.41	146.67	1.27	143.11	2.82	84.35	45.68	146.67	1.27	102.49
0619-MR-22 Spot 205	81.73	3698.94	2.57	22.11	2.62	0.14	2.76	0.02	0.88	0.32	146.91	1.28	136.34	3.52	NA	NA	146.91	1.28	107.76
0619-MR-22 Spot 196	89.53	1107.97	3.72	25.75	3.42	0.12	3.50	0.02	0.75	0.21	147.13	1.09	118.27	3.91	NA	NA	147.13	1.09	124.39
0619-MR-22 Spot 174	148.63	16469.71	2.09	18.52	1.66	0.17	1.82	0.02	0.75	0.41	147.24	1.09	161.07	2.71	369.62	37.34	147.24	1.09	91.41
0619-MR-22 Spot 221	114.04	80133.80	2.43	20.20	2.01	0.16	2.12	0.02	0.70	0.33	147.24	1.01	148.62	2.94	170.54	46.87	147.24	1.01	99.08
0619-MR-22 Spot 303	231.24	102702.52	2.24	20.16	1.32	0.16	1.51	0.02	0.73	0.48	147.26	1.06	148.89	2.09	174.87	30.78	147.26	1.06	98.91
0619-MR-22 Spot 192	166.86	205975.52	2.67	19.88	1.67	0.16	1.85	0.02	0.79	0.43	147.53	1.15	151.11	2.59	207.65	38.70	147.53	1.15	97.63
0619-MR-22 Spot 61	59.07	11446.98	3.93	21.64	2.81	0.15	3.09	0.02	1.29	0.42	147.67	1.89	139.76	4.04	7.39	67.63	147.67	1.89	105.66
0619-MR-22 Spot 268	80.77	21105.67	2.76	21.49	2.58	0.15	2.76	0.02	1.00	0.36	148.20	1.47	141.16	3.64	24.38	61.81	148.20	1.47	104.99
0619-MR-22 Spot 231	245.54	71083.87	2.19	20.40	1.36	0.16	1.62	0.02	0.87	0.54	148.21	1.28	148.20	2.23	148.01	31.93	148.21	1.28	100.01

0619-MR-22 Spot 113	173.17	11055.33	2.47	21.55	1.84	0.15	1.99	0.02	0.75	0.38	148.22	1.11	140.81	2.62	17.73	44.20	148.22	1.11	105.26
0619-MR-22 Spot 143	344.99	168685.97	1.83	20.20	1.31	0.16	1.51	0.02	0.77	0.51	148.25	1.13	149.61	2.11	171.07	30.47	148.25	1.13	99.10
0619-MR-22 Spot 230	280.50	22997.04	1.25	20.40	1.03	0.16	1.24	0.02	0.69	0.56	148.41	1.02	148.40	1.72	148.16	24.19	148.41	1.02	100.01
0619-MR-22 Spot 69	106.91	5625.85	2.07	20.51	2.93	0.16	3.19	0.02	1.25	0.39	148.56	1.83	147.77	4.38	135.14	68.93	148.56	1.83	100.53
0619-MR-22 Spot 70	202.83	4057.41	1.92	12.90	7.17	0.25	7.29	0.02	1.32	0.18	148.61	1.94	225.85	14.77	1133.35	142.97	148.61	1.94	65.80
0619-MR-22 Spot 83	234.84	86942.10	1.67	20.20	1.25	0.16	1.55	0.02	0.92	0.59	148.86	1.35	150.18	2.16	170.95	29.10	148.86	1.35	99.12
0619-MR-22 Spot 182	171.75	84754.00	1.87	20.60	1.27	0.16	1.49	0.02	0.77	0.52	149.01	1.13	147.60	2.04	125.10	29.95	149.01	1.13	100.95
0619-MR-22 Spot 257	157.45	10956.04	2.24	20.59	1.66	0.16	1.80	0.02	0.71	0.40	149.09	1.05	147.75	2.48	126.31	38.94	149.09	1.05	100.91
0619-MR-22 Spot 193	114.67	19438.76	2.03	21.47	1.43	0.15	1.69	0.02	0.91	0.54	149.11	1.34	142.12	2.24	26.88	34.21	149.11	1.34	104.92
0619-MR-22 Spot 111	605.64	81481.03	2.08	20.32	0.88	0.16	1.34	0.02	1.01	0.75	149.30	1.49	149.73	1.87	156.57	20.70	149.30	1.49	99.71
0619-MR-22 Spot 197	779.44	36642.13	2.09	20.21	0.74	0.16	1.35	0.02	1.13	0.83	149.31	1.66	150.49	1.89	169.22	17.37	149.31	1.66	99.21
0619-MR-22 Spot 66	202.26	8281.56	1.75	20.49	1.97	0.16	2.06	0.02	0.60	0.29	149.41	0.88	148.69	2.85	137.10	46.29	149.41	0.88	100.49
0619-MR-22 Spot 204	124.73	7282.08	1.68	21.13	2.95	0.15	3.11	0.02	0.96	0.31	149.45	1.42	144.55	4.19	64.78	70.35	149.45	1.42	103.39
0619-MR-22 Spot 171	97.17	11945.50	2.27	20.98	2.28	0.15	2.58	0.02	1.20	0.46	149.52	1.77	145.56	3.49	81.51	54.12	149.52	1.77	102.72
0619-MR-22 Spot 291	122.46	6580.25	2.68	22.26	1.81	0.15	2.04	0.02	0.94	0.46	149.56	1.39	137.74	2.62	NA	NA	149.56	1.39	108.58
0619-MR-22 Spot 181	155.65	32776.86	1.90	19.80	1.37	0.16	1.64	0.02	0.91	0.55	149.80	1.35	153.87	2.34	216.97	31.64	149.80	1.35	97.36
0619-MR-22 Spot 49	203.17	39887.58	2.34	20.97	1.44	0.15	1.72	0.02	0.94	0.55	149.85	1.39	145.93	2.33	82.58	34.09	149.85	1.39	102.69
0619-MR-22 Spot 168	140.19	7177.17	2.06	21.84	2.03	0.15	2.29	0.02	1.07	0.46	149.86	1.58	140.52	3.01	NA	NA	149.86	1.58	106.64
0619-MR-22 Spot 117	746.43	92615.86	1.43	20.14	0.83	0.16	1.34	0.02	1.06	0.79	149.88	1.57	151.55	1.89	177.88	19.39	149.88	1.57	98.89
0619-MR-22 Spot 179	261.98	61709.08	1.34	20.66	0.99	0.16	1.24	0.02	0.74	0.60	150.07	1.10	148.15	1.71	117.54	23.44	150.07	1.10	101.29
0619-MR-22 Spot 267	140.38	9624.02	1.75	20.92	1.61	0.16	1.83	0.02	0.88	0.48	150.10	1.31	146.51	2.50	88.92	38.14	150.10	1.31	102.45
0619-MR-22 Spot 32	170.92	24082.31	2.44	20.41	1.39	0.16	1.61	0.02	0.80	0.50	150.17	1.19	149.96	2.24	146.68	32.69	150.17	1.19	100.14
0619-MR-22 Spot 183	33.63	7518.53	3.43	21.50	4.02	0.15	4.21	0.02	1.26	0.30	150.27	1.87	142.99	5.62	23.71	96.48	150.27	1.87	105.09
0619-MR-22 Spot 242	174.41	5309.77	2.78	21.83	1.81	0.15	1.99	0.02	0.84	0.42	150.34	1.24	141.02	2.62	NA	NA	150.34	1.24	106.61
0619-MR-22 Spot 214	710.04	79672.92	3.13	19.85	0.92	0.16	1.31	0.02	0.93	0.71	150.43	1.39	154.12	1.87	211.23	21.22	150.43	1.39	97.61
0619-MR-22 Spot 84	247.10	12177.56	1.09	20.45	1.26	0.16	1.56	0.02	0.92	0.59	150.44	1.37	149.92	2.17	141.74	29.55	150.44	1.37	100.35
0619-MR-22 Spot 127	148.73	31930.94	2.16	19.95	1.42	0.16	1.70	0.02	0.95	0.56	150.46	1.41	153.46	2.42	199.96	32.89	150.46	1.41	98.05
0619-MR-22 Spot 279	159.54	10226.44	1.57	21.87	1.88	0.15	2.08	0.02	0.89	0.43	150.46	1.32	140.88	2.74	NA	NA	150.46	1.32	106.80
0619-MR-22 Spot 302	279.48	37978.27	1.36	20.29	1.34	0.16	1.59	0.02	0.86	0.54	150.61	1.29	151.23	2.23	160.98	31.24	150.61	1.29	99.59
0619-MR-22 Spot 310	75.39	4368.95	2.19	21.15	2.98	0.15	3.24	0.02	1.27	0.39	150.62	1.89	145.45	4.39	62.01	71.02	150.62	1.89	103.55
0619-MR-22 Spot 81	174.44	8477.15	2.07	20.80	2.59	0.16	2.75	0.02	0.90	0.33	150.69	1.35	147.81	3.78	101.86	61.31	150.69	1.35	101.95
0619-MR-22 Spot 158	150.29	45031.29	2.07	20.04	1.54	0.16	1.70	0.02	0.72	0.42	150.72	1.07	153.03	2.42	189.03	35.90	150.72	1.07	98.49
0619-MR-22 Spot 256	704.92	150782.12	1.25	20.21	0.74	0.16	1.27	0.02	1.03	0.81	150.77	1.54	151.92	1.79	169.79	17.18	150.77	1.54	99.25
0619-MR-22 Spot 311	337.06	8841.58	1.82	21.01	1.75	0.16	1.90	0.02	0.75	0.39	150.86	1.12	146.57	2.59	77.75	41.50	150.86	1.12	102.92
0619-MR-22 Spot 97	95.11	5817.84	3.95	21.55	1.79	0.15	2.00	0.02	0.90	0.45	151.12	1.34	143.42	2.68	17.72	42.92	151.12	1.34	105.37
0619-MR-22 Spot 107	69.04	3823.06	3.73	21.35	2.12	0.15	2.30	0.02	0.89	0.39	151.16	1.33	144.69	3.10	39.96	50.78	151.16	1.33	104.47
0619-MR-22 Spot 227	98.06	8175.89	2.58	19.64	1.87	0.17	2.12	0.02	0.99	0.47	151.36	1.48	156.54	3.07	235.78	43.16	151.36	1.48	96.69
0619-MR-22 Spot 60	117.26	8143.12	2.94	20.80	2.54	0.16	2.73	0.02	1.01	0.37	151.38	1.51	148.48	3.77	102.36	59.95	151.38	1.51	101.95
0619-MR-22 Spot 261	411.66	82957.07	2.07	20.33	1.02	0.16	1.52	0.02	1.13	0.74	151.48	1.69	151.73	2.15	155.61	23.88	151.48	1.69	99.84
0619-MR-22 Spot 194	90.54	7415.38	1.76	21.41	2.74	0.15	3.08	0.02	1.40	0.45	151.54	2.09	144.66	4.15	33.21	65.75	151.54	2.09	104.76

0619-MR-22 Spot 223	58.14	8190.84	2.22	20.18	2.80	0.16	2.97	0.02	0.98	0.33	151.54	1.46	152.84	4.21	173.01	65.41	151.54	1.46	99.15
0619-MR-22 Spot 159	100.45	12468.40	2.22	20.53	2.47	0.16	2.57	0.02	0.71	0.28	151.60	1.07	150.47	3.59	132.69	58.01	151.60	1.07	100.75
0619-MR-22 Spot 275	120.74	87406.81	2.33	21.20	1.61	0.15	1.87	0.02	0.95	0.51	151.63	1.43	146.09	2.54	57.04	38.29	151.63	1.43	103.79
0619-MR-22 Spot 161	145.19	7263.16	2.12	20.75	1.58	0.16	1.80	0.02	0.86	0.48	151.71	1.29	149.13	2.50	108.16	37.35	151.71	1.29	101.74
0619-MR-22 Spot 251	84.52	5664.44	3.10	20.73	2.90	0.16	3.07	0.02	1.01	0.33	151.72	1.52	149.23	4.26	109.91	68.44	151.72	1.52	101.67
0619-MR-22 Spot 213	165.24	7869.29	1.79	21.68	1.54	0.15	1.89	0.02	1.10	0.58	151.76	1.65	143.15	2.53	2.62	37.07	151.76	1.65	106.02
0619-MR-22 Spot 308	114.91	11381.68	3.00	20.62	2.00	0.16	2.27	0.02	1.07	0.47	151.78	1.60	150.04	3.16	122.57	47.16	151.78	1.60	101.16
0619-MR-22 Spot 274	253.62	1042964.27	1.96	20.79	1.35	0.16	1.68	0.02	0.99	0.59	151.84	1.48	148.92	2.32	102.75	32.02	151.84	1.48	101.96
0619-MR-22 Spot 162	122.57	6928.13	2.89	20.30	2.14	0.16	2.35	0.02	0.97	0.41	152.02	1.46	152.44	3.32	158.97	50.06	152.02	1.46	99.73
0619-MR-22 Spot 160	64.74	8971.07	2.55	20.04	2.26	0.16	2.41	0.02	0.85	0.35	152.06	1.28	154.35	3.46	189.72	52.54	152.06	1.28	98.51
0619-MR-22 Spot 6	150.61	47796.83	1.95	20.38	1.73	0.16	2.03	0.02	1.05	0.52	152.11	1.58	152.01	2.86	150.41	40.60	152.11	1.58	100.07
0619-MR-22 Spot 94	45.57	2108.80	2.91	23.07	8.77	0.14	8.87	0.02	1.30	0.15	152.22	1.96	135.47	11.25	NA	NA	152.22	1.96	112.37
0619-MR-22 Spot 282	58.78	10540.01	2.86	19.48	3.20	0.17	3.41	0.02	1.18	0.35	152.24	1.77	158.63	5.00	255.11	73.50	152.24	1.77	95.97
0619-MR-22 Spot 119	83.60	15410.78	2.31	21.76	2.56	0.15	2.78	0.02	1.10	0.40	152.36	1.65	143.23	3.72	NA	NA	152.36	1.65	106.37
0619-MR-22 Spot 50	159.28	11541.40	2.27	19.99	1.84	0.16	2.00	0.02	0.78	0.39	152.42	1.17	155.02	2.87	194.93	42.77	152.42	1.17	98.32
0619-MR-22 Spot 298	232.91	61718.01	2.47	19.93	1.32	0.17	1.60	0.02	0.90	0.56	152.46	1.35	155.50	2.30	202.08	30.66	152.46	1.35	98.05
0619-MR-22 Spot 149	77.48	10852.15	3.62	21.15	2.82	0.16	2.98	0.02	0.94	0.31	152.48	1.41	147.19	4.08	62.87	67.26	152.48	1.41	103.59
0619-MR-22 Spot 144	120.88	15763.97	2.12	19.98	2.27	0.17	2.45	0.02	0.91	0.37	152.48	1.38	155.16	3.52	196.20	52.74	152.48	1.38	98.28
0619-MR-22 Spot 312	93.25	57813.12	1.61	19.88	2.09	0.17	2.35	0.02	1.06	0.45	152.52	1.60	155.93	3.39	208.06	48.56	152.52	1.60	97.81
0619-MR-22 Spot 163	67.71	18499.11	2.30	20.85	2.63	0.16	2.80	0.02	0.96	0.34	152.53	1.45	149.18	3.88	96.19	62.22	152.53	1.45	102.25
0619-MR-22 Spot 185	48.95	4357.31	2.83	19.22	3.32	0.17	3.44	0.02	0.90	0.26	152.63	1.36	160.96	5.13	285.34	76.01	152.63	1.36	94.83
0619-MR-22 Spot 294	91.08	98983.00	2.69	20.21	2.11	0.16	2.32	0.02	0.96	0.41	152.68	1.45	153.69	3.31	169.19	49.32	152.68	1.45	99.35
0619-MR-22 Spot 215	58.23	12751.73	3.20	19.41	2.62	0.17	2.73	0.02	0.75	0.27	152.81	1.13	159.71	4.03	263.32	60.27	152.81	1.13	95.68
0619-MR-22 Spot 18	207.04	9520.08	1.74	20.47	1.43	0.16	1.62	0.02	0.76	0.47	153.02	1.15	152.23	2.29	139.92	33.61	153.02	1.15	100.52
0619-MR-22 Spot 208	174.33	41438.55	1.72	20.11	1.23	0.16	1.50	0.02	0.86	0.57	153.11	1.30	154.83	2.15	181.20	28.59	153.11	1.30	98.89
0619-MR-22 Spot 15	43.60	4839.25	4.82	22.31	3.44	0.15	3.66	0.02	1.27	0.35	153.15	1.92	140.63	4.81	NA	NA	153.15	1.92	108.90
0619-MR-22 Spot 250	69.07	5425.30	2.37	21.83	2.53	0.15	2.70	0.02	0.95	0.35	153.17	1.43	143.53	3.61	NA	NA	153.17	1.43	106.72
0619-MR-22 Spot 169	97.98	84284.10	2.46	19.94	1.93	0.17	2.20	0.02	1.06	0.48	153.19	1.60	156.11	3.19	200.68	44.91	153.19	1.60	98.13
0619-MR-22 Spot 123	74.96	12744.17	3.77	19.97	2.20	0.17	2.47	0.02	1.12	0.45	153.21	1.70	155.93	3.58	197.50	51.23	153.21	1.70	98.25
0619-MR-22 Spot 292	40.09	2391.88	3.27	24.29	3.45	0.14	3.54	0.02	0.76	0.22	153.22	1.15	129.90	4.31	NA	NA	153.22	1.15	117.95
0619-MR-22 Spot 296	123.79	16984.01	2.70	21.33	1.67	0.16	1.87	0.02	0.84	0.45	153.23	1.27	146.69	2.56	42.15	39.99	153.23	1.27	104.46
0619-MR-22 Spot 186	45.69	8475.83	4.29	20.82	3.39	0.16	3.60	0.02	1.19	0.33	153.33	1.80	150.13	5.02	100.01	80.29	153.33	1.80	102.13
0619-MR-22 Spot 173	95.16	71311.58	2.42	18.77	2.56	0.18	2.73	0.02	0.96	0.35	153.36	1.45	165.25	4.17	339.19	57.95	153.36	1.45	92.80
0619-MR-22 Spot 110	75.09	6548.67	2.41	22.08	2.48	0.15	2.71	0.02	1.09	0.40	153.49	1.65	142.26	3.59	NA	NA	153.49	1.65	107.90
0619-MR-22 Spot 283	62.91	26808.99	3.12	19.34	2.45	0.17	2.60	0.02	0.85	0.33	153.69	1.29	161.14	3.87	272.00	56.26	153.69	1.29	95.38
0619-MR-22 Spot 45	35.51	6018.39	2.73	20.68	3.57	0.16	3.79	0.02	1.25	0.33	153.98	1.91	151.65	5.33	115.36	84.29	153.98	1.91	101.54
0619-MR-22 Spot 55	98.87	48908.08	2.22	20.19	2.32	0.17	2.54	0.02	1.02	0.40	154.14	1.55	155.20	3.65	171.42	54.22	154.14	1.55	99.32
0619-MR-22 Spot 228	55.02	35667.98	3.20	19.17	2.44	0.17	2.69	0.02	1.14	0.42	154.23	1.73	162.97	4.05	291.98	55.74	154.23	1.73	94.63
0619-MR-22 Spot 233	93.04	16852.57	3.32	20.29	2.04	0.16	2.31	0.02	1.08	0.47	154.24	1.64	154.64	3.31	160.87	47.77	154.24	1.64	99.74
0619-MR-22 Spot 142	52.63	4416.49	3.51	21.16	4.31	0.16	4.44	0.02	1.04	0.23	154.33	1.59	148.80	6.14	61.54	102.81	154.33	1.59	103.72

0619-MR-22 Spot 295	100.25	16682.25	2.78	17.82	2.16	0.19	2.35	0.02	0.93	0.39	154.67	1.42	174.73	3.78	455.62	48.05	154.67	1.42	88.52
0619-MR-22 Spot 301	45.89	37256.35	1.47	20.12	3.29	0.17	3.50	0.02	1.20	0.34	154.92	1.84	156.46	5.08	179.80	76.67	154.92	1.84	99.02
0619-MR-22 Spot 68	116.58	43633.48	2.62	20.76	1.85	0.16	2.10	0.02	0.98	0.47	155.18	1.50	152.23	2.96	106.56	43.82	155.18	1.50	101.94
0619-MR-22 Spot 17	71.62	7757.81	2.36	20.96	2.33	0.16	2.51	0.02	0.92	0.37	155.22	1.41	150.91	3.52	83.78	55.35	155.22	1.41	102.85
0619-MR-22 Spot 62	381.46	21925.27	2.12	20.96	1.18	0.16	1.46	0.02	0.85	0.58	155.26	1.30	150.98	2.05	84.22	28.11	155.26	1.30	102.84
0619-MR-22 Spot 8	376.84	349128.24	1.82	20.38	1.09	0.16	1.35	0.02	0.80	0.59	155.36	1.24	155.04	1.95	150.15	25.50	155.36	1.24	100.21
0619-MR-22 Spot 314	40.11	33749.81	4.31	21.95	3.41	0.15	3.55	0.02	0.97	0.27	155.56	1.49	144.89	4.79	NA	NA	155.56	1.49	107.36
0619-MR-22 Spot 234	434.34	32701.33	1.51	20.68	1.09	0.16	1.50	0.02	1.03	0.69	155.62	1.59	153.21	2.14	116.00	25.77	155.62	1.59	101.58
0619-MR-22 Spot 209	44.72	7392.93	2.47	21.71	2.28	0.16	2.46	0.02	0.91	0.37	155.70	1.40	146.49	3.35	NA	NA	155.70	1.40	106.29
0619-MR-22 Spot 35	81.47	12153.37	2.70	15.58	5.29	0.22	5.40	0.02	1.05	0.20	155.70	1.62	198.79	9.74	746.77	111.88	155.70	1.62	78.32
0619-MR-22 Spot 65	129.14	10592.57	4.06	21.33	2.20	0.16	2.34	0.02	0.80	0.34	155.76	1.23	148.95	3.25	41.93	52.67	155.76	1.23	104.57
0619-MR-22 Spot 9	110.42	8988.97	3.36	21.00	1.67	0.16	1.99	0.02	1.08	0.54	155.87	1.66	151.23	2.79	79.03	39.57	155.87	1.66	103.07
0619-MR-22 Spot 243	513.67	60987.86	1.38	20.52	0.98	0.16	1.40	0.02	1.00	0.71	156.04	1.54	154.68	2.01	133.93	23.13	156.04	1.54	100.88
0619-MR-22 Spot 77	151.97	17500.26	4.06	20.90	2.00	0.16	2.19	0.02	0.90	0.41	156.09	1.39	152.10	3.10	90.42	47.34	156.09	1.39	102.62
0619-MR-22 Spot 129	268.55	17871.26	1.61	20.21	1.22	0.17	1.47	0.02	0.81	0.55	156.31	1.25	157.11	2.13	169.15	28.53	156.31	1.25	99.49
0619-MR-22 Spot 54	38.19	7449.09	2.10	22.42	3.27	0.15	3.57	0.02	1.45	0.41	156.35	2.24	142.75	4.76	NA	NA	156.35	2.24	109.53
0619-MR-22 Spot 74	132.98	248300.05	1.54	20.08	1.39	0.17	1.61	0.02	0.81	0.50	156.59	1.25	158.36	2.36	184.88	32.40	156.59	1.25	98.88
0619-MR-22 Spot 280	248.05	168425.15	3.69	20.22	1.07	0.17	1.37	0.02	0.86	0.63	156.80	1.33	157.52	2.00	168.41	24.97	156.80	1.33	99.54
0619-MR-22 Spot 289	211.11	151046.25	1.73	20.49	1.49	0.17	1.64	0.02	0.69	0.42	156.94	1.07	155.74	2.37	137.58	35.01	156.94	1.07	100.77
0619-MR-22 Spot 132	53.91	5319.06	3.36	22.16	4.13	0.15	4.27	0.02	1.07	0.25	156.95	1.66	144.82	5.76	NA	NA	156.95	1.66	108.38
0619-MR-22 Spot 106	74.05	2435.25	1.90	24.44	3.19	0.14	3.40	0.02	1.18	0.35	156.96	1.84	132.17	4.22	NA	NA	156.96	1.84	118.76
0619-MR-22 Spot 140	48.21	6249.41	2.96	19.40	4.01	0.18	4.14	0.02	1.03	0.25	157.17	1.59	164.05	6.27	264.54	92.14	157.17	1.59	95.81
0619-MR-22 Spot 286	86.77	6574.65	3.67	21.02	3.17	0.16	3.34	0.02	1.08	0.32	157.41	1.67	152.49	4.73	76.68	75.21	157.41	1.67	103.23
0619-MR-22 Spot 102	103.41	187055.33	2.33	19.82	2.34	0.17	2.56	0.02	1.03	0.40	157.55	1.60	161.20	3.81	215.20	54.17	157.55	1.60	97.73
0619-MR-22 Spot 131	46.94	4972.54	2.43	21.30	4.45	0.16	4.69	0.02	1.48	0.32	157.70	2.30	150.91	6.57	45.50	106.33	157.70	2.30	104.50
0619-MR-22 Spot 172	551.36	35847.80	1.87	20.54	0.84	0.17	1.31	0.02	1.00	0.76	158.58	1.56	156.94	1.90	132.14	19.85	158.58	1.56	101.05
0619-MR-22 Spot 40	102.68	5789.46	1.81	22.19	2.14	0.15	2.30	0.02	0.84	0.36	158.79	1.31	146.22	3.13	NA	NA	158.79	1.31	108.59
0619-MR-22 Spot 71	30.25	9006.74	2.81	21.40	4.37	0.16	4.53	0.02	1.21	0.27	158.99	1.90	151.44	6.38	34.84	104.69	158.99	1.90	104.98
0619-MR-22 Spot 285	370.01	158188.56	0.61	20.04	1.28	0.17	1.46	0.02	0.71	0.49	159.03	1.12	160.94	2.18	189.12	29.72	159.03	1.12	98.81
0619-MR-22 Spot 103	299.82	71711.06	1.58	20.58	1.01	0.17	1.31	0.03	0.83	0.64	159.36	1.31	157.33	1.91	126.92	23.87	159.36	1.31	101.29
0619-MR-22 Spot 226	23.69	1449.80	2.93	28.02	4.81	0.12	4.96	0.03	1.20	0.24	159.47	1.88	117.98	5.52	NA	NA	159.47	1.88	135.17
0619-MR-22 Spot 1	65.09	66025.92	2.03	16.89	3.15	0.20	3.32	0.03	1.03	0.31	159.48	1.62	188.78	5.71	573.14	68.58	159.48	1.62	84.48
0619-MR-22 Spot 80	167.47	13352.82	2.00	20.92	1.62	0.17	1.91	0.03	1.01	0.53	159.48	1.60	155.11	2.75	88.77	38.45	159.48	1.60	102.82
0619-MR-22 Spot 246	281.34	39999.26	2.23	20.11	1.39	0.17	1.59	0.03	0.77	0.49	159.58	1.22	160.96	2.37	181.26	32.40	159.58	1.22	99.14
0619-MR-22 Spot 135	351.78	370948.45	1.61	20.70	1.13	0.17	1.40	0.03	0.84	0.60	159.73	1.32	156.85	2.04	113.57	26.59	159.73	1.32	101.84
0619-MR-22 Spot 191	37.33	3825.46	2.91	19.70	4.15	0.18	4.36	0.03	1.35	0.31	160.28	2.13	164.73	6.63	229.09	95.84	160.28	2.13	97.30
0619-MR-22 Spot 313	79.09	10701.96	2.32	19.70	2.36	0.18	2.56	0.03	1.01	0.40	160.32	1.60	164.72	3.90	228.43	54.44	160.32	1.60	97.33
0619-MR-22 Spot 229	200.64	34136.13	2.93	20.61	1.23	0.17	1.61	0.03	1.04	0.65	160.60	1.65	158.29	2.36	123.78	28.90	160.60	1.65	101.46
0619-MR-22 Spot 56	87.04	9904.69	3.87	21.23	2.47	0.16	2.65	0.03	0.97	0.37	161.33	1.55	154.62	3.80	53.03	58.84	161.33	1.55	104.34
0619-MR-22 Spot 34	222.82	672789.15	1.66	19.44	1.44	0.18	1.70	0.03	0.90	0.53	161.90	1.44	168.32	2.63	259.59	33.04	161.90	1.44	96.18

0619-MR-22 Spot 304	341.22	306924.00	3.05	20.67	1.05	0.17	1.33	0.03	0.81	0.61	162.08	1.29	159.18	1.96	116.31	24.85	162.08	1.29	101.82
0619-MR-22 Spot 82	54.01	4105.54	4.27	21.02	2.89	0.17	3.08	0.03	1.06	0.34	162.26	1.70	156.89	4.48	76.54	68.81	162.26	1.70	103.42
0619-MR-22 Spot 236	70.75	2287.05	2.00	10.97	3.10	0.32	3.22	0.03	0.88	0.27	162.30	1.40	282.23	7.93	1449.67	58.97	162.30	1.40	57.51
0619-MR-22 Spot 29	66.23	7053.29	2.63	18.92	3.29	0.19	3.39	0.03	0.81	0.24	162.87	1.30	173.57	5.41	322.08	74.78	162.87	1.30	93.83
0619-MR-22 Spot 305	176.80	9681.81	0.80	21.25	2.09	0.17	2.23	0.03	0.78	0.35	163.43	1.25	156.37	3.23	50.66	49.96	163.43	1.25	104.51
0619-MR-22 Spot 20	160.64	26959.54	2.83	20.57	1.32	0.17	1.62	0.03	0.95	0.59	163.74	1.54	161.43	2.42	127.77	30.98	163.74	1.54	101.43
0619-MR-22 Spot 278	206.70	47371.10	2.68	19.84	1.54	0.18	1.79	0.03	0.91	0.51	164.17	1.48	167.33	2.76	212.27	35.63	164.17	1.48	98.11
0619-MR-22 Spot 290	390.15	35283.27	1.87	19.91	0.94	0.18	1.19	0.03	0.73	0.62	165.06	1.20	167.68	1.85	204.90	21.85	165.06	1.20	98.43
0619-MR-22 Spot 237	285.85	27233.31	1.71	20.39	1.02	0.18	1.40	0.03	0.96	0.69	165.39	1.57	164.34	2.13	149.18	23.89	165.39	1.57	100.64
0619-MR-22 Spot 76	78.51	4857.84	2.95	20.80	2.64	0.17	2.84	0.03	1.05	0.37	166.09	1.72	161.97	4.25	102.17	62.44	166.09	1.72	102.54
0619-MR-22 Spot 122	160.06	3285.34	3.54	9.93	12.22	0.37	12.27	0.03	1.12	0.09	167.44	1.85	316.20	33.34	1637.02	227.74	167.44	1.85	52.95
0619-MR-22 Spot 93	89.16	11012.62	1.62	19.64	1.93	0.18	2.14	0.03	0.91	0.43	167.68	1.51	172.26	3.38	235.63	44.60	167.68	1.51	97.34
0619-MR-22 Spot 154	47.75	4719.18	2.99	21.42	3.19	0.17	3.41	0.03	1.21	0.35	169.09	2.02	160.32	5.06	32.54	76.40	169.09	2.02	105.47
0619-MR-22 Spot 33	332.15	20652.66	2.24	20.73	1.00	0.18	1.37	0.03	0.95	0.69	169.64	1.58	165.73	2.10	110.28	23.49	169.64	1.58	102.36
0619-MR-22 Spot 72	82.32	22551.03	1.68	21.02	1.60	0.18	1.92	0.03	1.07	0.55	170.19	1.79	164.07	2.91	76.61	37.97	170.19	1.79	103.73
0619-MR-22 Spot 130	60.59	12003.43	1.81	20.76	2.93	0.18	3.16	0.03	1.19	0.38	170.39	2.01	166.15	4.85	106.09	69.27	170.39	2.01	102.55
0619-MR-22 Spot 63	51.25	7584.23	3.37	22.58	2.74	0.16	2.96	0.03	1.11	0.38	170.50	1.87	153.85	4.22	NA	NA	170.50	1.87	110.82
0619-MR-22 Spot 239	48.25	4989.55	3.37	22.38	3.20	0.17	3.33	0.03	0.91	0.27	170.68	1.54	155.29	4.79	NA	NA	170.68	1.54	109.91
0619-MR-22 Spot 118	349.55	20309.88	1.32	19.96	1.05	0.19	1.37	0.03	0.88	0.64	171.50	1.49	173.33	2.18	198.38	24.35	171.50	1.49	98.94
0619-MR-22 Spot 24	84.75	342704.09	3.51	19.90	1.96	0.19	2.22	0.03	1.03	0.46	172.77	1.75	175.00	3.57	205.29	45.60	172.77	1.75	98.72
0619-MR-22 Spot 264	208.82	18952.04	3.82	20.58	1.41	0.18	1.86	0.03	1.20	0.65	173.60	2.06	170.44	2.91	126.80	33.26	173.60	2.06	101.86
0619-MR-22 Spot 188	150.66	11049.95	2.24	13.22	2.24	0.29	2.43	0.03	0.94	0.39	178.54	1.66	260.78	5.59	1085.14	44.98	178.54	1.66	68.46
0619-MR-22 Spot 109	33.96	2426.87	3.25	7.07	10.16	0.55	10.24	0.03	1.27	0.12	178.66	2.23	443.78	36.84	2245.21	176.15	178.66	2.23	40.26
0619-MR-22 Spot 176	368.80	1268.95	2.51	4.30	20.56	0.97	20.80	0.03	3.16	0.15	191.76	5.98	686.89	104.21	3067.75	332.70	191.76	5.98	27.92
0619-MR-22 Spot 128	125.40	13131.91	2.30	20.86	1.80	0.21	2.59	0.03	1.85	0.72	201.67	3.68	193.50	4.55	94.93	42.70	201.67	3.68	104.22
0619-MR-22 Spot 75	187.03	29052.97	2.59	19.88	0.92	0.23	1.52	0.03	1.22	0.80	212.82	2.55	212.45	2.92	208.31	21.30	212.82	2.55	100.18
0619-MR-22 Spot 232	514.06	191659.73	1.57	19.75	0.68	0.25	1.24	0.04	1.04	0.84	224.29	2.30	224.23	2.50	223.70	15.62	224.29	2.30	100.02
0619-MR-22 Spot 199	48.26	10116.60	3.23	20.54	2.64	0.24	2.81	0.04	0.98	0.35	227.46	2.18	219.27	5.55	132.28	62.04	227.46	2.18	103.73
0619-MR-22 Spot 7	227.90	77257.56	1.86	19.98	1.26	0.26	1.60	0.04	0.99	0.62	235.53	2.30	231.95	3.32	195.80	29.25	235.53	2.30	101.55
0619-MR-22 Spot 98	87.63	71307.77	1.68	20.21	1.59	0.26	1.81	0.04	0.86	0.47	239.10	2.02	232.79	3.77	169.57	37.25	239.10	2.02	102.71
0619-MR-22 Spot 126	704.29	156108.29	2.12	19.53	0.54	0.29	1.00	0.04	0.84	0.84	256.96	2.10	256.19	2.26	249.10	12.50	256.96	2.10	100.30
0619-MR-22 Spot 167	16.08	26687.01	5.47	20.49	4.05	0.28	4.22	0.04	1.18	0.28	262.21	3.02	250.05	9.36	137.49	95.25	262.21	3.02	104.86
0619-MR-22 Spot 41	38.60	13270.71	2.43	19.25	2.29	0.31	2.49	0.04	0.99	0.40	273.67	2.66	274.54	6.00	282.02	52.39	273.67	2.66	99.68
0619-MR-22 Spot 4	344.76	72515.08	1.35	19.40	0.98	0.31	1.33	0.04	0.90	0.68	275.37	2.42	274.17	3.20	263.93	22.53	275.37	2.42	100.44
0619-MR-22 Spot 258	138.51	133580.28	6.10	15.64	1.94	0.41	2.51	0.05	1.60	0.64	294.27	4.59	350.02	7.44	738.73	41.08	294.27	4.59	84.07
0619-MR-22 Spot 31	63.04	17018.52	3.27	19.00	1.65	0.39	1.87	0.05	0.88	0.47	335.86	2.87	332.86	5.30	311.95	37.52	335.86	2.87	100.90
0619-MR-22 Spot 309	1215.23	618847.54	10.42	18.22	0.57	0.47	1.35	0.06	1.22	0.91	387.33	4.58	390.18	4.36	407.10	12.79	387.33	4.58	99.27
0619-MR-22 Spot 249	1064.98	59150.34	4.31	16.80	0.76	0.51	1.23	0.06	0.96	0.79	388.47	3.64	418.19	4.20	585.64	16.42	388.47	3.64	92.89
0619-MR-22 Spot 67	322.85	32273.91	1.33	17.86	0.64	0.54	0.99	0.07	0.76	0.76	439.18	3.21	441.01	3.54	450.58	14.26	439.18	3.21	97.47
0619-MR-22 Spot 247	145.75	82083.43	2.22	17.11	1.00	0.70	1.37	0.09	0.94	0.68	540.59	4.86	541.58	5.76	545.77	21.92	540.59	4.86	99.05

0619-MR-22 Spot 5	316.34	125911.58	1.59	16.78	0.70	0.78	0.99	0.09	0.70	0.71	582.80	3.91	583.78	4.40	587.59	15.13	582.80	3.91	99.18
0619-MR-22 Spot 175	228.23	69049.33	0.78	16.35	0.65	0.86	1.10	0.10	0.89	0.81	623.02	5.27	627.67	5.15	644.47	14.01	623.02	5.27	96.67
0619-MR-22 Spot 47	213.07	549951.53	4.50	16.29	0.64	0.96	1.42	0.11	1.27	0.89	690.14	8.28	681.33	7.04	652.36	13.70	690.14	8.28	105.79
0619-MR-22 Spot 11	27.13	26980.94	1.70	13.86	1.13	1.67	1.30	0.17	0.64	0.49	999.54	5.90	996.18	8.25	988.81	23.06	988.81	23.06	101.09
0619-MR-22 Spot 10	220.64	109498.50	4.10	13.74	0.58	1.67	0.91	0.17	0.70	0.77	992.13	6.42	996.67	5.77	1006.64	11.80	1006.64	11.80	98.56
0619-MR-22 Spot 307	152.72	424112.19	1.59	12.97	0.61	1.97	1.02	0.18	0.81	0.80	1093.98	8.16	1103.66	6.83	1122.77	12.20	1122.77	12.20	97.44
0619-MR-22 Spot 220	129.55	54280.43	1.64	12.95	0.78	2.03	1.14	0.19	0.83	0.73	1123.81	8.61	1124.40	7.75	1125.55	15.50	1125.55	15.50	99.85
0619-MR-22 Spot 88	126.24	83755.04	3.44	12.83	0.70	2.13	1.03	0.20	0.75	0.73	1168.28	8.05	1160.17	7.10	1145.05	13.84	1145.05	13.84	102.03
0619-MR-22 Spot 116	456.52	385165.81	2.57	12.71	0.63	2.12	1.10	0.20	0.90	0.82	1152.20	9.54	1156.11	7.59	1163.42	12.42	1163.42	12.42	99.04
0619-MR-22 Spot 270	539.57	574573.99	25.66	12.50	0.58	2.20	1.24	0.20	1.09	0.88	1173.42	11.74	1181.41	8.65	1196.07	11.47	1196.07	11.47	98.11
0619-MR-22 Spot 58	134.98	96176.37	2.33	11.78	0.57	2.65	1.16	0.23	1.02	0.87	1313.90	12.09	1313.47	8.58	1312.75	11.02	1312.75	11.02	100.09
0619-MR-22 Spot 151	213.78	190310.53	2.41	11.64	0.66	2.73	1.15	0.23	0.94	0.82	1337.86	11.38	1336.66	8.55	1334.72	12.79	1334.72	12.79	100.24
0619-MR-22 Spot 190	506.50	443967.05	1.67	11.41	0.69	2.87	1.36	0.24	1.17	0.86	1376.43	14.45	1375.34	10.22	1373.63	13.36	1373.63	13.36	100.20
0619-MR-22 Spot 30	148.52	97307.93	3.23	11.31	0.74	2.86	1.07	0.23	0.77	0.72	1359.03	9.46	1371.16	8.03	1390.10	14.14	1390.10	14.14	97.77
0619-MR-22 Spot 164	134.80	146850.36	2.01	11.15	0.59	3.03	0.87	0.24	0.64	0.74	1412.10	8.12	1414.52	6.62	1418.15	11.20	1418.15	11.20	99.57
0619-MR-22 Spot 306	368.08	408603.09	3.57	10.98	0.46	3.23	0.79	0.26	0.65	0.81	1476.15	8.54	1464.42	6.16	1447.42	8.77	1447.42	8.77	101.99
0619-MR-22 Spot 276	186.21	1327273.94	2.24	8.82	0.60	5.14	1.03	0.33	0.84	0.82	1833.89	13.46	1843.22	8.78	1853.76	10.76	1853.76	10.76	98.93
0619-MR-22 Spot 120	143.06	237216.38	1.63	8.76	0.59	5.10	1.05	0.32	0.86	0.83	1812.09	13.64	1836.76	8.88	1864.81	10.66	1864.81	10.66	97.17
0619-MR-22 Spot 253	96.92	2893538.56	1.01	6.51	0.59	9.08	0.91	0.43	0.70	0.77	2301.87	13.51	2346.00	8.34	2384.59	9.98	2384.59	9.98	96.53
0619-MR-22 Spot 248	65.11	649420.49	1.05	5.78	0.68	11.97	1.16	0.50	0.94	0.81	2621.43	20.23	2602.09	10.84	2587.05	11.27	2587.05	11.27	101.33

Sample 0619-MR-23

0619-MR-23 134	170.30	2482.07	3.43	23.69	2.72	0.12	2.87	0.02	0.91	0.32	130.17	1.17	113.87	3.09	NA	NA	130.17	1.17	NA
0619-MR-23 193	343.42	8876.43	2.56	20.85	1.22	0.14	1.46	0.02	0.80	0.55	131.43	1.05	129.58	1.78	95.80	28.99	131.43	1.05	NA
0619-MR-23 249	343.46	48266.81	2.71	20.76	1.47	0.14	1.76	0.02	0.97	0.55	133.07	1.28	131.68	2.17	106.58	34.62	133.07	1.28	NA
0619-MR-23 210	132.78	91692.17	4.11	19.94	2.58	0.14	2.76	0.02	1.00	0.36	133.21	1.31	136.85	3.53	200.50	59.80	133.21	1.31	NA
0619-MR-23 222	299.18	22933.50	2.20	20.60	1.43	0.14	1.64	0.02	0.80	0.49	133.77	1.06	133.27	2.04	124.45	33.62	133.77	1.06	NA
0619-MR-23 23	303.09	31256.54	2.62	20.61	1.49	0.14	1.63	0.02	0.65	0.40	133.85	0.86	133.29	2.03	123.14	35.15	133.85	0.86	NA
0619-MR-23 153	261.31	5497.02	2.91	21.91	3.31	0.13	3.48	0.02	1.06	0.31	134.05	1.41	126.05	4.12	NA	NA	134.05	1.41	NA
0619-MR-23 198	139.74	5306.02	3.58	20.46	2.21	0.14	2.41	0.02	0.97	0.40	134.35	1.29	134.73	3.05	141.37	51.93	134.35	1.29	NA
0619-MR-23 120	180.71	4870.98	3.65	21.08	3.16	0.14	3.29	0.02	0.89	0.27	134.37	1.18	131.02	4.04	70.68	75.26	134.37	1.18	NA
0619-MR-23 216	118.60	2936.80	3.74	23.28	4.64	0.12	4.82	0.02	1.31	0.27	134.38	1.75	119.35	5.43	NA	NA	134.38	1.75	NA
0619-MR-23 264	203.03	13409.28	3.18	20.81	2.11	0.14	2.36	0.02	1.06	0.45	134.44	1.41	132.68	2.93	101.20	49.83	134.44	1.41	NA
0619-MR-23 68	286.99	22531.20	3.66	21.24	1.89	0.14	2.17	0.02	1.07	0.49	134.81	1.43	130.46	2.66	51.93	45.14	134.81	1.43	NA
0619-MR-23 303	400.69	71299.40	2.24	20.02	1.44	0.15	1.78	0.02	1.04	0.58	134.97	1.39	138.07	2.30	191.78	33.59	134.97	1.39	NA
0619-MR-23 108	328.78	9217.50	2.87	21.04	1.49	0.14	1.81	0.02	1.03	0.57	135.08	1.37	131.90	2.24	75.15	35.34	135.08	1.37	NA
0619-MR-23 96	177.79	15920.84	3.44	20.64	1.86	0.14	2.14	0.02	1.06	0.50	135.11	1.42	134.34	2.69	120.59	43.75	135.11	1.42	NA
0619-MR-23 94	196.85	6849.52	3.79	21.85	2.30	0.13	2.52	0.02	1.03	0.41	135.17	1.38	127.35	3.02	NA	NA	135.17	1.38	NA
0619-MR-23 47	367.81	45643.26	2.62	20.74	1.49	0.14	1.76	0.02	0.93	0.53	135.49	1.24	134.08	2.21	109.17	35.19	135.49	1.24	NA

0619-MR-23 25	233.66	117911.57	3.44	20.47	2.00	0.14	2.28	0.02	1.09	0.48	135.58	1.47	135.83	2.90	140.08	47.01	135.58	1.47	NA
0619-MR-23 174	190.18	679577.56	3.50	19.68	2.08	0.15	2.31	0.02	1.02	0.44	135.63	1.37	140.93	3.04	231.11	47.96	135.63	1.37	NA
0619-MR-23 308	94.87	2049.70	3.42	21.80	2.75	0.13	3.05	0.02	1.31	0.43	135.64	1.76	128.07	3.66	NA	NA	135.64	1.76	NA
0619-MR-23 84	258.56	6864.98	3.07	21.19	1.96	0.14	2.28	0.02	1.16	0.51	136.16	1.57	132.04	2.82	58.43	46.72	136.16	1.57	NA
0619-MR-23 237	197.41	1594053.50	3.66	20.11	1.95	0.15	2.22	0.02	1.08	0.48	136.22	1.45	138.67	2.88	180.76	45.38	136.22	1.45	NA
0619-MR-23 126	226.68	9617.37	4.30	21.12	1.82	0.14	2.05	0.02	0.94	0.46	136.42	1.27	132.68	2.55	66.27	43.28	136.42	1.27	NA
0619-MR-23 224	282.62	9538.11	2.64	21.17	2.05	0.14	2.25	0.02	0.92	0.41	136.75	1.25	132.67	2.80	60.09	48.91	136.75	1.25	NA
0619-MR-23 135	352.10	11722.22	3.48	20.59	1.41	0.14	1.78	0.02	1.09	0.61	136.85	1.48	136.24	2.27	125.50	33.13	136.85	1.48	NA
0619-MR-23 78	487.71	27843.09	2.10	20.88	1.40	0.14	1.66	0.02	0.90	0.54	137.30	1.22	134.93	2.10	93.47	33.16	137.30	1.22	NA
0619-MR-23 57	405.73	12513.18	2.90	21.01	1.52	0.14	1.81	0.02	0.98	0.54	137.34	1.33	134.16	2.27	78.11	36.14	137.34	1.33	NA
0619-MR-23 243	147.35	3395.38	4.57	21.77	2.46	0.14	2.63	0.02	0.95	0.36	137.73	1.30	130.09	3.22	NA	NA	137.73	1.30	NA
0619-MR-23 115	182.59	12987.08	3.63	21.04	2.11	0.14	2.41	0.02	1.16	0.48	137.74	1.58	134.36	3.03	74.95	50.09	137.74	1.58	NA
0619-MR-23 293	360.19	9621.87	4.56	21.16	1.40	0.14	1.64	0.02	0.86	0.52	138.04	1.17	133.89	2.06	60.94	33.41	138.04	1.17	NA
0619-MR-23 256	93.44	109191.00	3.90	19.26	2.64	0.15	2.92	0.02	1.24	0.42	138.11	1.69	146.30	3.97	281.25	60.42	138.11	1.69	NA
0619-MR-23 287	79.71	1770.37	3.68	24.43	2.99	0.12	3.26	0.02	1.30	0.40	138.92	1.78	117.71	3.62	NA	NA	138.92	1.78	NA
0619-MR-23 175	168.33	52648.42	2.72	20.84	2.15	0.14	2.38	0.02	1.03	0.43	138.96	1.41	136.69	3.05	97.52	50.92	138.96	1.41	NA
0619-MR-23 294	277.57	37375.55	3.51	20.23	1.68	0.15	1.87	0.02	0.81	0.43	139.38	1.11	140.96	2.46	167.54	39.30	139.38	1.11	NA
0619-MR-23 19	146.47	3008.26	4.01	23.40	5.29	0.13	5.38	0.02	0.98	0.18	139.61	1.35	123.15	6.24	NA	NA	139.61	1.35	NA
0619-MR-23 292	116.58	17275.38	3.47	20.56	2.84	0.15	3.16	0.02	1.39	0.44	140.51	1.94	139.91	4.13	129.82	66.75	140.51	1.94	NA
0619-MR-23 313	155.75	103062.14	3.22	20.06	2.14	0.15	2.40	0.02	1.09	0.45	141.09	1.52	143.71	3.22	187.08	49.83	141.09	1.52	NA
0619-MR-23 163	383.42	11651.71	2.07	21.08	1.26	0.15	1.62	0.02	1.02	0.63	143.64	1.45	139.53	2.11	70.13	29.86	143.64	1.45	NA
0619-MR-23 82	266.74	181208.44	1.96	20.65	1.92	0.15	2.15	0.02	0.97	0.45	144.96	1.39	143.48	2.88	119.17	45.33	144.96	1.39	NA
0619-MR-23 185	261.98	20985.70	3.41	20.50	1.54	0.15	1.75	0.02	0.83	0.47	145.00	1.19	144.50	2.35	136.28	36.10	145.00	1.19	NA
0619-MR-23 10	261.91	7213.88	2.09	20.36	1.60	0.15	1.88	0.02	1.00	0.53	145.50	1.43	145.88	2.56	151.99	37.42	145.50	1.43	NA
0619-MR-23 259	123.48	17207.00	1.91	20.58	2.17	0.15	2.39	0.02	1.00	0.42	145.69	1.44	144.60	3.22	126.72	51.09	145.69	1.44	NA
0619-MR-23 154	121.47	13868.90	1.92	20.40	2.10	0.15	2.44	0.02	1.25	0.51	146.11	1.81	146.18	3.32	147.34	49.15	146.11	1.81	NA
0619-MR-23 251	213.55	83821.15	3.87	19.95	2.07	0.16	2.33	0.02	1.06	0.46	146.22	1.54	149.40	3.23	200.17	48.08	146.22	1.54	NA
0619-MR-23 239	120.78	6267.03	1.64	21.34	2.71	0.15	3.03	0.02	1.35	0.45	146.23	1.95	140.31	3.97	41.39	64.94	146.23	1.95	NA
0619-MR-23 188	170.78	5045.80	1.98	21.57	3.13	0.15	3.31	0.02	1.08	0.33	146.42	1.56	139.06	4.30	15.26	75.26	146.42	1.56	NA
0619-MR-23 257	410.57	30296.00	1.39	20.30	1.23	0.16	1.58	0.02	1.00	0.63	146.52	1.45	147.27	2.17	159.36	28.75	146.52	1.45	NA
0619-MR-23 147	113.52	7815.28	3.48	20.18	2.96	0.16	3.15	0.02	1.07	0.34	146.55	1.55	148.13	4.35	173.45	69.22	146.55	1.55	NA
0619-MR-23 17	882.22	20447.32	6.01	20.32	1.25	0.16	2.72	0.02	2.42	0.89	146.63	3.50	147.26	3.73	157.42	29.32	146.63	3.50	NA
0619-MR-23 186	128.99	23333.31	2.39	20.13	2.20	0.16	2.43	0.02	1.03	0.42	146.69	1.50	148.56	3.36	178.39	51.36	146.69	1.50	NA
0619-MR-23 306	101.12	2770.02	3.17	22.19	3.21	0.14	3.45	0.02	1.26	0.37	147.24	1.83	136.12	4.39	NA	NA	147.24	1.83	NA
0619-MR-23 156	123.29	17409.94	4.36	20.36	2.29	0.16	2.62	0.02	1.29	0.49	147.52	1.88	147.77	3.61	151.80	53.54	147.52	1.88	NA
0619-MR-23 131	56.77	2037.14	2.63	25.14	5.23	0.13	5.42	0.02	1.45	0.27	147.54	2.12	121.34	6.20	NA	NA	147.54	2.12	NA
0619-MR-23 172	72.20	2896.93	2.33	23.50	4.73	0.14	4.86	0.02	1.10	0.23	147.55	1.60	129.26	5.89	NA	NA	147.55	1.60	NA
0619-MR-23 271	146.68	20508.94	1.84	20.44	2.36	0.16	2.59	0.02	1.06	0.41	147.72	1.55	147.44	3.55	142.97	55.34	147.72	1.55	NA
0619-MR-23 41	142.09	6536.39	3.35	21.24	2.03	0.15	2.29	0.02	1.06	0.46	147.78	1.55	142.31	3.04	52.02	48.51	147.78	1.55	NA
0619-MR-23 109	110.07	3890.58	2.23	21.42	2.56	0.15	2.77	0.02	1.06	0.38	147.87	1.55	141.26	3.65	31.71	61.25	147.87	1.55	NA

0619-MR-23 209	177.69	4412.43	2.60	21.62	3.16	0.15	3.38	0.02	1.20	0.35	147.95	1.75	140.15	4.43	10.10	76.07	147.95	1.75	NA
0619-MR-23 24	153.87	5934.67	4.25	20.75	1.86	0.15	2.13	0.02	1.04	0.49	147.99	1.52	145.66	2.89	107.96	43.86	147.99	1.52	NA
0619-MR-23 212	345.96	16984.68	1.24	20.30	1.34	0.16	1.51	0.02	0.69	0.46	148.04	1.01	148.68	2.09	158.93	31.37	148.04	1.01	NA
0619-MR-23 283	142.45	3535.04	2.54	22.80	3.77	0.14	3.88	0.02	0.93	0.24	148.08	1.36	133.48	4.86	NA	NA	148.08	1.36	NA
0619-MR-23 34	127.29	6716.92	2.35	20.86	2.19	0.15	2.45	0.02	1.09	0.44	148.30	1.59	145.20	3.31	94.74	51.93	148.30	1.59	NA
0619-MR-23 80	168.94	93311.69	1.58	19.50	1.81	0.16	2.00	0.02	0.87	0.43	148.34	1.27	154.68	2.87	252.90	41.56	148.34	1.27	NA
0619-MR-23 266	107.75	3223241.14	3.20	21.07	2.39	0.15	2.74	0.02	1.34	0.49	148.47	1.97	144.05	3.68	71.80	56.84	148.47	1.97	NA
0619-MR-23 43	140.02	3758.44	2.08	21.78	2.60	0.15	2.87	0.02	1.21	0.42	148.48	1.77	139.62	3.74	NA	NA	148.48	1.77	NA
0619-MR-23 178	153.48	7732.77	2.02	22.12	2.30	0.15	2.62	0.02	1.26	0.48	148.52	1.85	137.66	3.37	NA	NA	148.52	1.85	NA
0619-MR-23 110	370.76	72140.44	4.73	20.33	1.38	0.16	1.89	0.02	1.29	0.68	148.63	1.90	149.06	2.62	156.00	32.41	148.63	1.90	NA
0619-MR-23 166	96.84	11836.41	2.26	20.30	3.15	0.16	3.29	0.02	0.94	0.29	148.63	1.38	149.26	4.57	159.27	73.79	148.63	1.38	NA
0619-MR-23 138	101.37	3103.71	2.57	22.70	2.66	0.14	2.90	0.02	1.14	0.39	148.63	1.68	134.50	3.65	NA	NA	148.63	1.68	NA
0619-MR-23 164	136.44	3417.11	1.98	22.21	3.84	0.14	3.97	0.02	1.03	0.26	148.69	1.51	137.31	5.10	NA	NA	148.69	1.51	NA
0619-MR-23 311	137.39	5840.55	3.17	20.21	2.66	0.16	2.93	0.02	1.23	0.42	148.70	1.80	149.96	4.08	169.97	62.12	148.70	1.80	NA
0619-MR-23 277	245.14	5152.70	1.71	21.38	1.23	0.15	1.45	0.02	0.77	0.53	148.79	1.13	142.38	1.93	36.77	29.41	148.79	1.13	NA
0619-MR-23 314	98.13	4691.45	3.47	20.87	3.20	0.15	3.41	0.02	1.18	0.35	148.85	1.74	145.68	4.63	94.33	75.80	148.85	1.74	NA
0619-MR-23 286	382.15	16940.42	1.50	20.63	1.53	0.16	1.76	0.02	0.88	0.50	148.92	1.29	147.34	2.42	121.87	35.98	148.92	1.29	NA
0619-MR-23 70	517.07	8297.91	1.69	21.24	1.07	0.15	1.35	0.02	0.82	0.61	148.94	1.21	143.38	1.80	52.25	25.46	148.94	1.21	NA
0619-MR-23 152	350.95	11013.13	1.83	20.60	1.33	0.16	1.55	0.02	0.80	0.52	149.06	1.18	147.67	2.13	125.37	31.33	149.06	1.18	NA
0619-MR-23 67	256.48	18134.67	1.93	20.37	1.54	0.16	1.73	0.02	0.79	0.46	149.17	1.16	149.32	2.40	151.65	36.09	149.17	1.16	NA
0619-MR-23 223	736.34	21375.88	1.86	20.19	0.81	0.16	1.11	0.02	0.76	0.69	149.28	1.13	150.66	1.55	172.36	18.81	149.28	1.13	NA
0619-MR-23 133	93.17	12635.80	3.40	20.06	2.91	0.16	3.07	0.02	0.97	0.32	149.34	1.43	151.60	4.32	186.96	67.76	149.34	1.43	NA
0619-MR-23 16	144.75	4603.46	3.71	19.31	2.98	0.17	3.19	0.02	1.15	0.36	149.35	1.70	157.08	4.65	275.27	68.25	149.35	1.70	NA
0619-MR-23 102	110.36	10456.64	2.15	20.54	2.52	0.16	2.76	0.02	1.13	0.41	149.36	1.66	148.30	3.81	131.37	59.32	149.36	1.66	NA
0619-MR-23 254	76.32	5846.28	3.31	20.68	3.31	0.16	3.59	0.02	1.40	0.39	149.47	2.06	147.52	4.93	116.19	77.99	149.47	2.06	NA
0619-MR-23 183	178.46	32427.91	2.56	19.91	2.14	0.16	2.50	0.02	1.29	0.52	149.48	1.91	152.82	3.55	204.81	49.75	149.48	1.91	NA
0619-MR-23 207	207.13	22992.13	1.78	20.06	1.76	0.16	1.92	0.02	0.77	0.40	149.52	1.14	151.76	2.71	186.92	40.93	149.52	1.14	NA
0619-MR-23 234	132.75	19698.57	1.98	19.96	1.95	0.16	2.16	0.02	0.93	0.43	149.71	1.37	152.66	3.06	198.66	45.25	149.71	1.37	NA
0619-MR-23 142	290.26	22876.05	2.73	20.51	1.52	0.16	1.77	0.02	0.89	0.51	149.78	1.32	148.95	2.45	135.71	35.81	149.78	1.32	NA
0619-MR-23 30	266.86	14629.60	2.74	20.56	2.05	0.16	2.19	0.02	0.76	0.35	149.93	1.13	148.70	3.02	129.22	48.23	149.93	1.13	NA
0619-MR-23 236	217.50	14747.94	1.51	20.82	1.92	0.16	2.16	0.02	1.00	0.46	149.98	1.48	147.02	2.96	99.57	45.47	149.98	1.48	NA
0619-MR-23 176	46.20	1943.09	3.87	25.46	4.63	0.13	4.80	0.02	1.29	0.27	150.06	1.91	121.81	5.51	NA	NA	150.06	1.91	NA
0619-MR-23 39	104.57	12579.91	3.01	20.07	2.38	0.16	2.62	0.02	1.10	0.42	150.12	1.63	152.26	3.71	185.65	55.46	150.12	1.63	NA
0619-MR-23 4	190.42	4679.82	2.05	21.92	1.98	0.15	2.22	0.02	1.00	0.45	150.29	1.48	140.41	2.91	NA	NA	150.29	1.48	NA
0619-MR-23 291	306.89	21432.05	1.55	19.90	1.83	0.16	2.32	0.02	1.42	0.61	150.31	2.11	153.64	3.30	205.37	42.51	150.31	2.11	NA
0619-MR-23 238	202.28	9717.92	1.87	21.05	1.88	0.15	2.25	0.02	1.24	0.55	150.32	1.85	145.84	3.06	73.62	44.67	150.32	1.85	NA
0619-MR-23 141	216.78	6564.56	3.16	22.04	1.84	0.15	2.10	0.02	1.00	0.48	150.37	1.48	139.78	2.74	NA	NA	150.37	1.48	NA
0619-MR-23 187	548.81	667459.56	1.99	20.44	1.12	0.16	1.38	0.02	0.81	0.58	150.39	1.20	149.94	1.93	142.86	26.36	150.39	1.20	NA
0619-MR-23 214	348.57	19720.86	1.67	20.15	1.81	0.16	1.98	0.02	0.78	0.40	150.43	1.16	152.01	2.79	176.69	42.32	150.43	1.16	NA
0619-MR-23 269	307.66	4851.79	1.55	20.78	1.36	0.16	1.52	0.02	0.70	0.46	150.50	1.04	147.81	2.10	104.83	32.05	150.50	1.04	NA

0619-MR-23 6	649.08	31087.77	1.89	20.43	1.05	0.16	1.45	0.02	1.00	0.69	150.60	1.49	150.23	2.02	144.39	24.59	150.60	1.49	NA
0619-MR-23 1	471.20	27281.85	3.29	19.94	1.49	0.16	1.77	0.02	0.94	0.53	150.61	1.41	153.64	2.52	200.60	34.69	150.61	1.41	NA
0619-MR-23 279	175.02	63736.62	2.36	20.04	3.12	0.16	3.33	0.02	1.16	0.35	150.66	1.72	152.98	4.73	189.15	72.70	150.66	1.72	NA
0619-MR-23 114	101.87	5666.58	3.89	20.91	2.19	0.16	2.42	0.02	1.03	0.42	150.69	1.53	147.11	3.31	89.76	51.98	150.69	1.53	NA
0619-MR-23 77	138.64	6663.02	2.36	21.68	2.66	0.15	2.92	0.02	1.21	0.41	150.70	1.81	142.22	3.88	3.07	64.07	150.70	1.81	NA
0619-MR-23 56	356.47	14962.99	3.86	20.45	1.54	0.16	1.78	0.02	0.89	0.50	150.71	1.33	150.21	2.49	142.30	36.11	150.71	1.33	NA
0619-MR-23 225	184.56	8399.36	1.81	20.74	2.61	0.16	2.73	0.02	0.82	0.30	150.73	1.22	148.25	3.77	108.65	61.55	150.73	1.22	NA
0619-MR-23 232	231.78	7125.45	1.77	22.00	2.35	0.15	2.55	0.02	0.98	0.39	150.74	1.46	140.33	3.34	NA	NA	150.74	1.46	NA
0619-MR-23 105	456.71	503328.2 5	2.15	20.17	1.28	0.16	1.60	0.02	0.96	0.60	150.75	1.43	152.14	2.26	173.86	29.87	150.75	1.43	NA
0619-MR-23 301	463.91	11067.56	1.91	20.75	0.94	0.16	1.32	0.02	0.93	0.70	150.78	1.38	148.26	1.82	108.24	22.08	150.78	1.38	NA
0619-MR-23 177	226.93	20892.00	2.88	20.13	1.44	0.16	1.73	0.02	0.96	0.55	150.79	1.43	152.47	2.45	178.61	33.63	150.79	1.43	NA
0619-MR-23 97	616.49	62283.38	1.43	20.40	0.98	0.16	1.19	0.02	0.68	0.57	150.81	1.01	150.62	1.66	147.80	22.90	150.81	1.01	NA
0619-MR-23 73	63.11	5131.70	4.36	21.24	3.55	0.15	3.80	0.02	1.34	0.35	150.91	2.00	145.15	5.14	52.04	84.85	150.91	2.00	NA
0619-MR-23 158	113.10	2073.41	3.64	23.36	2.22	0.14	2.46	0.02	1.05	0.43	150.93	1.57	132.82	3.06	NA	NA	150.93	1.57	NA
0619-MR-23 160	180.07	28665.64	1.72	21.00	1.81	0.16	2.15	0.02	1.16	0.54	151.02	1.73	146.79	2.94	78.85	43.00	151.02	1.73	NA
0619-MR-23 149	279.45	30519.67	1.29	20.41	1.58	0.16	1.80	0.02	0.87	0.48	151.05	1.29	150.82	2.53	147.06	37.07	151.05	1.29	NA
0619-MR-23 161	279.98	40940.92	1.95	20.07	1.52	0.16	1.81	0.02	0.98	0.54	151.09	1.47	153.19	2.57	185.82	35.39	151.09	1.47	NA
0619-MR-23 124	113.05	3142.37	2.22	21.31	2.92	0.15	3.14	0.02	1.16	0.37	151.14	1.73	144.92	4.24	44.24	69.84	151.14	1.73	NA
0619-MR-23 64	206.52	41767.48	5.49	20.38	2.05	0.16	2.24	0.02	0.89	0.40	151.15	1.32	151.06	3.14	149.65	48.16	151.15	1.32	NA
0619-MR-23 276	583.94	23401.12	1.12	20.66	0.99	0.16	1.43	0.02	1.03	0.72	151.38	1.54	149.43	1.98	118.51	23.31	151.38	1.54	NA
0619-MR-23 101	180.65	35956.54	2.80	20.97	1.39	0.16	1.60	0.02	0.79	0.50	151.39	1.19	147.35	2.19	82.71	32.92	151.39	1.19	NA
0619-MR-23 289	638.06	20045.96	1.25	20.35	1.27	0.16	1.58	0.02	0.93	0.59	151.45	1.40	151.56	2.22	153.28	29.82	151.45	1.40	NA
0619-MR-23 229	237.67	7276.15	2.51	20.29	1.02	0.16	1.33	0.02	0.86	0.64	151.70	1.29	152.20	1.89	159.95	23.88	151.70	1.29	NA
0619-MR-23 2	395.13	16960.52	1.26	20.18	1.23	0.16	1.47	0.02	0.80	0.54	151.82	1.19	153.09	2.08	172.77	28.76	151.82	1.19	NA
0619-MR-23 36	130.50	6152.57	3.19	21.88	1.93	0.15	2.26	0.02	1.16	0.52	151.84	1.75	142.04	2.99	NA	NA	151.84	1.75	NA
0619-MR-23 15	595.31	30162.06	2.51	20.25	1.29	0.16	1.87	0.02	1.35	0.72	151.85	2.03	152.63	2.65	164.78	30.19	151.85	2.03	NA
0619-MR-23 95	194.63	54084.12	1.99	16.78	2.79	0.20	2.94	0.02	0.92	0.31	151.86	1.38	181.56	4.88	588.10	60.50	151.86	1.38	NA
0619-MR-23 245	456.44	57263.44	2.18	20.50	0.98	0.16	1.38	0.02	0.97	0.71	151.87	1.46	150.91	1.93	135.73	22.96	151.87	1.46	NA
0619-MR-23 197	531.25	27478.45	1.83	20.56	1.27	0.16	1.60	0.02	0.96	0.60	151.90	1.45	150.56	2.24	129.51	30.01	151.90	1.45	NA
0619-MR-23 31	327.66	18322.15	1.84	20.86	1.51	0.16	1.73	0.02	0.84	0.49	152.01	1.27	148.61	2.39	94.68	35.69	152.01	1.27	NA
0619-MR-23 208	59.07	4113.60	3.26	20.39	2.93	0.16	3.15	0.02	1.16	0.37	152.02	1.75	151.80	4.44	148.44	68.63	152.02	1.75	NA
0619-MR-23 226	249.20	13271.12	1.71	21.05	1.47	0.16	1.68	0.02	0.82	0.49	152.09	1.23	147.49	2.30	74.17	34.86	152.09	1.23	NA
0619-MR-23 136	923.00	42891.44	1.85	20.19	0.97	0.16	1.34	0.02	0.93	0.69	152.12	1.40	153.28	1.91	171.37	22.63	152.12	1.40	NA
0619-MR-23 274	940.52	149621.1 3	1.50	20.06	0.80	0.16	1.28	0.02	1.00	0.78	152.21	1.50	154.34	1.84	187.18	18.72	152.21	1.50	NA
0619-MR-23 246	121.50	3276.99	2.01	22.07	2.78	0.15	2.98	0.02	1.06	0.36	152.22	1.59	141.20	3.92	NA	NA	152.22	1.59	NA
0619-MR-23 218	331.50	39876.48	1.94	20.81	1.64	0.16	2.40	0.02	1.74	0.73	152.24	2.62	149.20	3.32	101.02	38.87	152.24	2.62	NA
0619-MR-23 58	1429.26	24336.21	3.44	20.50	0.94	0.16	1.48	0.02	1.14	0.77	152.27	1.72	151.32	2.08	136.47	22.13	152.27	1.72	NA
0619-MR-23 217	188.65	10915.50	2.04	20.92	1.64	0.16	1.87	0.02	0.89	0.48	152.32	1.34	148.52	2.58	88.26	38.93	152.32	1.34	NA
0619-MR-23 11	105.58	9498.88	1.77	21.65	2.94	0.15	3.14	0.02	1.09	0.35	152.37	1.64	143.91	4.21	6.48	70.85	152.37	1.64	NA
0619-MR-23 171	179.66	5251.24	3.02	20.48	2.09	0.16	2.33	0.02	1.02	0.44	152.46	1.53	151.60	3.28	138.31	49.13	152.46	1.53	NA

0619-MR-23 247	70.15	2158.35	2.63	25.20	2.84	0.13	3.07	0.02	1.17	0.38	152.49	1.76	124.93	3.61	NA	NA	152.49	1.76	NA
0619-MR-23 88	180.50	41047.66	1.95	20.22	1.94	0.16	2.18	0.02	0.99	0.45	152.60	1.49	153.57	3.11	168.57	45.40	152.60	1.49	NA
0619-MR-23 35	127.23	3895.12	3.17	21.91	2.72	0.15	2.84	0.02	0.81	0.29	152.60	1.23	142.49	3.78	NA	NA	152.60	1.23	NA
0619-MR-23 169	142.39	31787.67	2.10	19.36	1.88	0.17	2.06	0.02	0.85	0.41	152.65	1.28	159.89	3.05	268.55	43.20	152.65	1.28	NA
0619-MR-23 261	171.92	11348.05	3.26	21.27	2.27	0.16	2.52	0.02	1.10	0.44	152.69	1.66	146.61	3.44	49.30	54.12	152.69	1.66	NA
0619-MR-23 7	405.06	31659.97	1.79	20.19	1.34	0.16	1.52	0.02	0.74	0.48	152.71	1.11	153.87	2.18	171.87	31.16	152.71	1.11	NA
0619-MR-23 37	307.13	76950.43	2.13	19.91	1.51	0.17	1.76	0.02	0.90	0.51	152.87	1.36	156.03	2.54	204.34	35.03	152.87	1.36	NA
0619-MR-23 300	121.10	3555.31	3.53	19.44	3.52	0.17	3.73	0.02	1.21	0.32	152.96	1.83	159.63	5.50	259.82	80.99	152.96	1.83	NA
0619-MR-23 267	110.03	15433.79	4.02	20.78	1.83	0.16	2.15	0.02	1.14	0.53	153.00	1.72	150.11	3.01	104.74	43.16	153.00	1.72	NA
0619-MR-23 69	91.79	9517.86	3.53	19.77	3.19	0.17	3.51	0.02	1.45	0.41	153.01	2.19	157.22	5.11	221.11	73.88	153.01	2.19	NA
0619-MR-23 91	99.95	3058.66	2.79	16.94	4.70	0.20	4.85	0.02	1.19	0.25	153.06	1.81	181.31	8.05	567.55	102.43	153.06	1.81	NA
0619-MR-23 14	610.72	106650.09	2.36	20.41	1.16	0.16	1.49	0.02	0.94	0.63	153.10	1.42	152.68	2.11	146.17	27.11	153.10	1.42	NA
0619-MR-23 151	170.46	9188.39	1.96	20.13	1.85	0.16	2.05	0.02	0.89	0.44	153.10	1.35	154.66	2.94	178.52	43.05	153.10	1.35	NA
0619-MR-23 205	612.60	18720.17	2.37	20.52	1.43	0.16	1.88	0.02	1.21	0.65	153.14	1.83	152.01	2.65	134.52	33.65	153.14	1.83	NA
0619-MR-23 144	1030.43	12872.03	2.00	20.34	1.05	0.16	1.55	0.02	1.14	0.73	153.15	1.72	153.25	2.20	154.72	24.66	153.15	1.72	NA
0619-MR-23 189	1075.37	32064.29	1.78	20.18	0.82	0.16	1.22	0.02	0.90	0.74	153.24	1.36	154.45	1.74	173.02	19.25	153.24	1.36	NA
0619-MR-23 184	424.76	30426.82	1.64	20.06	1.19	0.17	1.41	0.02	0.77	0.54	153.25	1.16	155.34	2.03	187.29	27.61	153.25	1.16	NA
0619-MR-23 273	473.34	4824.84	1.62	14.31	4.59	0.23	4.74	0.02	1.19	0.25	153.26	1.80	211.58	9.06	923.52	94.35	153.26	1.80	NA
0619-MR-23 40	193.01	8209.57	1.41	20.60	1.64	0.16	1.90	0.02	0.96	0.51	153.28	1.46	151.59	2.67	125.27	38.48	153.28	1.46	NA
0619-MR-23 194	388.23	19473.13	2.98	20.20	1.21	0.16	1.41	0.02	0.72	0.51	153.30	1.10	154.34	2.02	170.42	28.34	153.30	1.10	NA
0619-MR-23 145	625.61	16196.68	3.54	20.36	1.29	0.16	1.54	0.02	0.85	0.55	153.33	1.29	153.24	2.19	151.82	30.18	153.33	1.29	NA
0619-MR-23 270	3249.54	110165.63	0.41	20.43	0.55	0.16	1.03	0.02	0.87	0.85	153.38	1.32	152.84	1.46	144.41	12.86	153.38	1.32	NA
0619-MR-23 199	723.86	19616.88	1.45	20.26	1.28	0.16	1.48	0.02	0.75	0.50	153.43	1.13	154.04	2.11	163.48	29.85	153.43	1.13	NA
0619-MR-23 3	533.15	14667.26	1.14	20.18	1.08	0.16	1.31	0.02	0.73	0.56	153.44	1.10	154.65	1.87	173.13	25.30	153.44	1.10	NA
0619-MR-23 74	636.91	50527.06	0.95	20.27	1.03	0.16	1.59	0.02	1.21	0.76	153.45	1.84	154.04	2.28	163.15	24.11	153.45	1.84	NA
0619-MR-23 204	836.06	55616.05	1.43	20.35	0.91	0.16	1.32	0.02	0.95	0.72	153.48	1.44	153.50	1.87	153.77	21.36	153.48	1.44	NA
0619-MR-23 27	1120.24	16824.59	1.11	20.84	0.84	0.16	1.39	0.02	1.11	0.80	153.49	1.69	150.17	1.94	97.97	19.80	153.49	1.69	NA
0619-MR-23 143	180.27	63483.83	2.37	19.73	1.96	0.17	2.26	0.02	1.11	0.49	153.50	1.68	158.00	3.30	225.97	45.39	153.50	1.68	NA
0619-MR-23 290	643.18	32730.08	1.70	20.41	0.88	0.16	1.21	0.02	0.82	0.68	153.50	1.25	153.07	1.71	146.50	20.66	153.50	1.25	NA
0619-MR-23 200	233.27	4875.58	1.64	21.20	3.19	0.16	3.26	0.02	0.67	0.20	153.50	1.01	147.75	4.48	56.28	76.02	153.50	1.01	NA
0619-MR-23 250	169.84	7991.42	1.77	19.89	2.11	0.17	2.33	0.02	0.98	0.42	153.67	1.48	156.99	3.38	207.33	48.95	153.67	1.48	NA
0619-MR-23 60	690.82	17839.61	1.28	20.85	0.85	0.16	1.17	0.02	0.81	0.69	153.68	1.22	150.28	1.64	96.88	20.21	153.68	1.22	NA
0619-MR-23 284	230.17	10022.24	1.54	21.29	1.73	0.16	1.88	0.02	0.73	0.39	153.69	1.11	147.37	2.58	46.80	41.42	153.69	1.11	NA
0619-MR-23 304	86.61	4809.28	3.19	19.98	3.51	0.17	3.73	0.02	1.26	0.34	153.70	1.91	156.32	5.40	196.17	81.52	153.70	1.91	NA
0619-MR-23 244	499.26	35610.64	1.70	20.39	1.33	0.16	1.65	0.02	0.96	0.59	153.88	1.46	153.58	2.35	149.03	31.25	153.88	1.46	NA
0619-MR-23 268	243.06	8194.63	1.57	21.50	1.84	0.15	2.32	0.02	1.42	0.61	153.90	2.16	146.23	3.16	23.60	44.15	153.90	2.16	NA
0619-MR-23 159	2891.28	106979.20	16.23	20.15	0.56	0.17	1.00	0.02	0.83	0.83	153.92	1.26	155.29	1.44	176.29	13.05	153.92	1.26	NA
0619-MR-23 310	231.82	13799.64	1.59	20.67	1.52	0.16	1.76	0.02	0.90	0.51	153.94	1.36	151.67	2.49	116.25	35.87	153.94	1.36	NA
0619-MR-23 173	75.73	13450.52	2.84	20.31	3.32	0.16	3.50	0.02	1.10	0.32	154.03	1.68	154.25	5.01	157.63	77.76	154.03	1.68	NA
0619-MR-23 99	197.86	9511.25	3.86	14.89	4.70	0.22	4.80	0.02	0.97	0.20	154.35	1.48	205.50	8.93	842.12	97.86	154.35	1.48	NA

0619-MR-23 92	299.21	113616.34	1.95	19.98	1.42	0.17	1.77	0.02	1.06	0.60	154.44	1.62	157.01	2.58	196.11	33.05	154.44	1.62	NA
0619-MR-23 191	175.00	4153.33	3.19	21.64	2.19	0.15	2.35	0.02	0.85	0.36	154.49	1.30	145.87	3.19	7.77	52.60	154.49	1.30	NA
0619-MR-23 26	646.39	96692.33	1.57	20.80	1.14	0.16	1.72	0.02	1.29	0.75	154.55	1.97	151.41	2.42	102.47	26.85	154.55	1.97	NA
0619-MR-23 206	161.91	24695.67	0.85	20.13	1.96	0.17	2.09	0.02	0.74	0.35	154.55	1.13	156.06	3.03	179.06	45.65	154.55	1.13	NA
0619-MR-23 48	139.74	12519.28	1.97	20.66	2.51	0.16	2.64	0.02	0.83	0.31	154.57	1.26	152.32	3.74	117.50	59.14	154.57	1.26	NA
0619-MR-23 93	168.48	79841.51	2.92	19.59	1.80	0.17	2.03	0.02	0.93	0.46	154.73	1.41	160.21	3.01	241.98	41.60	154.73	1.41	NA
0619-MR-23 190	625.33	16341.54	2.63	20.72	0.98	0.16	1.62	0.02	1.29	0.79	154.91	1.97	152.24	2.29	110.90	23.16	154.91	1.97	NA
0619-MR-23 116	303.02	9186.25	2.08	20.70	1.80	0.16	2.02	0.02	0.91	0.45	154.94	1.40	152.40	2.86	113.02	42.54	154.94	1.40	NA
0619-MR-23 240	126.51	26359.45	2.57	20.09	1.87	0.17	2.12	0.02	1.01	0.48	155.14	1.55	156.89	3.09	183.42	43.52	155.14	1.55	NA
0619-MR-23 44	389.31	21502.55	1.92	20.38	1.27	0.16	1.51	0.02	0.81	0.54	155.15	1.25	154.86	2.17	150.37	29.84	155.15	1.25	NA
0619-MR-23 121	326.97	113620.54	1.89	20.48	1.36	0.16	1.57	0.02	0.77	0.49	155.17	1.18	154.14	2.24	138.30	32.03	155.17	1.18	NA
0619-MR-23 33	787.47	27576.57	2.21	20.60	1.00	0.16	1.28	0.02	0.80	0.62	155.24	1.22	153.41	1.82	125.06	23.44	155.24	1.22	NA
0619-MR-23 111	215.52	61151.21	2.50	20.17	1.70	0.17	2.00	0.02	1.05	0.53	155.27	1.61	156.45	2.90	174.33	39.77	155.27	1.61	NA
0619-MR-23 211	55.62	9251.78	1.85	20.16	4.14	0.17	4.31	0.02	1.19	0.28	155.44	1.83	156.67	6.25	175.34	96.54	155.44	1.83	NA
0619-MR-23 117	167.14	65979.19	2.39	19.27	1.94	0.17	2.14	0.02	0.90	0.42	155.83	1.38	163.71	3.24	279.31	44.48	155.83	1.38	NA
0619-MR-23 295	780.67	14949.09	1.57	17.91	2.10	0.19	2.40	0.02	1.16	0.48	155.95	1.78	175.33	3.86	445.42	46.69	155.95	1.78	NA
0619-MR-23 296	191.32	4049.24	3.36	22.99	2.68	0.15	2.80	0.02	0.79	0.28	155.98	1.22	139.11	3.64	NA	NA	155.98	1.22	NA
0619-MR-23 213	153.86	4567.62	2.37	21.79	2.38	0.15	2.59	0.02	1.01	0.39	156.01	1.56	146.26	3.53	NA	NA	156.01	1.56	NA
0619-MR-23 220	135.22	3313.53	2.31	21.50	2.55	0.16	2.69	0.02	0.85	0.32	156.26	1.32	148.31	3.71	22.87	61.25	156.26	1.32	NA
0619-MR-23 112	430.32	10818.54	1.27	20.17	1.52	0.17	1.73	0.02	0.84	0.48	156.32	1.29	157.42	2.53	174.03	35.38	156.32	1.29	NA
0619-MR-23 248	1636.85	19459.91	1.45	18.14	2.79	0.19	2.96	0.02	0.97	0.33	156.33	1.50	173.60	4.72	415.86	62.44	156.33	1.50	NA
0619-MR-23 83	160.18	11900.27	2.46	20.33	2.23	0.17	2.53	0.02	1.19	0.47	156.36	1.84	156.34	3.66	155.88	52.22	156.36	1.84	NA
0619-MR-23 123	506.38	118413.76	2.61	20.43	1.22	0.17	1.47	0.02	0.82	0.56	156.55	1.27	155.82	2.13	144.65	28.69	156.55	1.27	NA
0619-MR-23 118	865.22	53803.76	2.02	20.48	0.94	0.17	1.47	0.02	1.13	0.77	156.69	1.74	155.54	2.12	138.09	22.16	156.69	1.74	NA
0619-MR-23 53	204.30	236758.15	3.06	20.83	1.64	0.16	1.81	0.02	0.78	0.43	156.93	1.20	153.34	2.58	98.17	38.78	156.93	1.20	NA
0619-MR-23 165	313.05	6848644.16	3.19	20.77	1.49	0.16	1.68	0.02	0.77	0.46	157.04	1.19	153.85	2.39	104.93	35.18	157.04	1.19	NA
0619-MR-23 89	333.95	7478.40	2.18	20.51	1.54	0.17	1.70	0.02	0.72	0.43	157.56	1.13	156.19	2.46	135.54	36.07	157.56	1.13	NA
0619-MR-23 272	2426.90	103309.27	0.93	20.29	0.78	0.17	1.23	0.02	0.95	0.77	157.81	1.48	158.00	1.80	160.89	18.28	157.81	1.48	NA
0619-MR-23 253	321.69	14862.55	5.29	19.45	1.33	0.18	1.55	0.02	0.80	0.51	158.01	1.24	164.48	2.36	258.75	30.62	158.01	1.24	NA
0619-MR-23 129	431.03	18178.34	2.00	20.17	1.18	0.17	1.50	0.02	0.93	0.62	158.31	1.45	159.31	2.21	174.09	27.43	158.31	1.45	NA
0619-MR-23 38	246.84	4370.48	2.08	11.40	3.68	0.30	3.85	0.02	1.14	0.30	159.12	1.79	268.15	9.08	1376.28	70.77	159.12	1.79	NA
0619-MR-23 130	166.13	13808.94	0.89	20.35	2.01	0.17	2.28	0.02	1.07	0.47	159.15	1.68	158.81	3.35	153.63	47.10	159.15	1.68	NA
0619-MR-23 104	506.82	19102.76	2.52	20.15	1.15	0.17	1.40	0.02	0.80	0.57	159.17	1.25	160.27	2.08	176.48	26.85	159.17	1.25	NA
0619-MR-23 260	401.70	47028.44	1.72	20.05	1.25	0.17	1.47	0.03	0.77	0.52	159.29	1.21	161.13	2.19	188.20	29.06	159.29	1.21	NA
0619-MR-23 231	216.33	5072.39	4.09	21.07	2.07	0.16	2.24	0.03	0.85	0.38	159.30	1.34	153.89	3.20	71.36	49.29	159.30	1.34	NA
0619-MR-23 215	87.31	5954.34	2.50	17.61	3.75	0.20	3.91	0.03	1.11	0.28	160.06	1.75	182.38	6.53	482.29	82.88	160.06	1.75	NA
0619-MR-23 122	418.15	17567.08	2.06	20.24	1.33	0.17	1.62	0.03	0.93	0.57	160.12	1.46	160.48	2.41	165.81	31.10	160.12	1.46	NA
0619-MR-23 155	129.59	7776.42	1.74	21.12	2.25	0.16	2.50	0.03	1.09	0.44	160.65	1.73	154.80	3.60	66.15	53.65	160.65	1.73	NA
0619-MR-23 302	220.64	24801.16	1.80	17.90	4.17	0.19	4.65	0.03	2.07	0.44	160.69	3.29	180.29	7.69	445.67	92.66	160.69	3.29	NA
0619-MR-23 5	412.29	44151.21	2.60	20.10	1.62	0.17	1.82	0.03	0.82	0.45	160.77	1.30	162.12	2.72	181.96	37.78	160.77	1.30	NA

0619-MR-23 297	369.28	2873.56	1.62	12.64	8.08	0.28	8.17	0.03	1.21	0.15	161.64	1.92	248.25	18.00	1174.89	160.15	161.64	1.92	NA
0619-MR-23 179	472.96	18224.42	2.21	20.72	1.49	0.17	1.86	0.03	1.11	0.60	162.14	1.77	158.90	2.73	110.93	35.24	162.14	1.77	NA
0619-MR-23 280	243.40	9782.37	0.49	20.42	2.07	0.17	2.35	0.03	1.12	0.48	162.28	1.80	161.18	3.50	144.94	48.48	162.28	1.80	NA
0619-MR-23 278	193.81	8585.33	1.22	19.90	2.13	0.18	2.34	0.03	0.97	0.41	162.39	1.56	165.20	3.57	205.68	49.41	162.39	1.56	NA
0619-MR-23 50	206.97	8316.29	1.67	21.58	2.49	0.17	2.75	0.03	1.17	0.43	165.12	1.91	155.71	3.97	14.79	59.82	165.12	1.91	NA
0619-MR-23 87	164.34	3841.37	2.02	21.84	2.23	0.16	2.37	0.03	0.81	0.34	165.46	1.32	154.28	3.40	NA	NA	165.46	1.32	NA
0619-MR-23 52	273.15	14230.97	2.08	20.42	1.38	0.18	1.54	0.03	0.66	0.43	165.58	1.09	164.28	2.33	145.72	32.47	165.58	1.09	NA
0619-MR-23 252	1179.10	149570.73	1.10	20.25	0.64	0.18	1.22	0.03	1.04	0.85	165.83	1.70	165.81	1.86	165.56	14.86	165.83	1.70	NA
0619-MR-23 263	288.04	87560.01	1.76	19.74	1.35	0.18	1.69	0.03	1.02	0.60	166.41	1.68	170.25	2.65	223.93	31.17	166.41	1.68	NA
0619-MR-23 202	105.10	7318.52	3.32	20.72	2.76	0.17	3.02	0.03	1.24	0.41	166.42	2.03	162.86	4.55	111.35	65.17	166.42	2.03	NA
0619-MR-23 258	952.79	16991.72	4.18	20.52	0.81	0.18	1.38	0.03	1.11	0.81	166.82	1.83	164.65	2.09	133.55	19.16	166.82	1.83	NA
0619-MR-23 228	338.90	8581.41	2.52	20.88	2.10	0.17	2.25	0.03	0.82	0.36	167.09	1.35	162.30	3.38	92.88	49.68	167.09	1.35	NA
0619-MR-23 81	436.24	83738.83	1.78	20.24	0.98	0.18	1.20	0.03	0.68	0.57	167.83	1.13	167.69	1.85	165.81	23.00	167.83	1.13	NA
0619-MR-23 305	39.35	1506.57	3.37	24.35	4.72	0.15	4.85	0.03	1.09	0.23	167.84	1.81	141.31	6.40	NA	NA	167.84	1.81	NA
0619-MR-23 107	564.01	26075.79	2.50	20.33	1.24	0.18	1.44	0.03	0.73	0.51	168.61	1.22	167.76	2.22	155.85	28.90	168.61	1.22	NA
0619-MR-23 103	1121.70	55430.01	2.31	20.19	1.07	0.18	1.57	0.03	1.15	0.73	168.82	1.91	169.07	2.45	172.51	25.06	168.82	1.91	NA
0619-MR-23 128	1898.47	5466788.45	1.18	20.21	0.68	0.18	1.07	0.03	0.83	0.77	169.23	1.38	169.29	1.67	170.08	15.84	169.23	1.38	NA
0619-MR-23 98	154.05	23162.60	1.66	19.61	1.96	0.19	2.17	0.03	0.95	0.44	170.06	1.59	174.81	3.49	239.58	45.10	170.06	1.59	NA
0619-MR-23 312	2360.14	59304.84	2.08	20.13	0.75	0.18	1.16	0.03	0.89	0.76	171.68	1.51	172.20	1.85	179.24	17.49	171.68	1.51	NA
0619-MR-23 71	131.07	24919.09	2.56	19.76	1.96	0.19	2.23	0.03	1.07	0.48	172.85	1.82	176.23	3.61	221.84	45.33	172.85	1.82	NA
0619-MR-23 262	367.15	1773.19	2.00	7.21	13.07	0.52	14.13	0.03	5.39	0.38	173.39	9.22	425.99	49.21	2210.65	227.70	173.39	9.22	NA
0619-MR-23 42	840.54	35009.51	1.29	20.23	0.74	0.19	1.30	0.03	1.07	0.83	174.58	1.85	174.12	2.08	167.88	17.17	174.58	1.85	NA
0619-MR-23 140	575.00	74526.70	2.28	20.15	1.03	0.20	1.30	0.03	0.79	0.61	184.24	1.44	183.69	2.18	176.64	23.93	184.24	1.44	NA
0619-MR-23 55	803.75	81028.06	1.84	20.28	0.99	0.20	1.58	0.03	1.23	0.78	188.43	2.28	186.42	2.69	161.12	23.23	188.43	2.28	NA
0619-MR-23 241	424.38	13376.97	2.68	20.44	1.16	0.21	1.40	0.03	0.77	0.55	194.24	1.48	190.39	2.42	142.95	27.30	194.24	1.48	NA
0619-MR-23 18	265.33	16184.97	3.00	20.93	1.58	0.21	1.81	0.03	0.89	0.49	198.48	1.73	190.06	3.13	86.83	37.35	198.48	1.73	NA
0619-MR-23 235	489.38	116071.91	2.85	19.75	1.25	0.22	1.47	0.03	0.77	0.52	199.34	1.50	201.19	2.68	222.87	28.93	199.34	1.50	NA
0619-MR-23 309	610.19	16976.18	2.04	20.26	0.96	0.22	1.25	0.03	0.80	0.64	200.84	1.58	197.95	2.25	163.66	22.50	200.84	1.58	NA
0619-MR-23 62	202.29	11005.23	3.54	19.75	1.63	0.25	1.93	0.04	1.04	0.54	224.41	2.30	224.28	3.89	222.89	37.61	224.41	2.30	NA
0619-MR-23 76	207.72	7424.07	2.44	19.91	1.60	0.25	1.80	0.04	0.82	0.45	225.25	1.81	223.49	3.60	204.96	37.11	225.25	1.81	NA
0619-MR-23 113	229.02	55517.00	6.53	19.24	1.39	0.26	1.68	0.04	0.94	0.56	227.59	2.10	232.54	3.48	282.91	31.73	227.59	2.10	NA
0619-MR-23 51	196.77	32398.06	1.11	19.28	1.82	0.27	2.00	0.04	0.83	0.42	238.16	1.95	241.88	4.31	278.12	41.72	238.16	1.95	NA
0619-MR-23 182	167.12	5431.32	1.93	19.97	1.78	0.26	2.08	0.04	1.08	0.52	241.56	2.57	237.46	4.41	197.08	41.29	241.56	2.57	NA
0619-MR-23 282	922.72	117246.60	1.26	19.57	0.83	0.29	1.27	0.04	0.97	0.76	257.52	2.44	256.18	2.88	243.97	19.02	257.52	2.44	NA
0619-MR-23 255	1102.41	83592.89	1.07	19.48	0.70	0.32	1.32	0.04	1.11	0.85	281.68	3.07	278.86	3.21	255.28	16.16	281.68	3.07	NA
0619-MR-23 170	1248.62	47833.27	4.01	19.24	0.68	0.32	1.27	0.05	1.07	0.84	285.84	2.99	285.60	3.15	283.67	15.52	285.84	2.99	NA
0619-MR-23 219	510.00	17440.11	0.32	19.22	0.88	0.33	1.13	0.05	0.71	0.63	294.01	2.04	293.12	2.89	286.06	20.23	294.01	2.04	NA
0619-MR-23 139	250.43	9898.68	1.69	19.55	1.20	0.34	1.42	0.05	0.75	0.53	305.47	2.23	298.75	3.66	246.55	27.66	305.47	2.23	NA
0619-MR-23 28	394.23	76597.36	1.67	18.73	0.92	0.37	1.24	0.05	0.83	0.67	317.26	2.56	320.57	3.40	344.70	20.79	317.26	2.56	NA
0619-MR-23 29	342.93	33295.01	1.67	18.99	0.97	0.37	1.25	0.05	0.79	0.63	321.79	2.48	320.73	3.44	313.05	22.06	321.79	2.48	NA

0619-MR-23 181	1174.96	173920.82	35.95	18.73	0.73	0.38	1.20	0.05	0.95	0.79	323.78	3.00	326.35	3.34	344.71	16.43	323.78	3.00	NA
0619-MR-23 157	185.76	69315.79	2.68	19.15	1.47	0.38	1.77	0.05	0.99	0.56	331.88	3.19	327.16	4.95	293.75	33.54	331.88	3.19	NA
0619-MR-23 79	306.06	143176.86	2.43	18.94	0.96	0.39	1.21	0.05	0.74	0.61	335.01	2.41	332.98	3.44	318.82	21.84	335.01	2.41	NA
0619-MR-23 125	317.34	112242.34	2.09	18.82	0.94	0.39	1.30	0.05	0.90	0.69	336.21	2.94	335.88	3.71	333.60	21.26	336.21	2.94	NA
0619-MR-23 90	393.23	243571.47	4.62	18.15	0.85	0.45	1.23	0.06	0.88	0.72	373.63	3.21	379.39	3.89	414.68	19.03	373.63	3.21	NA
0619-MR-23 150	283.79	259461.96	1.60	17.98	0.99	0.50	1.25	0.06	0.77	0.61	404.73	3.01	409.47	4.21	436.29	21.97	404.73	3.01	92.77
0619-MR-23 315	112.56	24050.29	0.85	18.11	1.38	0.53	1.60	0.07	0.82	0.51	431.74	3.41	429.93	5.62	420.22	30.84	431.74	3.41	102.74
0619-MR-23 307	680.35	48192.98	0.43	17.77	0.63	0.54	1.01	0.07	0.79	0.79	433.34	3.33	437.98	3.60	462.49	13.90	433.34	3.33	93.70
0619-MR-23 22	781.83	736532.55	1.99	17.77	0.82	0.54	1.05	0.07	0.66	0.63	435.13	2.77	439.46	3.75	462.23	18.14	435.13	2.77	94.14
0619-MR-23 49	1747.60	77903.32	1.98	17.67	0.76	0.56	1.92	0.07	1.76	0.92	445.07	7.59	450.00	6.98	475.26	16.78	445.07	7.59	93.65
0619-MR-23 32	508.71	102876.57	2.42	17.86	0.56	0.57	0.99	0.07	0.82	0.82	460.34	3.63	458.83	3.66	451.22	12.51	460.34	3.63	102.02
0619-MR-23 66	313.80	20032.76	3.81	14.19	0.84	0.79	3.07	0.08	2.95	0.96	503.71	14.31	590.72	13.75	940.85	17.20	503.71	14.31	53.54
0619-MR-23 167	348.65	170922.88	4.28	16.70	0.76	0.78	1.21	0.09	0.94	0.78	584.85	5.25	587.64	5.40	598.46	16.48	584.85	5.25	97.73
0619-MR-23 233	115.06	33261.31	1.06	16.43	1.35	0.80	1.71	0.10	1.05	0.61	586.93	5.87	596.54	7.72	633.26	29.13	586.93	5.87	92.68
0619-MR-23 85	657.03	1765326.63	2.61	16.66	0.75	0.81	1.09	0.10	0.79	0.73	599.25	4.51	600.24	4.92	603.96	16.15	599.25	4.51	99.22
0619-MR-23 192	238.74	19881.80	2.26	16.85	1.00	0.81	1.29	0.10	0.81	0.63	606.32	4.68	600.48	5.83	578.52	21.70	606.32	4.68	104.80
0619-MR-23 242	606.82	81312.65	2.83	16.83	0.68	0.82	1.15	0.10	0.93	0.81	613.06	5.45	606.26	5.25	580.93	14.67	613.06	5.45	105.53
0619-MR-23 127	472.78	173025.62	1.82	16.58	0.71	0.84	1.15	0.10	0.90	0.79	618.23	5.33	617.44	5.32	614.52	15.39	618.23	5.33	100.60
0619-MR-23 298	300.86	90573.29	0.90	16.33	0.75	0.87	1.02	0.10	0.69	0.68	634.20	4.16	636.79	4.83	646.00	16.16	634.20	4.16	98.17
0619-MR-23 75	1230.95	86776.06	0.78	15.94	0.64	0.90	1.25	0.10	1.07	0.86	636.76	6.51	650.36	6.00	697.87	13.55	636.76	6.51	91.24
0619-MR-23 59	553.43	53641.38	2.41	16.22	0.61	0.90	0.98	0.11	0.77	0.78	650.60	4.76	653.03	4.73	661.44	13.10	650.60	4.76	98.36
0619-MR-23 8	884.42	4061177.83	5.09	15.20	0.64	1.04	1.07	0.12	0.86	0.80	701.75	5.75	725.27	5.56	798.64	13.37	701.75	5.75	87.87
0619-MR-23 86	148.70	75214.13	1.63	15.72	0.92	1.07	1.34	0.12	0.98	0.73	742.86	6.90	739.26	7.06	728.37	19.41	742.86	6.90	101.99
0619-MR-23 45	809.26	318455.51	2.26	14.46	0.76	1.41	1.32	0.15	1.08	0.82	886.96	8.95	891.44	7.84	902.56	15.66	886.96	8.95	98.27
0619-MR-23 119	100.00	46808.12	1.97	14.30	0.82	1.56	1.16	0.16	0.83	0.71	967.75	7.43	955.11	7.20	926.12	16.85	926.12	16.85	104.50
0619-MR-23 21	337.12	721552.02	1.01	14.24	0.75	1.47	1.29	0.15	1.05	0.81	912.77	8.91	918.98	7.79	933.90	15.40	933.90	15.40	97.74
0619-MR-23 299	1465.26	310048.28	84.89	13.87	0.57	1.63	1.02	0.16	0.84	0.83	977.78	7.66	980.89	6.39	987.86	11.50	987.86	11.50	98.98
0619-MR-23 137	108.70	158058.17	1.32	13.74	0.81	1.66	1.10	0.17	0.74	0.67	988.74	6.76	994.50	6.96	1007.22	16.50	1007.22	16.50	98.17
0619-MR-23 275	220.63	69219.96	2.92	13.68	0.70	1.73	1.08	0.17	0.82	0.76	1024.48	7.79	1021.49	6.98	1015.07	14.27	1015.07	14.27	100.93
0619-MR-23 72	1687.77	258280.80	8.77	13.68	0.53	1.58	1.07	0.16	0.93	0.87	940.36	8.16	963.18	6.68	1015.63	10.82	1015.63	10.82	92.59
0619-MR-23 230	173.96	24645.65	2.46	13.68	0.74	1.67	1.06	0.17	0.75	0.71	988.07	6.91	996.87	6.71	1016.28	14.98	1016.28	14.98	97.22
0619-MR-23 54	672.22	100726.62	4.46	13.60	0.60	1.71	0.92	0.17	0.70	0.76	1007.26	6.56	1013.70	5.92	1027.64	12.12	1027.64	12.12	98.02
0619-MR-23 196	362.19	64068.13	1.33	13.54	0.75	1.71	1.17	0.17	0.90	0.77	1000.63	8.35	1011.88	7.49	1036.30	15.08	1036.30	15.08	96.56
0619-MR-23 285	78.76	17065.70	1.50	13.30	0.69	1.82	1.13	0.18	0.89	0.79	1045.54	8.55	1054.25	7.38	1072.35	13.91	1072.35	13.91	97.50
0619-MR-23 281	363.65	53336.32	1.26	13.08	0.60	1.92	1.14	0.18	0.97	0.85	1078.95	9.65	1088.02	7.63	1106.22	12.00	1106.22	12.00	97.53
0619-MR-23 9	230.49	99326.59	2.45	12.52	0.69	2.10	1.09	0.19	0.84	0.77	1126.03	8.70	1148.86	7.51	1192.22	13.72	1192.22	13.72	94.45
0619-MR-23 195	338.57	96099.89	2.27	12.30	0.51	2.39	1.11	0.21	0.98	0.89	1244.35	11.14	1238.26	7.94	1227.71	10.07	1227.71	10.07	101.36
0619-MR-23 168	162.83	35778.23	2.10	12.26	0.63	2.29	1.02	0.20	0.81	0.79	1196.22	8.79	1209.97	7.23	1234.61	12.36	1234.61	12.36	96.89
0619-MR-23 221	772.91	196130.41	1.68	11.46	0.54	2.85	1.30	0.24	1.18	0.91	1369.65	14.61	1367.97	9.78	1365.34	10.43	1365.34	10.43	100.32
0619-MR-23 100	421.45	92873.76	2.04	11.25	0.83	2.84	1.44	0.23	1.18	0.82	1343.38	14.30	1365.76	10.82	1400.93	15.87	1400.93	15.87	95.89

0619-MR-23 46	335.30	69806.86	1.18	11.10	0.56	3.08	0.88	0.25	0.68	0.77	1428.84	8.68	1428.21	6.76	1427.26	10.77	1427.26	10.77	100.11
0619-MR-23 106	169.95	56663.49	1.41	11.00	0.82	3.18	1.05	0.25	0.66	0.63	1459.52	8.64	1453.18	8.13	1443.89	15.58	1443.89	15.58	101.08
0619-MR-23 146	345.24	166817.19	0.99	9.82	0.57	4.08	0.89	0.29	0.68	0.77	1644.77	9.87	1649.84	7.22	1656.30	10.51	1656.30	10.51	99.30
0619-MR-23 63	109.08	65243.05	4.77	9.43	0.68	4.38	1.13	0.30	0.90	0.80	1689.41	13.39	1708.02	9.34	1730.90	12.52	1730.90	12.52	97.60
0619-MR-23 132	430.39	64556.10	1.97	9.38	0.63	4.70	1.10	0.32	0.89	0.82	1788.34	13.97	1766.83	9.18	1741.47	11.63	1741.47	11.63	102.69
0619-MR-23 65	1811.25	580356.53	16.18	9.18	0.64	4.71	1.22	0.31	1.04	0.85	1759.72	16.04	1769.27	10.22	1780.54	11.59	1780.54	11.59	98.83
0619-MR-23 203	596.80	135397.54	1.53	9.00	0.59	4.78	0.98	0.31	0.79	0.80	1752.84	12.07	1782.06	8.24	1816.43	10.63	1816.43	10.63	96.50
0619-MR-23 12	141.70	105173.49	1.66	8.89	0.63	5.07	1.13	0.33	0.94	0.83	1824.83	14.97	1831.59	9.60	1839.27	11.34	1839.27	11.34	99.22
0619-MR-23 162	295.45	194354.05	3.72	8.88	0.49	4.91	1.30	0.32	1.21	0.93	1772.92	18.77	1804.35	11.01	1840.84	8.79	1840.84	8.79	96.31
0619-MR-23 201	945.64	287766.00	1.84	8.63	0.51	4.58	1.35	0.29	1.25	0.93	1625.71	17.95	1745.45	11.24	1892.04	9.12	1892.04	9.12	85.92
0619-MR-23 20	417.48	98621.11	0.75	8.24	0.63	6.02	1.03	0.36	0.82	0.79	1982.80	13.93	1979.26	8.98	1975.55	11.23	1975.55	11.23	100.37
0619-MR-23 180	82.81	67467.29	1.32	6.34	0.50	9.92	1.04	0.46	0.91	0.88	2421.29	18.41	2427.13	9.60	2432.02	8.50	2432.02	8.50	99.56
0619-MR-23 288	100.69	68041.95	1.50	6.29	0.63	8.77	1.03	0.40	0.81	0.79	2172.52	14.98	2314.79	9.35	2442.78	10.61	2442.78	10.61	88.94
0619-MR-23 13	369.29	233780.61	2.27	6.00	0.44	9.34	1.32	0.41	1.25	0.94	2198.13	23.22	2371.49	12.11	2524.03	7.31	2524.03	7.31	87.09
0619-MR-23 148	716.80	1102601.03	1.80	5.57	0.42	12.64	0.84	0.51	0.73	0.86	2662.60	15.82	2653.43	7.91	2646.43	7.04	2646.43	7.04	100.61
0619-MR-23 61	575.19	1167971.12	3.22	5.54	0.58	12.50	0.89	0.50	0.68	0.76	2623.85	14.73	2642.69	8.41	2657.14	9.57	2657.14	9.57	98.75
0619-MR-23 227	475.52	552100.52	1.26	5.46	0.55	12.92	0.95	0.51	0.77	0.81	2664.17	16.91	2673.91	8.98	2681.27	9.17	2681.27	9.17	99.36

Sample 0619-MR-24

0619-MR-24 Spot 142	181.10	41829.09	3.03	20.47	1.77	0.14	2.04	0.02	1.00	0.49	130.63	1.30	131.08	2.51	139.36	41.66	130.63	1.30	NA
0619-MR-24 Spot 246	81.92	3655.31	3.98	20.79	5.15	0.14	5.27	0.02	1.12	0.21	130.67	1.45	129.22	6.40	102.64	121.81	130.67	1.45	NA
0619-MR-24 Spot 10	315.24	28076.14	5.43	21.21	1.54	0.13	1.78	0.02	0.90	0.51	130.72	1.17	126.91	2.13	56.00	36.65	130.72	1.17	NA
0619-MR-24 Spot 114	98.19	35607.88	2.94	18.49	2.71	0.15	2.87	0.02	0.95	0.33	130.75	1.22	144.28	3.87	372.94	61.12	130.75	1.22	NA
0619-MR-24 Spot 139	229.34	64925.59	3.07	19.98	1.51	0.14	1.66	0.02	0.71	0.43	130.80	0.92	134.28	2.09	196.31	35.00	130.80	0.92	NA
0619-MR-24 Spot 185	469.77	20053.23	1.76	21.17	1.43	0.13	1.65	0.02	0.84	0.51	130.81	1.08	127.20	1.98	60.18	33.98	130.81	1.08	NA
0619-MR-24 Spot 61	222.35	21259.67	2.77	20.14	2.02	0.14	2.15	0.02	0.74	0.35	130.92	0.96	133.42	2.69	178.27	47.01	130.92	0.96	NA
0619-MR-24 Spot 243	343.98	262788.15	2.07	20.90	1.54	0.14	1.71	0.02	0.75	0.44	130.98	0.98	128.91	2.07	90.83	36.40	130.98	0.98	NA
0619-MR-24 Spot 152	105.82	15649.49	2.40	20.60	2.86	0.14	2.97	0.02	0.80	0.27	131.16	1.04	130.82	3.65	124.55	67.44	131.16	1.04	NA
0619-MR-24 Spot 2	109.53	8385.98	4.34	22.01	1.83	0.13	2.16	0.02	1.14	0.53	131.40	1.48	123.15	2.50	NA	NA	131.40	1.48	NA
0619-MR-24 Spot 107	86.75	12921.73	2.67	22.95	2.54	0.12	2.77	0.02	1.10	0.40	131.46	1.43	118.45	3.09	NA	NA	131.46	1.43	NA
0619-MR-24 Spot 127	110.59	11836.60	3.33	20.62	2.13	0.14	2.31	0.02	0.90	0.39	131.47	1.17	131.01	2.84	122.64	50.09	131.47	1.17	NA
0619-MR-24 Spot 113	195.87	17963.00	3.45	20.41	1.96	0.14	2.18	0.02	0.96	0.44	131.47	1.25	132.29	2.71	147.04	45.96	131.47	1.25	NA
0619-MR-24 Spot 34	139.38	15796.85	3.00	20.97	2.23	0.14	2.50	0.02	1.12	0.45	131.47	1.45	128.94	3.02	82.52	52.97	131.47	1.45	NA
0619-MR-24 Spot 204	236.22	39950.82	2.30	20.85	1.81	0.14	2.03	0.02	0.90	0.45	131.48	1.18	129.64	2.47	95.94	42.93	131.48	1.18	NA
0619-MR-24 Spot 3	95.72	8091.27	4.24	21.35	3.21	0.13	3.40	0.02	1.12	0.33	131.50	1.45	126.82	4.06	39.88	76.89	131.50	1.45	NA
0619-MR-24 Spot 74	79.42	3167.85	3.36	21.39	3.17	0.13	3.34	0.02	1.03	0.31	131.60	1.34	126.67	3.98	35.11	76.03	131.60	1.34	NA
0619-MR-24 Spot 213	228.91	25844.31	2.45	19.41	2.23	0.15	2.43	0.02	0.94	0.39	131.72	1.23	138.91	3.15	263.70	51.30	131.72	1.23	NA
0619-MR-24 Spot 68	255.16	74460.96	3.27	20.25	1.77	0.14	1.97	0.02	0.87	0.44	131.78	1.13	133.54	2.46	164.91	41.29	131.78	1.13	NA
0619-MR-24 Spot 290	93.56	9203.43	3.69	21.22	2.15	0.13	2.50	0.02	1.28	0.51	131.85	1.67	127.89	3.00	54.92	51.18	131.85	1.67	NA

0619-MR-24 Spot 279	198.20	9172.95	3.03	20.99	1.75	0.14	2.19	0.02	1.31	0.60	131.91	1.71	129.23	2.65	80.12	41.59	131.91	1.71	NA
0619-MR-24 Spot 136	126.23	155927.74	2.99	20.36	2.59	0.14	2.77	0.02	0.99	0.36	131.92	1.29	133.03	3.46	152.85	60.75	131.92	1.29	NA
0619-MR-24 Spot 222	128.02	25524.31	3.43	20.34	1.87	0.14	2.11	0.02	0.98	0.46	132.00	1.28	133.21	2.63	154.92	43.76	132.00	1.28	NA
0619-MR-24 Spot 75	100.88	616838.27	4.15	19.65	2.79	0.15	3.16	0.02	1.49	0.47	132.06	1.94	137.63	4.07	234.79	64.42	132.06	1.94	NA
0619-MR-24 Spot 91	112.57	10898.63	4.53	21.14	2.32	0.13	2.57	0.02	1.12	0.43	132.10	1.46	128.56	3.11	63.61	55.24	132.10	1.46	NA
0619-MR-24 Spot 172	161.79	20826.04	3.68	20.20	2.13	0.14	2.30	0.02	0.87	0.38	132.15	1.14	134.23	2.89	171.27	49.67	132.15	1.14	NA
0619-MR-24 Spot 154	189.66	75785.14	3.01	20.69	1.99	0.14	2.21	0.02	0.98	0.44	132.39	1.29	131.42	2.73	114.01	46.83	132.39	1.29	NA
0619-MR-24 Spot 228	80.06	12456.63	4.05	21.71	2.70	0.13	2.87	0.02	0.97	0.34	132.47	1.28	125.71	3.39	NA	NA	132.47	1.28	NA
0619-MR-24 Spot 173	331.28	35310.24	3.00	20.15	1.69	0.14	1.94	0.02	0.95	0.49	132.53	1.25	134.91	2.45	176.95	39.39	132.53	1.25	NA
0619-MR-24 Spot 160	188.15	51717.60	4.95	20.46	1.97	0.14	2.17	0.02	0.92	0.42	132.54	1.20	132.98	2.71	140.99	46.19	132.54	1.20	NA
0619-MR-24 Spot 258	98.30	8688.81	5.02	20.40	3.19	0.14	3.35	0.02	1.02	0.31	132.55	1.34	133.35	4.19	147.69	74.89	132.55	1.34	NA
0619-MR-24 Spot 197	176.04	10058.85	3.57	21.98	1.91	0.13	2.13	0.02	0.95	0.44	132.60	1.24	124.37	2.50	NA	NA	132.60	1.24	NA
0619-MR-24 Spot 111	98.71	6765.68	4.27	22.60	2.90	0.13	3.13	0.02	1.17	0.37	132.69	1.54	121.25	3.58	NA	NA	132.69	1.54	NA
0619-MR-24 Spot 72	224.02	25877.33	3.08	20.57	1.24	0.14	1.51	0.02	0.86	0.57	132.69	1.13	132.44	1.87	127.91	29.16	132.69	1.13	NA
0619-MR-24 Spot 205	624.83	22302.04	1.11	19.37	1.68	0.15	2.19	0.02	1.41	0.64	132.70	1.85	140.16	2.87	268.34	38.43	132.70	1.85	NA
0619-MR-24 Spot 287	157.85	23644.18	2.80	20.30	2.08	0.14	2.32	0.02	1.02	0.44	132.72	1.34	134.14	2.92	159.23	48.76	132.72	1.34	NA
0619-MR-24 Spot 20	255.37	97506.97	3.46	20.77	1.62	0.14	1.94	0.02	1.07	0.55	132.74	1.41	131.33	2.39	105.85	38.31	132.74	1.41	NA
0619-MR-24 Spot 207	123.91	5226.30	3.99	21.73	2.41	0.13	2.62	0.02	1.05	0.40	132.76	1.38	125.86	3.10	NA	NA	132.76	1.38	NA
0619-MR-24 Spot 134	245.05	91792.42	3.47	21.33	1.93	0.13	2.19	0.02	1.02	0.47	132.78	1.34	128.08	2.63	41.65	46.22	132.78	1.34	NA
0619-MR-24 Spot 65	177.68	23084.54	4.90	20.79	2.22	0.14	2.52	0.02	1.19	0.47	132.87	1.57	131.30	3.11	102.96	52.58	132.87	1.57	NA
0619-MR-24 Spot 165	298.01	229270.08	3.21	20.58	1.39	0.14	2.07	0.02	1.53	0.74	132.94	2.01	132.62	2.57	127.06	32.74	132.94	2.01	NA
0619-MR-24 Spot 158	118.56	113896.07	3.30	20.91	2.40	0.14	2.63	0.02	1.07	0.41	133.00	1.40	130.71	3.22	89.24	56.93	133.00	1.40	NA
0619-MR-24 Spot 16	419.79	22927.11	2.61	21.01	1.19	0.14	1.39	0.02	0.71	0.51	133.02	0.94	130.14	1.70	77.88	28.35	133.02	0.94	NA
0619-MR-24 Spot 40	187.54	47778.88	2.50	20.46	1.94	0.14	2.26	0.02	1.17	0.52	133.06	1.54	133.47	2.83	140.74	45.48	133.06	1.54	NA
0619-MR-24 Spot 104	74.32	4567.57	3.75	20.40	3.72	0.14	3.94	0.02	1.29	0.33	133.09	1.70	133.89	4.94	148.27	87.19	133.09	1.70	NA
0619-MR-24 Spot 59	68.19	3941.86	4.45	22.40	3.52	0.13	3.67	0.02	1.05	0.29	133.13	1.38	122.62	4.24	NA	NA	133.13	1.38	NA
0619-MR-24 Spot 121	132.74	51434.73	4.05	20.32	1.84	0.14	2.05	0.02	0.91	0.44	133.20	1.20	134.45	2.59	156.53	43.06	133.20	1.20	NA
0619-MR-24 Spot 262	120.58	62805.04	3.54	21.32	2.37	0.13	2.72	0.02	1.33	0.49	133.24	1.75	128.56	3.28	42.89	56.74	133.24	1.75	NA
0619-MR-24 Spot 215	70.57	25746.81	4.30	21.26	2.80	0.14	3.07	0.02	1.26	0.41	133.25	1.67	128.93	3.72	49.99	66.81	133.25	1.67	NA
0619-MR-24 Spot 62	162.67	29407.28	3.07	22.04	2.16	0.13	2.36	0.02	0.95	0.40	133.25	1.26	124.66	2.77	NA	NA	133.25	1.26	NA
0619-MR-24 Spot 176	111.75	5028.47	3.64	21.83	2.30	0.13	2.47	0.02	0.89	0.36	133.25	1.17	125.79	2.92	NA	NA	133.25	1.17	NA
0619-MR-24 Spot 95	107.86	37221.75	3.81	20.27	2.78	0.14	2.93	0.02	0.94	0.32	133.29	1.24	134.88	3.70	163.01	64.92	133.29	1.24	NA
0619-MR-24 Spot 146	272.21	227401.43	2.64	20.61	1.49	0.14	1.73	0.02	0.87	0.50	133.29	1.15	132.76	2.15	123.37	35.11	133.29	1.15	NA
0619-MR-24 Spot 120	106.69	21772.64	2.82	20.06	2.81	0.14	3.05	0.02	1.17	0.38	133.29	1.55	136.18	3.89	186.79	65.51	133.29	1.55	NA
0619-MR-24 Spot 87	88.13	7234.07	4.20	21.85	3.53	0.13	3.69	0.02	1.10	0.30	133.31	1.45	125.70	4.37	NA	NA	133.31	1.45	NA
0619-MR-24 Spot 4	197.05	26524.81	3.51	20.73	2.02	0.14	2.24	0.02	0.97	0.43	133.32	1.28	132.10	2.77	110.27	47.61	133.32	1.28	NA
0619-MR-24 Spot 24	68.96	3187.37	4.11	24.24	3.61	0.12	3.82	0.02	1.23	0.32	133.35	1.63	114.01	4.11	NA	NA	133.35	1.63	NA
0619-MR-24 Spot 15	211.97	866506.42	3.57	20.32	1.85	0.14	2.12	0.02	1.04	0.49	133.38	1.37	134.65	2.67	156.95	43.18	133.38	1.37	NA
0619-MR-24 Spot 78	341.18	18357.55	3.05	20.25	1.37	0.14	1.74	0.02	1.07	0.62	133.40	1.41	135.07	2.20	164.47	32.04	133.40	1.41	NA
0619-MR-24 Spot 223	277.55	50499.92	3.97	21.22	1.51	0.14	1.72	0.02	0.83	0.48	133.45	1.09	129.32	2.09	54.10	35.95	133.45	1.09	NA

0619-MR-24 Spot 33	146.18	58303.00	4.22	21.30	1.96	0.14	2.14	0.02	0.86	0.40	133.45	1.14	128.89	2.59	45.49	46.79	133.45	1.14	NA
0619-MR-24 Spot 277	145.38	12086.97	3.89	20.74	2.39	0.14	2.63	0.02	1.09	0.41	133.54	1.44	132.21	3.25	108.45	56.43	133.54	1.44	NA
0619-MR-24 Spot 148	363.48	86315.55	2.00	20.92	1.11	0.14	1.47	0.02	0.96	0.65	133.58	1.27	131.22	1.81	88.81	26.31	133.58	1.27	NA
0619-MR-24 Spot 161	163.33	18155.11	3.51	21.21	2.02	0.14	2.41	0.02	1.32	0.55	133.62	1.74	129.54	2.93	55.36	48.24	133.62	1.74	NA
0619-MR-24 Spot 81	173.37	36528.99	3.30	20.55	1.86	0.14	2.14	0.02	1.05	0.49	133.65	1.38	133.49	2.67	130.70	43.83	133.65	1.38	NA
0619-MR-24 Spot 278	318.80	27426.75	2.31	20.30	1.43	0.14	1.63	0.02	0.76	0.47	133.74	1.01	135.10	2.06	159.13	33.60	133.74	1.01	NA
0619-MR-24 Spot 12	430.04	669593.57	2.98	20.43	1.48	0.14	1.64	0.02	0.70	0.43	133.76	0.93	134.35	2.06	144.78	34.77	133.76	0.93	NA
0619-MR-24 Spot 77	315.32	63684.07	2.71	20.76	1.50	0.14	1.86	0.02	1.09	0.59	133.77	1.45	132.34	2.30	106.87	35.48	133.77	1.45	NA
0619-MR-24 Spot 43	208.06	17512.04	2.99	20.96	1.56	0.14	1.85	0.02	0.98	0.53	133.85	1.30	131.19	2.27	83.43	37.09	133.85	1.30	NA
0619-MR-24 Spot 138	405.14	155197.86	2.29	20.72	1.31	0.14	1.56	0.02	0.84	0.54	133.87	1.11	132.66	1.93	110.91	30.92	133.87	1.11	NA
0619-MR-24 Spot 54	129.53	14242.45	4.24	20.57	2.29	0.14	2.52	0.02	1.05	0.42	133.91	1.39	133.61	3.15	128.30	53.85	133.91	1.39	NA
0619-MR-24 Spot 257	198.32	13257.81	3.74	21.05	1.85	0.14	2.04	0.02	0.86	0.42	133.94	1.14	130.78	2.51	73.73	44.02	133.94	1.14	NA
0619-MR-24 Spot 155	125.79	18934.92	3.59	20.37	2.63	0.14	2.76	0.02	0.84	0.30	133.97	1.11	134.89	3.48	151.08	61.57	133.97	1.11	NA
0619-MR-24 Spot 36	132.53	8652.79	4.00	21.69	2.23	0.13	2.48	0.02	1.08	0.43	134.06	1.43	127.25	2.96	1.80	53.74	134.06	1.43	NA
0619-MR-24 Spot 137	52.37	102855.41	4.30	20.94	3.46	0.14	3.67	0.02	1.22	0.33	134.07	1.62	131.53	4.53	85.90	82.14	134.07	1.62	NA
0619-MR-24 Spot 30	130.03	25984.95	4.04	20.54	1.72	0.14	2.05	0.02	1.11	0.54	134.07	1.47	133.95	2.57	131.81	40.48	134.07	1.47	NA
0619-MR-24 Spot 64	152.96	61733.49	3.23	20.02	1.82	0.14	2.14	0.02	1.13	0.53	134.08	1.49	137.18	2.74	191.25	42.27	134.08	1.49	NA
0619-MR-24 Spot 195	431.45	209802.71	2.31	20.40	1.27	0.14	1.56	0.02	0.91	0.58	134.08	1.21	134.79	1.97	147.32	29.74	134.08	1.21	NA
0619-MR-24 Spot 149	181.38	8431.15	3.37	20.96	1.49	0.14	1.90	0.02	1.18	0.62	134.10	1.57	131.44	2.35	83.62	35.41	134.10	1.57	NA
0619-MR-24 Spot 100	437.09	28491.24	2.56	21.21	1.12	0.14	1.52	0.02	1.03	0.67	134.15	1.36	130.06	1.86	55.95	26.79	134.15	1.36	NA
0619-MR-24 Spot 129	70.79	51914.21	2.91	20.96	2.31	0.14	2.49	0.02	0.93	0.37	134.26	1.24	131.59	3.08	83.69	54.89	134.26	1.24	NA
0619-MR-24 Spot 151	109.31	92778.47	4.44	20.14	2.31	0.14	2.54	0.02	1.08	0.42	134.27	1.43	136.63	3.25	177.80	53.78	134.27	1.43	NA
0619-MR-24 Spot 41	64.57	3976.44	4.41	23.70	3.16	0.12	3.42	0.02	1.30	0.38	134.29	1.73	117.26	3.79	NA	NA	134.29	1.73	NA
0619-MR-24 Spot 293	276.85	29495.92	2.99	20.75	1.68	0.14	1.89	0.02	0.86	0.45	134.33	1.14	132.94	2.35	108.13	39.69	134.33	1.14	NA
0619-MR-24 Spot 218	136.21	22872.92	4.00	19.28	1.91	0.15	2.25	0.02	1.18	0.52	134.34	1.57	142.41	2.99	279.03	43.83	134.34	1.57	NA
0619-MR-24 Spot 69	207.04	51143.98	3.33	20.62	1.77	0.14	2.09	0.02	1.12	0.54	134.36	1.50	133.73	2.62	122.55	41.63	134.36	1.50	NA
0619-MR-24 Spot 55	174.23	10385.60	4.05	22.53	2.21	0.13	2.48	0.02	1.12	0.45	134.41	1.49	123.11	2.88	NA	NA	134.41	1.49	NA
0619-MR-24 Spot 25	189.18	14735.27	3.00	20.24	1.88	0.14	2.08	0.02	0.89	0.43	134.41	1.19	136.14	2.65	166.37	43.99	134.41	1.19	NA
0619-MR-24 Spot 128	78.49	24558.62	4.40	20.62	3.26	0.14	3.49	0.02	1.25	0.36	134.45	1.67	133.80	4.38	122.41	76.87	134.45	1.67	NA
0619-MR-24 Spot 27	143.06	18026.15	3.82	21.05	2.49	0.14	2.62	0.02	0.84	0.32	134.45	1.11	131.25	3.23	73.76	59.10	134.45	1.11	NA
0619-MR-24 Spot 5	344.04	50699.24	2.30	20.81	1.14	0.14	1.46	0.02	0.91	0.63	134.49	1.21	132.68	1.81	100.49	26.89	134.49	1.21	NA
0619-MR-24 Spot 234	206.16	107978.56	3.00	20.52	1.67	0.14	1.90	0.02	0.91	0.48	134.56	1.21	134.55	2.39	134.28	39.24	134.56	1.21	NA
0619-MR-24 Spot 110	270.57	78317.50	2.66	21.35	1.70	0.14	1.92	0.02	0.90	0.47	134.66	1.20	129.73	2.34	40.32	40.54	134.66	1.20	NA
0619-MR-24 Spot 174	102.19	11878.44	4.62	19.99	2.41	0.15	2.68	0.02	1.17	0.44	134.68	1.56	138.00	3.46	195.43	56.15	134.68	1.56	NA
0619-MR-24 Spot 67	261.82	28254.50	3.27	21.28	1.85	0.14	2.11	0.02	1.00	0.48	134.69	1.34	130.14	2.57	47.86	44.29	134.69	1.34	NA
0619-MR-24 Spot 14	100.00	39657.69	4.34	20.74	2.28	0.14	2.48	0.02	0.98	0.40	134.69	1.31	133.30	3.10	108.71	53.87	134.69	1.31	NA
0619-MR-24 Spot 267	162.54	31420.41	4.57	21.26	2.15	0.14	2.37	0.02	1.00	0.42	134.75	1.33	130.33	2.90	50.32	51.37	134.75	1.33	NA
0619-MR-24 Spot 261	181.42	10376.98	3.11	21.90	1.88	0.13	2.17	0.02	1.09	0.50	134.77	1.46	126.75	2.59	NA	NA	134.77	1.46	NA
0619-MR-24 Spot 46	257.49	27176.32	2.30	21.10	2.02	0.14	2.22	0.02	0.92	0.41	134.77	1.23	131.25	2.73	68.10	48.04	134.77	1.23	NA
0619-MR-24 Spot 214	304.70	207940.66	2.96	20.19	1.62	0.14	1.89	0.02	0.97	0.52	134.80	1.30	136.79	2.42	171.49	37.79	134.80	1.30	NA

0619-MR-24 Spot 35	167.29	9737.43	3.66	21.46	2.29	0.14	2.51	0.02	1.03	0.41	134.82	1.37	129.22	3.04	27.44	54.88	134.82	1.37	NA
0619-MR-24 Spot 300	124.73	69535.95	2.67	20.17	2.29	0.14	2.58	0.02	1.18	0.46	134.83	1.57	136.97	3.30	174.09	53.49	134.83	1.57	NA
0619-MR-24 Spot 221	59.02	10511.89	3.85	20.59	3.02	0.14	3.26	0.02	1.24	0.38	134.85	1.65	134.35	4.11	125.54	71.10	134.85	1.65	NA
0619-MR-24 Spot 184	87.24	10543.52	4.00	20.26	3.91	0.14	4.01	0.02	0.90	0.22	134.86	1.20	136.45	5.12	164.14	91.44	134.86	1.20	NA
0619-MR-24 Spot 32	250.04	22679.13	2.46	20.93	1.67	0.14	1.84	0.02	0.76	0.41	134.87	1.02	132.32	2.28	86.79	39.67	134.87	1.02	NA
0619-MR-24 Spot 101	272.46	30023.83	2.25	20.38	1.61	0.14	1.87	0.02	0.95	0.51	134.88	1.27	135.68	2.38	149.65	37.83	134.88	1.27	NA
0619-MR-24 Spot 198	115.84	20885.18	3.71	21.57	2.81	0.14	2.98	0.02	0.99	0.33	134.88	1.33	128.70	3.61	15.86	67.59	134.88	1.33	NA
0619-MR-24 Spot 47	127.50	15308.91	3.91	20.72	2.20	0.14	2.42	0.02	1.00	0.41	134.95	1.33	133.70	3.03	111.54	51.93	134.95	1.33	NA
0619-MR-24 Spot 169	133.67	14493.33	4.26	21.41	1.88	0.14	2.16	0.02	1.06	0.49	134.96	1.42	129.66	2.62	33.50	44.91	134.96	1.42	NA
0619-MR-24 Spot 289	108.46	31744.51	3.58	20.95	2.11	0.14	2.40	0.02	1.15	0.48	135.07	1.54	132.41	2.98	84.91	50.06	135.07	1.54	NA
0619-MR-24 Spot 57	139.15	41861.57	3.79	21.33	1.99	0.14	2.25	0.02	1.05	0.47	135.09	1.40	130.22	2.75	42.20	47.51	135.09	1.40	NA
0619-MR-24 Spot 194	97.76	30587.62	3.86	21.04	2.55	0.14	2.73	0.02	0.99	0.36	135.12	1.33	131.92	3.38	74.70	60.51	135.12	1.33	NA
0619-MR-24 Spot 248	167.63	42020.05	3.40	20.84	2.09	0.14	2.25	0.02	0.82	0.36	135.19	1.09	133.20	2.81	98.00	49.58	135.19	1.09	NA
0619-MR-24 Spot 297	122.43	4958.94	3.40	21.37	3.30	0.14	3.44	0.02	0.96	0.28	135.21	1.29	130.11	4.20	37.89	79.03	135.21	1.29	NA
0619-MR-24 Spot 303	138.62	9471.02	3.43	20.27	2.25	0.14	2.54	0.02	1.17	0.46	135.22	1.57	136.69	3.25	162.38	52.67	135.22	1.57	NA
0619-MR-24 Spot 1	143.45	417445.24	4.34	19.84	2.13	0.15	2.27	0.02	0.79	0.35	135.25	1.06	139.49	2.96	212.35	49.35	135.25	1.06	NA
0619-MR-24 Spot 108	109.02	6913.08	3.50	21.88	2.74	0.13	3.02	0.02	1.26	0.42	135.25	1.68	127.30	3.61	NA	NA	135.25	1.68	NA
0619-MR-24 Spot 232	272.86	28638.09	2.81	21.01	1.42	0.14	1.72	0.02	0.97	0.56	135.28	1.29	132.26	2.13	78.26	33.78	135.28	1.29	NA
0619-MR-24 Spot 116	248.35	40124.96	3.16	19.91	1.22	0.15	1.62	0.02	1.06	0.66	135.29	1.42	139.12	2.11	204.96	28.39	135.29	1.42	NA
0619-MR-24 Spot 226	134.51	56686.33	4.71	20.90	2.08	0.14	2.25	0.02	0.87	0.39	135.34	1.16	132.96	2.81	90.74	49.24	135.34	1.16	NA
0619-MR-24 Spot 191	149.26	9754.69	3.25	21.74	2.64	0.13	2.78	0.02	0.86	0.31	135.34	1.16	128.16	3.34	NA	NA	135.34	1.16	NA
0619-MR-24 Spot 122	164.26	40837.34	2.95	20.94	2.25	0.14	2.47	0.02	1.04	0.42	135.35	1.39	132.71	3.08	85.82	53.26	135.35	1.39	NA
0619-MR-24 Spot 45	168.38	10101.23	4.01	20.98	1.76	0.14	2.00	0.02	0.94	0.47	135.37	1.26	132.53	2.48	81.95	41.77	135.37	1.26	NA
0619-MR-24 Spot 238	230.55	29621.37	3.03	20.68	1.98	0.14	2.24	0.02	1.05	0.47	135.39	1.40	134.34	2.82	115.98	46.74	135.39	1.40	NA
0619-MR-24 Spot 188	261.84	54670.09	3.14	20.39	1.83	0.14	2.34	0.02	1.45	0.62	135.45	1.94	136.18	2.98	149.01	42.95	135.45	1.94	NA
0619-MR-24 Spot 274	303.64	26828.76	3.05	20.27	1.73	0.14	1.93	0.02	0.85	0.44	135.49	1.14	136.97	2.47	162.68	40.44	135.49	1.14	NA
0619-MR-24 Spot 252	120.19	14478.26	3.78	20.13	2.75	0.15	2.88	0.02	0.86	0.30	135.49	1.15	137.88	3.72	179.12	64.19	135.49	1.15	NA
0619-MR-24 Spot 82	142.18	8488.58	3.31	22.01	2.81	0.13	2.99	0.02	1.04	0.35	135.53	1.39	126.82	3.57	NA	NA	135.53	1.39	NA
0619-MR-24 Spot 125	190.42	833591.95	3.62	20.10	1.36	0.15	1.61	0.02	0.86	0.53	135.56	1.15	138.15	2.08	182.88	31.77	135.56	1.15	NA
0619-MR-24 Spot 115	130.39	78212.88	3.48	20.79	2.63	0.14	2.79	0.02	0.92	0.33	135.60	1.23	133.83	3.50	102.65	62.24	135.60	1.23	NA
0619-MR-24 Spot 88	241.25	37226.66	3.24	20.46	1.50	0.14	1.67	0.02	0.74	0.44	135.64	0.99	135.92	2.13	140.89	35.18	135.64	0.99	NA
0619-MR-24 Spot 97	253.52	23569.39	2.93	20.05	1.83	0.15	2.03	0.02	0.88	0.43	135.67	1.18	138.55	2.63	188.05	42.58	135.67	1.18	NA
0619-MR-24 Spot 123	65.66	31675.96	3.90	21.46	3.65	0.14	3.85	0.02	1.22	0.32	135.68	1.63	130.02	4.69	27.81	87.52	135.68	1.63	NA
0619-MR-24 Spot 73	96.48	23750.45	3.52	20.83	2.66	0.14	2.95	0.02	1.27	0.43	135.68	1.71	133.72	3.69	99.04	62.86	135.68	1.71	NA
0619-MR-24 Spot 209	91.45	3658.95	4.22	21.67	2.63	0.14	2.89	0.02	1.19	0.41	135.69	1.60	128.84	3.50	4.33	63.44	135.69	1.60	NA
0619-MR-24 Spot 219	123.24	22790.70	3.37	20.89	2.63	0.14	2.85	0.02	1.09	0.38	135.72	1.46	133.35	3.56	91.31	62.35	135.72	1.46	NA
0619-MR-24 Spot 309	144.30	22607.26	2.92	20.74	2.35	0.14	2.54	0.02	0.97	0.38	135.73	1.31	134.30	3.20	109.15	55.48	135.73	1.31	NA
0619-MR-24 Spot 28	132.48	10107.96	3.49	21.34	2.42	0.14	2.67	0.02	1.12	0.42	135.79	1.50	130.79	3.28	41.01	57.99	135.79	1.50	NA
0619-MR-24 Spot 29	152.76	142181.62	4.51	20.80	1.98	0.14	2.26	0.02	1.09	0.48	135.81	1.46	133.98	2.84	101.65	46.84	135.81	1.46	NA
0619-MR-24 Spot 235	424.52	55085.84	3.20	20.59	1.38	0.14	1.74	0.02	1.06	0.61	135.83	1.42	135.28	2.20	125.62	32.45	135.83	1.42	NA

0619-MR-24 Spot 39	137.56	9329.77	3.09	20.54	1.99	0.14	2.32	0.02	1.19	0.51	135.84	1.60	135.63	2.94	131.93	46.77	135.84	1.60	NA
0619-MR-24 Spot 9	131.19	10786.37	3.80	21.72	2.80	0.14	2.98	0.02	1.02	0.34	135.87	1.38	128.71	3.60	NA	NA	135.87	1.38	NA
0619-MR-24 Spot 6	194.87	8110.82	3.63	21.95	2.35	0.13	2.48	0.02	0.77	0.31	135.90	1.03	127.51	2.97	NA	NA	135.90	1.03	NA
0619-MR-24 Spot 58	102.10	64594.48	3.40	21.70	3.10	0.14	3.29	0.02	1.11	0.34	135.90	1.49	128.86	3.99	NA	NA	135.90	1.49	NA
0619-MR-24 Spot 200	191.46	22430.26	2.73	21.04	1.86	0.14	1.99	0.02	0.69	0.35	135.91	0.93	132.67	2.47	74.94	44.24	135.91	0.93	NA
0619-MR-24 Spot 306	213.93	27533.82	2.23	19.32	1.60	0.15	1.82	0.02	0.85	0.47	135.93	1.15	143.66	2.43	273.43	36.74	135.93	1.15	NA
0619-MR-24 Spot 96	175.87	10656.58	5.80	21.11	2.14	0.14	2.51	0.02	1.30	0.52	135.93	1.75	132.27	3.11	66.91	51.01	135.93	1.75	NA
0619-MR-24 Spot 159	160.43	20827.57	3.77	20.32	1.51	0.14	1.93	0.02	1.20	0.62	135.95	1.61	137.12	2.47	157.42	35.29	135.95	1.61	NA
0619-MR-24 Spot 147	239.87	44774.88	4.29	21.16	1.91	0.14	2.25	0.02	1.19	0.53	135.96	1.61	132.01	2.79	61.51	45.55	135.96	1.61	NA
0619-MR-24 Spot 31	90.98	9917.52	3.54	21.29	2.68	0.14	2.93	0.02	1.18	0.40	135.96	1.59	131.24	3.60	46.55	63.92	135.96	1.59	NA
0619-MR-24 Spot 314	116.61	3578.15	3.62	24.07	2.29	0.12	2.54	0.02	1.10	0.43	135.99	1.48	116.95	2.81	NA	NA	135.99	1.48	NA
0619-MR-24 Spot 212	134.62	11612.75	3.46	21.82	2.28	0.13	2.42	0.02	0.81	0.33	136.01	1.09	128.27	2.92	NA	NA	136.01	1.09	NA
0619-MR-24 Spot 182	158.17	11331.53	3.93	21.84	1.78	0.13	2.05	0.02	1.01	0.50	136.01	1.36	128.19	2.46	NA	NA	136.01	1.36	NA
0619-MR-24 Spot 18	94.57	10849.02	3.29	21.50	2.51	0.14	2.72	0.02	1.03	0.38	136.04	1.39	130.10	3.32	22.98	60.26	136.04	1.39	NA
0619-MR-24 Spot 229	98.57	11966.56	3.73	19.93	2.94	0.15	3.07	0.02	0.90	0.29	136.06	1.22	139.68	4.01	201.59	68.18	136.06	1.22	NA
0619-MR-24 Spot 256	473.06	133506.56	2.64	20.86	0.84	0.14	1.18	0.02	0.83	0.70	136.09	1.12	133.89	1.48	95.03	19.90	136.09	1.12	NA
0619-MR-24 Spot 157	336.19	23276.37	3.84	20.77	1.57	0.14	1.86	0.02	0.99	0.53	136.19	1.33	134.52	2.34	105.16	37.15	136.19	1.33	NA
0619-MR-24 Spot 251	104.03	11839.71	3.94	21.34	2.42	0.14	2.60	0.02	0.97	0.37	136.19	1.31	131.16	3.20	40.88	57.80	136.19	1.31	NA
0619-MR-24 Spot 51	106.83	7277.10	4.95	21.71	3.58	0.14	3.68	0.02	0.85	0.23	136.24	1.14	129.13	4.46	NA	NA	136.24	1.14	NA
0619-MR-24 Spot 76	250.87	20154.36	2.86	21.20	1.57	0.14	1.82	0.02	0.92	0.51	136.26	1.24	132.07	2.25	57.32	37.42	136.26	1.24	NA
0619-MR-24 Spot 192	140.03	10667.05	3.99	20.56	2.02	0.14	2.23	0.02	0.95	0.43	136.27	1.29	135.87	2.84	128.88	47.55	136.27	1.29	NA
0619-MR-24 Spot 85	265.32	183022.75	3.07	20.39	1.70	0.14	1.95	0.02	0.96	0.49	136.27	1.29	136.94	2.50	148.70	39.93	136.27	1.29	NA
0619-MR-24 Spot 80	169.30	18568.76	4.00	21.01	2.02	0.14	2.20	0.02	0.85	0.39	136.31	1.15	133.22	2.74	78.56	48.05	136.31	1.15	NA
0619-MR-24 Spot 37	287.05	92333.33	2.65	20.51	1.60	0.14	1.86	0.02	0.95	0.51	136.34	1.29	136.26	2.37	134.91	37.51	136.34	1.29	NA
0619-MR-24 Spot 295	331.52	68646.10	3.42	20.05	1.34	0.15	1.63	0.02	0.93	0.57	136.37	1.26	139.21	2.12	187.82	31.16	136.37	1.26	NA
0619-MR-24 Spot 171	234.54	32161.02	3.29	20.67	1.63	0.14	1.91	0.02	0.98	0.52	136.41	1.33	135.38	2.42	117.34	38.55	136.41	1.33	NA
0619-MR-24 Spot 231	141.27	9876.57	4.09	21.57	2.62	0.14	2.81	0.02	1.01	0.36	136.41	1.37	130.05	3.43	15.34	63.06	136.41	1.37	NA
0619-MR-24 Spot 259	117.34	6837.43	4.53	21.14	2.15	0.14	2.35	0.02	0.94	0.40	136.42	1.27	132.51	2.91	63.05	51.18	136.42	1.27	NA
0619-MR-24 Spot 240	118.11	28748.76	3.53	20.24	1.95	0.15	2.20	0.02	1.01	0.46	136.43	1.37	138.09	2.84	166.68	45.62	136.43	1.37	NA
0619-MR-24 Spot 167	231.66	22565.97	4.31	21.04	1.72	0.14	2.05	0.02	1.11	0.54	136.45	1.50	133.16	2.56	75.02	40.86	136.45	1.50	NA
0619-MR-24 Spot 143	83.51	41808.17	3.68	21.07	2.38	0.14	2.63	0.02	1.12	0.43	136.48	1.52	132.98	3.28	71.04	56.70	136.48	1.52	NA
0619-MR-24 Spot 275	292.09	15420.10	2.50	21.12	2.23	0.14	2.42	0.02	0.92	0.38	136.56	1.25	132.78	3.01	65.83	53.17	136.56	1.25	NA
0619-MR-24 Spot 250	119.57	50718.31	3.22	20.69	1.93	0.14	2.17	0.02	1.00	0.46	136.59	1.35	135.43	2.76	115.11	45.59	136.59	1.35	NA
0619-MR-24 Spot 296	177.85	232413.61	2.86	21.26	1.82	0.14	2.10	0.02	1.05	0.50	136.60	1.42	132.02	2.60	50.46	43.51	136.60	1.42	NA
0619-MR-24 Spot 239	98.63	20107.74	3.92	21.94	2.77	0.13	3.02	0.02	1.20	0.40	136.66	1.62	128.20	3.63	NA	NA	136.66	1.62	NA
0619-MR-24 Spot 83	411.31	38589.09	1.99	20.81	1.53	0.14	1.77	0.02	0.89	0.50	136.70	1.20	134.74	2.24	100.46	36.24	136.70	1.20	NA
0619-MR-24 Spot 13	251.49	75549.62	2.88	20.52	1.70	0.14	1.91	0.02	0.87	0.46	136.72	1.17	136.58	2.44	134.12	39.88	136.72	1.17	NA
0619-MR-24 Spot 140	94.56	4516.14	4.01	23.17	2.37	0.13	2.65	0.02	1.17	0.44	136.74	1.59	121.89	3.04	NA	NA	136.74	1.59	NA
0619-MR-24 Spot 230	289.35	66871.91	2.55	20.63	1.81	0.14	2.03	0.02	0.93	0.46	136.76	1.25	135.92	2.58	121.43	42.59	136.76	1.25	NA
0619-MR-24 Spot 119	149.52	24627.02	2.84	21.56	2.09	0.14	2.30	0.02	0.96	0.42	136.79	1.30	130.48	2.82	16.97	50.22	136.79	1.30	NA

0619-MR-24 Spot 21	189.25	21301.09	3.77	22.23	1.85	0.13	2.10	0.02	1.00	0.48	136.84	1.36	126.80	2.51	NA	NA	136.84	1.36	NA
0619-MR-24 Spot 193	222.24	9238.54	3.43	21.71	1.55	0.14	1.85	0.02	1.01	0.54	136.98	1.36	129.80	2.25	NA	NA	136.98	1.36	NA
0619-MR-24 Spot 145	136.96	89209.32	4.39	20.54	2.81	0.14	3.08	0.02	1.25	0.41	137.00	1.70	136.71	3.93	131.67	66.06	137.00	1.70	NA
0619-MR-24 Spot 63	174.99	7764.25	3.67	20.81	2.34	0.14	2.51	0.02	0.89	0.36	137.04	1.21	135.12	3.18	101.47	55.45	137.04	1.21	NA
0619-MR-24 Spot 263	248.16	261533.83	2.38	20.53	1.88	0.14	2.24	0.02	1.21	0.54	137.06	1.64	136.84	2.87	133.04	44.24	137.06	1.64	NA
0619-MR-24 Spot 276	290.80	58478.85	3.12	20.72	1.76	0.14	1.95	0.02	0.84	0.43	137.06	1.14	135.64	2.48	110.77	41.58	137.06	1.14	NA
0619-MR-24 Spot 50	213.93	43655.77	3.42	20.96	1.85	0.14	2.12	0.02	1.03	0.49	137.11	1.40	134.23	2.67	83.69	43.95	137.11	1.40	NA
0619-MR-24 Spot 89	104.90	244633.94	3.88	20.12	2.44	0.15	2.82	0.02	1.41	0.50	137.11	1.91	139.48	3.67	179.92	56.94	137.11	1.91	NA
0619-MR-24 Spot 280	107.14	26607.55	3.41	20.94	1.97	0.14	2.28	0.02	1.14	0.50	137.21	1.55	134.46	2.87	86.11	46.71	137.21	1.55	NA
0619-MR-24 Spot 106	206.16	12070.26	5.05	20.96	1.67	0.14	1.93	0.02	0.97	0.50	137.23	1.32	134.37	2.43	84.15	39.60	137.23	1.32	NA
0619-MR-24 Spot 268	156.41	16469.51	2.86	19.95	2.23	0.15	2.40	0.02	0.90	0.37	137.25	1.22	140.71	3.16	199.37	51.75	137.25	1.22	NA
0619-MR-24 Spot 283	126.58	537472.72	4.72	19.87	1.85	0.15	2.11	0.02	1.01	0.48	137.35	1.38	141.37	2.79	209.27	43.00	137.35	1.38	NA
0619-MR-24 Spot 313	255.64	15338.68	3.14	20.92	1.57	0.14	1.73	0.02	0.73	0.42	137.41	0.99	134.79	2.19	88.93	37.25	137.41	0.99	NA
0619-MR-24 Spot 38	135.54	17591.61	3.73	20.11	1.99	0.15	2.24	0.02	1.03	0.46	137.58	1.40	140.01	2.93	181.39	46.43	137.58	1.40	NA
0619-MR-24 Spot 206	66.97	7076.00	3.82	18.44	3.81	0.16	3.99	0.02	1.18	0.30	137.59	1.61	151.76	5.63	379.26	85.79	137.59	1.61	NA
0619-MR-24 Spot 126	124.74	23631.73	3.96	21.44	1.70	0.14	1.98	0.02	1.01	0.51	137.93	1.38	132.15	2.45	29.55	40.82	137.93	1.38	NA
0619-MR-24 Spot 180	102.35	22544.52	4.15	21.06	1.95	0.14	2.24	0.02	1.11	0.49	137.97	1.51	134.44	2.82	72.46	46.39	137.97	1.51	NA
0619-MR-24 Spot 11	93.43	9937.92	2.71	21.06	2.96	0.14	3.10	0.02	0.94	0.30	138.00	1.28	134.50	3.91	73.13	70.33	138.00	1.28	NA
0619-MR-24 Spot 187	129.46	10911.70	3.64	22.89	2.17	0.13	2.38	0.02	0.97	0.41	138.02	1.32	124.35	2.78	NA	NA	138.02	1.32	NA
0619-MR-24 Spot 201	204.49	91964.26	2.46	20.25	1.23	0.15	1.57	0.02	0.97	0.62	138.05	1.33	139.53	2.04	164.68	28.72	138.05	1.33	NA
0619-MR-24 Spot 312	177.17	8413.17	2.44	21.05	1.93	0.14	2.09	0.02	0.81	0.39	138.25	1.10	134.77	2.64	73.93	45.78	138.25	1.10	NA
0619-MR-24 Spot 70	196.58	33082.92	3.99	20.96	1.65	0.14	1.95	0.02	1.05	0.54	138.26	1.43	135.30	2.47	83.69	39.09	138.26	1.43	NA
0619-MR-24 Spot 84	135.90	22532.91	3.37	20.53	2.28	0.15	2.54	0.02	1.13	0.45	138.30	1.55	137.98	3.28	132.51	53.53	138.30	1.55	NA
0619-MR-24 Spot 141	123.49	133883.00	2.82	20.82	1.94	0.14	2.27	0.02	1.18	0.52	138.39	1.62	136.31	2.90	100.21	45.94	138.39	1.62	NA
0619-MR-24 Spot 244	98.62	17122.66	2.68	20.20	2.35	0.15	2.48	0.02	0.78	0.32	138.51	1.07	140.30	3.24	170.74	54.83	138.51	1.07	NA
0619-MR-24 Spot 299	169.48	14273.60	3.74	17.89	3.22	0.17	3.43	0.02	1.18	0.35	138.52	1.62	157.09	5.00	447.25	71.63	138.52	1.62	NA
0619-MR-24 Spot 112	105.63	5240.84	4.21	22.72	3.63	0.13	3.84	0.02	1.24	0.32	138.67	1.71	125.82	4.54	NA	NA	138.67	1.71	NA
0619-MR-24 Spot 168	42.59	5529.96	3.79	20.16	3.90	0.15	4.08	0.02	1.19	0.29	138.67	1.64	140.74	5.36	175.72	90.91	138.67	1.64	NA
0619-MR-24 Spot 175	86.89	21871.17	3.72	20.04	2.84	0.15	3.02	0.02	1.04	0.34	138.68	1.43	141.52	3.99	189.37	65.99	138.68	1.43	NA
0619-MR-24 Spot 7	182.93	20491.37	3.47	20.42	2.26	0.15	2.51	0.02	1.08	0.43	138.76	1.49	139.11	3.26	145.10	53.12	138.76	1.49	NA
0619-MR-24 Spot 264	238.58	12288.77	2.48	21.40	1.63	0.14	1.83	0.02	0.82	0.45	138.87	1.12	133.28	2.28	34.69	39.15	138.87	1.12	NA
0619-MR-24 Spot 281	111.94	235545.23	3.69	19.81	2.47	0.15	2.78	0.02	1.28	0.46	139.15	1.77	143.50	3.73	216.04	57.18	139.15	1.77	NA
0619-MR-24 Spot 26	95.75	20930.26	3.41	20.57	2.74	0.15	2.93	0.02	1.02	0.35	139.22	1.41	138.63	3.80	128.57	64.60	139.22	1.41	NA
0619-MR-24 Spot 66	122.62	28299.60	3.59	21.19	2.12	0.14	2.33	0.02	0.95	0.41	139.26	1.31	134.85	2.94	57.78	50.67	139.26	1.31	NA
0619-MR-24 Spot 71	227.66	22981.02	2.55	20.63	1.55	0.15	1.84	0.02	0.99	0.54	139.47	1.37	138.47	2.38	121.45	36.59	139.47	1.37	NA
0619-MR-24 Spot 210	332.73	47150.02	2.94	20.78	1.44	0.15	1.70	0.02	0.91	0.53	139.51	1.25	137.60	2.19	104.84	33.96	139.51	1.25	NA
0619-MR-24 Spot 49	128.43	11767.25	3.80	20.91	2.16	0.14	2.40	0.02	1.04	0.44	139.55	1.44	136.81	3.07	89.58	51.12	139.55	1.44	NA
0619-MR-24 Spot 56	112.90	9710.92	3.10	20.05	2.80	0.15	3.01	0.02	1.11	0.37	139.62	1.53	142.32	4.00	187.71	65.13	139.62	1.53	NA
0619-MR-24 Spot 224	90.06	21933.50	3.73	19.37	3.16	0.16	3.82	0.02	2.15	0.56	139.68	2.97	147.08	5.23	267.97	72.57	139.68	2.97	NA
0619-MR-24 Spot 8	233.96	15283.42	3.29	20.83	1.60	0.15	1.86	0.02	0.95	0.51	139.90	1.31	137.61	2.40	98.23	37.94	139.90	1.31	NA

0619-MR-24 Spot 284	561.00	81494.06	4.31	20.00	1.61	0.15	2.23	0.02	1.55	0.69	140.12	2.15	143.16	2.98	193.79	37.38	140.12	2.15	NA
0619-MR-24 Spot 189	219.60	23246.74	3.80	20.94	1.64	0.14	1.84	0.02	0.85	0.46	140.14	1.18	137.15	2.37	85.69	38.77	140.14	1.18	NA
0619-MR-24 Spot 23	85.94	23976.96	5.00	20.95	3.05	0.14	3.24	0.02	1.08	0.33	140.17	1.50	137.13	4.15	84.70	72.42	140.17	1.50	NA
0619-MR-24 Spot 265	165.30	255021.68	3.03	20.52	2.11	0.15	2.34	0.02	1.01	0.43	140.17	1.40	139.84	3.06	134.27	49.61	140.17	1.40	NA
0619-MR-24 Spot 211	154.11	15460.42	3.69	21.17	2.26	0.14	2.45	0.02	0.95	0.39	140.19	1.32	135.81	3.11	59.81	53.81	140.19	1.32	NA
0619-MR-24 Spot 98	148.05	16780.51	3.34	21.50	1.98	0.14	2.29	0.02	1.16	0.51	140.24	1.61	133.90	2.87	22.76	47.41	140.24	1.61	NA
0619-MR-24 Spot 144	110.30	11912.91	3.33	22.75	2.24	0.13	2.46	0.02	1.02	0.41	140.69	1.41	127.39	2.95	NA	NA	140.69	1.41	NA
0619-MR-24 Spot 163	93.51	22393.18	3.72	20.32	3.11	0.15	3.38	0.02	1.33	0.39	140.70	1.85	141.58	4.47	156.47	72.82	140.70	1.85	NA
0619-MR-24 Spot 285	62.40	9173.74	3.79	20.49	4.06	0.15	4.31	0.02	1.45	0.34	140.70	2.02	140.54	5.65	137.94	95.34	140.70	2.02	NA
0619-MR-24 Spot 291	74.20	86577.37	4.51	20.35	2.86	0.15	3.00	0.02	0.92	0.31	140.94	1.29	141.63	3.97	153.15	66.99	140.94	1.29	NA
0619-MR-24 Spot 48	224.52	836906.66	2.48	20.66	1.47	0.15	1.72	0.02	0.89	0.52	141.08	1.25	139.79	2.24	117.95	34.56	141.08	1.25	NA
0619-MR-24 Spot 242	144.24	11366.37	3.51	21.15	1.80	0.14	2.01	0.02	0.90	0.45	141.33	1.25	136.97	2.57	61.97	42.81	141.33	1.25	NA
0619-MR-24 Spot 150	127.33	18727.29	4.37	20.76	1.71	0.15	1.98	0.02	1.01	0.51	141.43	1.41	139.51	2.58	107.03	40.33	141.43	1.41	NA
0619-MR-24 Spot 135	182.73	15020.52	2.56	20.88	2.04	0.15	2.26	0.02	0.96	0.43	141.47	1.35	138.79	2.93	93.23	48.43	141.47	1.35	NA
0619-MR-24 Spot 53	211.51	17847.45	2.79	21.13	1.95	0.14	2.25	0.02	1.13	0.50	141.68	1.58	137.41	2.89	64.35	46.37	141.68	1.58	NA
0619-MR-24 Spot 273	110.26	11037.37	3.47	19.75	3.02	0.16	3.19	0.02	1.00	0.31	141.76	1.40	146.43	4.34	222.87	69.92	141.76	1.40	NA
0619-MR-24 Spot 153	100.73	8940.57	3.08	19.41	3.06	0.16	3.17	0.02	0.84	0.27	141.81	1.18	148.88	4.39	262.90	70.22	141.81	1.18	NA
0619-MR-24 Spot 190	77.75	13013.34	2.37	19.88	2.70	0.15	2.92	0.02	1.10	0.38	141.83	1.54	145.62	3.96	207.91	62.60	141.83	1.54	NA
0619-MR-24 Spot 94	108.01	17451.20	3.41	22.37	2.11	0.14	2.40	0.02	1.15	0.48	142.55	1.63	131.03	2.95	NA	NA	142.55	1.63	NA
0619-MR-24 Spot 269	8027.57	556556.58	1.41	20.11	0.57	0.15	1.15	0.02	1.00	0.87	143.09	1.42	145.32	1.56	181.74	13.39	143.09	1.42	NA
0619-MR-24 Spot 233	127.09	9364.05	3.77	21.14	2.42	0.15	2.66	0.02	1.10	0.41	143.59	1.56	139.15	3.46	64.07	57.73	143.59	1.56	NA
0619-MR-24 Spot 272	132.79	11985.69	3.60	19.58	2.38	0.16	2.62	0.02	1.10	0.42	145.16	1.58	150.98	3.67	243.36	54.79	145.16	1.58	NA
0619-MR-24 Spot 19	68.82	4143.55	3.97	20.62	2.95	0.15	3.23	0.02	1.33	0.41	145.56	1.91	144.27	4.35	123.03	69.51	145.56	1.91	NA
0619-MR-24 Spot 288	246.78	203679.82	2.46	19.88	1.62	0.16	1.95	0.02	1.08	0.55	146.50	1.56	150.17	2.72	208.49	37.65	146.50	1.56	NA
0619-MR-24 Spot 17	127.55	37108.99	2.71	17.86	3.04	0.18	3.20	0.02	0.99	0.31	146.55	1.44	165.88	4.90	451.55	67.61	146.55	1.44	NA
0619-MR-24 Spot 220	455.82	46629.68	2.00	20.58	1.17	0.15	1.57	0.02	1.05	0.67	146.73	1.52	145.58	2.13	126.87	27.56	146.73	1.52	NA
0619-MR-24 Spot 130	131.61	63210.02	3.60	20.53	2.14	0.15	2.30	0.02	0.85	0.37	146.83	1.23	146.00	3.13	132.59	50.26	146.83	1.23	NA
0619-MR-24 Spot 310	121.31	137744.26	2.89	19.99	1.97	0.16	2.23	0.02	1.06	0.47	147.41	1.54	150.27	3.12	195.60	45.76	147.41	1.54	NA
0619-MR-24 Spot 292	265.34	38295.88	1.50	19.80	1.46	0.16	2.08	0.02	1.48	0.71	147.42	2.15	151.55	2.93	216.74	33.87	147.42	2.15	NA
0619-MR-24 Spot 203	423.14	274706.45	9.20	20.25	1.13	0.16	1.55	0.02	1.06	0.68	147.49	1.54	148.53	2.14	165.22	26.41	147.49	1.54	NA
0619-MR-24 Spot 90	81.04	20875.13	4.95	21.14	2.52	0.15	2.86	0.02	1.36	0.47	147.53	1.98	142.71	3.81	63.19	60.08	147.53	1.98	NA
0619-MR-24 Spot 117	155.92	33524.59	1.80	21.28	2.36	0.15	2.50	0.02	0.80	0.32	148.07	1.18	142.31	3.32	47.31	56.47	148.07	1.18	NA
0619-MR-24 Spot 236	128.14	24503.96	1.95	20.53	1.78	0.16	2.01	0.02	0.92	0.46	148.15	1.35	147.25	2.75	132.84	41.91	148.15	1.35	NA
0619-MR-24 Spot 92	170.45	42462.97	1.61	21.23	1.68	0.15	2.09	0.02	1.23	0.59	149.55	1.82	144.00	2.80	53.61	40.19	149.55	1.82	NA
0619-MR-24 Spot 42	139.55	50584.03	2.28	18.63	2.77	0.17	2.93	0.02	0.95	0.32	149.81	1.41	162.78	4.40	355.93	62.55	149.81	1.41	NA
0619-MR-24 Spot 286	110.72	28100.72	4.85	19.97	2.54	0.16	2.93	0.02	1.47	0.50	150.15	2.18	152.98	4.16	197.06	58.96	150.15	2.18	NA
0619-MR-24 Spot 307	261.61	105667.82	4.13	20.14	1.04	0.16	1.44	0.02	1.00	0.69	151.30	1.49	152.90	2.05	177.84	24.20	151.30	1.49	NA
0619-MR-24 Spot 132	221.46	71005.40	2.23	19.76	1.77	0.17	1.93	0.02	0.75	0.39	151.59	1.12	155.89	2.78	221.77	41.06	151.59	1.12	NA
0619-MR-24 Spot 253	52.98	2888.27	3.45	23.56	4.10	0.14	4.32	0.02	1.36	0.31	151.62	2.04	132.37	5.37	NA	NA	151.62	2.04	NA
0619-MR-24 Spot 164	203.79	54571.92	2.31	20.49	1.62	0.16	1.92	0.02	1.04	0.54	151.72	1.56	150.84	2.69	137.03	37.97	151.72	1.56	NA

0619-MR-24 Spot 156	341.74	724422.43	1.21	20.44	1.48	0.16	1.76	0.02	0.96	0.54	151.79	1.44	151.25	2.47	142.84	34.65	151.79	1.44	NA
0619-MR-24 Spot 177	103.49	21578.84	2.16	22.39	2.67	0.15	2.92	0.02	1.17	0.40	152.24	1.75	139.32	3.80	NA	NA	152.24	1.75	NA
0619-MR-24 Spot 266	113.81	12916.99	2.30	20.80	2.10	0.16	2.27	0.02	0.86	0.38	152.41	1.30	149.38	3.16	101.51	49.68	152.41	1.30	NA
0619-MR-24 Spot 124	160.57	15309.20	1.86	20.12	1.83	0.16	2.06	0.02	0.95	0.46	152.61	1.43	154.29	2.95	180.24	42.73	152.61	1.43	NA
0619-MR-24 Spot 162	285.01	51987.95	2.84	20.43	1.56	0.16	1.81	0.02	0.91	0.50	152.66	1.37	152.16	2.55	144.39	36.59	152.66	1.37	NA
0619-MR-24 Spot 186	270.99	176090.38	1.63	20.18	1.24	0.16	1.46	0.02	0.78	0.53	152.77	1.17	153.98	2.09	172.67	28.88	152.77	1.17	NA
0619-MR-24 Spot 294	78.09	10026.15	2.44	21.16	3.10	0.16	3.26	0.02	1.01	0.31	152.78	1.53	147.40	4.47	61.65	73.79	152.78	1.53	NA
0619-MR-24 Spot 227	286.19	29640.24	1.95	20.66	1.56	0.16	1.81	0.02	0.92	0.51	153.08	1.40	150.95	2.54	117.70	36.72	153.08	1.40	NA
0619-MR-24 Spot 302	192.07	16909.03	1.60	20.82	2.05	0.16	2.26	0.02	0.97	0.43	153.39	1.47	150.18	3.16	99.79	48.43	153.39	1.47	NA
0619-MR-24 Spot 249	641.71	70283.67	1.10	20.57	1.29	0.16	1.64	0.02	1.02	0.62	153.65	1.54	152.12	2.31	128.31	30.28	153.65	1.54	NA
0619-MR-24 Spot 79	116.78	12799.86	2.18	21.77	2.60	0.15	2.72	0.02	0.81	0.30	154.65	1.24	145.18	3.68	NA	NA	154.65	1.24	NA
0619-MR-24 Spot 282	57.63	4692.55	3.99	20.81	3.35	0.16	3.57	0.02	1.23	0.34	154.82	1.88	151.54	5.03	100.50	79.35	154.82	1.88	NA
0619-MR-24 Spot 60	291.12	86555.28	1.33	20.50	1.39	0.16	1.76	0.02	1.07	0.61	155.50	1.65	154.35	2.51	136.71	32.59	155.50	1.65	NA
0619-MR-24 Spot 109	724.78	106428.41	1.32	20.39	1.01	0.17	1.80	0.02	1.49	0.83	155.67	2.30	155.26	2.59	148.99	23.59	155.67	2.30	NA
0619-MR-24 Spot 133	128.48	10712.27	0.99	20.66	1.81	0.16	2.55	0.02	1.80	0.71	155.83	2.77	153.49	3.64	117.52	42.69	155.83	2.77	NA
0619-MR-24 Spot 225	635.16	2024923.94	2.05	20.52	0.89	0.17	1.41	0.02	1.09	0.78	156.67	1.69	155.29	2.03	134.29	20.86	156.67	1.69	NA
0619-MR-24 Spot 237	149.19	289791.48	1.88	20.12	1.96	0.17	2.14	0.02	0.86	0.40	156.88	1.34	158.31	3.14	179.82	45.78	156.88	1.34	NA
0619-MR-24 Spot 247	222.48	160689.94	1.95	20.30	0.97	0.17	1.29	0.02	0.85	0.66	158.55	1.33	158.57	1.89	158.89	22.60	158.55	1.33	NA
0619-MR-24 Spot 217	90.63	8110.17	2.52	20.68	2.12	0.17	2.34	0.02	0.97	0.42	158.58	1.52	155.92	3.38	115.66	50.08	158.58	1.52	NA
0619-MR-24 Spot 99	60.67	8411.59	2.99	21.76	3.91	0.16	4.22	0.03	1.59	0.38	159.39	2.50	149.44	5.87	NA	NA	159.39	2.50	NA
0619-MR-24 Spot 304	241.54	51700.84	2.13	20.44	1.23	0.17	1.46	0.03	0.78	0.54	159.84	1.24	158.81	2.15	143.43	28.90	159.84	1.24	NA
0619-MR-24 Spot 254	207.44	38261.90	2.31	20.47	1.48	0.17	1.73	0.03	0.89	0.52	159.86	1.41	158.60	2.54	139.83	34.75	159.86	1.41	NA
0619-MR-24 Spot 255	109.05	14080.32	4.42	20.90	2.47	0.17	2.62	0.03	0.87	0.33	159.88	1.37	155.55	3.78	90.13	58.65	159.88	1.37	NA
0619-MR-24 Spot 216	119.12	707217.79	1.94	19.93	1.67	0.17	1.85	0.03	0.79	0.43	159.95	1.24	162.66	2.78	202.24	38.87	159.95	1.24	NA
0619-MR-24 Spot 131	556.82	246237.57	2.85	20.45	1.02	0.17	1.37	0.03	0.91	0.67	160.14	1.44	159.00	2.02	141.96	23.99	160.14	1.44	NA
0619-MR-24 Spot 199	587.29	21692.41	2.17	20.40	1.07	0.17	1.43	0.03	0.95	0.66	161.17	1.51	160.32	2.12	147.81	25.18	161.17	1.51	NA
0619-MR-24 Spot 260	894.35	62644.63	1.86	20.24	0.77	0.17	1.55	0.03	1.34	0.87	161.87	2.15	162.13	2.32	165.99	17.98	161.87	2.15	NA
0619-MR-24 Spot 102	108.81	40531.01	2.65	20.33	2.43	0.17	2.61	0.03	0.96	0.37	162.88	1.54	162.41	3.92	155.59	56.82	162.88	1.54	NA
0619-MR-24 Spot 305	61.92	12574.46	1.57	19.86	2.94	0.18	3.12	0.03	1.04	0.33	163.75	1.69	166.81	4.80	210.38	68.22	163.75	1.69	NA
0619-MR-24 Spot 208	942.87	58553.39	1.28	20.23	0.62	0.18	1.22	0.03	1.05	0.86	165.51	1.72	165.66	1.86	167.79	14.43	165.51	1.72	NA
0619-MR-24 Spot 103	336.42	163674.05	1.01	20.11	1.66	0.18	1.84	0.03	0.79	0.43	166.60	1.31	167.58	2.84	181.37	38.68	166.60	1.31	NA
0619-MR-24 Spot 183	95.92	10453.23	2.95	20.35	2.25	0.18	2.47	0.03	1.02	0.41	166.76	1.67	165.87	3.78	153.23	52.81	166.76	1.67	NA
0619-MR-24 Spot 22	587.63	113411.01	1.98	20.54	1.12	0.18	1.42	0.03	0.86	0.61	167.74	1.43	165.37	2.16	131.56	26.38	167.74	1.43	NA
0619-MR-24 Spot 44	302.85	20389.18	1.88	20.80	1.26	0.18	1.55	0.03	0.90	0.58	168.66	1.50	164.34	2.35	102.48	29.75	168.66	1.50	NA
0619-MR-24 Spot 301	161.43	45203.48	1.34	19.99	1.69	0.18	1.99	0.03	1.06	0.53	168.93	1.76	170.69	3.13	195.12	39.20	168.93	1.76	NA
0619-MR-24 Spot 52	221.91	27896.16	2.40	20.44	1.43	0.18	1.69	0.03	0.90	0.53	170.02	1.51	168.24	2.62	143.29	33.48	170.02	1.51	NA
0619-MR-24 Spot 202	322.58	359630.50	2.80	20.37	1.30	0.20	1.61	0.03	0.94	0.58	189.17	1.75	186.35	2.73	150.71	30.54	189.17	1.75	NA
0619-MR-24 Spot 179	555.74	223480.70	1.72	19.55	0.87	0.28	1.29	0.04	0.96	0.74	252.10	2.37	251.58	2.88	246.75	20.05	252.10	2.37	NA
0619-MR-24 Spot 86	555.53	127289.93	3.93	19.59	0.74	0.31	1.23	0.04	0.99	0.80	279.00	2.70	275.11	2.97	242.19	16.94	279.00	2.70	NA
0619-MR-24 Spot 298	179.47	182560.85	1.43	19.01	1.25	0.39	1.42	0.05	0.66	0.47	336.51	2.18	333.31	4.03	311.10	28.50	336.51	2.18	NA

0619-MR-24 Spot 315	1568.02	19102890.81	2.82	17.01	0.50	0.50	1.45	0.06	1.37	0.94	388.83	5.16	414.32	4.95	558.88	10.83	388.83	5.16	NA
0619-MR-24 Spot 178	449.95	3185872.00	2.64	13.92	0.95	0.76	2.33	0.08	2.12	0.91	476.98	9.76	574.19	10.20	980.39	19.36	476.98	9.76	48.65
0619-MR-24 Spot 166	742.72	174676.30	4.72	16.85	0.73	0.76	1.30	0.09	1.08	0.83	572.35	5.91	573.68	5.71	578.98	15.91	572.35	5.91	98.85
0619-MR-24 Spot 181	723.36	323062.04	18.96	14.56	0.49	1.26	1.31	0.13	1.21	0.93	804.74	9.16	827.09	7.39	887.62	10.07	804.74	9.16	90.66
0619-MR-24 Spot 196	431.16	2737100.08	4.48	13.64	0.58	1.72	0.96	0.17	0.77	0.80	1014.42	7.19	1016.84	6.18	1022.03	11.76	1022.03	11.76	99.26
0619-MR-24 Spot 118	300.32	289508.07	3.15	11.47	0.66	2.82	1.08	0.23	0.85	0.79	1359.98	10.46	1361.16	8.07	1363.00	12.64	1363.00	12.64	99.78
0619-MR-24 Spot 105	438.16	240784.30	1.73	11.04	0.60	3.10	0.96	0.25	0.75	0.78	1430.65	9.63	1433.12	7.37	1436.75	11.43	1436.75	11.43	99.58
0619-MR-24 Spot 270	408.73	499426.05	2.63	10.10	0.59	3.39	1.02	0.25	0.83	0.81	1428.24	10.62	1501.04	7.99	1605.35	11.05	1605.35	11.05	88.97
0619-MR-24 Spot 308	141.64	284304.07	1.50	9.90	0.72	3.97	0.95	0.29	0.62	0.65	1618.29	8.85	1628.61	7.73	1641.93	13.45	1641.93	13.45	98.56
0619-MR-24 Spot 245	210.74	934440.76	1.03	8.26	0.56	5.88	0.92	0.35	0.73	0.79	1945.37	12.26	1958.31	7.97	1972.00	9.93	1972.00	9.93	98.65

Sample 0619-MR-26

0619MR26-Spot 1	84.22	14615.54	1.99	19.83	1.20	0.18	1.83	0.03	1.31	0.72	170.77	2.21	170.36	2.87	164.73	29.70	170.77	2.21	103.67
0619MR26-Spot 2	78.94	6580.56	1.56	19.56	1.31	0.17	1.89	0.03	1.15	0.61	164.27	1.87	162.62	2.85	138.63	35.29	164.27	1.87	118.50
0619MR26-Spot 3	152.88	9468.48	1.74	18.83	1.08	0.18	1.71	0.03	1.31	0.77	165.49	2.15	171.97	2.70	262.15	25.02	165.49	2.15	63.13
0619MR26-Spot 4	223.51	24679.38	1.51	16.15	1.38	0.22	1.94	0.03	1.31	0.67	168.38	2.17	204.81	3.60	648.01	30.79	168.38	2.17	25.98
0619MR26-Spot 5	493.42	19078.10	1.31	17.47	0.94	0.20	1.89	0.03	1.64	0.87	166.83	2.70	188.40	3.25	468.07	20.77	166.83	2.70	35.64
0619MR26-Spot 6	196.13	135069.41	1.51	19.81	1.11	0.18	1.78	0.03	1.40	0.78	162.42	2.24	166.01	2.73	217.57	25.64	162.42	2.24	74.65
0619MR26-Spot 7	199.26	25468.84	1.44	20.04	0.87	0.17	1.87	0.03	1.65	0.88	161.85	2.64	162.29	2.81	168.55	20.59	161.85	2.64	96.03
0619MR26-Spot 8	77.50	7564.49	2.93	20.24	1.11	0.17	1.79	0.03	1.16	0.65	169.42	1.95	163.33	2.70	75.97	32.25	169.42	1.95	223.00
0619MR26-Spot 9	61.59	76006.69	1.92	19.73	1.69	0.18	2.02	0.03	1.11	0.55	164.53	1.81	168.20	3.13	220.13	39.01	164.53	1.81	74.74
0619MR26-Spot 10	34.29	305962.03	2.81	18.75	2.25	0.20	2.49	0.03	1.07	0.43	169.68	1.79	181.88	4.15	343.42	50.93	169.68	1.79	49.41
0619MR26-Spot 11	76.21	38194.17	1.70	20.00	1.29	0.18	1.71	0.03	1.12	0.66	166.13	1.84	167.00	2.63	179.38	29.99	166.13	1.84	92.61
0619MR26-Spot 12	74.48	6936.70	1.50	19.51	1.06	0.18	1.49	0.03	1.01	0.68	166.92	1.66	166.32	2.29	157.81	25.71	166.92	1.66	105.77
0619MR26-Spot 13	257.84	254846.91	1.41	20.22	0.92	0.18	1.79	0.03	1.53	0.86	166.15	2.52	166.36	2.74	169.29	21.45	166.15	2.52	98.14
0619MR26-Spot 14	198.27	24742.81	0.96	19.36	1.86	0.18	2.41	0.03	1.50	0.62	164.58	2.43	169.98	3.77	245.80	43.48	164.58	2.43	66.96
0619MR26-Spot 15	66.84	26321.65	1.48	19.70	1.34	0.18	1.81	0.03	1.22	0.67	165.99	1.99	168.67	2.81	206.47	31.04	165.99	1.99	80.39
0619MR26-Spot 16	68.82	14229.57	1.49	19.48	1.16	0.18	1.98	0.03	1.22	0.62	168.98	2.04	171.82	3.12	211.12	35.98	168.98	2.04	80.04
0619MR26-Spot 17	129.80	473136.21	1.52	19.80	1.07	0.18	1.48	0.03	1.02	0.69	164.10	1.65	167.70	2.28	218.84	24.71	164.10	1.65	74.98
0619MR26-Spot 18	139.24	92670.11	1.27	20.09	1.01	0.18	1.65	0.03	1.31	0.79	165.71	2.15	166.61	2.54	179.33	23.52	165.71	2.15	92.40
0619MR26-Spot 19	257.38	91120.66	1.93	20.40	0.93	0.18	1.80	0.03	1.54	0.86	168.85	2.57	167.17	2.78	143.41	21.89	168.85	2.57	117.74
0619MR26-Spot 21	227.28	49300.10	1.76	20.14	0.83	0.18	1.51	0.03	1.26	0.84	169.30	2.11	169.12	2.35	166.62	19.32	169.30	2.11	101.61
0619MR26-Spot 22	303.58	247586.31	0.70	20.05	0.81	0.18	1.65	0.03	1.44	0.87	167.65	2.38	169.04	2.57	188.50	18.96	167.65	2.38	88.93
0619MR26-Spot 23	123.94	6617.15	1.74	19.96	1.06	0.17	1.57	0.03	1.14	0.73	165.10	1.86	160.67	2.33	95.76	25.36	165.10	1.86	172.41
0619MR26-Spot 24	202.61	119045.29	1.28	20.06	0.90	0.17	1.65	0.03	1.38	0.84	162.22	2.22	163.71	2.50	185.36	21.05	162.22	2.22	87.52
0619MR26-Spot 25	133.93	32207.32	1.29	20.11	1.34	0.18	1.68	0.03	1.01	0.60	166.94	1.67	166.75	2.58	164.00	31.28	166.94	1.67	101.79
0619MR26-Spot 26	184.54	13548.78	1.39	20.28	1.17	0.17	1.93	0.03	1.53	0.79	165.27	2.50	161.86	2.88	112.39	27.59	165.27	2.50	147.05
0619MR26-Spot 27	386.19	83017.95	1.12	20.08	0.94	0.18	1.49	0.03	1.15	0.77	164.23	1.87	165.25	2.27	179.90	22.01	164.23	1.87	91.29
0619MR26-Spot 28	171.58	97504.53	1.23	19.35	1.19	0.18	1.97	0.03	1.57	0.80	165.11	2.56	171.86	3.12	265.87	27.36	165.11	2.56	62.10

0619MR26-Spot 29	98.67	12850.59	1.83	20.30	1.33	0.18	1.84	0.03	1.23	0.67	169.62	2.05	165.40	2.81	105.40	32.38	169.62	2.05	160.93
0619MR26-Spot 30	89.05	39891.21	1.58	19.47	1.56	0.19	1.95	0.03	1.17	0.60	168.18	1.94	173.12	3.11	241.02	36.06	168.18	1.94	69.78
0619MR26-Spot 31	62.92	11924.95	2.21	20.56	1.12	0.17	1.63	0.03	1.15	0.71	166.95	1.89	160.88	2.42	72.45	27.45	166.95	1.89	230.42
0619MR26-Spot 32	76.01	25253.34	1.50	19.54	1.33	0.18	1.66	0.03	1.00	0.60	165.78	1.63	169.76	2.60	225.55	30.78	165.78	1.63	73.50
0619MR26-Spot 33	157.55	96207.91	1.47	20.20	0.87	0.18	1.50	0.03	1.22	0.81	170.18	2.05	170.01	2.35	167.60	20.41	170.18	2.05	101.54
0619MR26-Spot 34	70.75	105400.83	1.73	19.13	1.31	0.18	1.80	0.03	1.24	0.69	161.43	1.98	170.24	2.82	294.44	29.87	161.43	1.98	54.83
0619MR26-Spot 35	324.56	61764.97	0.71	20.10	1.18	0.18	1.84	0.03	1.41	0.76	165.35	2.30	165.96	2.82	174.67	27.66	165.35	2.30	94.66
0619MR26-Spot 36	131.00	13782.79	1.10	20.11	1.07	0.18	1.62	0.03	1.12	0.69	165.98	1.83	163.87	2.45	133.45	27.56	165.98	1.83	124.38
0619MR26-Spot 37	320.94	61007.78	0.81	19.53	0.94	0.18	1.88	0.03	1.62	0.86	165.18	2.64	170.21	2.94	240.82	21.83	165.18	2.64	68.59
0619MR26-Spot 38	167.60	4005.99	1.66	9.66	3.70	0.39	3.95	0.03	1.40	0.35	177.32	2.44	330.96	11.17	1627.97	68.82	177.32	2.44	10.89
0619MR26-Spot 39	261.77	38441.24	0.68	19.88	0.85	0.18	1.55	0.03	1.27	0.82	166.83	2.10	168.56	2.41	192.87	20.60	166.83	2.10	86.50
0619MR26-Spot 40	101.78	13846.88	1.28	19.98	1.08	0.18	1.94	0.03	1.41	0.73	168.32	2.35	167.07	2.98	149.47	31.03	168.32	2.35	112.61
0619MR26-Spot 41	73.51	44869.55	1.72	19.97	1.45	0.18	1.79	0.03	1.04	0.58	166.15	1.71	167.34	2.76	184.14	33.90	166.15	1.71	90.23
0619MR26-Spot 42	84.57	6883.32	1.59	19.10	1.19	0.19	2.87	0.03	1.61	0.56	175.06	2.77	177.24	4.66	206.37	55.10	175.06	2.77	84.83
0619MR26-Spot 43	191.93	143043.38	1.67	20.05	1.02	0.18	1.79	0.03	1.48	0.82	168.00	2.45	169.17	2.80	185.44	23.71	168.00	2.45	90.60
0619MR26-Spot 44	316.49	55785.34	1.19	19.84	0.90	0.18	1.60	0.03	1.32	0.82	167.06	2.18	169.41	2.50	202.42	21.10	167.06	2.18	82.53
0619MR26-Spot 45	105.66	27332.94	1.51	20.28	1.26	0.17	1.69	0.03	1.06	0.63	163.46	1.71	161.81	2.53	137.69	30.89	163.46	1.71	118.72
0619MR26-Spot 46	283.08	107352.90	1.15	19.46	1.03	0.19	2.14	0.03	1.87	0.88	170.71	3.16	176.34	3.46	252.46	23.75	170.71	3.16	67.62
0619MR26-Spot 47	72.82	3829.77	2.80	12.37	1.55	0.29	2.01	0.03	1.28	0.64	170.91	2.15	255.10	4.54	1123.81	30.95	170.91	2.15	15.21
0619MR26-Spot 48	43.15	11501.92	2.19	19.45	1.29	0.18	1.84	0.03	1.07	0.58	165.13	1.74	167.53	2.84	201.56	34.83	165.13	1.74	81.93
0619MR26-Spot 50	81.50	23741.80	2.22	17.67	1.52	0.20	1.92	0.03	1.17	0.61	166.73	1.93	186.97	3.29	451.04	33.92	166.73	1.93	36.97
0619MR26-Spot 51	187.15	43538.82	1.37	19.98	1.11	0.18	1.93	0.03	1.57	0.81	168.85	2.62	169.64	3.02	180.59	26.17	168.85	2.62	93.50
0619MR26-Spot 52	207.44	53815.11	1.31	19.68	1.09	0.18	1.66	0.03	1.23	0.74	162.31	1.98	166.02	2.53	219.21	25.54	162.31	1.98	74.04
0619MR26-Spot 53	394.06	40136.61	1.07	19.97	0.86	0.18	1.63	0.03	1.38	0.85	163.99	2.24	165.06	2.49	180.45	20.26	163.99	2.24	90.88
0619MR26-Spot 54	390.86	42160.13	0.98	19.98	1.02	0.18	1.70	0.03	1.36	0.80	167.38	2.24	168.29	2.64	181.11	23.91	167.38	2.24	92.42
0619MR26-Spot 55	426.31	219211.84	0.88	20.12	0.91	0.18	1.75	0.03	1.50	0.85	169.13	2.50	169.78	2.74	178.75	21.16	169.13	2.50	94.62
0619MR26-Spot 57	164.79	5700.22	1.14	19.87	0.99	0.17	2.54	0.03	1.38	0.54	164.62	2.24	159.50	3.75	84.22	50.53	164.62	2.24	195.46
0619MR26-Spot 58	151.29	51400.33	1.66	20.44	0.89	0.17	2.01	0.03	1.80	0.89	164.83	2.92	162.48	3.01	128.35	21.07	164.83	2.92	128.42
0619MR26-Spot 59	106.05	15409.23	1.25	19.43	1.12	0.18	1.82	0.03	1.37	0.75	165.51	2.24	168.95	2.84	217.30	27.85	165.51	2.24	76.17
0619MR26-Spot 61	62.18	10848.26	1.72	19.93	1.48	0.18	1.90	0.03	1.14	0.60	165.76	1.86	164.12	2.89	140.67	35.84	165.76	1.86	117.84
0619MR26-Spot 62	41.56	9239.85	1.92	19.94	1.59	0.18	1.99	0.03	1.16	0.58	167.33	1.92	164.79	3.03	128.60	38.13	167.33	1.92	130.11
0619MR26-Spot 63	111.84	11870.62	1.43	20.04	1.12	0.17	1.86	0.03	1.37	0.74	163.76	2.22	161.77	2.78	132.59	29.55	163.76	2.22	123.51
0619MR26-Spot 64	35.46	6962.72	2.42	19.92	2.46	0.17	3.95	0.03	2.16	0.55	162.93	3.48	159.23	5.82	104.57	78.09	162.93	3.48	155.81
0619MR26-Spot 65	36.70	48129.41	2.46	19.99	1.80	0.18	2.24	0.03	1.32	0.59	164.47	2.14	165.75	3.42	184.09	42.03	164.47	2.14	89.34
0619MR26-Spot 66	51.22	10176.54	2.59	19.44	1.20	0.18	1.70	0.03	1.18	0.69	167.99	1.96	169.90	2.67	196.67	28.56	167.99	1.96	85.41
0619MR26-Spot 67	159.91	22499.28	1.22	20.19	1.20	0.17	1.94	0.03	1.50	0.77	164.24	2.43	162.99	2.91	144.84	28.79	164.24	2.43	113.39
0619MR26-Spot 69	66.32	91632.71	1.55	19.32	1.52	0.19	2.01	0.03	1.30	0.65	165.46	2.13	172.53	3.18	270.61	34.93	165.46	2.13	61.14
0619MR26-Spot 70	68.18	99229.92	2.66	20.76	1.19	0.17	1.89	0.03	1.47	0.78	164.83	2.39	160.89	2.82	103.36	28.25	164.83	2.39	159.47
0619MR26-Spot 72	80.65	19075.26	1.59	19.63	1.49	0.18	1.96	0.03	1.26	0.64	168.33	2.09	170.89	3.08	206.47	34.73	168.33	2.09	81.53
0619MR26-Spot 73	148.42	66890.62	1.52	20.45	1.21	0.17	2.16	0.03	1.78	0.83	164.01	2.89	162.30	3.23	137.43	28.47	164.01	2.89	119.34

0619MR26-Spot 74	453.73	72096.81	1.43	20.10	1.05	0.18	1.76	0.03	1.40	0.80	167.31	2.32	168.01	2.72	177.98	24.59	167.31	2.32	94.00
0619MR26-Spot 75	171.53	52214.29	1.19	20.19	0.81	0.18	1.76	0.03	1.55	0.88	168.09	2.58	167.83	2.72	164.05	19.14	168.09	2.58	102.47
0619MR26-Spot 76	184.24	64614.17	1.34	19.76	1.01	0.18	1.92	0.03	1.63	0.85	160.27	2.59	163.82	2.91	215.40	23.42	160.27	2.59	74.41
0619MR26-Spot 77	73.22	39683.46	1.60	19.84	1.48	0.18	2.04	0.03	1.39	0.68	167.16	2.30	169.37	3.18	200.26	34.69	167.16	2.30	83.47
0619MR26-Spot 78	308.07	453962.77	0.68	20.20	0.84	0.18	1.55	0.03	1.30	0.84	165.37	2.13	165.88	2.37	173.09	19.60	165.37	2.13	95.54
0619MR26-Spot 79	65.76	13794.96	1.53	19.97	1.38	0.18	1.86	0.03	1.23	0.66	167.11	2.04	165.96	2.85	149.64	32.71	167.11	2.04	111.67
0619MR26-Spot 80	358.63	77503.17	1.28	19.87	0.94	0.18	1.44	0.03	1.09	0.76	163.50	1.76	166.05	2.20	202.58	21.77	163.50	1.76	80.71
0619MR26-Spot 81	154.86	17677.88	1.31	19.45	1.51	0.18	2.06	0.03	1.36	0.66	165.10	2.21	168.95	3.21	223.18	35.89	165.10	2.21	73.98
0619MR26-Spot 83	77.22	14352.52	1.74	19.80	1.27	0.18	1.84	0.03	1.18	0.64	170.15	1.99	170.19	2.89	170.77	33.00	170.15	1.99	99.63
0619MR26-Spot 84	49.18	34654.10	1.91	20.09	1.30	0.18	1.81	0.03	1.26	0.70	169.96	2.12	169.64	2.83	165.16	30.40	169.96	2.12	102.90
0619MR26-Spot 85	323.38	168047.43	1.90	7.94	3.24	5.28	5.52	0.30	4.47	0.81	1708.85	67.05	1864.87	47.14	2043.50	57.30	2043.50	57.30	83.62
0619MR26-Spot 86	144.23	24739.87	1.49	19.88	1.05	0.18	1.76	0.03	1.38	0.78	167.52	2.29	168.70	2.74	185.20	25.45	167.52	2.29	90.45
0619MR26-Spot 87	146.50	20591.51	1.26	19.95	1.27	0.18	2.16	0.03	1.63	0.75	165.33	2.66	165.71	3.30	171.09	33.12	165.33	2.66	96.64
0619MR26-Spot 88	243.08	194699.09	0.96	20.23	1.00	0.18	1.88	0.03	1.59	0.85	167.33	2.63	167.43	2.90	168.78	23.28	167.33	2.63	99.14
0619MR26-Spot 89	106.82	10250.21	2.99	20.31	1.58	0.17	2.08	0.03	1.32	0.64	166.50	2.17	161.73	3.11	92.37	37.99	166.50	2.17	180.25
0619MR26-Spot 90	21.84	23136.77	2.60	18.13	2.16	0.20	2.46	0.03	1.17	0.47	167.77	1.93	183.87	4.14	396.13	48.65	167.77	1.93	42.35
0619MR26-Spot 91	178.11	67210.74	1.18	20.12	1.24	0.18	1.99	0.03	1.56	0.78	168.51	2.59	168.91	3.10	174.52	28.91	168.51	2.59	96.56
0619MR26-Spot 92	178.71	46889.98	0.88	20.11	0.84	0.18	1.49	0.03	1.23	0.83	171.43	2.09	171.43	2.35	171.45	19.53	171.43	2.09	99.99
0619MR26-Spot 93	201.03	27992.00	1.14	18.00	1.59	0.20	2.28	0.03	1.63	0.71	166.95	2.68	184.67	3.85	417.79	35.65	166.95	2.68	39.96
0619MR26-Spot 95	81.76	366086.43	1.59	20.14	1.50	0.18	2.07	0.03	1.42	0.69	163.35	2.30	164.47	3.14	180.50	35.01	163.35	2.30	90.50
0619MR26-Spot 96	149.53	24884.51	1.24	20.18	0.92	0.18	1.88	0.03	1.64	0.87	168.76	2.72	167.65	2.91	152.00	21.78	168.76	2.72	111.03
0619MR26-Spot 97	129.08	24735.90	1.92	19.68	1.27	0.18	1.58	0.03	0.91	0.57	164.67	1.47	167.74	2.44	211.26	29.94	164.67	1.47	77.95
0619MR26-Spot 98	91.80	10976.19	3.08	19.07	1.95	0.18	2.20	0.03	1.00	0.45	164.93	1.63	170.70	3.46	251.43	45.17	164.93	1.63	65.60
0619MR26-Spot 99	322.51	48338.81	1.10	20.09	0.95	0.19	2.02	0.03	1.78	0.88	175.85	3.08	175.89	3.26	176.38	22.27	175.85	3.08	99.70
0619MR26-Spot 100	154.44	95479.07	1.86	20.04	0.94	0.18	1.65	0.03	1.36	0.82	169.49	2.27	170.80	2.60	188.97	21.91	169.49	2.27	89.69
0619MR26-Spot 101	136.45	422381.85	1.36	17.80	2.12	0.20	2.27	0.03	0.83	0.37	166.27	1.37	187.57	3.89	464.92	46.89	166.27	1.37	35.76
0619MR26-Spot 102	106.40	41635.13	0.99	19.89	1.26	0.18	1.81	0.03	1.28	0.71	165.10	2.09	167.28	2.79	198.30	29.77	165.10	2.09	83.26
0619MR26-Spot 103	131.42	17299.80	1.85	20.41	1.06	0.17	1.49	0.03	1.05	0.70	165.19	1.71	161.89	2.23	113.98	25.14	165.19	1.71	144.92
0619MR26-Spot 104	488.63	133651.74	1.17	19.94	0.85	0.18	1.71	0.03	1.49	0.87	168.76	2.48	171.16	2.69	204.59	19.64	168.76	2.48	82.49
0619MR26-Spot 105	66.17	71914.85	2.59	20.04	1.39	0.18	1.83	0.03	1.19	0.65	168.52	1.97	169.85	2.86	188.40	32.27	168.52	1.97	89.45
0619MR26-Spot 106	110.38	9090.03	1.42	18.09	1.07	0.19	1.75	0.03	1.39	0.79	162.34	2.23	176.09	2.83	364.91	24.11	162.34	2.23	44.49
0619MR26-Spot 107	33.02	34742.66	2.58	19.58	1.77	0.18	2.24	0.03	1.38	0.62	164.70	2.24	169.21	3.49	232.76	40.76	164.70	2.24	70.76
0619MR26-Spot 108	331.58	89443.46	1.05	20.03	1.02	0.18	1.46	0.03	1.05	0.72	166.23	1.72	167.96	2.26	192.47	23.65	166.23	1.72	86.37
0619MR26-Spot 109	25.65	21406.45	2.68	17.22	1.83	0.22	2.24	0.03	1.30	0.58	172.55	2.21	198.07	4.04	514.02	40.19	172.55	2.21	33.57
0619MR26-Spot 110	105.51	54093.94	2.78	20.19	1.24	0.18	1.77	0.03	1.25	0.71	164.74	2.04	164.90	2.69	167.27	29.07	164.74	2.04	98.49
Sample 0619-MR-27																			
0619-MR-27 Spot 37	2585.28	257831.76	2.42	20.52	0.87	0.14	1.53	0.02	1.26	0.82	134.16	1.67	134.14	1.92	133.83	20.49	134.16	1.67	NA
0619-MR-27 Spot 43	80.72	4794.32	2.66	20.45	2.99	0.16	3.18	0.02	1.11	0.35	148.63	1.63	148.22	4.39	141.76	70.07	148.63	1.63	NA

0619-MR-27 Spot 88	158.78	7210.17	2.58	21.19	1.98	0.15	2.22	0.02	1.01	0.45	150.36	1.49	145.02	3.00	58.50	47.21	150.36	1.49	NA
0619-MR-27 Spot 5	443.31	151233.56	3.11	20.34	1.06	0.16	1.36	0.02	0.86	0.63	150.47	1.27	150.72	1.91	154.58	24.84	150.47	1.27	NA
0619-MR-27 Spot 100	223.02	7322.74	2.18	21.52	1.10	0.15	1.44	0.02	0.93	0.64	150.54	1.38	143.07	1.92	20.88	26.42	150.54	1.38	NA
0619-MR-27 Spot 51	236.36	16806.76	1.12	20.16	1.41	0.16	1.69	0.02	0.93	0.55	152.76	1.40	154.15	2.41	175.65	32.81	152.76	1.40	NA
0619-MR-27 Spot 19	104.43	9960.22	0.58	20.85	1.72	0.16	1.90	0.02	0.80	0.42	153.06	1.20	149.67	2.64	96.20	40.73	153.06	1.20	NA
0619-MR-27 Spot 112	47.38	6585.24	1.05	19.61	3.20	0.17	3.46	0.02	1.33	0.38	153.65	2.02	158.97	5.09	239.10	73.72	153.65	2.02	NA
0619-MR-27 Spot 57	229.14	9539.19	1.76	20.62	1.26	0.17	1.70	0.03	1.15	0.67	159.54	1.81	157.22	2.48	122.41	29.61	159.54	1.81	NA
0619-MR-27 Spot 115	413.73	22177.69	1.66	20.37	1.55	0.17	2.67	0.03	2.17	0.81	159.67	3.42	159.12	3.93	150.99	36.30	159.67	3.42	NA
0619-MR-27 Spot 66	177.09	146767.23	1.48	20.24	1.99	0.17	2.22	0.03	0.99	0.45	160.44	1.57	160.84	3.30	166.67	46.41	160.44	1.57	NA
0619-MR-27 Spot 36	597.27	164562.49	1.30	20.09	0.87	0.17	1.42	0.03	1.11	0.79	161.00	1.77	162.47	2.12	184.01	20.38	161.00	1.77	NA
0619-MR-27 Spot 101	216.55	12349.33	1.38	20.50	1.59	0.17	1.81	0.03	0.86	0.48	161.90	1.38	160.27	2.68	136.15	37.33	161.90	1.38	NA
0619-MR-27 Spot 77	144.36	23992.11	1.17	20.25	1.77	0.17	2.11	0.03	1.14	0.54	162.45	1.82	162.65	3.17	165.51	41.47	162.45	1.82	NA
0619-MR-27 Spot 48	169.50	9599.45	1.58	21.53	1.91	0.16	2.17	0.03	1.03	0.47	162.58	1.65	153.74	3.10	19.52	45.96	162.58	1.65	NA
0619-MR-27 Spot 69	81.65	17795.84	2.33	20.72	2.69	0.17	2.86	0.03	0.97	0.34	162.60	1.55	159.33	4.22	110.98	63.54	162.60	1.55	NA
0619-MR-27 Spot 7	418.34	18903.66	1.21	20.53	0.94	0.17	1.17	0.03	0.70	0.59	163.04	1.12	161.11	1.74	132.79	22.13	163.04	1.12	NA
0619-MR-27 Spot 32	59.77	27895.51	2.20	19.88	3.51	0.18	3.68	0.03	1.09	0.30	163.36	1.75	166.31	5.64	208.47	81.44	163.36	1.75	NA
0619-MR-27 Spot 120	650.19	96898.92	1.07	20.25	0.85	0.17	1.65	0.03	1.41	0.86	163.56	2.28	163.62	2.49	164.51	19.96	163.56	2.28	NA
0619-MR-27 Spot 117	351.59	71827.91	1.50	20.65	1.10	0.17	1.38	0.03	0.82	0.60	163.68	1.33	160.81	2.05	118.70	25.96	163.68	1.33	NA
0619-MR-27 Spot 99	65.65	42006.71	2.09	20.14	2.94	0.18	3.17	0.03	1.18	0.37	164.08	1.91	164.96	4.83	177.67	68.69	164.08	1.91	NA
0619-MR-27 Spot 67	110.73	13419.51	1.42	20.60	2.10	0.17	2.36	0.03	1.07	0.45	164.32	1.74	161.82	3.53	125.37	49.44	164.32	1.74	NA
0619-MR-27 Spot 64	63.19	199318.18	1.36	20.07	2.35	0.18	2.56	0.03	1.03	0.40	164.47	1.66	165.87	3.92	185.93	54.64	164.47	1.66	NA
0619-MR-27 Spot 86	51.94	10365.07	2.15	19.58	2.51	0.18	2.91	0.03	1.47	0.51	165.39	2.40	170.58	4.57	243.23	57.93	165.39	2.40	NA
0619-MR-27 Spot 8	97.91	6822.88	1.53	21.16	2.71	0.17	2.93	0.03	1.11	0.38	165.85	1.82	159.18	4.32	61.01	64.69	165.85	1.82	NA
0619-MR-27 Spot 103	134.57	11250.26	2.06	20.79	2.25	0.17	2.46	0.03	0.99	0.40	166.04	1.62	162.02	3.69	103.70	53.28	166.04	1.62	NA
0619-MR-27 Spot 20	152.14	16802.00	2.71	19.90	1.68	0.18	2.10	0.03	1.26	0.60	166.21	2.07	168.79	3.26	205.11	38.88	166.21	2.07	NA
0619-MR-27 Spot 118	524.74	18315.51	1.04	20.44	1.14	0.18	1.39	0.03	0.79	0.57	166.30	1.30	164.79	2.11	143.22	26.75	166.30	1.30	NA
0619-MR-27 Spot 80	60.57	137777.40	1.48	20.62	2.60	0.18	2.83	0.03	1.11	0.39	166.68	1.83	163.83	4.28	122.74	61.33	166.68	1.83	NA
0619-MR-27 Spot 85	66.31	35829.46	2.62	19.81	2.52	0.18	2.78	0.03	1.18	0.43	166.69	1.95	170.01	4.35	216.48	58.25	166.69	1.95	NA
0619-MR-27 Spot 4	88.67	34721.72	1.98	20.90	2.66	0.17	2.92	0.03	1.21	0.41	166.87	1.99	161.96	4.37	90.74	63.04	166.87	1.99	NA
0619-MR-27 Spot 70	102.32	6645.85	1.99	20.91	2.50	0.17	2.67	0.03	0.94	0.35	166.91	1.55	161.90	4.00	89.28	59.35	166.91	1.55	NA
0619-MR-27 Spot 25	216.17	20147.51	2.48	20.83	1.52	0.17	1.79	0.03	0.95	0.53	167.06	1.57	162.62	2.69	98.46	35.89	167.06	1.57	NA
0619-MR-27 Spot 71	26.53	12298.14	0.64	8.96	15.50	0.40	15.56	0.03	1.33	0.09	167.08	2.20	344.41	45.47	1824.60	282.91	167.08	2.20	NA
0619-MR-27 Spot 61	408.44	149874.90	1.54	20.45	0.89	0.18	1.34	0.03	1.00	0.75	167.11	1.65	165.44	2.05	141.72	20.94	167.11	1.65	NA
0619-MR-27 Spot 76	183.12	76145.10	1.46	19.53	1.65	0.19	1.84	0.03	0.82	0.45	167.34	1.35	172.89	2.92	249.54	37.89	167.34	1.35	NA
0619-MR-27 Spot 95	52.09	1672.62	2.81	23.71	2.86	0.15	3.05	0.03	1.05	0.34	167.44	1.73	144.51	4.10	NA	NA	167.44	1.73	NA
0619-MR-27 Spot 17	640.71	144274.75	1.55	20.21	0.93	0.18	1.56	0.03	1.26	0.80	167.72	2.08	167.81	2.41	169.11	21.65	167.72	2.08	NA
0619-MR-27 Spot 1	400.06	54623.32	1.26	20.35	1.20	0.18	1.40	0.03	0.73	0.52	168.48	1.21	167.50	2.17	153.75	28.07	168.48	1.21	NA
0619-MR-27 Spot 65	131.45	6313.14	2.49	21.27	1.60	0.17	1.87	0.03	0.95	0.51	168.67	1.59	160.94	2.78	48.62	38.33	168.67	1.59	NA
0619-MR-27 Spot 108	746.45	87576.88	1.13	20.38	0.81	0.18	1.33	0.03	1.06	0.79	168.74	1.76	167.54	2.06	150.56	19.06	168.74	1.76	NA
0619-MR-27 Spot 110	196.37	13229.49	1.34	20.83	1.70	0.18	1.87	0.03	0.79	0.42	168.80	1.31	164.23	2.83	98.84	40.14	168.80	1.31	NA

0619-MR-27 Spot 22	238.55	25204.02	1.53	20.03	1.39	0.18	1.64	0.03	0.88	0.53	168.88	1.46	170.35	2.58	190.97	32.34	168.88	1.46	NA
0619-MR-27 Spot 47	206.81	801948.46	1.69	20.33	1.19	0.18	1.54	0.03	0.97	0.63	169.38	1.62	168.44	2.39	155.30	27.95	169.38	1.62	NA
0619-MR-27 Spot 116	4500.56	172687.22	0.90	20.19	0.60	0.18	1.22	0.03	1.06	0.87	169.45	1.77	169.61	1.91	171.81	14.06	169.45	1.77	NA
0619-MR-27 Spot 82	71.44	13076.17	2.10	16.23	3.39	0.23	3.64	0.03	1.34	0.37	169.55	2.24	207.12	6.83	659.57	72.67	169.55	2.24	NA
0619-MR-27 Spot 42	395.02	24919.29	1.16	20.43	0.94	0.18	1.23	0.03	0.80	0.65	169.79	1.34	168.10	1.91	144.34	22.06	169.79	1.34	NA
0619-MR-27 Spot 46	91.34	8151.37	2.04	21.17	3.51	0.17	3.69	0.03	1.15	0.31	169.80	1.93	162.67	5.55	60.18	83.61	169.80	1.93	NA
0619-MR-27 Spot 31	146.91	16743.21	1.82	20.76	1.45	0.18	1.61	0.03	0.71	0.44	169.85	1.20	165.66	2.46	106.15	34.14	169.85	1.20	NA
0619-MR-27 Spot 123	206.91	37286.86	2.13	20.27	1.38	0.18	1.75	0.03	1.07	0.61	169.91	1.80	169.40	2.73	162.25	32.35	169.91	1.80	NA
0619-MR-27 Spot 55	134.28	9727.23	1.47	20.71	1.79	0.18	2.07	0.03	1.04	0.50	169.99	1.75	166.19	3.18	112.44	42.35	169.99	1.75	NA
0619-MR-27 Spot 28	158.50	95171.77	1.23	19.67	1.66	0.19	1.97	0.03	1.06	0.54	170.81	1.79	175.07	3.17	233.03	38.30	170.81	1.79	NA
0619-MR-27 Spot 24	212.48	8132.17	1.37	21.08	1.58	0.18	1.88	0.03	1.01	0.54	170.87	1.71	164.28	2.85	70.35	37.60	170.87	1.71	NA
0619-MR-27 Spot 54	61.27	4262.52	1.55	19.16	2.34	0.19	2.66	0.03	1.26	0.47	171.84	2.13	180.29	4.39	292.50	53.47	171.84	2.13	NA
0619-MR-27 Spot 60	275.91	20923.90	1.12	20.07	1.54	0.19	1.80	0.03	0.95	0.52	172.36	1.61	173.30	2.88	186.19	35.77	172.36	1.61	NA
0619-MR-27 Spot 38	140.96	15443.62	1.89	20.53	2.33	0.18	2.47	0.03	0.84	0.34	172.41	1.43	169.78	3.87	133.27	54.71	172.41	1.43	NA
0619-MR-27 Spot 63	31.21	2299.03	2.61	21.64	3.51	0.17	3.85	0.03	1.57	0.41	172.73	2.67	161.98	5.76	7.52	84.58	172.73	2.67	NA
0619-MR-27 Spot 12	263.21	25928.00	1.23	20.44	1.34	0.18	1.62	0.03	0.91	0.56	173.01	1.55	171.03	2.54	143.72	31.35	173.01	1.55	NA
0619-MR-27 Spot 105	86.55	11342.62	2.32	20.51	2.35	0.18	2.57	0.03	1.04	0.41	173.23	1.79	170.68	4.04	135.55	55.27	173.23	1.79	NA
0619-MR-27 Spot 58	287.94	34217.14	1.05	19.55	1.63	0.19	1.89	0.03	0.97	0.51	173.27	1.65	178.36	3.10	246.36	37.49	173.27	1.65	NA
0619-MR-27 Spot 84	158.14	737791.67	1.28	19.33	1.49	0.19	1.74	0.03	0.89	0.51	173.59	1.52	180.58	2.87	273.04	34.20	173.59	1.52	NA
0619-MR-27 Spot 114	487.21	144302.21	1.82	19.97	1.22	0.19	1.42	0.03	0.73	0.51	175.01	1.26	176.58	2.30	197.69	28.26	175.01	1.26	NA
0619-MR-27 Spot 92	92.61	5487.29	1.80	20.54	3.67	0.18	3.79	0.03	0.93	0.25	175.10	1.61	172.13	5.99	131.55	86.29	175.10	1.61	NA
0619-MR-27 Spot 102	72.30	20068.28	2.16	14.27	4.64	0.27	4.83	0.03	1.34	0.28	177.37	2.35	242.22	10.40	929.62	95.20	177.37	2.35	NA
0619-MR-27 Spot 21	279.46	135547.08	1.19	19.54	1.35	0.20	1.55	0.03	0.77	0.50	182.45	1.39	187.21	2.65	247.73	30.99	182.45	1.39	NA
0619-MR-27 Spot 79	322.49	256387.48	1.31	18.37	0.86	0.42	1.22	0.06	0.87	0.71	354.29	2.99	358.80	3.68	388.06	19.26	354.29	2.99	NA
0619-MR-27 Spot 18	460.38	70756.78	1.37	17.68	0.69	0.52	1.02	0.07	0.74	0.73	419.94	3.01	428.35	3.55	473.84	15.35	419.94	3.01	88.62
0619-MR-27 Spot 97	169.13	34363.02	2.19	17.93	1.36	0.60	1.73	0.08	1.07	0.62	482.54	4.99	475.62	6.57	442.33	30.20	482.54	4.99	109.09
0619-MR-27 Spot 13	160.31	55321.31	1.66	16.64	0.98	0.81	1.26	0.10	0.80	0.63	600.90	4.60	602.05	5.74	606.34	21.10	600.90	4.60	99.10
0619-MR-27 Spot 90	56.40	56920.20	1.74	11.47	0.94	2.77	1.68	0.23	1.39	0.83	1336.42	16.80	1347.09	12.52	1364.06	18.07	1364.06	18.07	97.97
0619-MR-27 Spot 29	688.40	432549.61	28.44	11.05	0.75	2.71	1.88	0.22	1.73	0.92	1268.92	19.90	1332.44	13.98	1436.03	14.34	1436.03	14.34	88.36

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0619-MR-30 195	176.08	15166.27	2.33	20.74	1.26	0.15	1.49	0.02	0.80	0.54	143.35	1.13	141.41	1.97	109.04	29.70	143.35	1.13	NA
0619-MR-30 125	171.69	41801.85	1.65	20.54	1.31	0.15	1.57	0.02	0.86	0.55	143.35	1.22	142.72	2.09	132.19	30.74	143.35	1.22	NA
0619-MR-30 253	569.28	101237.15	1.53	20.29	1.02	0.15	1.50	0.02	1.10	0.73	143.40	1.55	144.37	2.02	160.40	23.95	143.40	1.55	NA
0619-MR-30 242	301.03	69652.06	2.22	20.54	0.86	0.15	1.17	0.02	0.79	0.68	143.45	1.12	142.78	1.56	131.57	20.33	143.45	1.12	NA
0619-MR-30 129	394.44	34670.17	1.31	20.28	1.04	0.15	1.60	0.02	1.22	0.76	144.40	1.74	145.40	2.17	161.72	24.37	144.40	1.74	NA
0619-MR-30 230	102.68	5259.30	2.81	20.83	3.33	0.15	3.47	0.02	0.98	0.28	144.61	1.41	142.00	4.60	98.57	78.74	144.61	1.41	NA
0619-MR-30 243	169.18	27088.54	2.46	20.18	1.49	0.15	1.77	0.02	0.96	0.54	144.67	1.38	146.31	2.42	172.97	34.79	144.67	1.38	NA
0619-MR-30 19	913.21	30911.13	4.87	20.40	1.04	0.15	1.88	0.02	1.56	0.83	144.76	2.24	144.93	2.53	147.69	24.37	144.76	2.24	NA

0619-MR-30 157	150.39	3121.37	2.38	21.80	1.75	0.14	1.94	0.02	0.82	0.43	144.77	1.18	136.24	2.47	NA	NA	144.77	1.18	NA
0619-MR-30 292	177.04	20236.62	2.45	20.17	1.77	0.16	1.93	0.02	0.75	0.39	145.04	1.08	146.70	2.63	173.72	41.36	145.04	1.08	NA
0619-MR-30 184	135.56	12233.70	1.73	20.89	1.50	0.15	1.83	0.02	1.06	0.58	145.18	1.52	142.13	2.43	91.36	35.44	145.18	1.52	NA
0619-MR-30 40	202.96	15028.03	2.20	20.16	1.41	0.16	1.62	0.02	0.80	0.49	145.35	1.15	147.08	2.22	175.08	32.87	145.35	1.15	NA
0619-MR-30 50	137.40	6385.59	2.71	20.54	1.80	0.15	2.04	0.02	0.97	0.47	145.41	1.39	144.65	2.76	132.24	42.32	145.41	1.39	NA
0619-MR-30 128	151.87	13585.06	1.97	20.54	1.62	0.15	1.84	0.02	0.87	0.47	145.48	1.25	144.68	2.48	131.44	37.97	145.48	1.25	NA
0619-MR-30 220	195.03	8571.02	2.02	20.53	1.44	0.15	2.16	0.02	1.61	0.74	145.59	2.31	144.82	2.92	132.35	33.91	145.59	2.31	NA
0619-MR-30 41	153.34	8041.44	1.96	19.63	1.62	0.16	1.91	0.02	1.01	0.53	145.65	1.45	151.07	2.68	236.97	37.33	145.65	1.45	NA
0619-MR-30 137	209.94	18390.92	1.78	20.64	1.33	0.15	1.59	0.02	0.86	0.54	145.69	1.23	144.21	2.13	119.84	31.45	145.69	1.23	NA
0619-MR-30 266	731.52	25760.85	2.70	20.55	0.79	0.15	1.20	0.02	0.90	0.75	145.88	1.30	144.99	1.62	130.62	18.61	145.88	1.30	NA
0619-MR-30 52	182.20	7397.62	1.85	20.81	1.52	0.15	1.91	0.02	1.16	0.61	145.94	1.67	143.36	2.55	100.86	35.88	145.94	1.67	NA
0619-MR-30 39	150.80	72321.92	2.57	19.91	1.21	0.16	1.50	0.02	0.90	0.60	145.96	1.30	149.41	2.09	204.58	27.98	145.96	1.30	NA
0619-MR-30 193	153.46	22278.55	2.01	19.69	1.34	0.16	1.66	0.02	0.98	0.59	146.00	1.41	150.97	2.33	229.72	30.95	146.00	1.41	NA
0619-MR-30 288	545.17	42274.60	1.34	20.44	1.12	0.15	1.51	0.02	1.01	0.67	146.00	1.46	145.87	2.06	143.71	26.38	146.00	1.46	NA
0619-MR-30 99	530.04	31502.22	2.93	20.36	0.96	0.16	1.33	0.02	0.93	0.69	146.04	1.34	146.42	1.82	152.50	22.48	146.04	1.34	NA
0619-MR-30 151	186.22	9732.51	1.89	21.75	1.65	0.15	1.97	0.02	1.07	0.54	146.07	1.54	137.68	2.53	NA	NA	146.07	1.54	NA
0619-MR-30 229	189.77	58397.78	1.47	20.62	2.09	0.15	2.29	0.02	0.94	0.41	146.27	1.35	144.89	3.09	122.41	49.18	146.27	1.35	NA
0619-MR-30 236	193.57	27373.24	2.18	20.34	1.39	0.16	1.58	0.02	0.76	0.48	146.38	1.09	146.90	2.16	155.22	32.50	146.38	1.09	NA
0619-MR-30 188	128.89	14747.15	2.61	20.71	1.80	0.15	2.06	0.02	1.01	0.49	146.45	1.47	144.47	2.78	112.11	42.43	146.45	1.47	NA
0619-MR-30 228	190.51	17067.34	2.28	20.34	1.43	0.16	1.65	0.02	0.83	0.50	146.50	1.20	146.95	2.26	154.22	33.46	146.50	1.20	NA
0619-MR-30 80	540.37	14649.34	1.55	19.94	1.05	0.16	1.48	0.02	1.04	0.70	146.50	1.51	149.73	2.06	201.18	24.38	146.50	1.51	NA
0619-MR-30 68	146.51	8796.67	2.59	21.19	2.35	0.15	2.59	0.02	1.09	0.42	146.59	1.58	141.54	3.42	57.62	55.97	146.59	1.58	NA
0619-MR-30 275	1610.30	45558.50	1.94	19.28	0.72	0.16	1.25	0.02	1.02	0.82	146.68	1.48	154.68	1.80	279.08	16.58	146.68	1.48	NA
0619-MR-30 130	762.14	46944.05	1.84	20.19	0.79	0.16	1.35	0.02	1.10	0.81	146.71	1.60	148.18	1.87	171.75	18.42	146.71	1.60	NA
0619-MR-30 155	161.49	12149.79	1.89	19.89	1.74	0.16	1.91	0.02	0.79	0.41	146.74	1.14	150.33	2.67	207.33	40.42	146.74	1.14	NA
0619-MR-30 142	118.39	40598.69	2.59	19.68	1.58	0.16	1.79	0.02	0.85	0.47	146.77	1.23	151.82	2.52	231.36	36.37	146.77	1.23	NA
0619-MR-30 69	133.63	25098.63	2.41	20.89	2.00	0.15	2.18	0.02	0.86	0.40	146.79	1.25	143.64	2.92	91.95	47.34	146.79	1.25	NA
0619-MR-30 262	164.18	8791.26	1.79	20.95	1.66	0.15	1.84	0.02	0.80	0.43	146.79	1.16	143.25	2.46	85.17	39.29	146.79	1.16	NA
0619-MR-30 303	165.68	6853.17	2.34	20.37	2.01	0.16	2.34	0.02	1.19	0.51	146.82	1.72	147.07	3.20	151.18	47.20	146.82	1.72	NA
0619-MR-30 9	188.59	40775.38	2.08	18.09	1.19	0.18	1.45	0.02	0.83	0.57	146.90	1.21	164.25	2.20	422.29	26.51	146.90	1.21	NA
0619-MR-30 108	293.88	31249.11	1.26	20.73	1.17	0.15	1.41	0.02	0.78	0.56	147.01	1.14	144.88	1.90	110.16	27.54	147.01	1.14	NA
0619-MR-30 93	291.76	13926.81	1.53	20.63	1.43	0.15	1.70	0.02	0.92	0.54	147.08	1.34	145.60	2.31	121.58	33.75	147.08	1.34	NA
0619-MR-30 283	1902.84	121192.98	1.65	19.89	0.69	0.16	1.32	0.02	1.13	0.85	147.14	1.64	150.72	1.85	207.34	16.07	147.14	1.64	NA
0619-MR-30 197	144.76	5531.50	2.44	21.28	1.65	0.15	1.81	0.02	0.74	0.41	147.21	1.07	141.57	2.39	48.12	39.46	147.21	1.07	NA
0619-MR-30 83	121.29	5150.34	2.15	21.75	1.97	0.15	2.19	0.02	0.96	0.44	147.31	1.40	138.80	2.85	NA	NA	147.31	1.40	NA
0619-MR-30 20	202.29	6710.04	1.45	17.22	1.46	0.18	1.69	0.02	0.85	0.50	147.34	1.24	172.35	2.68	531.15	32.07	147.34	1.24	NA
0619-MR-30 198	191.52	22012949.19	1.55	19.98	1.61	0.16	1.85	0.02	0.92	0.49	147.34	1.33	150.22	2.59	195.86	37.43	147.34	1.33	NA
0619-MR-30 217	142.09	9753.13	2.45	21.23	1.76	0.15	2.09	0.02	1.13	0.54	147.37	1.65	142.03	2.78	53.66	42.00	147.37	1.65	NA
0619-MR-30 96	215.95	1171063.97	1.71	20.44	1.25	0.16	1.56	0.02	0.94	0.60	147.43	1.37	147.21	2.14	143.62	29.26	147.43	1.37	NA
0619-MR-30 264	149.69	47253.89	2.03	18.78	1.82	0.17	1.97	0.02	0.74	0.38	147.44	1.08	159.25	2.90	338.71	41.30	147.44	1.08	NA

0619-MR-30 199	165.30	3219.56	2.62	22.42	1.41	0.14	1.69	0.02	0.94	0.56	147.44	1.37	135.04	2.14	NA	NA	147.44	1.37	NA
0619-MR-30 239	132.20	7746.44	2.48	20.41	1.80	0.16	1.95	0.02	0.76	0.39	147.46	1.11	147.40	2.68	146.49	42.17	147.46	1.11	NA
0619-MR-30 260	488.62	110604.94	1.29	20.13	0.83	0.16	1.36	0.02	1.08	0.79	147.50	1.57	149.36	1.89	178.93	19.30	147.50	1.57	NA
0619-MR-30 62	156.30	14617.86	1.94	20.49	1.70	0.16	1.98	0.02	1.02	0.51	147.50	1.49	146.90	2.71	137.21	39.93	147.50	1.49	NA
0619-MR-30 310	271.13	605071.93	1.94	20.22	1.04	0.16	1.37	0.02	0.89	0.65	147.60	1.31	148.85	1.90	168.78	24.22	147.60	1.31	NA
0619-MR-30 161	124.92	3100.05	2.66	22.56	1.86	0.14	2.06	0.02	0.89	0.43	147.61	1.31	134.38	2.60	NA	NA	147.61	1.31	NA
0619-MR-30 251	184.70	9991.57	2.14	19.14	1.69	0.17	1.91	0.02	0.88	0.46	147.64	1.29	156.63	2.77	294.95	38.66	147.64	1.29	NA
0619-MR-30 248	125.66	9022.68	1.90	21.88	2.58	0.15	2.79	0.02	1.05	0.38	147.69	1.53	138.36	3.60	NA	NA	147.69	1.53	NA
0619-MR-30 182	135.36	24127.52	1.99	19.65	1.79	0.16	1.99	0.02	0.87	0.44	147.71	1.27	152.98	2.83	235.47	41.35	147.71	1.27	NA
0619-MR-30 244	164.43	17829.04	2.66	20.22	1.48	0.16	1.77	0.02	0.97	0.55	147.75	1.42	148.95	2.45	168.14	34.55	147.75	1.42	NA
0619-MR-30 202	372.91	13030.82	2.81	20.81	1.49	0.15	1.77	0.02	0.95	0.54	147.76	1.39	145.05	2.39	100.85	35.18	147.76	1.39	NA
0619-MR-30 204	196.35	20563.93	1.66	20.65	1.67	0.15	1.95	0.02	1.00	0.51	147.77	1.46	146.11	2.65	119.30	39.36	147.77	1.46	NA
0619-MR-30 57	528.10	52720.48	1.47	20.58	1.03	0.16	1.77	0.02	1.44	0.81	147.77	2.10	146.58	2.41	127.22	24.20	147.77	2.10	NA
0619-MR-30 3	127.43	30892.92	2.22	19.94	1.77	0.16	1.99	0.02	0.91	0.46	147.80	1.33	150.98	2.79	201.20	41.15	147.80	1.33	NA
0619-MR-30 110	114.55	10446.48	2.65	21.20	1.73	0.15	1.98	0.02	0.97	0.49	147.81	1.42	142.62	2.64	57.04	41.24	147.81	1.42	NA
0619-MR-30 26	479.05	18802.43	1.78	20.57	1.54	0.16	2.50	0.02	1.97	0.79	147.82	2.88	146.69	3.42	128.49	36.23	147.82	2.88	NA
0619-MR-30 240	159.75	8930.05	2.28	21.23	1.95	0.15	2.20	0.02	1.02	0.46	147.83	1.49	142.46	2.93	53.93	46.61	147.83	1.49	NA
0619-MR-30 225	358.75	100022.23	1.13	19.95	1.16	0.16	1.42	0.02	0.82	0.58	147.88	1.20	150.98	1.99	199.97	26.92	147.88	1.20	NA
0619-MR-30 105	125.85	10128.46	2.55	20.97	1.60	0.15	1.88	0.02	0.98	0.52	147.95	1.44	144.15	2.53	82.19	38.09	147.95	1.44	NA
0619-MR-30 121	140.54	18096.42	1.79	18.71	1.45	0.17	1.80	0.02	1.07	0.59	147.95	1.56	160.32	2.67	347.14	32.88	147.95	1.56	NA
0619-MR-30 209	134.64	8045.21	1.90	18.66	2.84	0.17	2.94	0.02	0.77	0.26	148.00	1.12	160.71	4.37	352.40	64.16	148.00	1.12	NA
0619-MR-30 196	176.69	9458.32	1.67	20.73	1.59	0.15	1.90	0.02	1.05	0.55	148.01	1.53	145.77	2.58	109.61	37.47	148.01	1.53	NA
0619-MR-30 75	158.85	51437.69	2.42	19.81	1.74	0.16	2.22	0.02	1.38	0.62	148.01	2.02	152.06	3.14	215.73	40.28	148.01	2.02	NA
0619-MR-30 23	174.76	8492.85	1.67	20.86	1.51	0.15	1.82	0.02	1.03	0.56	148.01	1.50	144.93	2.46	94.86	35.67	148.01	1.50	NA
0619-MR-30 141	225.02	12441.49	1.59	20.74	1.15	0.15	1.32	0.02	0.65	0.49	148.03	0.95	145.77	1.79	109.18	27.18	148.03	0.95	NA
0619-MR-30 127	180.56	13046.18	1.99	20.62	1.74	0.16	1.88	0.02	0.71	0.38	148.04	1.03	146.54	2.57	122.23	41.06	148.04	1.03	NA
0619-MR-30 25	163.99	43135.95	1.85	20.40	1.48	0.16	1.77	0.02	0.97	0.55	148.06	1.42	148.02	2.44	147.32	34.76	148.06	1.42	NA
0619-MR-30 307	211.12	8431.36	2.43	20.98	1.28	0.15	1.65	0.02	1.04	0.63	148.07	1.52	144.22	2.22	81.37	30.41	148.07	1.52	NA
0619-MR-30 45	1217.16	4586.33	1.85	12.12	3.64	0.26	3.82	0.02	1.16	0.30	148.10	1.70	238.08	8.10	1256.56	71.15	148.10	1.70	NA
0619-MR-30 162	397.93	64315.41	1.79	20.28	0.71	0.16	1.34	0.02	1.14	0.85	148.13	1.67	148.90	1.86	161.24	16.56	148.13	1.67	NA
0619-MR-30 49	77.38	4779.79	2.92	22.47	2.64	0.14	2.92	0.02	1.25	0.43	148.13	1.83	135.34	3.70	NA	NA	148.13	1.83	NA
0619-MR-30 218	644.58	48101.14	2.10	20.38	0.90	0.16	1.46	0.02	1.15	0.79	148.20	1.69	148.30	2.02	149.91	20.99	148.20	1.69	NA
0619-MR-30 304	152.96	5905.90	2.43	21.34	2.97	0.15	3.10	0.02	0.89	0.29	148.22	1.31	142.08	4.11	40.68	71.09	148.22	1.31	NA
0619-MR-30 88	338.51	46728.75	3.54	20.42	1.35	0.16	1.64	0.02	0.92	0.56	148.23	1.35	148.05	2.26	145.03	31.72	148.23	1.35	NA
0619-MR-30 18	131.68	4359.04	2.49	21.43	2.20	0.15	2.39	0.02	0.94	0.39	148.24	1.38	141.54	3.16	30.60	52.66	148.24	1.38	NA
0619-MR-30 100	512.73	75243.11	2.08	19.96	0.77	0.16	1.30	0.02	1.05	0.81	148.28	1.54	151.30	1.83	198.88	17.95	148.28	1.54	NA
0619-MR-30 191	138.08	99013.78	2.58	19.38	1.93	0.17	2.15	0.02	0.96	0.44	148.29	1.40	155.50	3.11	266.89	44.28	148.29	1.40	NA
0619-MR-30 295	151.67	17276.21	1.64	20.70	1.27	0.15	1.53	0.02	0.85	0.56	148.29	1.25	146.25	2.08	113.29	29.89	148.29	1.25	NA
0619-MR-30 136	150.24	18439.80	2.61	18.97	2.15	0.17	2.30	0.02	0.82	0.36	148.30	1.20	158.58	3.38	315.11	49.00	148.30	1.20	NA
0619-MR-30 134	202.56	9233.14	2.30	20.69	1.89	0.15	2.16	0.02	1.05	0.48	148.30	1.54	146.30	2.95	114.07	44.66	148.30	1.54	NA

0619-MR-30 44	93.89	6384.44	2.56	21.02	2.70	0.15	2.97	0.02	1.23	0.41	148.32	1.80	144.18	3.99	76.55	64.22	148.32	1.80	NA
0619-MR-30 272	174.49	7374.76	1.67	16.75	2.41	0.19	2.64	0.02	1.09	0.41	148.32	1.60	177.93	4.32	591.89	52.24	148.32	1.60	NA
0619-MR-30 143	126.65	16176.75	2.24	20.23	1.92	0.16	2.15	0.02	0.99	0.46	148.39	1.45	149.55	3.00	167.82	44.75	148.39	1.45	NA
0619-MR-30 126	141.11	6699.43	2.46	21.16	2.03	0.15	2.20	0.02	0.85	0.39	148.41	1.25	143.42	2.95	61.54	48.37	148.41	1.25	NA
0619-MR-30 120	204.99	17738.39	1.91	19.35	1.34	0.17	1.90	0.02	1.34	0.71	148.44	1.97	155.83	2.75	269.75	30.83	148.44	1.97	NA
0619-MR-30 259	245.39	14909.18	2.02	20.20	1.48	0.16	1.83	0.02	1.08	0.59	148.54	1.58	149.89	2.55	171.15	34.62	148.54	1.58	NA
0619-MR-30 138	130.15	5947.27	2.53	22.07	2.24	0.15	2.44	0.02	0.98	0.40	148.58	1.43	138.02	3.15	NA	NA	148.58	1.43	NA
0619-MR-30 281	101.00	14461.23	2.37	20.82	1.78	0.15	2.00	0.02	0.91	0.46	148.59	1.34	145.73	2.71	99.38	42.11	148.59	1.34	NA
0619-MR-30 43	147.51	5199.61	2.72	21.58	2.13	0.15	2.40	0.02	1.10	0.46	148.67	1.61	141.04	3.16	14.44	51.31	148.67	1.61	NA
0619-MR-30 61	140.44	40113.77	2.37	20.27	1.89	0.16	2.16	0.02	1.06	0.49	148.68	1.56	149.50	3.01	162.54	44.13	148.68	1.56	NA
0619-MR-30 300	106.79	26657.12	2.78	20.89	2.20	0.15	2.39	0.02	0.92	0.39	148.69	1.36	145.36	3.24	91.28	52.22	148.69	1.36	NA
0619-MR-30 183	112.69	5619.44	2.46	22.50	1.83	0.14	2.18	0.02	1.18	0.54	148.70	1.73	135.66	2.77	NA	NA	148.70	1.73	NA
0619-MR-30 36	126.04	48914.40	2.70	19.54	1.70	0.16	2.01	0.02	1.07	0.53	148.73	1.57	154.72	2.88	247.54	39.14	148.73	1.57	NA
0619-MR-30 234	131.86	9025.38	1.85	20.24	1.97	0.16	2.23	0.02	1.05	0.47	148.74	1.55	149.75	3.11	165.75	46.07	148.74	1.55	NA
0619-MR-30 122	161.84	32748.02	2.46	19.94	1.50	0.16	1.73	0.02	0.86	0.50	148.81	1.26	151.92	2.44	200.82	34.88	148.81	1.26	NA
0619-MR-30 206	140.04	60137.77	2.62	20.55	1.33	0.16	1.59	0.02	0.86	0.54	148.83	1.27	147.76	2.18	130.66	31.37	148.83	1.27	NA
0619-MR-30 147	219.22	7075.32	1.88	20.97	1.52	0.15	1.91	0.02	1.15	0.60	148.96	1.69	145.14	2.58	83.23	36.06	148.96	1.69	NA
0619-MR-30 192	148.43	10592.65	2.56	20.22	1.77	0.16	1.97	0.02	0.87	0.44	148.99	1.28	150.16	2.75	168.67	41.34	148.99	1.28	NA
0619-MR-30 287	161.99	13690.65	1.70	20.40	1.31	0.16	1.58	0.02	0.88	0.56	149.00	1.29	148.94	2.19	148.00	30.75	149.00	1.29	NA
0619-MR-30 27	288.86	89912.02	2.05	20.25	1.14	0.16	1.49	0.02	0.96	0.64	149.05	1.41	149.97	2.08	164.48	26.71	149.05	1.41	NA
0619-MR-30 212	125.27	17211.48	2.68	19.81	1.72	0.16	2.00	0.02	1.01	0.51	149.11	1.49	153.12	2.84	215.65	39.87	149.11	1.49	NA
0619-MR-30 71	993.23	30736.02	1.10	20.42	0.87	0.16	1.41	0.02	1.11	0.79	149.15	1.64	148.93	1.95	145.34	20.40	149.15	1.64	NA
0619-MR-30 17	356.50	23723.88	3.05	20.56	1.26	0.16	1.53	0.02	0.86	0.56	149.19	1.26	148.04	2.10	129.60	29.72	149.19	1.26	NA
0619-MR-30 84	137.52	7012.79	2.40	21.24	2.00	0.15	2.27	0.02	1.06	0.47	149.23	1.57	143.65	3.04	52.38	47.84	149.23	1.57	NA
0619-MR-30 296	330.74	15234.90	1.64	20.38	1.37	0.16	2.08	0.02	1.56	0.75	149.23	2.30	149.28	2.88	150.10	32.10	149.23	2.30	NA
0619-MR-30 64	158.02	11482.33	1.70	20.85	1.42	0.15	1.74	0.02	1.01	0.58	149.25	1.49	146.13	2.37	95.83	33.63	149.25	1.49	NA
0619-MR-30 285	115.02	17583.35	1.93	18.51	1.96	0.17	2.22	0.02	1.05	0.47	149.27	1.55	163.24	3.35	371.03	44.12	149.27	1.55	NA
0619-MR-30 305	103.06	22162.28	2.55	20.85	2.04	0.15	2.28	0.02	1.02	0.45	149.27	1.51	146.16	3.10	95.95	48.23	149.27	1.51	NA
0619-MR-30 200	150.03	102022.58	1.64	19.04	1.36	0.17	1.68	0.02	0.98	0.58	149.31	1.45	159.11	2.48	307.59	31.09	149.31	1.45	NA
0619-MR-30 156	184.14	24807.40	1.64	19.18	1.80	0.17	1.99	0.02	0.85	0.43	149.32	1.25	157.99	2.92	290.03	41.25	149.32	1.25	NA
0619-MR-30 250	137.79	11825.92	2.62	20.55	1.37	0.16	1.60	0.02	0.84	0.52	149.34	1.24	148.23	2.21	130.63	32.16	149.34	1.24	NA
0619-MR-30 282	122.88	6592.58	2.91	18.83	1.80	0.17	2.02	0.02	0.91	0.45	149.36	1.35	160.75	3.00	332.06	40.75	149.36	1.35	NA
0619-MR-30 72	95.81	5052.33	2.53	21.67	2.37	0.15	2.63	0.02	1.14	0.43	149.42	1.69	141.13	3.47	3.74	57.12	149.42	1.69	NA
0619-MR-30 227	177.76	18925.38	1.47	18.78	1.66	0.17	1.83	0.02	0.78	0.42	149.43	1.15	161.20	2.73	337.90	37.57	149.43	1.15	NA
0619-MR-30 268	160.24	7665.16	1.89	21.11	1.74	0.15	2.18	0.02	1.31	0.60	149.44	1.94	144.67	2.93	67.14	41.33	149.44	1.94	NA
0619-MR-30 177	113.99	3281.60	2.60	22.35	2.14	0.14	2.31	0.02	0.87	0.38	149.50	1.29	137.21	2.97	NA	NA	149.50	1.29	NA
0619-MR-30 180	129.25	125005.19	2.61	19.44	1.98	0.17	2.13	0.02	0.80	0.37	149.53	1.18	156.29	3.09	260.00	45.46	149.53	1.18	NA
0619-MR-30 55	140.33	7196.51	2.18	19.78	2.40	0.16	2.66	0.02	1.15	0.43	149.53	1.69	153.81	3.79	220.15	55.48	149.53	1.69	NA
0619-MR-30 153	164.70	109902.63	2.04	19.98	1.45	0.16	1.77	0.02	1.01	0.57	149.54	1.49	152.37	2.50	196.56	33.80	149.54	1.49	NA
0619-MR-30 219	143.07	109424.65	2.45	19.87	1.42	0.16	1.78	0.02	1.06	0.60	149.55	1.57	153.18	2.53	209.64	33.02	149.55	1.57	NA

0619-MR-30 215	147.56	4154.25	1.72	21.90	1.29	0.15	1.55	0.02	0.86	0.56	149.61	1.27	139.95	2.03	NA	NA	149.61	1.27	NA
0619-MR-30 205	147.08	14964.88	2.30	20.10	1.43	0.16	1.72	0.02	0.95	0.55	149.62	1.41	151.61	2.42	182.80	33.37	149.62	1.41	NA
0619-MR-30 118	137.58	62625.21	2.14	18.58	1.93	0.17	2.03	0.02	0.63	0.31	149.62	0.93	163.01	3.06	362.14	43.59	149.62	0.93	NA
0619-MR-30 306	762.37	63889.94	3.39	20.17	0.77	0.16	1.17	0.02	0.89	0.75	149.64	1.31	151.13	1.65	174.50	17.97	149.64	1.31	NA
0619-MR-30 152	96.43	46318.89	2.92	20.30	2.19	0.16	2.47	0.02	1.15	0.47	149.67	1.70	150.22	3.45	158.99	51.21	149.67	1.70	NA
0619-MR-30 315	460.13	13390.12	1.49	17.61	1.75	0.18	2.10	0.02	1.15	0.55	149.69	1.70	171.35	3.31	482.00	38.75	149.69	1.70	NA
0619-MR-30 7	267.02	28539.68	3.46	21.01	1.40	0.15	1.74	0.02	1.02	0.59	149.71	1.51	145.55	2.35	78.34	33.36	149.71	1.51	NA
0619-MR-30 132	428.92	32016.94	2.55	20.20	1.06	0.16	1.49	0.02	1.05	0.70	149.71	1.55	150.94	2.09	170.32	24.75	149.71	1.55	NA
0619-MR-30 148	179.43	28847.04	1.63	20.46	1.96	0.16	2.08	0.02	0.70	0.34	149.73	1.04	149.19	2.89	140.67	45.96	149.73	1.04	NA
0619-MR-30 150	161.96	60141.54	1.59	20.47	1.45	0.16	1.67	0.02	0.84	0.50	149.75	1.25	149.16	2.32	139.76	33.95	149.75	1.25	NA
0619-MR-30 154	127.09	24565.68	1.85	16.86	2.26	0.19	2.45	0.02	0.94	0.38	149.77	1.39	178.45	4.01	577.53	49.09	149.77	1.39	NA
0619-MR-30 149	140.00	7022.36	2.46	20.68	1.58	0.16	1.86	0.02	0.98	0.53	149.77	1.45	147.76	2.56	115.50	37.28	149.77	1.45	NA
0619-MR-30 190	80.97	5734.41	4.36	20.65	2.58	0.16	2.82	0.02	1.13	0.40	149.79	1.67	147.97	3.88	118.84	60.83	149.79	1.67	NA
0619-MR-30 238	96.39	3939.77	2.61	21.98	2.21	0.15	2.39	0.02	0.91	0.38	149.79	1.35	139.62	3.12	NA	NA	149.79	1.35	NA
0619-MR-30 241	121.77	3223.11	2.53	22.42	1.80	0.14	2.02	0.02	0.93	0.46	149.80	1.37	137.08	2.59	NA	NA	149.80	1.37	NA
0619-MR-30 12	148.42	7428.80	2.60	21.00	2.26	0.15	2.43	0.02	0.90	0.37	149.81	1.33	145.69	3.30	79.10	53.66	149.81	1.33	NA
0619-MR-30 131	105.80	16635.73	2.63	20.63	1.53	0.16	1.70	0.02	0.76	0.45	149.83	1.12	148.18	2.35	121.85	35.94	149.83	1.12	NA
0619-MR-30 58	398.19	50781.18	2.28	20.32	0.99	0.16	1.32	0.02	0.87	0.66	149.84	1.30	150.27	1.85	157.09	23.29	149.84	1.30	NA
0619-MR-30 97	150.44	9697.94	1.68	20.65	1.83	0.16	2.24	0.02	1.30	0.58	149.97	1.93	148.17	3.09	119.34	43.07	149.97	1.93	NA
0619-MR-30 185	51.06	2119.46	1.15	23.12	2.60	0.14	2.85	0.02	1.16	0.41	150.01	1.72	133.35	3.56	NA	NA	150.01	1.72	NA
0619-MR-30 38	124.98	6763.37	2.61	21.47	2.21	0.15	2.39	0.02	0.89	0.37	150.03	1.33	142.93	3.18	26.52	53.08	150.03	1.33	NA
0619-MR-30 24	178.73	36864.48	2.03	19.28	1.72	0.17	2.22	0.02	1.40	0.63	150.04	2.08	157.94	3.25	278.23	39.37	150.04	2.08	NA
0619-MR-30 299	75.29	91493.85	2.05	19.69	2.16	0.16	2.39	0.02	1.01	0.42	150.06	1.50	154.91	3.43	229.76	49.94	150.06	1.50	NA
0619-MR-30 81	145.20	9910.80	1.85	20.68	1.98	0.16	2.23	0.02	1.03	0.46	150.07	1.53	148.04	3.07	115.67	46.62	150.07	1.53	NA
0619-MR-30 22	143.52	7009.78	2.46	20.26	1.85	0.16	2.02	0.02	0.82	0.40	150.10	1.21	150.94	2.84	164.07	43.32	150.10	1.21	NA
0619-MR-30 133	99.60	8597.50	2.23	21.40	1.91	0.15	2.13	0.02	0.93	0.44	150.11	1.38	143.46	2.84	34.69	45.78	150.11	1.38	NA
0619-MR-30 163	156.45	13786212.51	1.97	20.23	1.38	0.16	1.65	0.02	0.91	0.55	150.12	1.35	151.17	2.32	167.50	32.19	150.12	1.35	NA
0619-MR-30 51	125.14	13672.62	2.84	20.62	1.51	0.16	1.73	0.02	0.83	0.48	150.13	1.23	148.49	2.39	122.43	35.68	150.13	1.23	NA
0619-MR-30 60	111.58	29264.04	2.68	19.95	2.02	0.16	2.24	0.02	0.96	0.43	150.15	1.43	153.12	3.18	199.38	47.03	150.15	1.43	NA
0619-MR-30 178	321.11	11957.16	2.50	20.45	1.21	0.16	1.47	0.02	0.83	0.57	150.15	1.24	149.64	2.04	141.60	28.39	150.15	1.24	NA
0619-MR-30 66	64.82	32295.94	4.34	20.17	2.13	0.16	2.33	0.02	0.94	0.40	150.16	1.40	151.62	3.28	174.53	49.77	150.16	1.40	NA
0619-MR-30 312	139.07	3895.73	1.40	22.09	1.52	0.15	1.84	0.02	1.03	0.56	150.16	1.53	139.30	2.39	NA	NA	150.16	1.53	NA
0619-MR-30 112	351.46	33133.38	1.78	20.09	1.35	0.16	1.95	0.02	1.41	0.72	150.17	2.09	152.14	2.76	182.94	31.50	150.17	2.09	NA
0619-MR-30 94	148.96	12787.26	1.60	20.54	1.46	0.16	1.76	0.02	0.98	0.56	150.18	1.46	149.12	2.44	132.18	34.40	150.18	1.46	NA
0619-MR-30 189	568.64	33380.94	1.39	20.78	1.01	0.16	1.66	0.02	1.31	0.79	150.20	1.95	147.51	2.28	104.48	23.97	150.20	1.95	NA
0619-MR-30 261	123.65	24808.42	2.50	20.42	1.59	0.16	1.95	0.02	1.14	0.58	150.20	1.70	149.88	2.72	144.89	37.17	150.20	1.70	NA
0619-MR-30 67	130.52	11048.47	2.42	20.51	1.67	0.16	1.90	0.02	0.91	0.48	150.22	1.35	149.31	2.64	134.98	39.22	150.22	1.35	NA
0619-MR-30 270	106.11	4846.23	2.43	20.91	3.47	0.16	3.60	0.02	0.94	0.26	150.25	1.39	146.72	4.92	89.98	82.36	150.25	1.39	NA
0619-MR-30 42	233.68	19829.96	2.37	20.65	1.30	0.16	1.76	0.02	1.19	0.67	150.27	1.76	148.41	2.43	118.69	30.55	150.27	1.76	NA
0619-MR-30 226	132.42	3791.55	2.56	17.05	1.55	0.19	1.79	0.02	0.88	0.49	150.32	1.31	177.23	2.91	553.29	33.89	150.32	1.31	NA

0619-MR-30 176	135.79	100465.95	2.36	18.05	2.04	0.18	2.19	0.02	0.80	0.37	150.35	1.19	168.25	3.40	428.02	45.50	150.35	1.19	NA
0619-MR-30 135	168.23	33746.74	2.31	20.81	1.65	0.16	1.86	0.02	0.87	0.47	150.36	1.29	147.46	2.56	100.98	38.97	150.36	1.29	NA
0619-MR-30 79	129.12	7290.37	2.29	19.32	1.84	0.17	2.15	0.02	1.13	0.52	150.41	1.67	158.05	3.15	274.15	42.08	150.41	1.67	NA
0619-MR-30 46	108.52	7556.01	2.57	21.01	2.06	0.15	2.25	0.02	0.90	0.40	150.43	1.34	146.20	3.06	78.08	48.91	150.43	1.34	NA
0619-MR-30 214	61.87	3743.99	0.79	21.32	3.51	0.15	3.75	0.02	1.31	0.35	150.44	1.95	144.23	5.04	43.26	84.02	150.44	1.95	NA
0619-MR-30 174	116.24	8802.76	2.49	18.83	1.68	0.17	1.91	0.02	0.90	0.47	150.57	1.34	162.02	2.85	332.79	38.08	150.57	1.34	NA
0619-MR-30 222	149.41	7999.70	2.05	20.13	2.46	0.16	2.67	0.02	1.04	0.39	150.57	1.55	152.26	3.78	178.69	57.28	150.57	1.55	NA
0619-MR-30 186	602.46	721720.11	5.36	20.35	0.90	0.16	1.53	0.02	1.24	0.81	150.61	1.85	150.81	2.15	153.95	21.07	150.61	1.85	NA
0619-MR-30 15	118.98	7010.55	1.79	20.27	2.05	0.16	2.27	0.02	0.98	0.43	150.65	1.46	151.40	3.20	163.13	47.90	150.65	1.46	NA
0619-MR-30 257	187.05	439136.54	1.59	20.08	1.51	0.16	1.74	0.02	0.86	0.50	150.68	1.29	152.74	2.46	184.74	35.09	150.68	1.29	NA
0619-MR-30 302	154.74	8435.81	2.68	20.99	2.46	0.16	2.63	0.02	0.94	0.36	150.72	1.40	146.57	3.59	79.94	58.37	150.72	1.40	NA
0619-MR-30 294	159.61	17693.01	1.76	19.24	1.28	0.17	1.53	0.02	0.85	0.56	150.73	1.27	158.93	2.26	282.97	29.20	150.73	1.27	NA
0619-MR-30 279	142.41	95895.77	2.15	20.00	1.55	0.16	1.74	0.02	0.80	0.46	150.75	1.20	153.37	2.48	194.10	36.00	150.75	1.20	NA
0619-MR-30 10	134.39	15713.86	2.27	20.63	1.67	0.16	1.96	0.02	1.02	0.52	150.82	1.52	149.06	2.71	121.16	39.41	150.82	1.52	NA
0619-MR-30 53	201.43	6162.45	2.10	21.43	1.45	0.15	1.81	0.02	1.08	0.60	150.83	1.61	143.90	2.43	31.14	34.76	150.83	1.61	NA
0619-MR-30 82	276.43	39145.33	2.79	20.77	1.09	0.16	1.52	0.02	1.06	0.70	150.86	1.58	148.18	2.09	105.51	25.78	150.86	1.58	NA
0619-MR-30 102	158.78	6086.20	1.55	20.61	1.69	0.16	1.86	0.02	0.78	0.42	150.87	1.16	149.23	2.58	123.17	39.79	150.87	1.16	NA
0619-MR-30 37	120.19	4748.66	1.59	20.33	1.78	0.16	2.15	0.02	1.20	0.56	150.87	1.79	151.19	3.02	156.16	41.72	150.87	1.79	NA
0619-MR-30 233	157.71	27172.55	2.03	16.07	1.48	0.20	1.68	0.02	0.79	0.47	150.88	1.17	187.79	2.88	681.53	31.69	150.88	1.17	NA
0619-MR-30 301	124.59	9505.74	1.61	20.26	2.28	0.16	2.48	0.02	0.97	0.39	150.89	1.45	151.70	3.49	164.42	53.24	150.89	1.45	NA
0619-MR-30 170	197.17	106097.24	1.85	19.95	1.64	0.16	1.98	0.02	1.11	0.56	150.89	1.65	153.85	2.82	199.56	37.98	150.89	1.65	NA
0619-MR-30 77	148.65	4221.84	2.00	19.42	1.90	0.17	2.09	0.02	0.86	0.41	150.91	1.28	157.79	3.05	262.37	43.68	150.91	1.28	NA
0619-MR-30 255	119.35	8832.57	2.14	19.25	1.95	0.17	2.21	0.02	1.04	0.47	150.92	1.56	159.05	3.25	282.06	44.53	150.92	1.56	NA
0619-MR-30 165	722.09	53558.64	3.51	19.85	0.96	0.16	1.46	0.02	1.10	0.75	150.93	1.64	154.59	2.09	211.10	22.24	150.93	1.64	NA
0619-MR-30 146	123.19	19053.38	2.46	20.49	1.56	0.16	1.81	0.02	0.93	0.51	150.94	1.38	150.16	2.53	137.90	36.61	150.94	1.38	NA
0619-MR-30 116	127.82	16840.18	2.49	20.07	1.87	0.16	2.08	0.02	0.92	0.44	150.94	1.37	153.08	2.96	186.35	43.57	150.94	1.37	NA
0619-MR-30 247	129.39	4694.64	2.27	19.39	1.97	0.17	2.19	0.02	0.95	0.43	150.94	1.41	158.05	3.20	266.04	45.22	150.94	1.41	NA
0619-MR-30 139	220.36	137899.47	2.61	20.30	1.20	0.16	1.56	0.02	0.99	0.64	151.08	1.48	151.58	2.19	159.53	28.07	151.08	1.48	NA
0619-MR-30 256	138.97	10028.42	2.43	19.17	2.11	0.17	2.29	0.02	0.89	0.39	151.13	1.33	159.86	3.39	291.37	48.27	151.13	1.33	NA
0619-MR-30 16	160.76	25784.64	2.93	20.62	1.50	0.16	1.80	0.02	0.99	0.55	151.15	1.48	149.48	2.50	123.06	35.25	151.15	1.48	NA
0619-MR-30 265	146.35	14678.40	2.32	20.07	2.02	0.16	2.20	0.02	0.87	0.40	151.17	1.30	153.25	3.13	185.50	47.05	151.17	1.30	NA
0619-MR-30 166	70.03	3338.80	2.76	22.55	3.80	0.15	3.97	0.02	1.15	0.29	151.19	1.72	137.55	5.10	NA	NA	151.19	1.72	NA
0619-MR-30 34	153.70	7732.20	2.22	20.67	2.04	0.16	2.24	0.02	0.91	0.41	151.29	1.36	149.26	3.10	117.08	48.17	151.29	1.36	NA
0619-MR-30 124	211.13	50788.09	1.82	20.59	1.10	0.16	1.33	0.02	0.75	0.56	151.31	1.12	149.81	1.85	126.26	25.83	151.31	1.12	NA
0619-MR-30 311	98.44	2581.99	2.58	21.31	1.61	0.15	1.87	0.02	0.96	0.51	151.31	1.44	145.08	2.53	44.22	38.42	151.31	1.44	NA
0619-MR-30 164	118.43	8713.39	2.70	20.96	2.35	0.16	2.54	0.02	0.97	0.38	151.35	1.46	147.41	3.49	84.37	55.68	151.35	1.46	NA
0619-MR-30 29	297.08	20972.31	2.23	21.18	1.05	0.15	1.93	0.02	1.62	0.84	151.36	2.42	145.98	2.62	59.33	25.01	151.36	2.42	NA
0619-MR-30 172	1189.62	459047.05	1.53	20.15	0.80	0.16	1.24	0.02	0.94	0.76	151.47	1.41	152.99	1.76	176.51	18.78	151.47	1.41	NA
0619-MR-30 232	93.47	6681.50	3.42	21.21	1.77	0.15	2.09	0.02	1.11	0.53	151.49	1.66	145.86	2.83	55.15	42.17	151.49	1.66	NA
0619-MR-30 173	139.25	7043.64	2.71	21.40	2.10	0.15	2.25	0.02	0.80	0.36	151.50	1.20	144.68	3.04	34.35	50.35	151.50	1.20	NA

0619-MR-30 11	271.67	14895.82	2.92	20.62	1.50	0.16	1.79	0.02	0.98	0.55	151.51	1.47	149.75	2.50	122.02	35.28	151.51	1.47	NA
0619-MR-30 90	130.42	12361.88	2.44	20.37	1.88	0.16	2.14	0.02	1.01	0.47	151.54	1.52	151.52	3.01	151.07	44.10	151.54	1.52	NA
0619-MR-30 276	29.24	3725.85	0.59	21.14	4.85	0.16	5.04	0.02	1.37	0.27	151.70	2.06	146.55	6.87	63.90	115.45	151.70	2.06	NA
0619-MR-30 111	121.11	70913.56	2.39	20.32	1.27	0.16	1.51	0.02	0.81	0.54	151.72	1.22	152.03	2.13	156.91	29.78	151.72	1.22	NA
0619-MR-30 314	812.04	435824.7 2	3.15	20.52	0.69	0.16	1.09	0.02	0.84	0.77	151.74	1.26	150.71	1.52	134.37	16.25	151.74	1.26	NA
0619-MR-30 74	1897.27	929386.9 4	5.84	20.31	0.52	0.16	0.98	0.02	0.83	0.85	151.76	1.25	152.14	1.39	158.16	12.20	151.76	1.25	NA
0619-MR-30 144	959.68	61491.07	2.99	20.48	0.72	0.16	1.36	0.02	1.15	0.85	151.78	1.73	151.01	1.91	138.84	16.90	151.78	1.73	NA
0619-MR-30 85	134.65	97393.90	2.50	20.11	2.13	0.16	2.33	0.02	0.95	0.41	151.82	1.42	153.58	3.33	180.75	49.68	151.82	1.42	NA
0619-MR-30 21	106.38	6076.13	2.37	20.79	2.05	0.16	2.28	0.02	0.99	0.44	151.84	1.49	148.98	3.16	103.70	48.46	151.84	1.49	NA
0619-MR-30 115	181.89	4468.22	2.16	15.87	5.51	0.21	5.60	0.02	0.96	0.17	151.87	1.44	191.07	9.75	707.86	117.32	151.87	1.44	NA
0619-MR-30 98	356.51	35257.33	2.29	20.18	1.00	0.16	1.28	0.02	0.80	0.62	151.89	1.20	153.21	1.82	173.55	23.44	151.89	1.20	NA
0619-MR-30 274	210.84	6510.53	2.52	21.19	1.27	0.16	1.56	0.02	0.89	0.57	151.91	1.34	146.37	2.12	57.53	30.37	151.91	1.34	NA
0619-MR-30 167	310.04	12794.58	1.83	20.33	1.40	0.16	1.81	0.02	1.14	0.63	151.92	1.72	152.13	2.55	155.34	32.77	151.92	1.72	NA
0619-MR-30 203	125.83	7962.68	2.53	21.19	2.64	0.16	2.79	0.02	0.89	0.32	151.98	1.34	146.48	3.81	58.37	63.01	151.98	1.34	NA
0619-MR-30 119	154.51	91058.41	2.29	19.15	1.54	0.17	1.89	0.02	1.09	0.58	151.98	1.64	160.90	2.81	294.23	35.16	151.98	1.64	NA
0619-MR-30 5	84.26	18860.82	0.75	20.31	2.14	0.16	2.30	0.02	0.85	0.37	151.98	1.28	152.35	3.25	158.12	49.99	151.98	1.28	NA
0619-MR-30 235	138.35	4758.40	2.35	16.48	2.75	0.20	2.88	0.02	0.87	0.30	152.00	1.31	184.77	4.87	627.52	59.25	152.00	1.31	NA
0619-MR-30 101	768.21	93592.25	1.05	20.32	0.99	0.16	1.37	0.02	0.94	0.69	152.02	1.42	152.30	1.94	156.75	23.28	152.02	1.42	NA
0619-MR-30 103	129.95	5800.92	1.91	21.89	1.67	0.15	1.96	0.02	1.02	0.52	152.05	1.54	142.15	2.60	NA	NA	152.05	1.54	NA
0619-MR-30 284	134.25	6734.83	2.09	21.42	1.95	0.15	2.15	0.02	0.92	0.43	152.08	1.38	145.08	2.91	32.08	46.63	152.08	1.38	NA
0619-MR-30 290	121.43	5380.45	1.74	21.64	1.93	0.15	2.08	0.02	0.78	0.37	152.11	1.17	143.74	2.79	7.78	46.50	152.11	1.17	NA
0619-MR-30 245	121.41	36503.17	2.27	17.79	3.34	0.18	3.45	0.02	0.89	0.26	152.11	1.33	172.32	5.47	459.50	74.06	152.11	1.33	NA
0619-MR-30 117	104.43	8385.07	2.57	20.99	2.18	0.16	2.39	0.02	0.98	0.41	152.12	1.47	147.89	3.29	80.52	51.88	152.12	1.47	NA
0619-MR-30 211	76.58	7207.97	2.85	18.76	2.52	0.18	2.75	0.02	1.10	0.40	152.16	1.65	164.13	4.17	340.43	57.09	152.16	1.65	NA
0619-MR-30 280	149.33	85152.51	2.53	20.22	2.06	0.16	2.20	0.02	0.78	0.35	152.24	1.17	153.22	3.13	168.36	48.08	152.24	1.17	NA
0619-MR-30 13	194.93	48206.38	1.78	18.89	1.43	0.17	1.70	0.02	0.90	0.53	152.24	1.36	163.20	2.56	325.23	32.57	152.24	1.36	NA
0619-MR-30 113	139.82	1544354. 16	2.47	20.45	2.16	0.16	2.51	0.02	1.27	0.51	152.26	1.91	151.65	3.53	141.97	50.74	152.26	1.91	NA
0619-MR-30 30	99.13	7302.13	2.60	16.73	2.58	0.20	2.79	0.02	1.05	0.38	152.30	1.58	182.49	4.66	593.98	56.01	152.30	1.58	NA
0619-MR-30 313	178.84	29471.68	1.97	20.13	1.72	0.16	1.96	0.02	0.93	0.48	152.31	1.40	153.94	2.79	179.18	40.09	152.31	1.40	NA
0619-MR-30 65	1083.35	117915.4 9	1.98	20.41	1.00	0.16	1.65	0.02	1.31	0.79	152.39	1.98	152.03	2.33	146.51	23.52	152.39	1.98	NA
0619-MR-30 160	1283.75	47035.99	1.01	20.45	0.76	0.16	1.21	0.02	0.94	0.78	152.39	1.42	151.78	1.70	142.26	17.83	152.39	1.42	NA
0619-MR-30 213	145.64	6359.66	1.84	20.87	1.99	0.16	2.12	0.02	0.73	0.34	152.40	1.10	148.94	2.94	94.17	47.16	152.40	1.10	NA
0619-MR-30 297	201.44	12025.80	2.96	17.56	2.11	0.19	2.30	0.02	0.92	0.40	152.41	1.39	174.74	3.70	488.74	46.60	152.41	1.39	NA
0619-MR-30 201	206.94	21420.23	1.68	20.55	1.62	0.16	1.83	0.02	0.86	0.47	152.44	1.30	151.14	2.58	130.66	38.07	152.44	1.30	NA
0619-MR-30 171	107.91	23359.73	2.78	21.44	1.98	0.15	2.25	0.02	1.06	0.47	152.47	1.60	145.29	3.04	29.63	47.46	152.47	1.60	NA
0619-MR-30 258	108.36	12063.83	2.50	20.12	2.06	0.16	2.20	0.02	0.78	0.35	152.50	1.18	154.20	3.15	180.37	47.97	152.50	1.18	NA
0619-MR-30 107	118.69	45398.38	1.96	21.09	1.93	0.16	2.14	0.02	0.92	0.43	152.50	1.38	147.60	2.93	69.47	45.91	152.50	1.38	NA
0619-MR-30 210	168.19	94039.88	2.76	20.45	1.30	0.16	1.62	0.02	0.97	0.60	152.60	1.46	151.95	2.28	141.72	30.40	152.60	1.46	NA
0619-MR-30 95	123.27	9110.47	2.52	20.09	1.88	0.16	2.22	0.02	1.18	0.53	152.60	1.78	154.46	3.18	182.99	43.78	152.60	1.78	NA
0619-MR-30 187	149.86	4170.94	2.81	21.50	2.10	0.15	2.33	0.02	1.02	0.44	152.61	1.54	145.04	3.16	22.80	50.41	152.61	1.54	NA

0619-MR-30 35	364.92	19947.04	1.85	19.34	1.22	0.17	1.50	0.02	0.88	0.59	152.64	1.33	160.10	2.23	272.00	27.92	152.64	1.33	NA
0619-MR-30 31	155.60	233869.2 7	2.37	16.76	2.02	0.20	2.17	0.02	0.79	0.37	152.68	1.20	182.69	3.63	590.99	43.85	152.68	1.20	NA
0619-MR-30 123	253.84	28492.15	2.81	19.91	1.36	0.17	1.57	0.02	0.79	0.51	152.75	1.20	155.89	2.27	203.87	31.50	152.75	1.20	NA
0619-MR-30 181	102.08	57839.25	2.68	20.26	1.93	0.16	2.11	0.02	0.86	0.41	152.82	1.30	153.49	3.01	163.86	45.10	152.82	1.30	NA
0619-MR-30 263	145.08	4726.89	2.10	15.73	4.00	0.21	4.15	0.02	1.08	0.26	152.93	1.64	193.81	7.32	726.13	84.93	152.93	1.64	NA
0619-MR-30 140	184.84	54523.49	2.18	18.85	1.29	0.18	1.59	0.02	0.92	0.58	152.95	1.39	164.20	2.40	329.61	29.26	152.95	1.39	NA
0619-MR-30 104	169.96	10135.52	1.79	19.23	1.93	0.17	2.16	0.02	0.96	0.45	152.98	1.45	161.22	3.22	284.09	44.20	152.98	1.45	NA
0619-MR-30 33	413.62	24153.24	2.67	20.36	1.22	0.16	1.64	0.02	1.10	0.67	153.04	1.67	152.97	2.33	151.93	28.49	153.04	1.67	NA
0619-MR-30 278	91.24	4769.47	2.65	21.21	3.88	0.16	4.02	0.02	1.05	0.26	153.08	1.59	147.33	5.51	55.71	92.58	153.08	1.59	NA
0619-MR-30 194	98.42	35613.86	2.57	20.55	1.89	0.16	2.14	0.02	1.01	0.47	153.11	1.53	151.77	3.02	130.94	44.42	153.11	1.53	NA
0619-MR-30 269	126.25	4576.99	2.17	21.59	1.83	0.15	2.16	0.02	1.15	0.53	153.17	1.74	145.00	2.92	13.21	44.03	153.17	1.74	NA
0619-MR-30 6	135.82	8665.39	2.13	21.17	2.22	0.16	2.31	0.02	0.64	0.28	153.23	0.96	147.72	3.18	60.16	52.93	153.23	0.96	NA
0619-MR-30 47	159.91	3474.92	1.75	13.41	2.56	0.25	2.75	0.02	1.01	0.37	153.30	1.53	224.45	5.54	1056.4 6	51.49	153.30	1.53	NA
0619-MR-30 14	140.14	29616.87	2.55	20.64	1.64	0.16	1.95	0.02	1.05	0.54	153.38	1.59	151.40	2.74	120.51	38.64	153.38	1.59	NA
0619-MR-30 223	606.66	28566.92	2.35	20.19	1.11	0.16	1.83	0.02	1.45	0.79	153.44	2.19	154.56	2.62	171.89	26.00	153.44	2.19	NA
0619-MR-30 89	51.24	3974.48	5.59	20.66	3.42	0.16	3.61	0.02	1.16	0.32	153.49	1.76	151.36	5.08	118.19	80.72	153.49	1.76	NA
0619-MR-30 231	115.61	4583.36	2.44	18.46	2.19	0.18	2.41	0.02	1.01	0.42	153.51	1.53	167.98	3.73	377.00	49.16	153.51	1.53	NA
0619-MR-30 32	120.38	9099.90	2.46	20.85	2.18	0.16	2.35	0.02	0.88	0.38	153.64	1.34	150.22	3.28	96.55	51.48	153.64	1.34	NA
0619-MR-30 207	831.49	41579.15	3.30	20.37	0.85	0.16	1.41	0.02	1.12	0.80	153.65	1.70	153.49	2.01	151.08	19.91	153.65	1.70	NA
0619-MR-30 54	144.13	18761.61	2.36	20.09	1.62	0.17	1.83	0.02	0.87	0.47	153.72	1.32	155.55	2.65	183.61	37.62	153.72	1.32	NA
0619-MR-30 59	121.38	41315.32	2.65	20.30	2.24	0.16	2.60	0.02	1.32	0.51	153.79	2.00	154.11	3.72	158.97	52.50	153.79	2.00	NA
0619-MR-30 70	94.72	4969.93	2.34	19.72	1.85	0.17	2.08	0.02	0.96	0.46	153.86	1.46	158.38	3.06	226.55	42.69	153.86	1.46	NA
0619-MR-30 237	52.56	62927.89	3.16	20.71	2.47	0.16	2.62	0.02	0.86	0.33	153.95	1.30	151.45	3.68	112.45	58.40	153.95	1.30	NA
0619-MR-30 8	276.63	119340.7 7	2.73	20.81	1.40	0.16	1.74	0.02	1.03	0.59	153.96	1.57	150.80	2.43	101.48	33.08	153.96	1.57	NA
0619-MR-30 159	255.73	9264.36	1.72	18.10	1.59	0.18	1.88	0.02	1.00	0.53	154.20	1.52	171.78	2.97	421.24	35.61	154.20	1.52	NA
0619-MR-30 273	88.43	3209.97	2.74	20.15	2.06	0.17	2.33	0.02	1.09	0.47	154.33	1.67	155.72	3.36	176.84	47.94	154.33	1.67	NA
0619-MR-30 76	48.81	5878.75	2.90	21.11	3.57	0.16	3.66	0.02	0.83	0.23	154.36	1.27	149.11	5.08	66.37	84.91	154.36	1.27	NA
0619-MR-30 28	289.78	30379.18	2.29	20.29	1.16	0.16	1.42	0.02	0.82	0.58	154.46	1.25	154.83	2.04	160.47	27.02	154.46	1.25	NA
0619-MR-30 208	129.20	8719.68	2.18	20.22	2.41	0.17	2.54	0.02	0.79	0.31	154.50	1.21	155.33	3.66	168.00	56.39	154.50	1.21	NA
0619-MR-30 293	85.48	2973.78	2.41	22.50	2.26	0.15	2.45	0.02	0.94	0.38	154.64	1.44	140.78	3.21	NA	NA	154.64	1.44	NA
0619-MR-30 291	46.12	7253.12	3.04	19.12	3.39	0.18	3.53	0.02	0.97	0.27	154.68	1.48	163.81	5.33	297.86	77.36	154.68	1.48	NA
0619-MR-30 63	634.61	23680.34	2.00	20.70	0.83	0.16	1.37	0.02	1.08	0.79	154.81	1.66	152.28	1.94	113.09	19.70	154.81	1.66	NA
0619-MR-30 249	169.36	25502.09	1.94	20.36	1.31	0.16	1.65	0.02	1.01	0.61	155.03	1.55	154.88	2.37	152.66	30.58	155.03	1.55	NA
0619-MR-30 56	186.05	8656.38	3.46	21.29	1.94	0.16	2.15	0.02	0.94	0.43	155.04	1.43	148.59	2.98	46.77	46.36	155.04	1.43	NA
0619-MR-30 254	83.95	4675.64	2.70	20.91	2.09	0.16	2.23	0.02	0.79	0.36	155.13	1.22	151.20	3.14	89.99	49.46	155.13	1.22	NA
0619-MR-30 145	271.52	45361.85	2.62	20.27	1.25	0.17	1.67	0.02	1.11	0.66	155.14	1.70	155.62	2.41	162.78	29.32	155.14	1.70	NA
0619-MR-30 298	91.18	91476.61	2.51	20.53	2.37	0.16	2.52	0.02	0.84	0.34	155.27	1.29	153.87	3.59	132.38	55.75	155.27	1.29	NA
0619-MR-30 216	462.70	40782.92	3.65	20.36	1.09	0.17	1.45	0.02	0.96	0.66	155.42	1.48	155.25	2.09	152.63	25.51	155.42	1.48	NA
0619-MR-30 73	195.10	27830.61	2.61	16.06	3.94	0.21	4.02	0.02	0.79	0.20	155.44	1.22	193.11	7.07	682.65	84.15	155.44	1.22	NA
0619-MR-30 158	175.82	13135.26	3.17	19.75	1.64	0.17	1.88	0.02	0.93	0.49	156.17	1.43	160.38	2.80	222.95	37.95	156.17	1.43	NA

0619-MR-30 221	120.82	29949.48	2.14	18.39	2.20	0.18	2.35	0.02	0.82	0.35	156.22	1.26	171.35	3.71	385.64	49.48	156.22	1.26	NA
0619-MR-30 1	452.69	19310.69	1.89	20.57	0.97	0.16	1.62	0.02	1.29	0.80	156.68	2.00	154.96	2.33	128.81	22.95	156.68	2.00	NA
0619-MR-30 169	131.63	19050.43	2.29	16.84	2.00	0.20	2.20	0.02	0.92	0.42	156.68	1.43	186.32	3.75	580.78	43.44	156.68	1.43	NA
0619-MR-30 87	119.11	9908.81	2.11	20.74	2.08	0.16	2.29	0.02	0.97	0.42	157.23	1.51	154.25	3.28	108.81	49.09	157.23	1.51	NA
0619-MR-30 246	131.91	5913.53	2.87	15.14	1.85	0.23	2.08	0.03	0.95	0.46	159.21	1.50	208.19	3.92	806.51	38.71	159.21	1.50	NA
0619-MR-30 48	97.89	4515.18	2.34	21.69	1.62	0.16	1.93	0.03	1.04	0.54	159.99	1.64	150.45	2.69	2.55	39.11	159.99	1.64	NA
0619-MR-30 308	234.96	34567.22	1.65	20.14	1.31	0.17	1.56	0.03	0.84	0.54	160.66	1.33	161.73	2.33	177.41	30.63	160.66	1.33	NA
0619-MR-30 168	105.58	350225.5 1	2.14	15.96	4.18	0.22	4.33	0.03	1.15	0.26	160.76	1.82	200.29	7.87	695.64	89.04	160.76	1.82	NA
0619-MR-30 267	211.97	13410.86	1.83	19.30	1.36	0.18	2.00	0.03	1.47	0.73	161.90	2.35	169.43	3.13	275.82	31.19	161.90	2.35	NA
0619-MR-30 271	363.10	7076.94	1.40	20.94	2.00	0.17	2.52	0.03	1.53	0.61	165.58	2.51	160.50	3.74	86.20	47.40	165.58	2.51	NA
0619-MR-30 179	82.62	6407.25	0.99	21.90	1.86	0.16	2.08	0.03	0.94	0.45	166.32	1.55	154.62	2.99	NA	NA	166.32	1.55	NA
0619-MR-30 106	675.88	49448.28	0.94	19.56	0.92	0.18	1.34	0.03	0.97	0.72	166.99	1.60	172.28	2.12	245.46	21.25	166.99	1.60	NA
0619-MR-30 277	185.58	366952.6 5	1.04	19.91	1.28	0.18	1.59	0.03	0.94	0.59	167.94	1.55	170.39	2.49	204.59	29.84	167.94	1.55	NA
0619-MR-30 78	243.04	33155.67	1.59	19.48	1.50	0.19	1.83	0.03	1.04	0.57	170.97	1.76	176.80	2.97	255.42	34.60	170.97	1.76	NA
0619-MR-30 286	71.49	1728.90	2.15	6.20	2.29	0.62	2.61	0.03	1.24	0.48	176.38	2.16	487.67	10.1 0	2468.2 5	38.73	176.38	2.16	NA
0619-MR-30 114	179.38	479554.1 2	3.80	12.51	0.52	2.20	0.93	0.20	0.78	0.83	1174.8 1	8.32	1181.6 1	6.51	1194.0 7	10.20	1194.0 7	10.20	98.39
0619-MR-30 109	149.67	581641.3 5	2.75	12.11	0.95	1.23	2.21	0.11	1.99	0.90	661.18	12.52	814.02	12.3 6	1258.5 3	18.54	1258.5 3	18.54	52.54
0619-MR-30 86	158.26	60786.48	1.76	11.61	0.59	2.41	2.47	0.20	2.39	0.97	1192.4 7	26.07	1246.4 6	17.7 1	1340.9 6	11.43	1340.9 6	11.43	88.93
0619-MR-30 2	144.87	165479.1 0	3.43	11.09	0.56	3.07	0.95	0.25	0.77	0.81	1421.7 8	9.85	1424.5 8	7.30	1428.7 4	10.68	1428.7 4	10.68	99.51
0619-MR-30 224	132.78	404043.9 8	3.68	9.56	0.52	4.30	0.96	0.30	0.81	0.84	1683.7 0	12.03	1693.7 9	7.94	1706.2 8	9.56	1706.2 8	9.56	98.68
0619-MR-30 175	177.11	119182.9 1	3.80	9.28	0.70	4.47	1.33	0.30	1.13	0.85	1697.5 2	16.92	1725.7 6	11.0 6	1760.1 7	12.81	1760.1 7	12.81	96.44
0619-MR-30 91	110.13	98102.46	3.17	9.28	0.59	3.82	1.32	0.26	1.18	0.89	1474.5 1	15.53	1596.5 0	10.6 1	1761.4 8	10.80	1761.4 8	10.80	83.71

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0619-MR-35 144	75.95	2202.42	1.99	21.62	3.76	0.14	3.89	0.02	0.99	0.26	138.13	1.36	131.29	4.79	9.33	90.47	138.13	1.36	105.20
0619-MR-35 155	48.16	3212.38	3.16	22.70	3.29	0.13	3.60	0.02	1.46	0.40	139.90	2.02	126.97	4.30	NA	NA	139.90	2.02	110.18
0619-MR-35 101	159.60	10735.34	3.05	19.85	1.53	0.15	1.65	0.02	0.61	0.37	140.41	0.85	144.42	2.21	210.89	35.41	140.41	0.85	97.22
0619-MR-35 6	57.11	3759.47	3.18	20.76	3.15	0.15	3.34	0.02	1.13	0.34	140.65	1.57	138.73	4.34	106.01	74.34	140.65	1.57	101.38
0619-MR-35 121	83.22	2682.18	3.50	21.91	3.95	0.14	4.17	0.02	1.34	0.32	140.80	1.87	132.04	5.17	NA	NA	140.80	1.87	106.64
0619-MR-35 246	40.92	1872.70	3.11	23.92	5.39	0.13	5.49	0.02	1.07	0.19	140.93	1.49	121.72	6.30	NA	NA	140.93	1.49	115.78
0619-MR-35 198	34.16	2490.45	2.94	19.05	4.91	0.16	5.11	0.02	1.42	0.28	141.06	1.98	150.75	7.16	305.84	111.93	141.06	1.98	93.58
0619-MR-35 50	125.33	3652.86	2.77	22.67	1.84	0.13	2.06	0.02	0.92	0.45	141.16	1.28	128.23	2.48	NA	NA	141.16	1.28	110.08
0619-MR-35 275	96.71	63441.23	4.35	20.24	1.85	0.15	2.06	0.02	0.92	0.44	141.38	1.28	142.82	2.74	166.73	43.15	141.38	1.28	98.99
0619-MR-35 166	121.94	5247.76	2.51	21.47	2.16	0.14	2.40	0.02	1.03	0.43	141.78	1.45	135.48	3.04	26.48	51.90	141.78	1.45	104.65
0619-MR-35 149	171.06	25166.01	2.98	20.28	1.65	0.15	1.96	0.02	1.06	0.54	142.31	1.50	143.42	2.62	161.94	38.49	142.31	1.50	99.22
0619-MR-35 13	45.65	2768.74	2.61	21.34	3.19	0.14	3.33	0.02	0.96	0.29	142.91	1.36	137.28	4.27	41.00	76.19	142.91	1.36	104.10
0619-MR-35 26	125.23	4386.61	2.27	22.07	2.14	0.14	2.35	0.02	0.98	0.41	143.02	1.38	133.11	2.93	NA	NA	143.02	1.38	107.44
0619-MR-35 122	110.44	4324.92	3.11	21.84	1.89	0.14	2.06	0.02	0.83	0.40	143.04	1.18	134.47	2.60	NA	NA	143.04	1.18	106.37

0619-MR-35 41	91.50	6646.13	2.61	20.39	2.23	0.15	2.45	0.02	1.01	0.41	143.14	1.43	143.48	3.28	149.20	52.39	143.14	1.43	99.76
0619-MR-35 220	103.74	3747.70	1.92	20.53	2.23	0.15	2.39	0.02	0.86	0.36	143.38	1.22	142.78	3.19	132.76	52.49	143.38	1.22	100.42
0619-MR-35 300	179.85	8810.26	2.81	20.64	1.70	0.15	1.89	0.02	0.83	0.44	143.50	1.18	142.18	2.51	120.23	40.14	143.50	1.18	100.93
0619-MR-35 62	254.37	11497.89	2.15	19.57	1.50	0.16	1.72	0.02	0.84	0.49	144.09	1.20	149.97	2.40	243.92	34.62	144.09	1.20	96.08
0619-MR-35 290	222.10	11343.98	2.57	20.49	1.76	0.15	1.88	0.02	0.67	0.35	144.28	0.95	143.92	2.52	137.92	41.27	144.28	0.95	100.25
0619-MR-35 301	179.94	7960.09	2.94	20.55	1.93	0.15	2.14	0.02	0.91	0.43	144.46	1.30	143.63	2.86	130.05	45.46	144.46	1.30	100.57
0619-MR-35 206	229.32	11563.03	2.95	21.02	1.42	0.15	1.65	0.02	0.84	0.51	144.52	1.19	140.74	2.17	77.38	33.76	144.52	1.19	102.69
0619-MR-35 36	161.83	333228.0 9	3.10	20.01	1.19	0.16	1.48	0.02	0.88	0.60	144.58	1.26	147.40	2.03	193.19	27.58	144.58	1.26	98.08
0619-MR-35 261	203.40	5635.33	2.83	21.44	3.27	0.15	3.36	0.02	0.79	0.24	144.69	1.14	138.31	4.35	30.10	78.37	144.69	1.14	104.61
0619-MR-35 118	283.34	5268.23	2.26	21.15	3.21	0.15	3.38	0.02	1.07	0.32	144.78	1.53	140.15	4.42	62.39	76.35	144.78	1.53	103.31
0619-MR-35 294	176.73	5999.38	3.59	20.55	1.77	0.15	2.07	0.02	1.09	0.52	145.32	1.56	144.50	2.79	130.94	41.53	145.32	1.56	100.57
0619-MR-35 211	182.24	62255.79	2.88	20.37	1.57	0.15	1.74	0.02	0.74	0.43	145.50	1.07	145.81	2.36	150.86	36.78	145.50	1.07	99.79
0619-MR-35 172	168.93	52082.39	4.16	19.68	1.52	0.16	1.84	0.02	1.04	0.56	145.51	1.49	150.56	2.58	230.82	35.08	145.51	1.49	96.65
0619-MR-35 292	196.79	12747.34	2.59	19.58	1.34	0.16	1.51	0.02	0.70	0.46	146.02	1.01	151.82	2.12	243.47	30.78	146.02	1.01	96.18
0619-MR-35 112	111.46	9613.78	2.99	21.23	2.62	0.15	2.84	0.02	1.10	0.39	146.13	1.58	140.87	3.74	53.06	62.56	146.13	1.58	103.74
0619-MR-35 239	265.31	20912.98	2.88	20.91	1.43	0.15	1.65	0.02	0.82	0.50	146.14	1.18	142.92	2.20	89.77	33.91	146.14	1.18	102.25
0619-MR-35 7	187.28	51927.86	4.32	20.22	1.59	0.16	1.85	0.02	0.94	0.51	146.46	1.37	147.76	2.54	168.76	37.03	146.46	1.37	99.12
0619-MR-35 44	324.09	4866.80	2.02	21.43	1.13	0.15	1.40	0.02	0.83	0.59	146.56	1.21	140.04	1.84	30.96	27.09	146.56	1.21	104.65
0619-MR-35 130	552.16	48766.20	1.33	20.63	0.89	0.15	1.34	0.02	1.00	0.75	146.69	1.46	145.21	1.81	121.14	20.92	146.69	1.46	101.02
0619-MR-35 214	147.57	24600.85	3.61	20.84	1.49	0.15	1.75	0.02	0.92	0.53	146.88	1.34	144.06	2.35	98.03	35.21	146.88	1.34	101.95
0619-MR-35 286	435.14	116266.5 7	2.15	20.25	1.03	0.16	1.48	0.02	1.06	0.72	146.92	1.54	147.96	2.04	164.64	24.06	146.92	1.54	99.30
0619-MR-35 116	128.56	4216.02	3.01	20.03	3.07	0.16	3.18	0.02	0.83	0.26	147.12	1.21	149.69	4.42	190.54	71.40	147.12	1.21	98.29
0619-MR-35 59	149.22	5962.75	3.56	21.51	1.90	0.15	2.00	0.02	0.62	0.31	147.24	0.91	140.20	2.62	22.53	45.62	147.24	0.91	105.02
0619-MR-35 141	199.29	5958.67	2.81	21.03	1.54	0.15	1.68	0.02	0.66	0.40	147.28	0.97	143.18	2.24	75.75	36.53	147.28	0.97	102.86
0619-MR-35 80	229.57	13863.19	2.04	20.49	1.47	0.16	1.66	0.02	0.78	0.47	147.53	1.14	146.96	2.27	137.90	34.40	147.53	1.14	100.38
0619-MR-35 228	374.15	33841.52	2.12	20.42	1.28	0.16	1.77	0.02	1.22	0.69	147.54	1.79	147.44	2.43	145.96	29.94	147.54	1.79	100.06
0619-MR-35 302	120.41	6157.10	2.06	20.93	1.74	0.15	1.88	0.02	0.72	0.38	147.54	1.05	144.08	2.53	87.48	41.16	147.54	1.05	102.40
0619-MR-35 24	774.42	52216.92	2.64	20.34	0.79	0.16	1.10	0.02	0.76	0.69	148.03	1.12	148.42	1.52	154.67	18.58	148.03	1.12	99.74
0619-MR-35 173	262.60	19148.96	2.10	20.34	1.10	0.16	1.34	0.02	0.76	0.57	148.41	1.12	148.77	1.86	154.35	25.78	148.41	1.12	99.76
0619-MR-35 32	122.14	315694.6 8	3.13	19.99	1.99	0.16	2.27	0.02	1.09	0.48	148.51	1.60	151.33	3.19	195.65	46.14	148.51	1.60	98.14
0619-MR-35 73	114.28	6442.23	3.06	21.09	1.50	0.15	1.87	0.02	1.11	0.59	148.71	1.63	144.09	2.51	68.66	35.80	148.71	1.63	103.21
0619-MR-35 66	120.87	13430.33	2.61	20.45	1.71	0.16	2.07	0.02	1.16	0.56	148.77	1.71	148.39	2.86	142.29	40.20	148.77	1.71	100.26
0619-MR-35 58	195.13	11699.35	2.27	19.65	1.62	0.16	1.93	0.02	1.05	0.54	148.97	1.55	154.19	2.77	235.23	37.43	148.97	1.55	96.61
0619-MR-35 255	173.10	10600.64	3.10	20.51	1.68	0.16	1.82	0.02	0.70	0.38	149.61	1.03	148.78	2.51	135.64	39.40	149.61	1.03	100.55
0619-MR-35 278	255.95	13833.57	2.26	20.67	1.22	0.16	1.43	0.02	0.75	0.52	149.75	1.11	147.84	1.97	117.33	28.84	149.75	1.11	101.29
0619-MR-35 106	180.03	11779.64	3.22	21.35	1.25	0.15	1.59	0.02	0.99	0.62	149.99	1.46	143.66	2.14	40.40	29.98	149.99	1.46	104.40
0619-MR-35 103	219.35	20926.08	2.50	20.12	1.21	0.16	1.46	0.02	0.82	0.56	150.14	1.21	151.93	2.07	179.97	28.30	150.14	1.21	98.82
0619-MR-35 215	128.04	60580.53	3.00	20.47	1.84	0.16	2.09	0.02	1.00	0.48	150.28	1.49	149.68	2.91	140.14	43.11	150.28	1.49	100.40
0619-MR-35 236	148.06	12142.63	5.36	20.35	1.64	0.16	1.89	0.02	0.94	0.50	150.82	1.40	150.96	2.65	153.17	38.46	150.82	1.40	99.91
0619-MR-35 293	405.70	47387.95	3.26	19.96	0.83	0.16	1.45	0.02	1.19	0.82	151.02	1.78	153.93	2.08	198.91	19.40	151.02	1.78	98.11

0619-MR-35 196	221.52	12231.05	2.30	20.14	1.55	0.16	1.77	0.02	0.86	0.49	151.03	1.28	152.61	2.50	177.31	36.04	151.03	1.28	98.96
0619-MR-35 217	124.06	7877.06	2.64	19.50	2.25	0.17	2.37	0.02	0.74	0.31	151.05	1.10	157.31	3.45	252.73	51.75	151.05	1.10	96.02
0619-MR-35 131	221.89	8191.80	3.17	21.35	1.85	0.15	2.01	0.02	0.77	0.38	151.19	1.15	144.70	2.71	39.67	44.32	151.19	1.15	104.48
0619-MR-35 11	604.52	166621.2 0	1.59	20.49	0.74	0.16	1.14	0.02	0.87	0.76	151.60	1.31	150.74	1.60	137.17	17.35	151.60	1.31	100.57
0619-MR-35 12	528.93	24985.90	2.29	20.55	0.88	0.16	1.38	0.02	1.07	0.77	152.10	1.61	150.80	1.94	130.38	20.58	152.10	1.61	100.86
0619-MR-35 268	73.65	40334.23	3.43	19.52	2.59	0.17	2.76	0.02	0.95	0.34	152.58	1.43	158.67	4.05	250.50	59.63	152.58	1.43	96.16
0619-MR-35 157	346.63	10749.49	2.84	20.49	1.71	0.16	1.95	0.02	0.95	0.49	152.63	1.43	151.72	2.75	137.42	40.05	152.63	1.43	100.60
0619-MR-35 70	266.96	13575.80	1.73	20.71	1.12	0.16	1.41	0.02	0.85	0.60	154.09	1.29	151.56	1.98	112.14	26.51	154.09	1.29	101.67
0619-MR-35 282	701.65	44590.47	1.60	20.49	0.88	0.16	1.41	0.02	1.10	0.78	154.37	1.68	153.34	2.01	137.50	20.71	154.37	1.68	100.67
0619-MR-35 265	99.58	9066.11	2.83	20.93	1.70	0.16	1.92	0.02	0.90	0.47	154.50	1.37	150.45	2.69	87.10	40.37	154.50	1.37	102.69
0619-MR-35 142	275.48	13126.85	2.12	20.77	1.51	0.16	1.67	0.02	0.70	0.42	155.00	1.08	152.01	2.36	105.74	35.73	155.00	1.08	101.96
0619-MR-35 150	298.70	52886.93	1.64	20.18	1.30	0.17	1.65	0.02	1.02	0.62	155.19	1.57	156.26	2.40	172.52	30.38	155.19	1.57	99.31
0619-MR-35 30	225.76	9932.63	3.06	20.35	1.38	0.17	1.71	0.02	1.00	0.59	155.73	1.54	155.61	2.46	153.77	32.32	155.73	1.54	100.08
0619-MR-35 38	307.30	21704.83	2.43	18.52	1.03	0.18	1.38	0.02	0.92	0.67	155.81	1.41	169.79	2.16	369.37	23.23	155.81	1.41	91.76
0619-MR-35 111	1018.37	19742.47	2.91	20.74	0.89	0.16	1.28	0.02	0.93	0.72	156.93	1.44	153.99	1.83	108.99	20.89	156.93	1.44	101.91
0619-MR-35 83	61.75	2159.18	3.79	22.68	2.96	0.15	3.14	0.02	1.03	0.33	156.97	1.59	141.73	4.15	NA	NA	156.97	1.59	110.75
0619-MR-35 185	473.21	23071.41	1.69	20.14	1.19	0.17	1.71	0.02	1.23	0.72	157.91	1.91	159.14	2.52	177.38	27.74	157.91	1.91	99.23
0619-MR-35 119	102.22	5746.68	3.09	21.38	1.78	0.16	2.11	0.02	1.13	0.53	159.06	1.77	151.58	2.97	36.14	42.68	159.06	1.77	104.93
0619-MR-35 310	171.16	9593.02	2.39	20.11	1.57	0.17	1.74	0.02	0.74	0.43	159.07	1.16	160.48	2.58	181.34	36.58	159.07	1.16	99.12
0619-MR-35 194	149.52	4233.05	3.21	22.11	1.77	0.16	2.03	0.02	0.99	0.49	159.10	1.55	146.99	2.77	NA	NA	159.10	1.55	108.24
0619-MR-35 87	305.79	75015.88	1.73	20.20	1.15	0.17	1.38	0.03	0.76	0.55	160.14	1.20	160.83	2.05	171.07	26.83	160.14	1.20	99.57
0619-MR-35 29	524.33	16860.58	1.23	20.31	1.13	0.17	1.46	0.03	0.92	0.63	160.34	1.46	160.20	2.16	158.16	26.45	160.34	1.46	100.09
0619-MR-35 105	206.75	20840.77	4.21	20.65	1.48	0.17	1.82	0.03	1.06	0.58	160.50	1.67	157.91	2.66	119.27	34.96	160.50	1.67	101.64
0619-MR-35 17	543.85	21384.11	2.97	20.47	1.14	0.17	1.59	0.03	1.11	0.70	160.85	1.76	159.54	2.34	140.22	26.70	160.85	1.76	100.82
0619-MR-35 20	254.41	6057.26	4.31	21.32	0.92	0.16	1.19	0.03	0.76	0.64	160.90	1.21	153.67	1.70	43.66	22.02	160.90	1.21	104.70
0619-MR-35 169	703.07	790262.5 3	3.06	20.11	0.76	0.17	1.23	0.03	0.97	0.79	161.88	1.55	163.12	1.86	181.18	17.66	161.88	1.55	99.24
0619-MR-35 297	255.81	28340.10	2.83	20.29	1.05	0.17	1.33	0.03	0.81	0.61	162.85	1.31	162.69	2.00	160.44	24.59	162.85	1.31	100.09
0619-MR-35 222	252.57	9291.39	1.86	20.31	1.46	0.18	1.67	0.03	0.81	0.48	164.73	1.32	164.30	2.54	158.05	34.28	164.73	1.32	100.26
0619-MR-35 34	218.00	12874.93	3.73	20.66	1.54	0.17	1.73	0.03	0.79	0.46	165.22	1.29	162.16	2.59	117.62	36.23	165.22	1.29	101.89
0619-MR-35 143	747.35	2381115 3.79	1.81	19.98	0.70	0.18	1.34	0.03	1.14	0.85	165.33	1.87	167.33	2.06	195.80	16.17	165.33	1.87	98.80
0619-MR-35 51	234.29	6898.37	3.18	20.98	1.89	0.17	2.06	0.03	0.82	0.40	165.89	1.35	160.49	3.05	81.49	44.77	165.89	1.35	103.36
0619-MR-35 209	846.31	21671.24	1.99	20.33	0.77	0.18	1.18	0.03	0.89	0.76	166.84	1.47	166.09	1.81	155.40	17.95	166.84	1.47	100.45
0619-MR-35 213	445.18	33174.63	3.59	20.22	1.12	0.18	1.57	0.03	1.09	0.70	167.22	1.80	167.34	2.42	168.90	26.22	167.22	1.80	99.93
0619-MR-35 158	260.41	49687.37	2.78	19.86	1.26	0.18	1.53	0.03	0.87	0.57	168.04	1.45	170.88	2.41	210.47	29.21	168.04	1.45	98.33
0619-MR-35 154	736.55	796042.0 1	1.81	20.31	0.70	0.18	1.22	0.03	1.00	0.82	168.55	1.66	167.88	1.88	158.47	16.27	168.55	1.66	100.40
0619-MR-35 235	190.61	19242.77	1.60	20.07	1.08	0.18	1.42	0.03	0.92	0.65	168.89	1.54	170.03	2.22	185.92	25.13	168.89	1.54	99.33
0619-MR-35 202	335.88	176445.0 8	3.33	20.03	1.12	0.18	1.37	0.03	0.79	0.57	170.43	1.32	171.83	2.16	191.09	26.11	170.43	1.32	99.19
0619-MR-35 99	177.45	13896.69	1.80	17.92	2.55	0.21	2.75	0.03	1.02	0.37	170.63	1.72	190.40	4.77	443.14	56.72	170.63	1.72	89.62
0619-MR-35 224	240.91	10673.44	2.28	20.64	1.11	0.18	1.34	0.03	0.76	0.57	171.32	1.28	167.88	2.08	119.69	26.11	171.32	1.28	102.05
0619-MR-35 55	197.64	13350.40	2.48	20.44	1.48	0.18	1.72	0.03	0.87	0.51	171.71	1.48	169.77	2.69	142.80	34.68	171.71	1.48	101.14

0619-MR-35 308	405.96	31811.55	2.00	20.49	1.13	0.18	1.57	0.03	1.09	0.69	173.28	1.86	170.84	2.46	137.29	26.52	173.28	1.86	101.42
0619-MR-35 163	507.74	162409.07	1.99	20.09	0.98	0.19	1.26	0.03	0.78	0.62	180.57	1.39	180.80	2.08	183.82	22.89	180.57	1.39	99.87
0619-MR-35 100	194.78	24364.81	3.23	19.51	1.27	0.20	1.45	0.03	0.70	0.48	182.91	1.26	187.94	2.49	251.68	29.29	182.91	1.26	97.32
0619-MR-35 219	480.75	17812.72	2.06	20.40	0.96	0.20	1.48	0.03	1.12	0.76	186.02	2.05	183.29	2.48	148.27	22.62	186.02	2.05	101.49
0619-MR-35 175	128.36	5826.16	3.26	20.38	1.84	0.20	1.95	0.03	0.64	0.33	186.20	1.18	183.60	3.27	150.30	43.11	186.20	1.18	101.41
0619-MR-35 74	140.73	9904.11	2.89	19.82	1.97	0.21	2.17	0.03	0.90	0.42	188.66	1.68	190.64	3.77	215.18	45.75	188.66	1.68	98.96
0619-MR-35 33	49.95	65104.97	4.09	20.26	2.46	0.20	2.72	0.03	1.16	0.43	189.31	2.16	187.39	4.65	163.32	57.45	189.31	2.16	101.02
0619-MR-35 42	92.89	4586.97	3.83	21.01	3.91	0.20	4.03	0.03	0.98	0.24	189.72	1.83	181.70	6.71	78.60	92.89	189.72	1.83	104.41
0619-MR-35 298	425.68	108588.17	3.21	20.02	0.98	0.21	1.50	0.03	1.13	0.76	190.41	2.13	190.50	2.60	191.64	22.74	190.41	2.13	99.95
0619-MR-35 168	409.52	55486.07	2.71	19.78	0.90	0.21	1.39	0.03	1.06	0.76	190.88	2.00	193.06	2.44	219.86	20.76	190.88	2.00	98.87
0619-MR-35 182	378.10	16516.60	2.48	20.24	0.95	0.20	1.40	0.03	1.03	0.74	190.98	1.93	189.10	2.41	165.66	22.10	190.98	1.93	100.99
0619-MR-35 249	153.52	12509.54	3.60	20.35	1.27	0.20	1.41	0.03	0.62	0.44	191.00	1.17	188.22	2.43	153.47	29.75	191.00	1.17	101.48
0619-MR-35 221	136.79	9680.94	2.19	19.97	1.71	0.21	1.90	0.03	0.82	0.43	191.30	1.55	191.79	3.33	197.85	39.83	191.30	1.55	99.74
0619-MR-35 127	187.80	4996.51	3.58	20.84	1.45	0.20	1.68	0.03	0.85	0.50	191.31	1.60	184.44	2.83	97.25	34.31	191.31	1.60	103.73
0619-MR-35 260	73.44	6786.50	3.82	19.81	2.67	0.21	2.83	0.03	0.94	0.33	191.37	1.77	193.22	4.98	215.99	61.77	191.37	1.77	99.04
0619-MR-35 72	157.11	44400.33	3.83	19.55	1.57	0.21	1.84	0.03	0.97	0.53	191.78	1.84	195.95	3.29	246.35	36.08	191.78	1.84	97.88
0619-MR-35 104	133.55	19861.45	3.93	20.10	1.95	0.21	2.12	0.03	0.85	0.40	192.19	1.61	191.48	3.71	182.69	45.32	192.19	1.61	100.37
0619-MR-35 88	402.92	12405.80	2.39	20.48	1.04	0.20	1.52	0.03	1.11	0.73	192.24	2.09	188.29	2.61	138.95	24.37	192.24	2.09	102.10
0619-MR-35 187	137.24	5364.05	2.94	21.00	1.79	0.20	1.96	0.03	0.80	0.41	192.32	1.51	184.05	3.31	79.17	42.63	192.32	1.51	104.49
0619-MR-35 151	60.42	6073.03	5.48	21.46	2.00	0.20	2.28	0.03	1.10	0.48	193.15	2.09	181.15	3.78	27.31	47.84	193.15	2.09	106.63
0619-MR-35 195	177.13	6529.78	4.39	20.13	2.65	0.21	2.75	0.03	0.75	0.27	193.25	1.43	192.15	4.82	178.58	61.77	193.25	1.43	100.57
0619-MR-35 90	179.20	8811.14	3.31	20.26	1.83	0.21	2.01	0.03	0.83	0.41	193.27	1.58	191.05	3.49	163.60	42.69	193.27	1.58	101.17
0619-MR-35 125	281.99	31166.10	3.31	20.10	1.00	0.21	1.46	0.03	1.06	0.73	193.86	2.03	192.99	2.56	182.37	23.30	193.86	2.03	100.45
0619-MR-35 81	212.11	13152.53	2.50	20.10	1.47	0.21	1.70	0.03	0.87	0.51	194.27	1.66	193.38	3.00	182.50	34.16	194.27	1.66	100.46
0619-MR-35 40	290.64	8321.18	3.86	20.81	1.27	0.20	1.44	0.03	0.69	0.48	194.55	1.33	187.60	2.47	101.00	29.96	194.55	1.33	103.70
0619-MR-35 96	194.20	11567.97	4.16	20.41	1.18	0.21	1.41	0.03	0.78	0.55	194.59	1.50	191.01	2.46	147.05	27.65	194.59	1.50	101.87
0619-MR-35 232	63.67	3964.81	3.61	21.12	2.57	0.20	2.67	0.03	0.75	0.28	195.60	1.45	186.02	4.55	66.05	61.12	195.60	1.45	105.15
0619-MR-35 85	183.28	7743.26	3.44	20.51	1.73	0.21	1.97	0.03	0.95	0.48	195.78	1.83	191.17	3.44	134.66	40.69	195.78	1.83	102.41
0619-MR-35 262	208.90	27319.91	3.51	19.82	1.15	0.21	1.34	0.03	0.68	0.51	195.97	1.32	197.48	2.40	215.52	26.66	195.97	1.32	99.24
0619-MR-35 147	420.31	8808.22	1.56	20.76	0.99	0.21	1.45	0.03	1.06	0.73	196.31	2.05	189.54	2.50	106.04	23.29	196.31	2.05	103.57
0619-MR-35 281	370.34	28229.57	2.61	19.65	0.95	0.22	1.18	0.03	0.71	0.60	196.99	1.38	199.97	2.15	235.32	21.82	196.99	1.38	98.51
0619-MR-35 216	341.36	31687.19	3.22	19.56	0.83	0.22	1.07	0.03	0.68	0.63	197.81	1.32	201.54	1.96	245.43	19.12	197.81	1.32	98.15
0619-MR-35 57	160.82	16225.95	4.00	20.50	1.60	0.21	1.79	0.03	0.80	0.45	198.17	1.56	193.49	3.15	136.85	37.58	198.17	1.56	102.42
0619-MR-35 115	343.59	21301.07	2.14	20.32	0.96	0.21	1.27	0.03	0.84	0.66	198.40	1.64	195.23	2.26	157.09	22.40	198.40	1.64	101.62
0619-MR-35 253	164.06	337606.40	1.58	19.68	1.31	0.22	1.55	0.03	0.83	0.53	199.91	1.63	202.41	2.85	231.61	30.33	199.91	1.63	98.76
0619-MR-35 132	155.93	62955.18	3.17	19.79	1.26	0.22	1.52	0.03	0.86	0.56	200.84	1.70	202.21	2.79	218.28	29.12	200.84	1.70	99.32
0619-MR-35 137	212.41	17112.81	3.44	20.14	1.34	0.22	1.58	0.03	0.82	0.52	201.18	1.63	199.32	2.85	177.32	31.29	201.18	1.63	100.93
0619-MR-35 160	191.08	7255.83	2.66	20.73	1.37	0.21	1.51	0.03	0.64	0.42	201.45	1.26	194.40	2.67	109.63	32.29	201.45	1.26	103.63
0619-MR-35 93	112.11	60911.41	2.39	18.65	1.78	0.24	2.03	0.03	0.96	0.47	205.70	1.95	218.08	3.98	353.91	40.32	205.70	1.95	94.32
0619-MR-35 19	122.72	10009.45	4.97	19.87	2.00	0.23	2.14	0.03	0.75	0.35	208.15	1.53	208.18	4.02	208.56	46.43	208.15	1.53	99.98

0619-MR-35 167	569.70	149138.86	1.81	19.73	0.81	0.23	1.25	0.03	0.95	0.76	209.72	1.96	211.05	2.38	225.96	18.81	209.72	1.96	99.37
0619-MR-35 226	114.47	13051.92	1.12	19.64	1.46	0.24	1.71	0.03	0.89	0.52	220.49	1.94	221.86	3.41	236.40	33.68	220.49	1.94	99.38
0619-MR-35 291	373.60	38282.75	2.15	19.93	1.10	0.27	1.31	0.04	0.71	0.54	247.38	1.71	243.09	2.83	201.87	25.62	247.38	1.71	101.77
0619-MR-35 136	435.49	828396.86	4.19	19.39	0.89	0.28	1.43	0.04	1.12	0.78	252.62	2.77	253.92	3.21	265.94	20.33	252.62	2.77	99.49
0619-MR-35 145	294.65	7773.72	2.20	20.09	1.05	0.28	1.36	0.04	0.86	0.63	257.00	2.16	249.83	3.01	182.98	24.58	257.00	2.16	102.87
0619-MR-35 303	25.97	8104.49	214170.38	16.88	3.55	0.34	4.19	0.04	2.23	0.53	265.40	5.80	299.61	10.87	575.43	77.11	265.40	5.80	88.58
0619-MR-35 146	265.61	10164.08	4.35	19.48	0.85	0.31	1.40	0.04	1.12	0.80	275.85	3.03	273.69	3.37	255.24	19.43	275.85	3.03	100.79
0619-MR-35 285	124.54	69451.51	1.87	18.89	0.95	0.35	1.21	0.05	0.75	0.62	299.88	2.20	302.78	3.17	325.21	21.54	299.88	2.20	99.04
0619-MR-35 15	325.53	33237.85	1.51	18.60	0.64	0.36	0.87	0.05	0.59	0.67	302.13	1.73	308.85	2.32	359.81	14.52	302.13	1.73	97.83
0619-MR-35 254	152.87	6479.61	1.88	19.38	1.24	0.34	1.48	0.05	0.81	0.55	302.56	2.38	298.44	3.83	266.36	28.47	302.56	2.38	101.38
0619-MR-35 178	57.91	18371.25	5.51	19.60	1.39	0.34	1.71	0.05	0.99	0.58	305.57	2.95	298.18	4.41	240.72	32.11	305.57	2.95	102.48
0619-MR-35 256	232.22	23674.21	1.31	18.86	0.85	0.36	1.21	0.05	0.86	0.71	306.75	2.59	309.36	3.22	329.03	19.19	306.75	2.59	99.16
0619-MR-35 271	200.09	88192.38	1.21	18.79	1.01	0.36	1.27	0.05	0.76	0.60	309.70	2.31	312.88	3.41	336.65	22.91	309.70	2.31	98.98
0619-MR-35 165	158.17	16139.02	4.74	18.91	0.94	0.37	1.22	0.05	0.78	0.64	319.65	2.44	320.06	3.36	323.04	21.32	319.65	2.44	99.87
0619-MR-35 107	272.92	38980.41	3.41	18.76	0.97	0.43	1.23	0.06	0.75	0.62	364.09	2.67	360.91	3.72	340.57	21.87	364.09	2.67	100.88
0619-MR-35 272	34.23	2150.20	1.14	20.19	2.01	0.41	2.30	0.06	1.11	0.48	374.29	4.05	347.48	6.76	171.84	46.92	374.29	4.05	107.72
0619-MR-35 54	254.90	13880.09	3.20	18.64	0.81	0.44	1.11	0.06	0.75	0.68	376.63	2.75	373.67	3.46	355.32	18.32	376.63	2.75	100.79
0619-MR-35 14	121.34	14550.07	1.46	18.54	1.25	0.45	1.63	0.06	1.05	0.64	378.60	3.85	377.08	5.13	367.75	28.06	378.60	3.85	100.40
0619-MR-35 189	128.95	7313.88	1.47	18.77	1.27	0.46	1.51	0.06	0.83	0.55	388.91	3.12	381.91	4.82	339.76	28.68	388.91	3.12	101.83
0619-MR-35 77	216.27	306411.13	1.20	18.18	0.95	0.48	1.22	0.06	0.76	0.63	396.65	2.94	398.74	4.01	410.85	21.14	396.65	2.94	99.48
0619-MR-35 67	110.23	16575.02	1.68	18.58	1.29	0.47	1.62	0.06	0.99	0.61	397.86	3.81	392.78	5.29	363.00	29.07	397.86	3.81	101.29
0619-MR-35 242	555.44	307647.39	2.20	18.13	0.65	0.49	1.16	0.06	0.96	0.83	404.89	3.76	406.88	3.89	418.20	14.62	404.89	3.76	96.82
0619-MR-35 258	257.80	2391167.97	2.50	17.91	0.74	0.50	1.03	0.07	0.72	0.70	407.55	2.85	413.17	3.51	444.69	16.43	407.55	2.85	91.65
0619-MR-35 82	583.91	27547.68	6.27	17.96	0.57	0.51	1.11	0.07	0.96	0.86	416.13	3.85	419.61	3.82	438.78	12.65	416.13	3.85	94.84
0619-MR-35 10	65.12	5560.83	0.88	17.86	1.43	0.55	1.71	0.07	0.93	0.55	441.50	3.98	442.99	6.14	450.72	31.84	441.50	3.98	97.95
0619-MR-35 23	46.48	3966.36	1.02	18.11	3.63	0.54	3.73	0.07	0.87	0.23	441.66	3.70	438.30	13.28	420.64	81.03	441.66	3.70	105.00
0619-MR-35 245	388.07	26943.71	1.59	17.78	0.68	0.60	1.27	0.08	1.06	0.84	477.23	4.89	474.44	4.79	460.93	15.18	477.23	4.89	103.54
0619-MR-35 200	64.31	4069.48	0.74	18.02	1.23	0.63	1.45	0.08	0.77	0.53	508.49	3.77	494.59	5.68	430.73	27.40	508.49	3.77	118.05
0619-MR-35 78	209.13	24289.27	1.07	17.18	0.63	0.67	1.02	0.08	0.80	0.78	515.01	3.95	518.97	4.15	536.45	13.90	515.01	3.95	96.00
0619-MR-35 156	81.80	19072.28	1.55	17.07	1.15	0.69	1.45	0.09	0.88	0.61	526.67	4.45	531.28	5.99	551.10	25.11	526.67	4.45	95.57
0619-MR-35 197	276.71	31752.45	2.00	17.07	0.62	0.69	1.07	0.09	0.87	0.82	529.99	4.44	533.90	4.44	550.65	13.46	529.99	4.44	96.25
0619-MR-35 240	114.17	98219.85	2.08	16.53	1.74	0.72	1.96	0.09	0.90	0.46	535.86	4.62	552.17	8.35	619.98	37.61	535.86	4.62	86.43
0619-MR-35 68	387.10	116985.73	2.07	17.12	0.66	0.73	1.01	0.09	0.76	0.76	562.74	4.11	559.03	4.34	543.97	14.42	562.74	4.11	103.45
0619-MR-35 27	279.18	47216.56	7.88	16.96	0.47	0.75	0.97	0.09	0.85	0.87	570.74	4.62	569.55	4.22	564.81	10.29	570.74	4.62	101.05
0619-MR-35 314	93.67	18953.20	1.18	16.52	0.88	0.77	1.16	0.09	0.76	0.65	571.35	4.13	581.49	5.14	621.31	19.04	571.35	4.13	91.96
0619-MR-35 273	56.95	5981.10	7.15	17.31	1.10	0.76	1.38	0.09	0.84	0.60	584.34	4.67	571.42	6.04	520.30	24.17	584.34	4.67	112.31
0619-MR-35 244	114.91	15757.22	1.94	16.26	0.87	0.82	1.05	0.10	0.58	0.56	592.91	3.29	606.14	4.78	655.93	18.65	592.91	3.29	90.39
0619-MR-35 91	330.34	283680.67	2.75	16.49	0.67	0.81	1.10	0.10	0.88	0.80	593.99	4.98	600.62	5.00	625.68	14.40	593.99	4.98	94.94
0619-MR-35 203	122.23	23784.45	188.85	16.33	0.88	0.82	1.22	0.10	0.85	0.70	596.27	4.84	606.99	5.58	647.19	18.82	596.27	4.84	92.13
0619-MR-35 188	164.71	37268.66	1.89	16.80	0.90	0.80	1.27	0.10	0.90	0.71	600.14	5.15	596.93	5.73	584.80	19.48	600.14	5.15	102.62

0619-MR-35 28	124.75	133374.76	2.25	16.56	0.97	0.82	1.18	0.10	0.67	0.57	606.56	3.89	608.66	5.42	616.45	21.04	606.56	3.89	98.40
0619-MR-35 128	80.44	6671.20	4.60	16.66	1.00	0.83	1.30	0.10	0.83	0.64	618.20	4.92	614.98	6.01	603.10	21.67	618.20	4.92	102.50
0619-MR-35 16	168.01	46684.48	12.44	13.52	0.69	1.04	0.99	0.10	0.70	0.71	625.09	4.19	722.99	5.10	1039.92	14.01	625.09	4.19	60.11
0619-MR-35 311	168.57	42031.84	6.06	16.55	0.80	0.85	1.05	0.10	0.69	0.65	627.71	4.12	625.61	4.92	618.00	17.22	627.71	4.12	101.57
0619-MR-35 48	61.36	4833.58	2.12	16.53	1.04	0.86	1.29	0.10	0.76	0.59	629.64	4.58	627.54	6.02	619.94	22.37	629.64	4.58	101.57
0619-MR-35 266	400.46	66556.18	1.36	16.49	0.64	0.87	1.31	0.10	1.14	0.87	638.82	6.91	635.98	6.17	625.86	13.85	638.82	6.91	102.07
0619-MR-35 148	72.00	53323.59	6.43	16.06	1.18	0.90	1.53	0.11	0.98	0.64	645.46	6.00	653.70	7.39	682.25	25.26	645.46	6.00	94.61
0619-MR-35 241	136.99	27655.98	1.46	16.01	0.88	0.99	1.32	0.12	0.99	0.75	704.27	6.62	700.61	6.70	688.89	18.76	704.27	6.62	102.23
0619-MR-35 210	187.64	24747.93	7.69	15.74	0.72	1.02	1.20	0.12	0.97	0.80	707.14	6.47	711.46	6.16	725.10	15.25	707.14	6.47	97.52
0619-MR-35 306	470.53	89115.14	22.16	14.34	0.78	1.26	1.55	0.13	1.34	0.87	795.27	10.04	828.70	8.78	919.47	15.98	795.27	10.04	86.49
0619-MR-35 257	279.38	33189.68	2.25	15.20	0.58	1.21	0.86	0.13	0.64	0.74	805.46	4.83	803.57	4.78	798.31	12.14	805.46	4.83	100.90
0619-MR-35 233	86.69	16558.59	2.82	14.44	0.85	1.45	1.20	0.15	0.85	0.71	910.74	7.25	909.29	7.22	905.77	17.45	905.77	17.45	100.55
0619-MR-35 1	34.77	4810.74	2.46	14.22	0.86	1.52	1.24	0.16	0.89	0.72	937.28	7.76	937.25	7.57	937.15	17.62	937.15	17.62	100.01
0619-MR-35 114	66.64	14514.33	1.76	14.09	1.12	1.56	1.43	0.16	0.89	0.62	951.17	7.83	952.70	8.82	956.23	22.87	956.23	22.87	99.47
0619-MR-35 199	50.27	10732.39	4.98	14.07	0.91	1.52	1.31	0.15	0.94	0.72	927.14	8.15	936.51	8.00	958.62	18.50	958.62	18.50	96.72
0619-MR-35 192	73.41	28471.42	3.36	13.96	0.79	1.53	1.13	0.16	0.81	0.71	930.69	7.01	943.70	6.96	974.20	16.12	974.20	16.12	95.53
0619-MR-35 39	256.56	78673.54	4.28	13.92	0.61	1.62	1.01	0.16	0.81	0.80	979.54	7.38	979.65	6.37	979.91	12.39	979.91	12.39	99.96
0619-MR-35 56	21.52	5376.43	2.99	13.92	1.91	1.69	2.13	0.17	0.95	0.44	1016.46	8.93	1005.35	13.62	981.22	38.91	981.22	38.91	103.59
0619-MR-35 296	355.55	62307.61	7.04	13.85	0.61	1.66	0.91	0.17	0.67	0.74	994.64	6.16	993.58	5.74	991.24	12.42	991.24	12.42	100.34
0619-MR-35 230	313.26	50598.36	3.04	13.83	0.57	1.68	0.79	0.17	0.54	0.68	1006.62	5.01	1002.62	5.01	993.91	11.65	993.91	11.65	101.28
0619-MR-35 299	111.25	32553.40	0.68	13.79	0.57	1.68	0.88	0.17	0.67	0.76	1004.15	6.24	1002.54	5.60	998.99	11.53	998.99	11.53	100.52
0619-MR-35 126	1075.81	2872574.26	12.33	13.76	0.54	1.63	1.13	0.16	0.99	0.88	974.35	8.93	983.29	7.09	1003.28	10.96	1003.28	10.96	97.12
0619-MR-35 264	321.62	452783.88	2.31	13.68	0.62	1.71	0.95	0.17	0.72	0.76	1013.11	6.79	1013.91	6.12	1015.61	12.57	1015.61	12.57	99.75
0619-MR-35 123	111.86	36632.77	1.99	13.66	0.72	1.67	1.01	0.17	0.70	0.70	986.28	6.40	996.58	6.38	1019.32	14.62	1019.32	14.62	96.76
0619-MR-35 140	136.43	597520.65	3.46	13.63	0.70	1.64	1.04	0.16	0.76	0.74	970.82	6.89	986.87	6.56	1022.70	14.24	1022.70	14.24	94.93
0619-MR-35 295	286.41	166860.86	2.81	13.62	0.53	1.75	0.89	0.17	0.72	0.81	1027.01	6.85	1026.17	5.78	1024.36	10.71	1024.36	10.71	100.26
0619-MR-35 25	102.87	529224.70	1.29	13.61	0.72	1.69	0.90	0.17	0.55	0.61	996.46	5.05	1005.98	5.75	1026.76	14.47	1026.76	14.47	97.05
0619-MR-35 183	164.22	49348.68	3.05	13.60	0.61	1.70	0.95	0.17	0.73	0.77	999.39	6.75	1008.47	6.07	1028.23	12.29	1028.23	12.29	97.19
0619-MR-35 247	168.05	45886.40	4.16	13.57	0.71	1.71	0.97	0.17	0.65	0.67	1002.69	6.05	1012.02	6.19	1032.27	14.46	1032.27	14.46	97.13
0619-MR-35 307	146.76	262405.45	2.86	13.54	0.77	1.72	1.10	0.17	0.78	0.71	1007.44	7.24	1016.49	7.04	1036.01	15.66	1036.01	15.66	97.24
0619-MR-35 135	120.14	61240.92	5.09	13.54	0.68	1.71	1.09	0.17	0.85	0.78	999.28	7.91	1011.16	7.00	1036.95	13.81	1036.95	13.81	96.37
0619-MR-35 79	142.14	45771.69	3.94	13.53	0.75	1.66	1.12	0.16	0.83	0.75	973.38	7.53	993.28	7.08	1037.49	15.07	1037.49	15.07	93.82
0619-MR-35 207	362.26	77246.53	3.76	13.53	0.66	1.78	1.06	0.17	0.83	0.78	1036.53	7.92	1037.00	6.86	1037.98	13.26	1037.98	13.26	99.86
0619-MR-35 186	368.22	62435.33	2.60	13.53	0.67	1.80	1.21	0.18	1.01	0.83	1046.18	9.75	1043.74	7.89	1038.62	13.50	1038.62	13.50	100.73
0619-MR-35 129	143.81	451713.43	4.40	13.52	0.85	1.77	1.11	0.17	0.71	0.64	1033.79	6.79	1035.49	7.20	1039.08	17.19	1039.08	17.19	99.49
0619-MR-35 201	175.56	553673.01	1.96	13.52	0.63	1.75	0.86	0.17	0.59	0.68	1019.11	5.56	1025.52	5.58	1039.20	12.76	1039.20	12.76	98.07
0619-MR-35 225	122.67	347774.41	4.81	13.51	0.79	1.70	1.15	0.17	0.84	0.73	994.92	7.70	1009.52	7.35	1041.31	15.94	1041.31	15.94	95.55
0619-MR-35 274	21.60	15495.70	1.78	13.46	1.16	1.73	1.50	0.17	0.96	0.64	1008.35	8.92	1021.10	9.67	1048.54	23.39	1048.54	23.39	96.17
0619-MR-35 288	23.52	18039.47	0.69	13.45	1.29	1.63	1.65	0.16	1.02	0.62	951.46	9.06	981.69	10.35	1049.95	25.97	1049.95	25.97	90.62
0619-MR-35 289	35.15	111212.99	5.29	13.41	1.07	1.89	1.94	0.18	1.62	0.84	1086.92	16.24	1076.62	12.89	1055.86	21.46	1055.86	21.46	102.94

0619-MR-35 181	94.13	63019.66	3.68	13.38	0.61	1.78	1.10	0.17	0.91	0.83	1027.94	8.67	1038.53	7.14	1060.88	12.29	1060.88	12.29	96.90
0619-MR-35 60	141.00	35623.05	5.87	13.36	0.53	1.75	1.09	0.17	0.96	0.88	1008.77	8.97	1026.27	7.07	1063.78	10.56	1063.78	10.56	94.83
0619-MR-35 161	202.28	163871.28	3.25	13.35	0.54	1.77	0.90	0.17	0.72	0.80	1020.41	6.76	1034.49	5.83	1064.39	10.93	1064.39	10.93	95.87
0619-MR-35 97	28.29	7246.86	2.15	13.34	1.23	1.76	1.42	0.17	0.70	0.50	1015.01	6.61	1031.33	9.18	1066.15	24.74	1066.15	24.74	95.20
0619-MR-35 313	127.71	151809.66	1.84	13.34	0.76	1.70	1.05	0.16	0.72	0.69	981.13	6.52	1008.11	6.68	1067.22	15.32	1067.22	15.32	91.93
0619-MR-35 64	49.19	60286.37	2.02	13.31	1.03	1.77	1.24	0.17	0.69	0.56	1018.96	6.52	1035.49	8.07	1070.58	20.76	1070.58	20.76	95.18
0619-MR-35 35	86.67	364040.71	1.81	13.31	0.74	1.82	1.30	0.18	1.06	0.82	1041.61	10.21	1051.21	8.48	1071.23	14.90	1071.23	14.90	97.24
0619-MR-35 124	51.60	10682.05	2.46	13.28	0.83	1.94	1.09	0.19	0.71	0.65	1104.17	7.15	1094.55	7.28	1075.48	16.61	1075.48	16.61	102.67
0619-MR-35 47	103.22	37907.19	4.35	13.26	1.00	1.89	1.60	0.18	1.24	0.78	1077.80	12.34	1078.02	10.61	1078.43	20.10	1078.43	20.10	99.94
0619-MR-35 46	196.53	71821.07	2.72	13.25	0.52	1.86	0.92	0.18	0.77	0.83	1058.51	7.47	1065.51	6.09	1079.86	10.35	1079.86	10.35	98.02
0619-MR-35 252	295.47	63325.77	3.68	13.25	0.55	1.85	0.85	0.18	0.65	0.77	1055.49	6.36	1063.48	5.62	1079.94	10.97	1079.94	10.97	97.74
0619-MR-35 184	71.14	67579.30	2.99	13.25	0.83	1.88	1.42	0.18	1.14	0.81	1072.35	11.30	1074.98	9.39	1080.31	16.73	1080.31	16.73	99.26
0619-MR-35 177	87.64	48382.68	4.92	13.21	0.72	1.80	1.18	0.17	0.93	0.79	1027.00	8.85	1046.10	7.68	1086.20	14.36	1086.20	14.36	94.55
0619-MR-35 234	133.42	44032.20	315.13	13.13	0.73	1.95	1.06	0.19	0.77	0.72	1100.32	7.75	1099.86	7.12	1098.92	14.64	1098.92	14.64	100.13
0619-MR-35 86	18.02	15850.93	6.58	12.96	1.60	2.12	2.28	0.20	1.62	0.71	1169.60	17.38	1154.12	15.73	1125.14	31.87	1125.14	31.87	103.95
0619-MR-35 180	532.94	126877.26	7.41	12.95	0.65	1.96	1.32	0.18	1.15	0.87	1091.86	11.53	1103.40	8.89	1126.24	13.06	1126.24	13.06	96.95
0619-MR-35 179	231.39	104935.36	2.09	12.93	0.56	2.03	1.03	0.19	0.87	0.84	1122.29	8.92	1124.45	7.00	1128.65	11.09	1128.65	11.09	99.44
0619-MR-35 63	272.14	50667.11	8.14	12.90	0.72	1.94	1.31	0.18	1.10	0.84	1075.20	10.84	1094.88	8.76	1134.22	14.22	1134.22	14.22	94.80
0619-MR-35 238	273.68	74466.47	3.24	12.88	0.51	2.07	0.95	0.19	0.80	0.84	1140.41	8.35	1139.33	6.50	1137.30	10.18	1137.30	10.18	100.27
0619-MR-35 52	483.60	708394.84	2.69	12.86	0.51	2.15	1.18	0.20	1.07	0.90	1177.75	11.48	1164.41	8.19	1139.67	10.17	1139.67	10.17	103.34
0619-MR-35 171	92.75	27934.37	4.46	12.85	0.79	1.98	1.57	0.18	1.36	0.86	1093.04	13.67	1109.11	10.61	1140.73	15.69	1140.73	15.69	95.82
0619-MR-35 190	103.12	71523.79	3.32	12.80	1.06	2.01	1.95	0.19	1.63	0.84	1104.06	16.59	1119.52	13.20	1149.64	20.96	1149.64	20.96	96.04
0619-MR-35 2	436.48	116361.59	3.95	12.73	0.49	2.15	1.11	0.20	0.99	0.90	1169.69	10.60	1166.22	7.66	1159.76	9.70	1159.76	9.70	100.86
0619-MR-35 133	62.90	14090.66	2.91	12.67	0.85	2.11	1.40	0.19	1.12	0.80	1141.23	11.71	1151.25	9.68	1170.20	16.83	1170.20	16.83	97.52
0619-MR-35 152	133.35	77781.66	2.37	12.65	0.67	2.07	1.01	0.19	0.76	0.75	1121.03	7.81	1138.56	6.91	1172.14	13.20	1172.14	13.20	95.64
0619-MR-35 205	14.88	213522.97	0.86	12.60	1.41	1.86	1.69	0.17	0.93	0.55	1011.32	8.69	1066.43	11.14	1180.99	27.86	1180.99	27.86	85.63
0619-MR-35 315	139.38	428457.63	2.64	12.59	0.57	2.17	0.93	0.20	0.74	0.79	1165.39	7.87	1171.39	6.49	1182.52	11.30	1182.52	11.30	98.55
0619-MR-35 139	184.10	64559.53	3.01	12.54	0.72	2.21	1.06	0.20	0.77	0.73	1182.18	8.34	1185.09	7.40	1190.41	14.28	1190.41	14.28	99.31
0619-MR-35 138	693.50	192944.21	76.85	12.53	0.64	2.26	1.38	0.21	1.23	0.89	1204.69	13.48	1199.80	9.73	1191.03	12.58	1191.03	12.58	101.15
0619-MR-35 120	49.59	116366.10	2.11	12.32	0.89	2.24	1.14	0.20	0.72	0.63	1178.49	7.80	1194.69	8.03	1224.11	17.38	1224.11	17.38	96.27
0619-MR-35 259	17.34	7348.05	2.88	12.32	1.39	2.33	1.59	0.21	0.75	0.48	1221.23	8.38	1222.40	11.27	1224.45	27.39	1224.45	27.39	99.74
0619-MR-35 248	158.90	47836.37	3.13	12.20	0.73	2.27	1.04	0.20	0.74	0.71	1180.15	8.00	1203.12	7.33	1244.61	14.28	1244.61	14.28	94.82
0619-MR-35 8	170.21	182209.52	1.49	11.87	0.55	2.62	0.96	0.23	0.78	0.82	1311.37	9.30	1306.33	7.03	1298.04	10.65	1298.04	10.65	101.03
0619-MR-35 284	110.53	61648.14	4.77	11.61	0.68	2.71	0.93	0.23	0.64	0.68	1326.77	7.62	1331.72	6.92	1339.67	13.19	1339.67	13.19	99.04
0619-MR-35 208	213.54	186741.90	2.20	11.59	0.62	2.63	1.08	0.22	0.88	0.82	1288.90	10.31	1309.64	7.92	1343.76	11.90	1343.76	11.90	95.92
0619-MR-35 223	71.57	73551.76	2.23	11.43	0.69	2.70	1.04	0.22	0.77	0.75	1302.66	9.12	1328.48	7.67	1370.34	13.24	1370.34	13.24	95.06
0619-MR-35 283	147.01	42074.24	2.61	11.36	0.69	2.82	1.00	0.23	0.72	0.72	1347.05	8.71	1360.82	7.47	1382.49	13.31	1382.49	13.31	97.44
0619-MR-35 65	171.75	129252.52	4.40	11.31	0.56	2.96	1.04	0.24	0.87	0.84	1401.06	11.01	1396.95	7.88	1390.68	10.74	1390.68	10.74	100.75
0619-MR-35 176	62.53	158406.94	1.50	11.29	0.68	2.80	1.20	0.23	0.99	0.83	1331.82	11.91	1356.16	8.97	1394.74	12.98	1394.74	12.98	95.49
0619-MR-35 49	185.90	123543.17	5.15	11.26	0.55	2.96	0.92	0.24	0.74	0.80	1395.76	9.23	1396.86	6.96	1398.52	10.49	1398.52	10.49	99.80

0619-MR-354	230.01	128951.53	2.47	11.12	0.63	3.12	0.92	0.25	0.67	0.73	1448.85	8.76	1438.58	7.08	1423.40	11.95	1423.40	11.95	101.79
0619-MR-3595	381.57	981571.30	3.08	11.11	0.53	2.75	0.96	0.22	0.80	0.83	1292.45	9.39	1343.00	7.17	1424.47	10.18	1424.47	10.18	90.73
0619-MR-35287	244.87	48822.73	2.98	11.08	0.57	3.13	0.81	0.25	0.58	0.71	1448.72	7.47	1440.90	6.22	1429.35	10.82	1429.35	10.82	101.36
0619-MR-359	198.50	95375.12	1.87	11.06	0.57	3.10	0.98	0.25	0.79	0.81	1430.80	10.12	1431.71	7.48	1433.06	10.94	1433.06	10.94	99.84
0619-MR-3589	236.13	605517.28	2.06	11.06	0.56	2.98	1.01	0.24	0.84	0.83	1383.05	10.45	1402.92	7.66	1433.23	10.63	1433.23	10.63	96.50
0619-MR-35276	160.39	72315.64	3.03	11.05	0.45	3.07	0.93	0.25	0.81	0.87	1419.41	10.29	1425.60	7.10	1434.84	8.66	1434.84	8.66	98.92
0619-MR-35109	80.56	139769.29	1.60	11.03	0.75	3.07	1.01	0.25	0.68	0.67	1416.78	8.60	1425.46	7.72	1438.41	14.26	1438.41	14.26	98.50
0619-MR-35304	125.94	244176.27	1.56	11.02	0.60	3.10	0.91	0.25	0.69	0.75	1426.18	8.76	1431.95	6.99	1440.51	11.42	1440.51	11.42	99.00
0619-MR-355	446.06	171269.24	2.06	11.01	0.51	3.10	1.37	0.25	1.27	0.93	1426.33	16.23	1432.79	10.48	1442.38	9.64	1442.38	9.64	98.89
0619-MR-3598	599.96	160324.50	3.36	10.96	0.48	3.23	1.12	0.26	1.01	0.90	1472.08	13.27	1463.23	8.65	1450.38	9.11	1450.38	9.11	101.50
0619-MR-3592	127.71	46466.11	3.12	10.92	0.55	3.14	0.98	0.25	0.81	0.83	1430.29	10.38	1441.41	7.55	1457.83	10.53	1457.83	10.53	98.11
0619-MR-3531	167.67	48212.02	3.85	10.91	0.52	2.75	3.29	0.22	3.25	0.99	1270.81	37.52	1342.76	24.54	1459.33	9.89	1459.33	9.89	87.08
0619-MR-35270	63.39	22898.71	1.17	10.90	0.65	3.10	0.97	0.25	0.73	0.75	1412.94	9.22	1432.19	7.47	1460.88	12.31	1460.88	12.31	96.72
0619-MR-35251	146.00	77249.15	4.24	10.86	0.67	3.09	1.00	0.24	0.74	0.74	1402.68	9.36	1429.07	7.65	1468.58	12.65	1468.58	12.65	95.51
0619-MR-35243	267.94	84867.41	2.11	10.78	0.63	3.26	1.03	0.26	0.82	0.79	1465.71	10.69	1472.66	8.01	1482.66	11.94	1482.66	11.94	98.86
0619-MR-35164	110.38	67688.96	4.16	10.71	0.61	3.16	0.99	0.25	0.78	0.79	1416.90	9.89	1448.60	7.64	1495.42	11.58	1495.42	11.58	94.75
0619-MR-3594	48.93	18140.81	1.68	10.61	0.80	3.18	1.18	0.25	0.86	0.73	1412.86	10.95	1453.28	9.08	1512.86	15.06	1512.86	15.06	93.39
0619-MR-35229	234.86	71386.93	3.99	10.52	0.48	3.50	0.80	0.27	0.64	0.80	1525.02	8.73	1526.52	6.33	1528.59	9.02	1528.59	9.02	99.77
0619-MR-3571	340.64	177940.02	3.47	10.51	0.54	3.59	1.10	0.27	0.95	0.87	1560.71	13.22	1548.09	8.72	1530.88	10.23	1530.88	10.23	101.95
0619-MR-35153	151.47	91662.81	3.04	10.12	0.64	3.81	1.04	0.28	0.81	0.79	1590.10	11.45	1594.69	8.33	1600.75	11.96	1600.75	11.96	99.33
0619-MR-35212	113.97	14903.11	2.31	10.00	0.69	3.91	1.05	0.28	0.79	0.75	1608.94	11.29	1614.97	8.51	1622.82	12.89	1622.82	12.89	99.14
0619-MR-3561	278.43	115062.87	1.64	9.97	0.60	3.79	0.90	0.27	0.67	0.74	1560.86	9.23	1590.12	7.19	1629.11	11.14	1629.11	11.14	95.81
0619-MR-3518	124.48	158545.27	1.89	9.94	0.64	3.93	1.04	0.28	0.81	0.79	1607.76	11.59	1619.15	8.38	1633.98	11.87	1633.98	11.87	98.40
0619-MR-35305	336.46	187323.03	1.44	9.93	0.48	4.08	0.97	0.29	0.84	0.87	1661.06	12.33	1650.46	7.91	1636.97	8.93	1636.97	8.93	101.47
0619-MR-3569	173.15	258807.52	2.23	9.90	0.59	4.17	1.13	0.30	0.97	0.85	1688.40	14.34	1667.75	9.28	1641.85	11.03	1641.85	11.03	102.84
0619-MR-35108	96.37	124902.32	1.48	9.87	0.62	3.91	0.97	0.28	0.74	0.77	1592.23	10.48	1616.18	7.83	1647.51	11.50	1647.51	11.50	96.64
0619-MR-35280	51.07	13539.71	1.56	9.81	0.65	4.03	0.98	0.29	0.73	0.74	1626.85	10.50	1641.28	7.98	1659.79	12.12	1659.79	12.12	98.02
0619-MR-3553	124.50	112075.67	2.88	9.63	0.57	4.21	0.96	0.29	0.77	0.81	1662.47	11.29	1676.09	7.84	1693.17	10.42	1693.17	10.42	98.19
0619-MR-3576	161.47	601837.68	5.32	9.54	0.60	4.27	0.98	0.30	0.77	0.79	1670.48	11.37	1687.94	8.03	1709.68	10.96	1709.68	10.96	97.71
0619-MR-35267	155.28	78914.91	3.68	9.54	0.52	4.34	0.91	0.30	0.75	0.82	1693.58	11.20	1700.89	7.52	1709.89	9.49	1709.89	9.49	99.05
0619-MR-35174	68.56	64387.09	1.73	9.52	0.63	4.14	1.00	0.29	0.77	0.77	1622.80	11.05	1662.97	8.15	1714.05	11.62	1714.05	11.62	94.68
0619-MR-3584	168.19	205140.33	2.31	9.39	0.63	4.39	1.15	0.30	0.96	0.83	1688.84	14.26	1711.26	9.52	1738.79	11.63	1738.79	11.63	97.13
0619-MR-35162	301.13	185939.77	5.22	9.38	0.37	4.61	0.70	0.31	0.59	0.85	1758.88	9.16	1750.64	5.84	1740.79	6.78	1740.79	6.78	101.04
0619-MR-35312	83.22	92563.73	2.30	9.33	0.64	4.39	1.03	0.30	0.80	0.78	1676.48	11.87	1710.12	8.49	1751.55	11.70	1751.55	11.70	95.71
0619-MR-3575	355.81	190168.84	3.81	9.24	0.44	4.81	0.85	0.32	0.73	0.86	1802.00	11.50	1787.03	7.17	1769.57	7.99	1769.57	7.99	101.83
0619-MR-35159	138.87	113324.33	4.72	9.21	0.67	4.65	1.03	0.31	0.78	0.76	1743.98	11.91	1758.02	8.57	1774.72	12.15	1774.72	12.15	98.27
0619-MR-35170	114.59	73947.01	3.01	9.18	0.64	4.50	1.06	0.30	0.85	0.80	1689.09	12.62	1730.15	8.83	1780.17	11.65	1780.17	11.65	94.88
0619-MR-35309	232.52	1499322.73	4.50	9.06	0.49	4.81	0.90	0.32	0.76	0.84	1771.52	11.71	1786.73	7.57	1804.51	8.88	1804.51	8.88	98.17
0619-MR-353	371.53	107771.66	11.39	9.02	0.51	5.15	0.82	0.34	0.64	0.78	1871.39	10.40	1843.74	6.95	1812.66	9.25	1812.66	9.25	103.24
0619-MR-35191	185.67	55758.29	3.05	8.75	0.47	5.20	0.91	0.33	0.79	0.86	1839.54	12.57	1852.87	7.79	1867.86	8.43	1867.86	8.43	98.48

0619-MR-35 237	148.23	128361.60	0.92	8.71	0.69	5.14	1.04	0.33	0.78	0.75	1814.79	12.33	1843.37	8.83	1875.78	12.37	1875.78	12.37	96.75
0619-MR-35 218	186.02	107418.09	1.14	8.69	0.64	5.15	1.02	0.33	0.80	0.78	1814.78	12.60	1845.22	8.68	1879.70	11.49	1879.70	11.49	96.55
0619-MR-35 269	208.27	4705356.29	1.88	8.61	0.53	5.44	0.87	0.34	0.69	0.79	1885.83	11.29	1891.23	7.49	1897.14	9.60	1897.14	9.60	99.40
0619-MR-35 227	226.05	112480.08	2.03	8.50	0.63	5.54	1.21	0.34	1.03	0.85	1894.01	16.87	1906.10	10.37	1919.26	11.29	1919.26	11.29	98.68
0619-MR-35 117	279.78	74896.96	2.64	8.31	0.50	5.88	0.87	0.35	0.70	0.81	1956.64	11.86	1958.65	7.51	1960.75	9.01	1960.75	9.01	99.79
0619-MR-35 45	75.49	105409.05	6.04	8.08	0.72	6.00	1.22	0.35	0.98	0.80	1941.41	16.40	1975.41	10.57	2011.20	12.79	2011.20	12.79	96.53
0619-MR-35 22	286.75	344023.07	2.67	7.86	0.50	6.31	0.71	0.36	0.50	0.71	1983.01	8.59	2020.26	6.21	2058.53	8.80	2058.53	8.80	96.33
0619-MR-35 263	113.98	1863668.15	4.98	7.74	0.67	6.45	1.04	0.36	0.80	0.77	1991.50	13.68	2038.54	9.16	2086.46	11.79	2086.46	11.79	95.45
0619-MR-35 250	65.44	63555.18	2.86	7.72	0.56	6.43	0.95	0.36	0.77	0.81	1982.48	13.13	2036.12	8.35	2090.91	9.80	2090.91	9.80	94.81
0619-MR-35 37	158.90	902176.33	10.63	7.69	0.62	7.12	1.29	0.40	1.13	0.88	2155.26	20.77	2126.29	11.52	2098.38	10.94	2098.38	10.94	102.71
0619-MR-35 102	131.45	84797.89	4.49	7.65	0.61	6.65	1.13	0.37	0.95	0.84	2026.10	16.43	2066.27	9.95	2106.56	10.77	2106.56	10.77	96.18
0619-MR-35 277	233.20	417202.98	4.44	7.65	0.51	6.62	0.88	0.37	0.72	0.82	2016.90	12.39	2061.61	7.73	2106.60	8.90	2106.60	8.90	95.74
0619-MR-35 110	43.14	901196.70	5.62	7.46	0.61	6.99	1.16	0.38	0.98	0.85	2067.97	17.35	2109.75	10.28	2150.72	10.73	2150.72	10.73	96.15
0619-MR-35 193	53.59	109201.47	1.84	6.32	0.61	9.47	0.97	0.43	0.76	0.78	2324.73	14.83	2384.75	8.94	2436.43	10.32	2436.43	10.32	95.42
0619-MR-35 21	928.46	1544351.61	9.43	6.02	0.50	10.36	1.07	0.45	0.95	0.88	2407.99	19.05	2467.44	9.93	2516.76	8.43	2516.76	8.43	95.68
0619-MR-35 113	22.44	20240.35	1.12	5.78	0.77	11.31	1.23	0.47	0.96	0.78	2501.35	19.98	2548.85	11.51	2586.85	12.87	2586.85	12.87	96.69
0619-MR-35 204	54.30	76328.09	1.10	5.59	0.69	12.15	1.10	0.49	0.86	0.78	2581.92	18.33	2616.40	10.35	2643.17	11.44	2643.17	11.44	97.68
0619-MR-35 231	51.72	49091.50	2.94	4.91	0.67	14.77	0.99	0.53	0.73	0.74	2725.69	16.30	2800.35	9.43	2854.55	10.87	2854.55	10.87	95.49

Sample 0619-MR-36

0619-MR-36 293	280.55	5754.78	2.31	21.55	1.84	0.13	1.99	0.02	0.77	0.39	130.38	1.00	124.68	2.34	17.32	44.12	130.38	1.00	NA
0619-MR-36 134	142.70	16758.89	2.75	20.93	2.13	0.15	2.26	0.02	0.75	0.33	141.11	1.05	138.15	2.92	87.66	50.57	141.11	1.05	NA
0619-MR-36 288	180.72	15048.77	1.51	21.19	2.41	0.14	2.58	0.02	0.93	0.36	141.95	1.31	137.34	3.32	58.32	57.42	141.95	1.31	NA
0619-MR-36 201	65.02	6927.52	1.99	20.80	3.05	0.15	3.21	0.02	1.02	0.32	142.19	1.43	139.94	4.20	102.00	72.06	142.19	1.43	NA
0619-MR-36 260	72.14	36429.53	2.75	18.78	2.16	0.16	2.42	0.02	1.11	0.46	142.24	1.56	153.97	3.46	338.53	48.83	142.24	1.56	NA
0619-MR-36 41	245.85	4945.25	2.87	15.40	2.62	0.20	2.80	0.02	0.98	0.35	143.51	1.39	186.35	4.76	771.18	55.18	143.51	1.39	NA
0619-MR-36 181	255.70	5608.84	1.81	21.60	2.06	0.14	2.24	0.02	0.88	0.39	143.67	1.25	136.45	2.86	12.56	49.58	143.67	1.25	NA
0619-MR-36 17	156.56	4324.19	2.24	21.20	1.65	0.15	1.91	0.02	0.97	0.51	144.51	1.38	139.62	2.49	57.13	39.29	144.51	1.38	NA
0619-MR-36 49	361.35	17311.47	7.91	20.83	1.26	0.15	1.49	0.02	0.80	0.54	145.09	1.15	142.48	1.98	99.15	29.79	145.09	1.15	NA
0619-MR-36 192	124.88	60939.06	2.24	18.99	2.49	0.17	2.77	0.02	1.21	0.44	145.69	1.74	155.82	4.00	312.81	56.71	145.69	1.74	NA
0619-MR-36 71	393.31	6860.48	1.82	21.06	1.35	0.15	1.58	0.02	0.82	0.52	145.84	1.19	141.68	2.09	72.47	32.16	145.84	1.19	NA
0619-MR-36 117	201.94	4367.23	2.23	21.86	4.10	0.14	4.24	0.02	1.05	0.25	145.96	1.51	136.91	5.43	NA	NA	145.96	1.51	NA
0619-MR-36 73	700.95	34614.62	1.53	19.80	1.16	0.16	1.55	0.02	1.04	0.67	147.07	1.51	151.27	2.18	217.54	26.75	147.07	1.51	NA
0619-MR-36 257	170.93	28986.17	2.79	20.20	1.57	0.16	1.71	0.02	0.66	0.39	147.31	0.96	148.69	2.36	170.68	36.72	147.31	0.96	NA
0619-MR-36 56	247.13	115304.50	2.09	20.30	1.67	0.16	1.89	0.02	0.89	0.47	147.36	1.30	148.06	2.61	159.18	39.06	147.36	1.30	NA
0619-MR-36 38	118.83	43542.79	2.60	21.12	1.98	0.15	2.14	0.02	0.83	0.39	147.45	1.20	142.78	2.85	65.85	47.01	147.45	1.20	NA
0619-MR-36 121	214.49	12863.73	2.36	20.44	1.84	0.16	2.03	0.02	0.87	0.43	147.92	1.27	147.62	2.79	142.86	43.14	147.92	1.27	NA
0619-MR-36 292	226.57	6351.19	2.05	21.22	2.38	0.15	2.55	0.02	0.91	0.36	148.07	1.33	142.70	3.39	54.40	56.81	148.07	1.33	NA
0619-MR-36 104	104.45	29927.22	2.18	21.85	1.79	0.15	2.11	0.02	1.12	0.53	148.18	1.64	138.97	2.74	NA	NA	148.18	1.64	NA

0619-MR-36 313	264.04	14126.40	1.73	18.59	1.56	0.17	1.85	0.02	1.00	0.54	148.20	1.46	161.48	2.76	360.98	35.16	148.20	1.46	NA
0619-MR-36 283	467.56	1767026.60	1.45	20.43	0.96	0.16	1.26	0.02	0.81	0.64	148.70	1.19	148.43	1.74	144.16	22.61	148.70	1.19	NA
0619-MR-36 18	278.27	96855.65	2.29	19.58	1.69	0.16	1.86	0.02	0.77	0.41	149.10	1.13	154.78	2.66	242.60	38.95	149.10	1.13	NA
0619-MR-36 308	268.81	18682.59	1.66	20.63	1.85	0.16	2.02	0.02	0.81	0.40	149.41	1.20	147.75	2.78	121.25	43.63	149.41	1.20	NA
0619-MR-36 199	802.37	82752.67	1.54	20.15	0.91	0.16	1.45	0.02	1.13	0.78	149.85	1.68	151.46	2.05	176.72	21.26	149.85	1.68	NA
0619-MR-36 297	143.39	123971.32	2.31	20.43	1.87	0.16	2.19	0.02	1.14	0.52	149.90	1.69	149.54	3.04	143.76	43.86	149.90	1.69	NA
0619-MR-36 172	448.35	11409.98	2.39	18.47	2.04	0.18	2.55	0.02	1.54	0.60	150.05	2.28	164.41	3.87	376.46	45.79	150.05	2.28	NA
0619-MR-36 55	141.28	23271.47	2.61	19.63	2.18	0.17	2.41	0.02	1.04	0.43	150.41	1.55	155.69	3.48	236.80	50.23	150.41	1.55	NA
0619-MR-36 187	184.44	6238.88	3.10	21.58	2.14	0.15	2.29	0.02	0.83	0.36	150.45	1.23	142.62	3.05	14.32	51.37	150.45	1.23	NA
0619-MR-36 83	211.48	12376.23	1.85	20.22	1.87	0.16	2.07	0.02	0.88	0.43	150.64	1.32	151.70	2.92	168.37	43.76	150.64	1.32	NA
0619-MR-36 14	189.71	12283.88	2.59	20.40	1.79	0.16	1.94	0.02	0.75	0.39	150.67	1.12	150.49	2.71	147.57	41.88	150.67	1.12	NA
0619-MR-36 125	227.12	17194.22	2.02	20.67	1.55	0.16	1.81	0.02	0.93	0.52	150.97	1.39	148.96	2.50	116.97	36.46	150.97	1.39	NA
0619-MR-36 166	153.62	7231.69	2.55	20.63	3.25	0.16	3.38	0.02	0.94	0.28	151.28	1.41	149.47	4.70	120.92	76.54	151.28	1.41	NA
0619-MR-36 115	361.97	61236.57	1.94	20.08	1.19	0.16	1.52	0.02	0.95	0.62	151.70	1.43	153.67	2.17	184.16	27.66	151.70	1.43	NA
0619-MR-36 10	515.82	7034.47	1.58	21.18	2.40	0.16	2.55	0.02	0.86	0.34	152.71	1.30	147.17	3.49	58.85	57.13	152.71	1.30	NA
0619-MR-36 127	564.01	19188.10	1.51	20.45	1.14	0.16	1.36	0.02	0.73	0.54	153.10	1.11	152.41	1.92	141.80	26.79	153.10	1.11	NA
0619-MR-36 43	507.38	43840.91	1.68	20.39	0.94	0.16	1.47	0.02	1.13	0.77	153.30	1.71	153.00	2.09	148.33	22.11	153.30	1.71	NA
0619-MR-36 5	1074.63	24948.49	1.84	20.54	0.92	0.16	1.50	0.02	1.18	0.79	153.63	1.79	152.31	2.11	131.85	21.69	153.63	1.79	NA
0619-MR-36 170	287.42	17155.44	1.97	20.39	1.31	0.16	1.58	0.02	0.89	0.56	153.82	1.36	153.50	2.25	148.55	30.60	153.82	1.36	NA
0619-MR-36 118	939.84	76589.19	44.65	20.29	0.83	0.16	1.40	0.02	1.12	0.80	154.51	1.72	154.85	2.01	160.07	19.39	154.51	1.72	NA
0619-MR-36 229	154.77	117307.38	2.67	19.54	2.07	0.17	2.22	0.02	0.80	0.36	155.55	1.22	161.42	3.31	248.37	47.58	155.55	1.22	NA
0619-MR-36 128	289.85	8399.24	2.05	20.71	2.15	0.16	2.38	0.02	1.02	0.43	155.86	1.58	153.20	3.39	112.28	50.75	155.86	1.58	NA
0619-MR-36 259	285.08	18438.05	2.31	20.74	1.72	0.16	1.95	0.02	0.91	0.47	156.34	1.41	153.46	2.77	109.22	40.65	156.34	1.41	NA
0619-MR-36 44	204.07	14714.61	1.21	20.22	2.05	0.17	2.23	0.02	0.87	0.39	157.16	1.36	157.90	3.26	169.01	47.95	157.16	1.36	NA
0619-MR-36 291	371.47	29272.43	2.42	20.11	1.15	0.17	1.42	0.02	0.83	0.58	157.47	1.29	158.97	2.09	181.42	26.87	157.47	1.29	NA
0619-MR-36 6	288.24	7364.16	2.38	21.17	1.90	0.16	2.03	0.02	0.72	0.35	158.83	1.13	152.80	2.88	60.29	45.23	158.83	1.13	NA
0619-MR-36 40	371.13	7613.70	3.45	20.96	1.25	0.17	1.49	0.03	0.80	0.54	160.26	1.27	155.54	2.14	84.26	29.71	160.26	1.27	NA
0619-MR-36 301	306.61	15824.89	2.25	20.36	1.24	0.17	1.56	0.03	0.94	0.60	160.72	1.49	160.23	2.31	152.89	29.12	160.72	1.49	NA
0619-MR-36 2	315.12	14086.74	2.30	20.92	1.45	0.17	1.67	0.03	0.82	0.49	160.86	1.30	156.32	2.42	87.96	34.43	160.86	1.30	NA
0619-MR-36 133	813.00	28130.24	1.25	20.66	0.96	0.17	1.44	0.03	1.07	0.75	162.42	1.72	159.63	2.12	118.32	22.56	162.42	1.72	NA
0619-MR-36 232	632.32	34216.54	1.45	20.33	1.09	0.17	1.50	0.03	1.03	0.68	162.69	1.65	162.24	2.25	155.68	25.58	162.69	1.65	NA
0619-MR-36 11	548.24	17735.52	2.74	20.62	0.85	0.17	1.06	0.03	0.63	0.60	163.03	1.02	160.43	1.57	122.21	20.01	163.03	1.02	NA
0619-MR-36 304	190.78	7407.07	1.47	21.18	1.87	0.17	2.03	0.03	0.80	0.40	163.14	1.30	156.63	2.95	59.26	44.53	163.14	1.30	NA
0619-MR-36 123	1104.58	40807.46	4.96	20.31	0.75	0.18	1.32	0.03	1.08	0.82	164.24	1.76	163.81	1.99	157.58	17.56	164.24	1.76	NA
0619-MR-36 171	535.66	14819.63	3.55	20.82	1.41	0.17	1.68	0.03	0.92	0.54	164.36	1.49	160.26	2.50	100.01	33.43	164.36	1.49	NA
0619-MR-36 3	938.50	45236.52	2.54	20.27	0.77	0.18	1.33	0.03	1.09	0.82	165.08	1.77	164.91	2.03	162.35	17.89	165.08	1.77	NA
0619-MR-36 57	368.27	20380.66	33.78	20.56	1.22	0.17	1.50	0.03	0.88	0.59	165.48	1.44	163.11	2.26	128.86	28.61	165.48	1.44	NA
0619-MR-36 196	289.94	6926.41	1.68	19.83	1.68	0.18	1.90	0.03	0.88	0.46	166.35	1.44	169.48	2.97	213.42	39.05	166.35	1.44	NA
0619-MR-36 299	233.05	9662.08	2.21	20.56	1.71	0.18	1.92	0.03	0.88	0.46	166.69	1.44	164.25	2.91	129.20	40.12	166.69	1.44	NA
0619-MR-36 242	543.84	116724.91	2.77	20.42	0.93	0.18	1.27	0.03	0.87	0.69	167.58	1.44	166.11	1.95	145.12	21.76	167.58	1.44	NA

0619-MR-36 151	342.16	56116.83	3.03	20.34	1.28	0.18	1.54	0.03	0.85	0.55	167.68	1.41	166.81	2.36	154.61	29.95	167.68	1.41	NA
0619-MR-36 26	243.78	109893.20	1.93	19.86	1.41	0.18	1.60	0.03	0.75	0.47	168.25	1.25	171.07	2.51	210.31	32.67	168.25	1.25	NA
0619-MR-36 215	586.27	17129.11	1.48	20.26	1.21	0.18	1.73	0.03	1.24	0.72	168.31	2.05	168.05	2.67	164.32	28.21	168.31	2.05	NA
0619-MR-36 282	488.36	78657.31	1.47	20.45	1.11	0.18	1.40	0.03	0.85	0.61	169.28	1.43	167.45	2.17	141.53	26.14	169.28	1.43	NA
0619-MR-36 207	735.69	14097.22	4.03	20.54	0.81	0.18	1.20	0.03	0.88	0.74	169.52	1.48	167.02	1.84	131.68	19.06	169.52	1.48	NA
0619-MR-36 22	377.95	11038.30	1.64	20.90	1.11	0.18	1.29	0.03	0.66	0.51	170.77	1.11	165.52	1.97	90.98	26.28	170.77	1.11	NA
0619-MR-36 32	1203.62	44217.75	1.69	19.91	0.76	0.19	1.29	0.03	1.03	0.80	174.18	1.78	176.29	2.08	204.73	17.74	174.18	1.78	NA
0619-MR-36 47	371.09	37751.12	1.81	20.40	1.16	0.19	1.30	0.03	0.59	0.46	176.09	1.03	174.14	2.08	147.80	27.16	176.09	1.03	NA
0619-MR-36 270	331.60	26091.84	1.99	20.25	1.35	0.20	1.53	0.03	0.73	0.48	186.12	1.34	184.60	2.59	165.20	31.51	186.12	1.34	NA
0619-MR-36 68	330.94	35369.34	1.63	20.30	1.03	0.20	1.34	0.03	0.85	0.63	186.98	1.56	184.98	2.26	159.62	24.19	186.98	1.56	NA
0619-MR-36 66	572.70	60488.59	2.04	19.90	0.90	0.20	1.25	0.03	0.87	0.69	187.16	1.60	188.53	2.16	205.75	20.97	187.16	1.60	NA
0619-MR-36 8	202.51	71070.01	3.41	19.64	1.59	0.21	1.81	0.03	0.85	0.47	187.35	1.56	191.02	3.14	236.60	36.79	187.35	1.56	NA
0619-MR-36 107	398.45	12047.82	2.51	20.89	1.23	0.20	1.40	0.03	0.67	0.48	188.02	1.25	181.08	2.32	91.36	29.09	188.02	1.25	NA
0619-MR-36 239	471.58	14422.07	1.43	19.93	1.12	0.21	1.28	0.03	0.62	0.49	190.71	1.17	191.55	2.23	202.06	25.93	190.71	1.17	NA
0619-MR-36 36	173.14	27418.13	3.07	20.27	1.71	0.21	1.93	0.03	0.91	0.47	193.65	1.73	191.28	3.37	162.14	39.94	193.65	1.73	NA
0619-MR-36 92	332.79	48679.60	2.48	20.38	1.28	0.21	1.75	0.03	1.19	0.68	193.84	2.27	190.57	3.03	150.19	29.96	193.84	2.27	NA
0619-MR-36 27	75.22	26058.47	3.58	20.28	2.12	0.21	2.41	0.03	1.15	0.48	193.95	2.20	191.52	4.21	161.63	49.53	193.95	2.20	NA
0619-MR-36 263	325.57	44763.60	2.65	19.81	1.16	0.21	1.39	0.03	0.77	0.56	194.08	1.48	195.81	2.48	216.69	26.84	194.08	1.48	NA
0619-MR-36 64	424.23	27599.27	1.68	20.08	0.90	0.21	1.31	0.03	0.95	0.72	195.68	1.82	194.80	2.32	184.25	21.07	195.68	1.82	NA
0619-MR-36 139	205.57	31567.71	2.51	20.25	1.26	0.21	1.61	0.03	1.00	0.62	196.02	1.93	193.63	2.83	164.46	29.36	196.02	1.93	NA
0619-MR-36 243	641.44	24709.20	3.84	20.31	0.95	0.21	1.30	0.03	0.89	0.69	196.45	1.73	193.51	2.29	157.80	22.12	196.45	1.73	NA
0619-MR-36 30	226.45	22645.53	2.18	20.04	1.40	0.21	1.54	0.03	0.62	0.41	196.47	1.21	195.92	2.74	189.20	32.71	196.47	1.21	NA
0619-MR-36 287	317.95	12939.96	2.55	20.19	1.20	0.21	1.51	0.03	0.92	0.61	197.04	1.79	195.14	2.68	172.15	27.95	197.04	1.79	NA
0619-MR-36 120	436.28	21566.43	2.62	20.04	1.20	0.21	1.56	0.03	0.99	0.64	197.81	1.94	197.16	2.79	189.32	27.86	197.81	1.94	NA
0619-MR-36 224	238.67	23508.65	2.59	19.81	1.40	0.22	1.62	0.03	0.82	0.50	199.92	1.61	201.22	2.96	216.44	32.44	199.92	1.61	NA
0619-MR-36 177	230.41	9533.98	2.84	20.88	1.23	0.21	1.56	0.03	0.95	0.61	202.97	1.91	194.49	2.76	92.82	29.19	202.97	1.91	NA
0619-MR-36 289	565.60	20253.87	4.98	18.09	1.48	0.24	2.16	0.03	1.58	0.73	203.91	3.16	222.38	4.32	422.64	33.13	203.91	3.16	NA
0619-MR-36 140	219.48	41181.85	2.48	19.96	1.18	0.22	1.42	0.03	0.79	0.56	204.33	1.59	203.86	2.63	198.48	27.51	204.33	1.59	NA
0619-MR-36 7	581.33	47878.78	1.91	20.27	0.85	0.22	1.42	0.03	1.13	0.80	204.62	2.27	201.35	2.59	163.19	19.97	204.62	2.27	NA
0619-MR-36 231	503.44	32469.76	1.75	20.31	0.89	0.22	1.16	0.03	0.75	0.65	205.08	1.52	201.41	2.13	158.68	20.75	205.08	1.52	NA
0619-MR-36 34	410.36	48068.75	0.77	19.74	1.18	0.24	1.45	0.03	0.84	0.58	218.31	1.80	218.77	2.85	223.75	27.24	218.31	1.80	NA
0619-MR-36 290	175.34	16102.10	2.81	19.96	1.46	0.24	1.69	0.03	0.84	0.50	220.09	1.81	218.26	3.31	198.55	34.00	220.09	1.81	NA
0619-MR-36 84	380.60	64096.47	0.53	19.36	1.21	0.25	1.41	0.04	0.73	0.51	226.80	1.62	230.59	2.92	269.33	27.84	226.80	1.62	NA
0619-MR-36 60	494.32	20301.86	2.40	19.59	1.02	0.26	1.40	0.04	0.96	0.68	232.10	2.18	232.96	2.90	241.62	23.44	232.10	2.18	NA
0619-MR-36 209	674.64	50757.45	1.82	19.61	0.72	0.27	1.29	0.04	1.07	0.83	240.53	2.54	240.42	2.76	239.31	16.47	240.53	2.54	NA
0619-MR-36 294	713.06	243077.90	1.74	19.41	0.78	0.28	1.26	0.04	0.99	0.79	248.09	2.42	249.52	2.80	263.01	17.95	248.09	2.42	NA
0619-MR-36 98	528.72	131899.09	1.82	19.51	0.96	0.29	1.24	0.04	0.79	0.63	257.14	1.99	256.60	2.81	251.67	22.06	257.14	1.99	NA
0619-MR-36 200	76.80	14698.64	2.21	19.75	2.53	0.30	3.17	0.04	1.91	0.60	271.87	5.09	266.83	7.43	222.74	58.43	271.87	5.09	NA
0619-MR-36 212	182.76	17501.92	1.41	18.39	1.11	0.37	1.34	0.05	0.74	0.56	309.02	2.24	318.23	3.65	386.15	24.95	309.02	2.24	NA
0619-MR-36 280	227.67	27887.59	2.35	19.22	0.79	0.36	1.10	0.05	0.76	0.69	315.80	2.33	312.27	2.95	285.96	18.14	315.80	2.33	NA

0619-MR-36 246	421.99	35613.32	1.29	18.72	0.91	0.37	1.18	0.05	0.76	0.64	316.60	2.34	320.08	3.24	345.53	20.49	316.60	2.34	NA
0619-MR-36 130	757.91	93035.80	4.83	19.10	0.74	0.37	1.27	0.05	1.03	0.81	324.08	3.27	321.18	3.50	300.23	16.80	324.08	3.27	NA
0619-MR-36 284	1142.64	179128.21	4.40	18.71	0.53	0.39	1.23	0.05	1.11	0.90	331.07	3.57	333.11	3.48	347.35	11.87	331.07	3.57	NA
0619-MR-36 173	223.24	15777.21	3.12	18.85	1.03	0.39	1.31	0.05	0.81	0.62	336.09	2.64	335.29	3.73	329.72	23.34	336.09	2.64	NA
0619-MR-36 37	228.40	57338.00	1.13	18.35	1.16	0.41	1.35	0.05	0.69	0.51	339.07	2.28	345.77	3.96	391.05	26.11	339.07	2.28	NA
0619-MR-36 99	510.67	44463.63	1.57	18.78	0.70	0.41	0.96	0.06	0.65	0.68	351.58	2.24	349.83	2.83	338.26	15.78	351.58	2.24	NA
0619-MR-36 129	611.93	112694.56	1.71	18.56	0.87	0.43	1.45	0.06	1.15	0.80	361.88	4.06	362.32	4.41	365.13	19.68	361.88	4.06	NA
0619-MR-36 112	393.80	111308.71	1.51	18.42	0.73	0.43	1.09	0.06	0.80	0.74	362.57	2.83	365.19	3.33	381.84	16.38	362.57	2.83	NA
0619-MR-36 167	876.68	53267.95	10.15	18.58	0.72	0.43	1.19	0.06	0.95	0.80	363.44	3.35	363.27	3.63	362.15	16.13	363.44	3.35	NA
0619-MR-36 186	389.85	40578.38	2.14	18.34	0.75	0.44	1.10	0.06	0.80	0.73	364.88	2.85	368.50	3.40	391.28	16.84	364.88	2.85	NA
0619-MR-36 249	604.09	31384.85	13.71	18.38	0.77	0.44	1.23	0.06	0.96	0.78	371.03	3.45	373.18	3.84	386.53	17.32	371.03	3.45	NA
0619-MR-36 45	280.37	104694.13	0.87	18.57	0.91	0.44	1.17	0.06	0.74	0.63	373.94	2.68	372.60	3.65	364.25	20.54	373.94	2.68	NA
0619-MR-36 286	267.57	107156.58	0.66	18.06	0.78	0.49	1.00	0.06	0.62	0.62	398.84	2.40	402.82	3.32	425.72	17.40	398.84	2.40	NA
0619-MR-36 302	501.56	65139.04	7.17	18.21	0.83	0.49	1.20	0.06	0.87	0.72	401.45	3.38	402.47	3.98	408.35	18.48	401.45	3.38	98.31
0619-MR-36 131	273.55	46356.87	3.37	18.25	0.85	0.49	1.14	0.06	0.76	0.67	404.87	2.99	404.55	3.81	402.68	19.05	404.87	2.99	100.54
0619-MR-36 147	128.03	10689.98	2.39	18.35	1.25	0.49	1.65	0.06	1.07	0.65	405.86	4.21	403.55	5.49	390.33	28.17	405.86	4.21	103.98
0619-MR-36 213	128.72	16350.52	0.84	18.80	1.22	0.49	1.56	0.07	0.97	0.62	415.45	3.89	403.61	5.19	336.40	27.70	415.45	3.89	123.50
0619-MR-36 194	295.45	296306.13	1.91	18.11	0.98	0.51	1.25	0.07	0.77	0.62	417.22	3.13	417.66	4.28	420.04	21.92	417.22	3.13	99.33
0619-MR-36 136	191.03	183828.29	0.73	17.82	0.93	0.54	1.10	0.07	0.58	0.53	434.75	2.46	438.19	3.90	456.28	20.57	434.75	2.46	95.28
0619-MR-36 250	215.18	16962.98	0.92	17.72	0.73	0.56	1.02	0.07	0.71	0.70	451.06	3.10	453.99	3.74	468.84	16.25	451.06	3.10	96.21
0619-MR-36 226	587.74	53263.11	1.32	17.58	0.55	0.60	1.21	0.08	1.08	0.89	476.37	4.94	478.12	4.61	486.56	12.26	476.37	4.94	97.90
0619-MR-36 90	532.82	300433.67	3.45	17.32	0.57	0.62	0.93	0.08	0.74	0.79	481.37	3.42	487.86	3.61	518.40	12.48	481.37	3.42	92.86
0619-MR-36 97	375.44	45238.80	2.67	17.37	0.84	0.62	1.24	0.08	0.91	0.73	485.34	4.26	490.15	4.82	512.69	18.52	485.34	4.26	94.67
0619-MR-36 275	281.76	94501.81	1.06	17.53	0.96	0.62	1.17	0.08	0.68	0.58	485.77	3.17	486.81	4.53	491.70	21.11	485.77	3.17	98.79
0619-MR-36 238	189.37	46736.37	1.43	17.40	0.77	0.63	1.11	0.08	0.80	0.72	491.08	3.78	494.21	4.33	508.75	16.86	491.08	3.78	96.53
0619-MR-36 175	471.41	184393.96	1.76	17.54	0.65	0.62	0.99	0.08	0.74	0.75	493.35	3.53	492.85	3.86	490.52	14.40	493.35	3.53	100.58
0619-MR-36 50	216.45	10476.91	2.17	17.73	1.08	0.64	1.41	0.08	0.91	0.64	513.03	4.48	504.83	5.61	467.86	23.90	513.03	4.48	109.65
0619-MR-36 195	67.03	10364.72	0.89	17.44	1.82	0.66	1.99	0.08	0.81	0.41	515.90	4.04	513.75	8.04	504.17	40.09	515.90	4.04	102.33
0619-MR-36 25	380.63	100954.76	3.71	15.01	1.04	0.77	1.60	0.08	1.22	0.76	520.63	6.10	581.16	7.09	825.41	21.68	520.63	6.10	63.07
0619-MR-36 312	180.89	38460.79	8.32	17.38	1.24	0.67	1.44	0.08	0.74	0.52	521.18	3.73	519.37	5.87	511.42	27.14	521.18	3.73	101.91
0619-MR-36 109	147.23	44917.93	1.05	16.99	0.81	0.71	1.33	0.09	1.06	0.79	539.92	5.49	544.05	5.62	561.39	17.69	539.92	5.49	96.17
0619-MR-36 223	920.74	126834.25	2.23	16.85	0.76	0.73	1.39	0.09	1.17	0.84	548.20	6.15	554.24	5.95	579.10	16.48	548.20	6.15	94.66
0619-MR-36 255	120.25	23705.66	3.33	17.28	1.10	0.71	1.41	0.09	0.88	0.63	548.93	4.63	543.99	5.93	523.32	24.09	548.93	4.63	104.89
0619-MR-36 264	212.31	64993220.99	1.22	16.68	0.92	0.74	1.23	0.09	0.82	0.66	553.54	4.35	562.80	5.34	600.41	19.99	553.54	4.35	92.19
0619-MR-36 230	371.95	198767.13	3.32	16.91	0.74	0.74	0.91	0.09	0.53	0.59	560.14	2.86	562.37	3.92	571.41	16.00	560.14	2.86	98.03
0619-MR-36 311	236.94	93265.01	1.64	17.15	0.69	0.73	1.09	0.09	0.85	0.78	563.92	4.58	559.38	4.70	540.96	15.09	563.92	4.58	104.24
0619-MR-36 306	282.74	123641.33	1.66	16.73	0.56	0.76	1.16	0.09	1.02	0.88	570.46	5.55	575.37	5.09	594.82	12.09	570.46	5.55	95.91
0619-MR-36 101	246.23	78596.89	1.31	16.37	0.67	0.78	1.20	0.09	0.99	0.83	570.57	5.40	585.04	5.32	641.61	14.49	570.57	5.40	88.93
0619-MR-36 233	226.63	25302.29	0.84	16.40	0.98	0.80	1.23	0.09	0.74	0.60	584.29	4.11	595.20	5.52	637.04	21.14	584.29	4.11	91.72
0619-MR-36 300	319.60	68399.65	1.30	16.66	0.58	0.80	1.00	0.10	0.82	0.82	593.68	4.64	595.65	4.52	603.12	12.54	593.68	4.64	98.43

0619-MR-36 63	466.19	94874.93	1.76	16.63	0.61	0.80	1.01	0.10	0.80	0.80	595.32	4.57	597.91	4.55	607.71	13.10	595.32	4.57	97.96
0619-MR-36 156	63.34	107206.6 6	0.94	16.38	1.09	0.81	1.39	0.10	0.86	0.62	595.96	4.89	605.21	6.33	640.02	23.47	595.96	4.89	93.12
0619-MR-36 279	431.21	103478.9 9	2.03	16.72	0.64	0.80	1.41	0.10	1.26	0.89	597.05	7.17	596.74	6.36	595.52	13.80	597.05	7.17	100.26
0619-MR-36 100	395.47	116095.9 7	6.37	16.77	0.70	0.80	0.99	0.10	0.70	0.71	599.56	4.03	597.41	4.47	589.25	15.07	599.56	4.03	101.75
0619-MR-36 262	126.13	29313.44	1.82	16.68	1.12	0.81	1.49	0.10	0.98	0.66	599.78	5.59	599.90	6.74	600.34	24.31	599.78	5.59	99.91
0619-MR-36 53	134.15	428803.7 3	1.40	16.69	0.94	0.81	1.14	0.10	0.64	0.57	603.50	3.71	602.65	5.18	599.42	20.37	603.50	3.71	100.68
0619-MR-36 258	438.65	25215.58	0.85	16.75	0.62	0.81	0.95	0.10	0.71	0.75	606.60	4.13	603.57	4.31	592.19	13.51	606.60	4.13	102.43
0619-MR-36 298	127.14	14226.73	0.71	16.70	1.13	0.82	1.33	0.10	0.70	0.53	607.50	4.07	605.63	6.07	598.65	24.49	607.50	4.07	101.48
0619-MR-36 240	169.58	74899.99	1.41	16.61	0.69	0.82	1.08	0.10	0.83	0.77	608.81	4.80	609.17	4.93	610.50	14.87	608.81	4.80	99.72
0619-MR-36 183	89.23	30890.80	0.90	16.53	1.32	0.83	1.65	0.10	0.99	0.60	609.40	5.75	611.64	7.59	619.93	28.55	609.40	5.75	98.30
0619-MR-36 218	325.41	15495.93	2.23	15.22	2.81	0.90	2.97	0.10	0.94	0.32	611.78	5.49	652.41	14.2 7	795.60	58.97	611.78	5.49	76.89
0619-MR-36 137	184.40	25976.14	2.26	16.66	0.88	0.82	1.29	0.10	0.95	0.73	612.38	5.54	610.36	5.92	602.87	18.93	612.38	5.54	101.58
0619-MR-36 266	261.86	31727.14	1.56	15.62	1.84	0.88	1.97	0.10	0.71	0.36	613.66	4.15	641.69	9.36	741.61	38.82	613.66	4.15	82.75
0619-MR-36 138	372.81	161211.7 0	0.62	16.24	0.85	0.85	1.25	0.10	0.91	0.73	614.24	5.31	623.88	5.80	659.04	18.29	614.24	5.31	93.20
0619-MR-36 81	216.29	81539.82	1.16	16.41	0.83	0.85	1.12	0.10	0.75	0.67	622.24	4.46	625.26	5.23	636.20	17.89	622.24	4.46	97.81
0619-MR-36 96	117.35	12896.02	1.42	17.07	1.21	0.82	1.49	0.10	0.86	0.58	622.49	5.10	607.16	6.79	550.35	26.49	622.49	5.10	113.11
0619-MR-36 110	241.22	306564.0 9	1.56	16.53	0.73	0.85	1.18	0.10	0.93	0.79	627.17	5.54	625.58	5.50	619.80	15.69	627.17	5.54	101.19
0619-MR-36 193	341.83	101254.6 6	3.04	16.59	0.69	0.85	0.97	0.10	0.68	0.70	628.62	4.07	625.13	4.52	612.48	14.87	628.62	4.07	102.64
0619-MR-36 48	46.45	11323.63	3.14	16.10	1.46	0.88	1.73	0.10	0.93	0.54	628.77	5.56	639.43	8.21	677.24	31.24	628.77	5.56	92.84
0619-MR-36 179	284.18	166075.0 3	0.97	16.15	0.96	0.88	1.31	0.10	0.90	0.69	633.24	5.44	641.49	6.25	670.63	20.45	633.24	5.44	94.42
0619-MR-36 208	76.11	48177.90	1.06	16.07	0.95	0.89	1.22	0.10	0.77	0.63	633.89	4.62	644.23	5.80	680.64	20.22	633.89	4.62	93.13
0619-MR-36 74	249.01	86430.76	1.22	16.38	0.76	0.87	1.21	0.10	0.94	0.78	635.77	5.71	636.68	5.73	639.94	16.34	635.77	5.71	99.35
0619-MR-36 91	217.51	22117.71	1.17	16.53	0.80	0.87	0.98	0.10	0.57	0.58	636.89	3.46	633.24	4.62	620.22	17.22	636.89	3.46	102.69
0619-MR-36 278	50.15	5192.65	1.40	17.44	2.14	0.84	2.35	0.11	0.99	0.42	652.92	6.13	620.56	10.9 3	504.22	47.06	652.92	6.13	129.49
0619-MR-36 227	196.78	2956738. 77	2.88	15.90	0.73	0.93	0.97	0.11	0.64	0.66	659.37	4.00	669.58	4.77	704.07	15.62	659.37	4.00	93.65
0619-MR-36 271	528.61	276179.3 5	1.49	15.87	0.49	0.95	0.90	0.11	0.76	0.84	671.06	4.83	679.58	4.46	707.90	10.31	671.06	4.83	94.80
0619-MR-36 273	306.64	332406.8 4	7.20	15.94	0.59	0.95	1.10	0.11	0.93	0.84	675.00	5.94	680.53	5.44	698.82	12.51	675.00	5.94	96.59
0619-MR-36 106	418.48	439159.4 0	1.74	15.81	0.71	0.99	1.07	0.11	0.80	0.74	695.73	5.25	700.48	5.41	715.73	15.16	695.73	5.25	97.20
0619-MR-36 216	210.15	32255.24	1.32	15.83	0.61	1.04	1.01	0.12	0.81	0.80	729.79	5.56	725.56	5.24	712.55	12.96	729.79	5.56	102.42
0619-MR-36 277	279.81	287538.5 5	0.76	15.13	0.74	1.12	1.17	0.12	0.90	0.77	750.09	6.40	764.81	6.27	808.04	15.45	750.09	6.40	92.83
0619-MR-36 67	581.36	360742.7 6	2.92	15.13	0.56	1.16	1.04	0.13	0.88	0.84	771.10	6.37	780.82	5.66	808.67	11.67	771.10	6.37	95.35
0619-MR-36 19	297.74	40547.89	2.60	14.91	0.78	1.27	1.04	0.14	0.68	0.66	828.75	5.29	831.70	5.88	839.61	16.27	828.75	5.29	98.71
0619-MR-36 214	167.79	41757.34	1.65	14.11	0.66	1.53	0.96	0.16	0.70	0.73	935.25	6.06	940.57	5.86	953.03	13.39	953.03	13.39	98.13
0619-MR-36 124	182.52	100704.5 5	1.37	13.95	0.63	1.62	1.02	0.16	0.80	0.78	976.11	7.24	976.14	6.39	976.21	12.87	976.21	12.87	99.99
0619-MR-36 141	234.03	37883.59	9.78	13.94	0.67	1.61	1.03	0.16	0.78	0.76	970.43	7.05	972.84	6.43	978.27	13.57	978.27	13.57	99.20
0619-MR-36 122	124.87	56097.82	1.70	13.86	0.87	1.66	1.12	0.17	0.70	0.63	995.76	6.48	993.71	7.11	989.22	17.76	989.22	17.76	100.66
0619-MR-36 108	134.17	86874.65	1.20	13.77	0.67	1.74	0.95	0.17	0.68	0.71	1034.9 7	6.48	1024.5 9	6.15	1002.4 9	13.58	1002.4 9	13.58	103.24
0619-MR-36 202	850.36	318918.6 1	9.29	13.76	0.57	1.69	1.30	0.17	1.16	0.90	1005.6 7	10.83	1005.2 2	8.27	1004.2 1	11.62	1004.2 1	11.62	100.15
0619-MR-36 205	118.72	359751.1 3	2.15	13.76	0.83	1.59	1.26	0.16	0.95	0.76	952.19	8.45	968.17	7.88	1004.6 2	16.78	1004.6 2	16.78	94.78
0619-MR-36 267	132.71	46885.23	2.09	13.75	0.77	1.69	1.21	0.17	0.94	0.77	1002.2 0	8.72	1003.0 7	7.74	1004.9 4	15.59	1004.9 4	15.59	99.73

0619-MR-36 307	76.47	37868.51	1.26	13.74	0.96	1.77	1.23	0.18	0.78	0.63	1047.81	7.52	1034.62	8.00	1006.82	19.42	1006.82	19.42	104.07
0619-MR-36 85	183.53	235381.92	1.18	13.73	0.81	1.68	1.08	0.17	0.71	0.66	997.95	6.58	1001.16	6.85	1008.17	16.37	1008.17	16.37	98.99
0619-MR-36 309	174.02	108034.59	2.97	13.71	0.75	1.65	1.19	0.16	0.92	0.77	979.12	8.36	989.20	7.52	1011.61	15.29	1011.61	15.29	96.79
0619-MR-36 241	161.14	91440.85	3.19	13.65	0.70	1.72	1.01	0.17	0.72	0.72	1013.89	6.76	1015.76	6.46	1019.78	14.23	1019.78	14.23	99.42
0619-MR-36 28	130.76	82630.59	2.49	13.61	0.77	1.62	1.34	0.16	1.10	0.82	959.06	9.77	979.71	8.40	1026.28	15.49	1026.28	15.49	93.45
0619-MR-36 70	356.52	236196.11	2.93	13.58	0.56	1.72	0.96	0.17	0.78	0.81	1010.90	7.28	1016.96	6.16	1030.01	11.31	1030.01	11.31	98.14
0619-MR-36 276	483.70	88580.24	3.30	13.57	0.67	1.73	0.98	0.17	0.71	0.73	1011.83	6.66	1018.35	6.29	1032.38	13.61	1032.38	13.61	98.01
0619-MR-36 247	194.44	46640.94	2.11	13.57	0.83	1.68	1.29	0.17	0.99	0.77	986.88	9.05	1001.17	8.20	1032.58	16.70	1032.58	16.70	95.57
0619-MR-36 95	193.33	55210.13	3.03	13.52	0.83	1.77	1.24	0.17	0.92	0.74	1030.47	8.80	1033.18	8.05	1038.91	16.77	1038.91	16.77	99.19
0619-MR-36 76	83.54	31838.22	1.12	13.48	0.85	1.78	1.09	0.17	0.69	0.63	1031.75	6.54	1036.37	7.09	1046.15	17.16	1046.15	17.16	98.62
0619-MR-36 145	621.63	206202.34	3.05	13.47	0.66	1.79	1.34	0.17	1.17	0.87	1038.34	11.22	1041.30	8.75	1047.52	13.33	1047.52	13.33	99.12
0619-MR-36 103	1118.84	546969.78	6.88	13.43	0.63	1.69	1.23	0.16	1.06	0.86	983.13	9.62	1005.25	7.83	1053.81	12.64	1053.81	12.64	93.29
0619-MR-36 159	1892.35	1531867.21	9.26	13.41	0.51	1.72	1.00	0.17	0.86	0.86	999.46	7.96	1017.45	6.43	1056.36	10.33	1056.36	10.33	94.61
0619-MR-36 148	900.80	219406.15	3.27	13.40	0.65	1.70	1.53	0.17	1.38	0.90	985.14	12.63	1007.73	9.76	1057.20	13.09	1057.20	13.09	93.18
0619-MR-36 46	76.91	70575.42	1.42	13.35	0.78	1.93	1.20	0.19	0.91	0.76	1104.85	9.27	1091.78	8.03	1065.83	15.65	1065.83	15.65	103.66
0619-MR-36 162	319.85	78174.92	5.80	13.32	0.60	1.87	1.03	0.18	0.83	0.81	1068.70	8.19	1068.92	6.79	1069.40	12.10	1069.40	12.10	99.94
0619-MR-36 164	271.66	380513.07	3.37	13.32	0.65	1.67	1.11	0.16	0.90	0.81	966.48	8.05	998.64	7.05	1069.94	13.07	1069.94	13.07	90.33
0619-MR-36 197	267.47	252948.75	1.34	13.31	0.68	1.84	1.11	0.18	0.88	0.79	1056.50	8.56	1061.26	7.29	1071.07	13.55	1071.07	13.55	98.64
0619-MR-36 149	176.80	30385.85	5.88	13.31	0.88	1.83	1.21	0.18	0.83	0.69	1047.47	8.07	1055.42	7.97	1071.92	17.69	1071.92	17.69	97.72
0619-MR-36 182	61.28	97780.95	1.88	13.30	0.96	1.87	1.30	0.18	0.88	0.67	1067.30	8.63	1068.88	8.60	1072.10	19.28	1072.10	19.28	99.55
0619-MR-36 61	67.15	14805.86	1.81	13.30	0.97	1.88	1.29	0.18	0.85	0.66	1075.76	8.40	1074.94	8.56	1073.28	19.54	1073.28	19.54	100.23
0619-MR-36 51	211.51	139427.16	1.21	13.22	0.63	1.91	0.89	0.18	0.63	0.71	1083.06	6.25	1083.65	5.90	1084.85	12.56	1084.85	12.56	99.84
0619-MR-36 295	59.27	410392.43	1.20	13.21	1.09	1.85	1.39	0.18	0.86	0.62	1051.54	8.33	1062.72	9.14	1085.77	21.81	1085.77	21.81	96.85
0619-MR-36 105	149.99	22977.51	1.59	13.19	0.71	1.88	1.09	0.18	0.82	0.76	1065.42	8.07	1073.10	7.20	1088.70	14.23	1088.70	14.23	97.86
0619-MR-36 153	315.78	41730.44	3.20	13.19	0.65	1.91	0.96	0.18	0.71	0.74	1083.30	7.12	1085.27	6.42	1089.22	12.92	1089.22	12.92	99.46
0619-MR-36 59	144.73	249656.56	2.09	13.15	0.61	1.96	1.07	0.19	0.88	0.82	1103.97	8.88	1101.25	7.18	1095.85	12.27	1095.85	12.27	100.74
0619-MR-36 189	1128.27	88594.90	2.92	13.14	0.69	1.79	1.13	0.17	0.90	0.79	1017.17	8.44	1042.82	7.36	1096.98	13.74	1096.98	13.74	92.72
0619-MR-36 1	360.95	215539.36	1.93	13.10	0.57	1.97	0.85	0.19	0.63	0.74	1107.46	6.40	1105.99	5.70	1103.11	11.34	1103.11	11.34	100.39
0619-MR-36 69	43.26	165345.92	1.18	12.97	0.97	1.96	1.21	0.18	0.73	0.60	1093.06	7.35	1103.14	8.16	1123.05	19.29	1123.05	19.29	97.33
0619-MR-36 29	271.70	51446.29	1.62	12.90	0.65	2.00	0.99	0.19	0.74	0.75	1103.93	7.54	1114.11	6.68	1134.06	12.92	1134.06	12.92	97.34
0619-MR-36 221	33.36	92544.15	1.03	12.89	0.79	1.95	1.18	0.18	0.88	0.74	1081.05	8.71	1099.14	7.93	1135.17	15.79	1135.17	15.79	95.23
0619-MR-36 155	77.19	86754.84	3.38	12.86	0.84	1.96	1.14	0.18	0.77	0.68	1081.26	7.68	1100.65	7.66	1139.20	16.68	1139.20	16.68	94.91
0619-MR-36 178	253.36	915088.93	3.57	12.76	0.64	2.13	1.06	0.20	0.84	0.80	1159.36	8.92	1157.80	7.29	1154.88	12.68	1154.88	12.68	100.39
0619-MR-36 161	341.82	88025.46	4.00	12.75	0.65	2.12	1.20	0.20	1.01	0.84	1152.77	10.62	1154.48	8.27	1157.67	12.99	1157.67	12.99	99.58
0619-MR-36 21	105.67	25004.45	0.67	12.74	0.73	2.11	0.96	0.19	0.62	0.65	1147.13	6.49	1151.07	6.58	1158.50	14.46	1158.50	14.46	99.02
0619-MR-36 169	241.98	82745.99	2.79	12.74	0.62	2.19	1.17	0.20	0.99	0.85	1189.78	10.76	1178.98	8.14	1159.20	12.24	1159.20	12.24	102.64
0619-MR-36 203	301.53	233149.44	2.16	12.70	0.51	2.08	1.08	0.19	0.95	0.88	1132.81	9.91	1143.83	7.42	1164.77	10.09	1164.77	10.09	97.26
0619-MR-36 135	106.53	12401.28	2.55	12.57	1.10	2.09	1.32	0.19	0.73	0.55	1121.97	7.52	1143.91	9.07	1185.77	21.78	1185.77	21.78	94.62
0619-MR-36 220	454.78	305061.35	3.37	12.49	0.52	2.20	0.93	0.20	0.78	0.83	1173.52	8.34	1182.25	6.53	1198.24	10.24	1198.24	10.24	97.94
0619-MR-36 144	601.09	131489.19	4.02	12.48	0.54	2.15	1.16	0.19	1.03	0.89	1147.35	10.77	1165.26	8.02	1198.70	10.61	1198.70	10.61	95.72

0619-MR-36 114	444.77	1394502.65	1.01	12.32	0.57	2.29	0.97	0.20	0.78	0.81	1198.09	8.58	1207.79	6.85	1225.15	11.20	1225.15	11.20	97.79
0619-MR-36 185	96.96	56043.98	2.79	12.32	0.74	2.27	1.06	0.20	0.77	0.72	1191.12	8.36	1203.31	7.50	1225.23	14.45	1225.23	14.45	97.22
0619-MR-36 157	155.80	98709.98	3.07	12.30	0.60	2.19	1.11	0.20	0.93	0.84	1152.84	9.87	1179.06	7.73	1227.53	11.73	1227.53	11.73	93.91
0619-MR-36 176	594.09	146916.51	2.68	12.12	0.53	2.40	1.15	0.21	1.02	0.89	1236.31	11.45	1244.08	8.22	1257.57	10.31	1257.57	10.31	98.31
0619-MR-36 77	505.69	18601.42	2.48	12.11	2.16	2.08	2.31	0.18	0.80	0.35	1083.34	8.00	1143.00	15.84	1258.06	42.32	1258.06	42.32	86.11
0619-MR-36 54	167.53	68981.24	2.12	12.10	0.66	2.33	1.08	0.20	0.85	0.79	1200.68	9.35	1221.78	7.65	1259.21	12.81	1259.21	12.81	95.35
0619-MR-36 23	79.80	147573.99	2.48	12.07	0.71	2.41	0.97	0.21	0.66	0.68	1232.72	7.45	1244.33	6.98	1264.50	13.90	1264.50	13.90	97.49
0619-MR-36 272	342.51	61609.55	3.34	11.92	0.55	2.45	1.05	0.21	0.90	0.85	1239.80	10.12	1257.75	7.60	1288.58	10.75	1288.58	10.75	96.21
0619-MR-36 94	783.35	249640.40	1.51	11.88	0.50	2.56	0.94	0.22	0.80	0.85	1286.46	9.32	1289.69	6.87	1295.04	9.64	1295.04	9.64	99.34
0619-MR-36 269	258.05	205480.03	2.57	11.87	0.62	2.58	0.95	0.22	0.72	0.76	1294.32	8.42	1295.43	6.94	1297.24	12.06	1297.24	12.06	99.78
0619-MR-36 16	117.45	33982.26	0.96	11.84	0.66	2.63	1.03	0.23	0.79	0.77	1311.58	9.34	1308.14	7.56	1302.50	12.84	1302.50	12.84	100.70
0619-MR-36 256	128.35	48781.54	2.42	11.83	0.67	2.51	1.12	0.22	0.90	0.80	1258.34	10.26	1275.43	8.15	1304.33	13.07	1304.33	13.07	96.47
0619-MR-36 62	167.31	135054.97	1.72	11.81	0.61	2.60	1.00	0.22	0.79	0.79	1295.23	9.27	1299.54	7.33	1306.65	11.91	1306.65	11.91	99.13
0619-MR-36 39	175.51	305314.35	2.27	11.70	0.67	2.62	1.03	0.22	0.78	0.76	1294.13	9.18	1305.97	7.58	1325.46	13.03	1325.46	13.03	97.64
0619-MR-36 252	200.64	64549.81	1.78	11.69	0.65	2.63	1.03	0.22	0.81	0.78	1297.08	9.48	1308.43	7.61	1327.06	12.53	1327.06	12.53	97.74
0619-MR-36 198	109.71	38031.46	3.40	11.51	0.69	2.79	1.18	0.23	0.95	0.81	1351.68	11.61	1354.03	8.81	1357.72	13.38	1357.72	13.38	99.56
0619-MR-36 20	207.44	55285.62	2.96	11.48	0.56	2.81	0.89	0.23	0.69	0.78	1356.49	8.46	1358.33	6.67	1361.21	10.83	1361.21	10.83	99.65
0619-MR-36 190	114.70	100929.42	1.87	11.44	0.77	2.80	1.14	0.23	0.85	0.74	1348.86	10.29	1356.67	8.56	1368.98	14.82	1368.98	14.82	98.53
0619-MR-36 310	57.26	76400.01	1.67	11.40	0.86	2.85	1.14	0.24	0.74	0.65	1366.76	9.17	1369.93	8.58	1374.86	16.62	1374.86	16.62	99.41
0619-MR-36 142	141.08	61419.59	1.62	11.39	0.61	2.88	1.01	0.24	0.80	0.79	1375.59	9.93	1376.04	7.61	1376.72	11.82	1376.72	11.82	99.92
0619-MR-36 219	274.25	69313.60	2.60	11.38	0.59	2.81	0.97	0.23	0.77	0.79	1343.74	9.30	1357.21	7.26	1378.48	11.40	1378.48	11.40	97.48
0619-MR-36 174	121.57	63280.21	0.69	11.22	0.75	3.01	1.05	0.25	0.73	0.69	1414.13	9.22	1411.01	7.99	1406.28	14.46	1406.28	14.46	100.56
0619-MR-36 126	109.88	104249.05	1.75	11.03	0.70	3.04	1.14	0.24	0.90	0.79	1403.64	11.30	1417.90	8.70	1439.35	13.39	1439.35	13.39	97.52
0619-MR-36 9	102.78	144892.41	1.44	11.02	0.69	3.06	0.96	0.24	0.66	0.69	1411.73	8.41	1423.33	7.34	1440.69	13.22	1440.69	13.22	97.99
0619-MR-36 72	140.43	121561.89	2.41	11.00	0.66	3.10	1.13	0.25	0.92	0.81	1423.94	11.73	1431.92	8.70	1443.79	12.66	1443.79	12.66	98.63
0619-MR-36 248	128.51	1753579.80	2.67	10.99	0.61	3.14	1.04	0.25	0.85	0.81	1438.84	10.92	1441.72	8.02	1445.94	11.56	1445.94	11.56	99.51
0619-MR-36 315	94.76	45581.70	2.56	10.95	0.70	3.17	1.04	0.25	0.76	0.74	1448.00	9.91	1450.05	8.02	1453.03	13.39	1453.03	13.39	99.65
0619-MR-36 13	624.05	7493790.17	3.21	10.95	0.59	3.06	1.14	0.24	0.97	0.86	1404.02	12.27	1423.67	8.71	1453.15	11.23	1453.15	11.23	96.62
0619-MR-36 35	101.15	135730.05	1.27	10.94	0.67	3.14	1.04	0.25	0.79	0.76	1434.48	10.14	1442.57	7.98	1454.50	12.80	1454.50	12.80	98.62
0619-MR-36 158	217.40	78103.08	2.33	10.85	0.63	3.16	0.87	0.25	0.60	0.69	1434.21	7.75	1448.39	6.72	1469.24	11.94	1469.24	11.94	97.62
0619-MR-36 180	321.00	134460.13	2.92	10.84	0.53	3.33	1.00	0.26	0.85	0.85	1500.26	11.35	1488.67	7.82	1472.19	10.11	1472.19	10.11	101.91
0619-MR-36 79	422.08	324097.87	2.63	10.81	0.55	3.22	0.99	0.25	0.82	0.83	1451.28	10.63	1461.89	7.65	1477.30	10.50	1477.30	10.50	98.24
0619-MR-36 222	225.92	1056454.35	1.58	10.73	0.56	3.28	0.99	0.26	0.82	0.83	1468.35	10.77	1477.38	7.71	1490.34	10.54	1490.34	10.54	98.52
0619-MR-36 303	494.28	119927.91	1.33	10.70	0.50	3.25	0.92	0.25	0.77	0.84	1449.93	10.01	1468.61	7.13	1495.70	9.45	1495.70	9.45	96.94
0619-MR-36 253	190.49	102518.51	1.96	10.69	0.51	3.29	0.90	0.26	0.74	0.82	1465.78	9.68	1479.28	7.00	1498.69	9.67	1498.69	9.67	97.80
0619-MR-36 150	146.99	113955.41	1.28	10.64	0.60	3.46	0.90	0.27	0.67	0.75	1527.00	9.13	1518.63	7.07	1506.96	11.25	1506.96	11.25	101.33
0619-MR-36 116	362.53	142289.41	2.72	10.59	0.52	3.43	0.89	0.26	0.72	0.81	1507.11	9.73	1510.85	7.01	1516.09	9.81	1516.09	9.81	99.41
0619-MR-36 119	139.02	116081.13	1.13	10.34	0.57	3.61	1.03	0.27	0.86	0.83	1546.09	11.87	1552.20	8.23	1560.50	10.69	1560.50	10.69	99.08
0619-MR-36 244	117.40	48427.61	0.62	10.23	0.57	3.53	0.99	0.26	0.81	0.82	1499.96	10.83	1533.72	7.82	1580.57	10.60	1580.57	10.60	94.90
0619-MR-36 245	374.14	103488.33	0.67	10.18	0.47	3.66	0.74	0.27	0.57	0.77	1542.77	7.81	1562.95	5.91	1590.31	8.87	1590.31	8.87	97.01

0619-MR-36 274	311.00	1981027.34	1.17	10.12	0.58	3.72	0.99	0.27	0.80	0.81	1557.52	11.14	1575.77	7.95	1600.27	10.84	1600.27	10.84	97.33
0619-MR-36 285	234.47	111724.77	1.31	10.07	0.57	3.84	1.02	0.28	0.85	0.83	1594.54	11.97	1601.64	8.22	1610.97	10.59	1610.97	10.59	98.98
0619-MR-36 75	354.35	599640.09	2.13	9.94	0.53	3.92	0.89	0.28	0.71	0.80	1606.90	10.12	1618.84	7.20	1634.38	9.94	1634.38	9.94	98.32
0619-MR-36 254	430.05	106314.81	2.34	9.89	0.44	3.64	1.05	0.26	0.96	0.91	1496.21	12.78	1558.45	8.39	1643.85	8.17	1643.85	8.17	91.02
0619-MR-36 237	135.81	85274.32	1.23	9.85	0.54	4.03	1.07	0.29	0.92	0.86	1633.08	13.33	1641.14	8.72	1651.47	10.07	1651.47	10.07	98.89
0619-MR-36 86	308.77	233535.07	1.81	9.84	0.53	3.99	0.88	0.29	0.71	0.80	1617.32	10.09	1633.18	7.14	1653.64	9.73	1653.64	9.73	97.80
0619-MR-36 65	72.65	49865.18	1.42	9.83	0.76	3.99	1.19	0.28	0.91	0.77	1613.23	13.03	1631.65	9.62	1655.47	14.01	1655.47	14.01	97.45
0619-MR-36 42	394.22	975021.74	1.99	9.83	0.50	4.24	0.81	0.30	0.64	0.79	1703.12	9.56	1681.98	6.65	1655.71	9.20	1655.71	9.20	102.86
0619-MR-36 113	433.36	210675.80	1.01	9.81	0.60	4.06	1.00	0.29	0.81	0.80	1636.68	11.65	1646.32	8.17	1658.64	11.04	1658.64	11.04	98.68
0619-MR-36 154	97.18	84144.01	1.50	9.81	0.65	4.08	0.95	0.29	0.69	0.73	1643.87	10.07	1650.74	7.74	1659.47	11.97	1659.47	11.97	99.06
0619-MR-36 211	526.07	6580357.39	3.97	9.77	0.59	4.03	1.04	0.29	0.85	0.82	1619.93	12.18	1639.92	8.44	1665.62	10.99	1665.62	10.99	97.26
0619-MR-36 160	238.31	116650.76	0.98	9.72	0.55	4.14	0.90	0.29	0.71	0.79	1651.15	10.31	1661.83	7.33	1675.32	10.18	1675.32	10.18	98.56
0619-MR-36 168	487.12	2323872.22	1.90	9.65	0.53	4.21	0.99	0.29	0.84	0.84	1664.48	12.30	1675.38	8.16	1689.05	9.87	1689.05	9.87	98.55
0619-MR-36 251	238.96	309083.22	3.07	9.57	0.77	4.17	1.25	0.29	0.99	0.79	1637.48	14.30	1667.18	10.24	1704.77	14.09	1704.77	14.09	96.05
0619-MR-36 4	113.93	44521.36	3.97	9.49	0.71	4.11	1.07	0.28	0.80	0.75	1604.83	11.33	1655.45	8.72	1720.27	13.06	1720.27	13.06	93.29
0619-MR-36 235	236.82	223107.26	1.34	9.43	0.51	4.37	0.85	0.30	0.68	0.80	1684.70	10.02	1705.80	7.00	1731.79	9.37	1731.79	9.37	97.28
0619-MR-36 146	112.37	270722.47	11.26	9.39	0.71	4.14	1.05	0.28	0.77	0.73	1604.13	10.95	1663.17	8.60	1738.53	13.09	1738.53	13.09	92.27
0619-MR-36 89	175.82	862523.55	2.24	9.35	0.59	4.63	1.03	0.31	0.85	0.82	1759.25	13.04	1754.10	8.63	1747.94	10.84	1747.94	10.84	100.65
0619-MR-36 210	157.92	139364.23	2.37	9.14	0.52	5.05	0.91	0.33	0.74	0.82	1862.38	12.04	1828.25	7.72	1789.59	9.56	1789.59	9.56	104.07
0619-MR-36 12	112.06	202995.92	1.35	9.13	0.67	4.87	1.06	0.32	0.82	0.77	1801.15	12.93	1796.62	8.94	1791.35	12.22	1791.35	12.22	100.55
0619-MR-36 265	310.52	152698.76	3.90	9.09	0.61	4.82	0.86	0.32	0.61	0.71	1780.12	9.50	1788.50	7.27	1798.27	11.13	1798.27	11.13	98.99
0619-MR-36 184	105.15	81552.66	1.70	9.08	0.60	4.85	0.94	0.32	0.72	0.77	1786.43	11.29	1792.96	7.90	1800.56	10.88	1800.56	10.88	99.22
0619-MR-36 58	299.95	722839.75	2.18	8.90	0.45	5.23	0.86	0.34	0.73	0.85	1874.56	11.88	1857.19	7.30	1837.78	8.11	1837.78	8.11	102.00
0619-MR-36 82	249.91	108816.02	1.32	8.76	0.50	5.20	0.92	0.33	0.77	0.84	1842.35	12.34	1853.24	7.80	1865.46	8.95	1865.46	8.95	98.76
0619-MR-36 31	301.98	398537.15	2.15	8.75	0.56	5.26	0.96	0.33	0.78	0.81	1856.32	12.60	1861.89	8.18	1868.11	10.04	1868.11	10.04	99.37
0619-MR-36 165	202.03	1928852.99	2.90	8.69	0.52	5.43	1.12	0.34	0.99	0.89	1896.91	16.31	1888.97	9.61	1880.23	9.37	1880.23	9.37	100.89
0619-MR-36 15	146.96	40982.64	1.07	8.62	0.55	4.83	0.88	0.30	0.70	0.79	1702.61	10.40	1790.86	7.44	1895.25	9.84	1895.25	9.84	89.84
0619-MR-36 228	236.02	115246.74	1.18	8.46	0.60	5.44	1.06	0.33	0.87	0.82	1858.57	14.02	1891.74	9.06	1928.32	10.78	1928.32	10.78	96.38
0619-MR-36 93	310.32	248133.43	5.42	8.27	0.61	5.70	1.05	0.34	0.86	0.82	1898.16	14.09	1931.98	9.07	1968.44	10.82	1968.44	10.82	96.43
0619-MR-36 88	168.43	284671.00	1.25	8.20	0.54	5.78	0.98	0.34	0.82	0.83	1906.29	13.48	1943.99	8.49	1984.38	9.66	1984.38	9.66	96.06
0619-MR-36 217	273.05	136146.52	1.17	8.17	0.39	6.06	0.79	0.36	0.68	0.87	1979.24	11.62	1984.41	6.85	1989.80	6.96	1989.80	6.96	99.47
0619-MR-36 163	84.93	1508196.63	0.78	8.11	0.51	6.12	0.80	0.36	0.61	0.77	1983.90	10.39	1993.63	6.94	2003.71	9.09	2003.71	9.09	99.01
0619-MR-36 24	94.35	43963.98	1.11	8.08	0.54	6.08	0.90	0.36	0.73	0.80	1965.94	12.29	1987.98	7.88	2010.97	9.56	2010.97	9.56	97.76
0619-MR-36 143	239.05	5607.06	0.99	8.06	11.26	1.44	11.36	0.08	1.50	0.13	523.04	7.55	907.72	68.28	2014.29	200.40	2014.29	200.40	25.97
0619-MR-36 281	262.86	146370.15	3.11	8.00	0.53	5.85	0.96	0.34	0.80	0.83	1884.11	13.00	1953.61	8.31	2028.07	9.47	2028.07	9.47	92.90
0619-MR-36 305	607.09	1149455.98	10.02	7.93	0.54	6.56	0.96	0.38	0.79	0.83	2064.71	14.03	2053.87	8.48	2042.98	9.61	2042.98	9.61	101.06
0619-MR-36 132	318.65	1575635.43	1.95	7.70	0.64	6.74	1.00	0.38	0.77	0.77	2059.69	13.63	2077.70	8.87	2095.58	11.25	2095.58	11.25	98.29
0619-MR-36 191	213.41	353837.21	2.83	7.65	0.92	5.83	1.35	0.32	0.99	0.73	1807.15	15.62	1951.15	11.71	2107.61	16.11	2107.61	16.11	85.74
0619-MR-36 314	370.61	101770.92	1.30	7.62	0.56	6.97	0.82	0.39	0.60	0.73	2100.64	10.75	2107.54	7.26	2114.27	9.74	2114.27	9.74	99.36
0619-MR-36 188	156.17	142290.95	1.25	7.54	0.52	7.11	0.95	0.39	0.80	0.84	2117.90	14.39	2125.19	8.46	2132.24	9.06	2132.24	9.06	99.33

0619-MR-36 236	188.92	170307.35	1.70	6.31	0.41	9.71	0.86	0.44	0.75	0.88	2370.67	14.88	2407.96	7.88	2439.63	6.97	2439.63	6.97	97.17
0619-MR-36 206	410.59	110841.28	8.69	5.82	0.63	11.63	0.89	0.49	0.64	0.71	2574.84	13.50	2574.99	8.35	2575.10	10.48	2575.10	10.48	99.99
0619-MR-36 52	61.35	49836.96	0.86	5.64	0.67	12.37	1.05	0.51	0.80	0.77	2643.02	17.43	2633.20	9.85	2625.65	11.20	2625.65	11.20	100.66
0619-MR-36 87	27.48	51180.24	0.99	5.52	0.80	13.25	1.25	0.53	0.96	0.77	2744.80	21.44	2697.49	11.81	2662.21	13.30	2662.21	13.30	103.10
0619-MR-36 152	343.19	205277.86	1.90	4.91	0.48	15.44	0.93	0.55	0.80	0.85	2824.02	18.26	2843.00	8.91	2856.47	7.89	2856.47	7.89	98.86
0619-MR-36 268	275.49	1284872.78	2.05	4.85	0.63	15.95	0.91	0.56	0.66	0.72	2870.56	15.20	2873.65	8.67	2875.81	10.18	2875.81	10.18	99.82

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0619-MR-37 163	569.10	58328.63	1.37	20.70	1.04	0.15	1.41	0.02	0.95	0.67	144.48	1.36	142.70	1.87	113.27	24.49	144.48	1.36	NA
0619-MR-37 19	152.84	12491.63	3.95	21.05	2.06	0.15	2.31	0.02	1.06	0.46	144.59	1.52	140.58	3.04	73.26	48.89	144.59	1.52	NA
0619-MR-37 66	390.54	89857.19	3.75	20.91	1.14	0.15	1.39	0.02	0.81	0.58	145.40	1.16	142.25	1.85	89.95	26.92	145.40	1.16	NA
0619-MR-37 154	39.24	10938.04	1.92	18.78	4.34	0.17	4.55	0.02	1.35	0.30	146.76	1.96	158.57	6.68	338.86	98.38	146.76	1.96	NA
0619-MR-37 303	96.21	4128.43	1.40	22.08	2.86	0.14	3.01	0.02	0.94	0.31	146.82	1.37	136.42	3.84	NA	NA	146.82	1.37	NA
0619-MR-37 287	312.85	15205.51	2.61	20.93	1.38	0.15	1.61	0.02	0.82	0.51	147.80	1.19	144.28	2.16	86.80	32.80	147.80	1.19	NA
0619-MR-37 35	269.86	48714.61	2.19	19.52	1.59	0.16	1.92	0.02	1.07	0.56	147.86	1.57	154.03	2.74	250.08	36.52	147.86	1.57	NA
0619-MR-37 165	179.01	12683.11	4.87	21.10	1.99	0.15	2.11	0.02	0.71	0.33	148.61	1.04	143.97	2.84	68.16	47.44	148.61	1.04	NA
0619-MR-37 146	184.99	44091.44	2.64	20.19	1.97	0.16	2.26	0.02	1.10	0.49	149.56	1.63	150.88	3.17	171.70	46.03	149.56	1.63	NA
0619-MR-37 4	337.18	57249.91	5.78	20.37	1.31	0.16	1.56	0.02	0.86	0.55	149.88	1.27	149.94	2.18	150.93	30.64	149.88	1.27	NA
0619-MR-37 254	474.30	24861.06	2.39	20.21	1.39	0.16	1.61	0.02	0.82	0.51	149.97	1.21	151.16	2.26	169.83	32.44	149.97	1.21	NA
0619-MR-37 108	173.65	6268.39	4.13	21.09	2.36	0.16	2.57	0.02	1.02	0.40	151.18	1.53	146.37	3.50	69.11	56.07	151.18	1.53	NA
0619-MR-37 57	986.42	508338.25	1.83	20.35	0.76	0.16	1.27	0.02	1.02	0.80	151.40	1.52	151.52	1.79	153.37	17.76	151.40	1.52	NA
0619-MR-37 288	298.67	24119.73	3.45	20.31	1.49	0.16	1.80	0.02	1.01	0.56	151.74	1.51	152.13	2.54	158.21	34.80	151.74	1.51	NA
0619-MR-37 248	216.09	86833.82	3.14	20.11	1.71	0.16	1.99	0.02	1.01	0.51	152.65	1.53	154.41	2.85	181.43	39.91	152.65	1.53	NA
0619-MR-37 56	415.95	22552.94	3.47	20.84	1.31	0.16	1.62	0.02	0.96	0.59	152.96	1.45	149.65	2.25	97.43	30.92	152.96	1.45	NA
0619-MR-37 79	690.36	38527.81	1.99	20.34	0.95	0.16	1.64	0.02	1.33	0.81	153.18	2.02	153.25	2.33	154.30	22.26	153.18	2.02	NA
0619-MR-37 60	430.40	24629.36	3.27	20.47	1.26	0.16	1.44	0.02	0.69	0.48	153.47	1.05	152.62	2.03	139.40	29.57	153.47	1.05	NA
0619-MR-37 177	170.97	307454.44	2.31	20.59	1.75	0.16	2.05	0.02	1.07	0.52	153.61	1.62	151.97	2.90	126.47	41.23	153.61	1.62	NA
0619-MR-37 175	1201.86	41717.99	1.19	20.33	1.01	0.16	1.55	0.02	1.18	0.76	153.87	1.79	154.01	2.22	156.12	23.70	153.87	1.79	NA
0619-MR-37 2	125.54	3387.13	5.72	21.62	2.66	0.15	2.82	0.02	0.93	0.33	154.30	1.42	145.83	3.83	10.12	64.00	154.30	1.42	NA
0619-MR-37 28	794.92	174255.37	2.27	20.35	0.90	0.16	1.47	0.02	1.16	0.79	154.31	1.77	154.26	2.10	153.62	21.13	154.31	1.77	NA
0619-MR-37 247	228.62	36119.76	2.48	19.86	1.52	0.17	1.85	0.02	1.07	0.58	154.43	1.63	157.88	2.71	209.92	35.15	154.43	1.63	NA
0619-MR-37 184	533.68	37361.73	2.06	20.35	0.98	0.16	1.23	0.02	0.74	0.60	154.66	1.13	154.59	1.76	153.47	23.05	154.66	1.13	NA
0619-MR-37 11	618.76	5991795.59	2.14	19.99	0.89	0.17	1.50	0.02	1.21	0.81	154.66	1.85	157.17	2.18	195.07	20.62	154.66	1.85	NA
0619-MR-37 258	268.95	19322.13	3.37	20.70	1.30	0.16	1.71	0.02	1.11	0.65	155.24	1.70	152.70	2.42	113.32	30.62	155.24	1.70	NA
0619-MR-37 153	520.27	44888.49	2.96	20.38	0.99	0.17	1.28	0.02	0.80	0.63	155.47	1.23	155.11	1.84	149.61	23.25	155.47	1.23	NA
0619-MR-37 50	169.73	5425.27	2.85	13.69	5.42	0.25	5.50	0.02	0.97	0.18	156.14	1.50	223.97	11.06	1014.15	109.86	156.14	1.50	NA
0619-MR-37 1	495.72	151997.42	2.73	20.07	1.10	0.17	1.50	0.02	1.01	0.68	156.61	1.57	158.47	2.20	186.34	25.69	156.61	1.57	NA
0619-MR-37 84	670.62	57996.19	0.92	20.59	1.23	0.16	1.74	0.02	1.23	0.71	156.74	1.91	154.83	2.50	125.68	29.01	156.74	1.91	NA
0619-MR-37 207	829.73	61350.80	2.12	20.58	0.92	0.16	1.58	0.02	1.29	0.81	156.82	2.00	155.00	2.28	127.25	21.66	156.82	2.00	NA

0619-MR-37 40	422.61	346674.57	4.75	20.68	1.06	0.16	1.51	0.02	1.08	0.71	157.11	1.67	154.54	2.17	115.27	25.09	157.11	1.67	NA
0619-MR-37 217	872.32	362002.52	2.99	20.47	0.80	0.17	1.43	0.02	1.18	0.83	157.39	1.84	156.30	2.07	139.75	18.78	157.39	1.84	NA
0619-MR-37 176	732.67	38478.76	2.12	20.51	1.03	0.17	1.41	0.02	0.96	0.68	158.11	1.50	156.68	2.04	135.14	24.11	158.11	1.50	NA
0619-MR-37 194	729.31	41001.47	2.36	20.16	1.00	0.17	1.66	0.02	1.33	0.80	158.17	2.08	159.28	2.45	175.68	23.32	158.17	2.08	NA
0619-MR-37 208	205.45	30615.45	2.40	20.10	1.41	0.17	1.70	0.02	0.96	0.56	158.37	1.50	159.87	2.52	182.11	32.78	158.37	1.50	NA
0619-MR-37 266	1177.67	73304.50	2.21	20.36	0.80	0.17	1.37	0.02	1.11	0.81	158.39	1.74	157.98	2.00	151.83	18.79	158.39	1.74	NA
0619-MR-37 168	839.95	331647.75	1.96	20.64	0.92	0.17	1.56	0.02	1.27	0.81	159.01	1.99	156.57	2.27	119.79	21.63	159.01	1.99	NA
0619-MR-37 265	249.12	39584.08	4.04	20.07	1.31	0.17	1.65	0.02	0.99	0.60	159.10	1.56	160.80	2.45	185.91	30.64	159.10	1.56	NA
0619-MR-37 270	440.86	43140.84	2.35	20.46	1.12	0.17	1.46	0.02	0.93	0.64	159.17	1.47	158.05	2.13	141.34	26.26	159.17	1.47	NA
0619-MR-37 73	159.20	78187.32	1.83	20.15	1.83	0.17	2.21	0.03	1.24	0.56	159.27	1.96	160.38	3.28	176.77	42.59	159.27	1.96	NA
0619-MR-37 70	274.51	7956.51	1.97	20.73	1.56	0.17	1.96	0.03	1.18	0.60	159.93	1.87	156.83	2.85	110.20	36.85	159.93	1.87	NA
0619-MR-37 191	600.37	63507.18	2.56	20.15	1.09	0.17	1.49	0.03	1.02	0.69	160.36	1.62	161.41	2.23	176.86	25.33	160.36	1.62	NA
0619-MR-37 98	671.28	160111.06	1.30	20.14	0.85	0.17	1.39	0.03	1.10	0.79	160.68	1.75	161.74	2.08	177.27	19.77	160.68	1.75	NA
0619-MR-37 243	205.90	26541.44	3.38	20.16	1.81	0.17	2.02	0.03	0.88	0.44	160.78	1.40	161.71	3.02	175.36	42.32	160.78	1.40	NA
0619-MR-37 237	113.74	5385.98	1.26	21.23	2.25	0.16	2.40	0.03	0.83	0.34	161.08	1.32	154.40	3.44	53.08	53.79	161.08	1.32	NA
0619-MR-37 97	428.91	16915.12	2.63	20.38	0.95	0.17	1.33	0.03	0.93	0.70	161.35	1.48	160.61	1.98	149.77	22.34	161.35	1.48	NA
0619-MR-37 294	296.05	64528.84	2.35	20.69	1.37	0.17	1.62	0.03	0.85	0.53	161.56	1.36	158.59	2.37	114.35	32.43	161.56	1.36	NA
0619-MR-37 51	302.68	20206.99	2.94	20.49	1.32	0.17	1.62	0.03	0.94	0.58	161.68	1.50	160.17	2.40	137.90	31.01	161.68	1.50	NA
0619-MR-37 305	515.88	897566.19	2.58	20.24	1.16	0.17	1.49	0.03	0.93	0.63	162.28	1.49	162.51	2.23	165.90	27.07	162.28	1.49	NA
0619-MR-37 131	883.40	153765.36	1.13	20.44	0.97	0.17	1.55	0.03	1.21	0.78	162.34	1.94	161.13	2.31	143.37	22.74	162.34	1.94	NA
0619-MR-37 187	437.90	34434.27	1.50	20.33	1.09	0.17	1.98	0.03	1.65	0.83	162.46	2.65	162.07	2.97	156.35	25.56	162.46	2.65	NA
0619-MR-37 231	317.62	27829.38	2.68	20.49	1.49	0.17	1.74	0.03	0.91	0.52	162.47	1.46	160.84	2.59	136.98	34.92	162.47	1.46	NA
0619-MR-37 136	177.93	7057.98	3.24	21.10	1.78	0.17	1.95	0.03	0.79	0.40	162.47	1.26	156.54	2.83	67.66	42.42	162.47	1.26	NA
0619-MR-37 126	1259.55	247147.29	2.87	20.14	0.73	0.18	1.26	0.03	1.03	0.82	162.83	1.66	163.83	1.91	178.22	17.03	162.83	1.66	NA
0619-MR-37 227	205.81	24709.55	3.06	20.77	1.71	0.17	1.87	0.03	0.76	0.41	162.99	1.22	159.36	2.76	105.63	40.35	162.99	1.22	NA
0619-MR-37 94	446.26	25966.17	3.83	20.17	1.19	0.18	1.44	0.03	0.82	0.57	163.36	1.32	164.10	2.18	174.67	27.74	163.36	1.32	NA
0619-MR-37 214	597.57	89430.23	4.10	20.61	1.07	0.17	1.63	0.03	1.22	0.75	164.09	1.98	161.50	2.43	123.65	25.27	164.09	1.98	NA
0619-MR-37 12	676.80	76803.04	2.72	20.41	0.99	0.17	1.61	0.03	1.27	0.79	164.19	2.06	163.08	2.42	147.03	23.16	164.19	2.06	NA
0619-MR-37 306	327.13	193609.04	3.66	20.04	1.30	0.18	1.68	0.03	1.07	0.64	164.44	1.74	166.10	2.58	189.89	30.16	164.44	1.74	NA
0619-MR-37 101	1356.83	528239.33	3.19	20.19	0.86	0.18	1.36	0.03	1.06	0.78	164.60	1.72	165.09	2.08	172.13	20.04	164.60	1.72	NA
0619-MR-37 307	353.57	58964.58	3.47	20.48	1.40	0.17	1.66	0.03	0.88	0.53	165.20	1.44	163.49	2.51	138.73	32.98	165.20	1.44	NA
0619-MR-37 291	1728.99	1081615.52	4.41	20.10	0.71	0.18	1.27	0.03	1.05	0.83	165.28	1.71	166.41	1.94	182.50	16.66	165.28	1.71	NA
0619-MR-37 100	1839.91	408878.06	1.49	20.27	0.64	0.18	1.30	0.03	1.13	0.87	166.80	1.86	166.54	2.00	162.81	14.99	166.80	1.86	NA
0619-MR-37 280	690.40	58509.57	1.79	20.15	0.75	0.18	1.18	0.03	0.90	0.77	166.99	1.49	167.64	1.82	176.74	17.53	166.99	1.49	NA
0619-MR-37 34	696.61	122829.83	45.13	20.16	0.87	0.18	1.61	0.03	1.36	0.84	167.29	2.25	167.81	2.50	175.23	20.27	167.29	2.25	NA
0619-MR-37 52	253.06	23777.51	2.77	20.01	1.65	0.18	1.89	0.03	0.93	0.49	167.31	1.54	169.01	2.95	192.88	38.32	167.31	1.54	NA
0619-MR-37 140	459.25	58229.87	3.39	19.96	0.98	0.18	1.27	0.03	0.81	0.63	167.35	1.33	169.39	1.98	198.05	22.81	167.35	1.33	NA
0619-MR-37 158	1116.96	80465.47	7.85	20.23	0.75	0.18	1.56	0.03	1.37	0.88	168.16	2.28	168.14	2.42	167.86	17.51	168.16	2.28	NA
0619-MR-37 263	323.79	93770.37	4.00	19.95	1.12	0.18	1.43	0.03	0.89	0.62	168.98	1.48	171.06	2.26	199.80	26.12	168.98	1.48	NA
0619-MR-37 156	533.88	97812.49	2.11	20.01	0.84	0.18	1.82	0.03	1.61	0.89	170.06	2.70	171.58	2.87	192.66	19.65	170.06	2.70	NA

0619-MR-37 61	373.55	38351.88	2.18	19.95	1.30	0.18	1.63	0.03	0.97	0.60	170.12	1.63	172.11	2.57	199.61	30.30	170.12	1.63	NA
0619-MR-37 150	543.77	56311.78	1.49	20.21	1.48	0.18	1.84	0.03	1.08	0.59	170.35	1.82	170.33	2.88	170.01	34.64	170.35	1.82	NA
0619-MR-37 68	261.95	16713.47	1.69	20.25	1.51	0.18	2.17	0.03	1.55	0.72	170.63	2.61	170.23	3.40	164.69	35.38	170.63	2.61	NA
0619-MR-37 216	1269.03	436507.7 4	2.70	20.36	0.75	0.18	1.28	0.03	1.04	0.81	170.92	1.75	169.70	2.00	152.71	17.59	170.92	1.75	NA
0619-MR-37 103	453.44	137959.6 1	2.25	20.03	0.99	0.19	1.38	0.03	0.95	0.69	171.25	1.61	172.57	2.18	190.73	23.14	171.25	1.61	NA
0619-MR-37 215	447.94	31089.91	1.49	20.68	0.82	0.18	1.16	0.03	0.82	0.71	171.84	1.40	168.11	1.80	115.89	19.35	171.84	1.40	NA
0619-MR-37 228	1754.50	156504.6 4	1.68	20.20	0.58	0.19	1.09	0.03	0.92	0.85	172.71	1.57	172.60	1.73	171.02	13.52	172.71	1.57	NA
0619-MR-37 282	315.11	22699.74	1.40	20.53	1.33	0.18	1.51	0.03	0.72	0.48	173.83	1.24	171.08	2.38	133.27	31.27	173.83	1.24	NA
0619-MR-37 83	468.59	18482.33	1.49	20.52	0.97	0.18	1.55	0.03	1.21	0.78	174.53	2.09	171.75	2.45	133.59	22.81	174.53	2.09	NA
0619-MR-37 157	262.98	21461.45	2.13	20.50	1.55	0.19	1.77	0.03	0.86	0.48	181.83	1.54	178.63	2.91	136.44	36.50	181.83	1.54	NA
0619-MR-37 169	444.10	33931.43	1.87	19.29	1.28	0.21	1.61	0.03	0.98	0.61	183.98	1.77	190.93	2.80	277.77	29.22	183.98	1.77	NA
0619-MR-37 20	481.55	167375.0 5	2.10	19.77	1.01	0.20	1.27	0.03	0.77	0.60	184.05	1.40	186.71	2.17	220.48	23.47	184.05	1.40	NA
0619-MR-37 181	673.03	187817.4 4	2.41	20.11	0.80	0.20	1.46	0.03	1.23	0.84	187.02	2.26	186.61	2.50	181.42	18.70	187.02	2.26	NA
0619-MR-37 18	536.03	30327.92	1.93	20.38	1.00	0.20	1.29	0.03	0.82	0.63	187.14	1.51	184.41	2.18	149.50	23.41	187.14	1.51	NA
0619-MR-37 135	569.79	113680.2 7	1.97	19.81	0.89	0.21	1.32	0.03	0.97	0.74	187.91	1.81	189.97	2.29	215.64	20.63	187.91	1.81	NA
0619-MR-37 124	312.04	40871.85	2.50	20.71	1.38	0.20	1.71	0.03	1.01	0.59	188.96	1.89	183.38	2.87	112.03	32.57	188.96	1.89	NA
0619-MR-37 195	478.94	37400.14	3.36	20.08	1.02	0.21	1.37	0.03	0.92	0.67	191.36	1.73	190.84	2.39	184.35	23.76	191.36	1.73	NA
0619-MR-37 81	274.14	168927.5 6	4.74	20.05	1.67	0.21	1.96	0.03	1.02	0.52	193.28	1.95	192.93	3.44	188.60	38.85	193.28	1.95	NA
0619-MR-37 189	501.22	48994.25	1.68	19.94	1.03	0.21	1.43	0.03	0.98	0.69	193.37	1.87	193.92	2.52	200.62	24.00	193.37	1.87	NA
0619-MR-37 22	145.22	18858.26	2.92	19.91	1.52	0.21	1.89	0.03	1.13	0.60	194.44	2.17	195.17	3.36	203.90	35.22	194.44	2.17	NA
0619-MR-37 21	132.52	12452.68	3.88	21.26	1.87	0.20	2.09	0.03	0.92	0.44	195.45	1.78	184.74	3.53	49.94	44.77	195.45	1.78	NA
0619-MR-37 183	1013.65	250831.2 0	2.27	19.78	0.90	0.22	1.57	0.03	1.29	0.82	196.27	2.49	198.07	2.82	219.61	20.74	196.27	2.49	NA
0619-MR-37 244	236.59	12577.34	2.34	20.48	1.31	0.21	1.57	0.03	0.86	0.55	196.29	1.67	191.96	2.75	139.04	30.83	196.29	1.67	NA
0619-MR-37 224	428.63	23573.34	1.84	20.34	1.18	0.21	1.52	0.03	0.96	0.63	196.43	1.86	193.25	2.67	154.59	27.53	196.43	1.86	NA
0619-MR-37 134	682.59	23812.68	2.50	20.05	1.19	0.21	1.78	0.03	1.33	0.75	196.62	2.57	195.96	3.17	187.97	27.62	196.62	2.57	NA
0619-MR-37 164	204.26	26598.00	4.25	20.53	1.28	0.21	1.66	0.03	1.05	0.64	196.74	2.04	191.94	2.90	133.39	30.11	196.74	2.04	NA
0619-MR-37 33	171.38	19935.50	2.47	19.68	1.40	0.22	1.64	0.03	0.85	0.52	196.93	1.65	199.59	2.97	231.19	32.33	196.93	1.65	NA
0619-MR-37 112	119.73	15367.52	3.41	20.27	1.93	0.21	2.21	0.03	1.08	0.49	198.40	2.11	195.67	3.93	162.86	45.12	198.40	2.11	NA
0619-MR-37 180	176.61	15275.51	2.07	20.60	1.53	0.21	1.76	0.03	0.87	0.50	200.57	1.73	194.72	3.13	124.37	36.09	200.57	1.73	NA
0619-MR-37 54	159.62	24897.98	2.90	20.93	1.78	0.21	1.93	0.03	0.76	0.39	200.74	1.51	192.13	3.38	87.66	42.08	200.74	1.51	NA
0619-MR-37 87	96.00	2087838. 66	3.07	19.23	2.05	0.23	2.34	0.03	1.13	0.48	201.32	2.24	208.02	4.40	284.58	46.86	201.32	2.24	NA
0619-MR-37 142	191.48	38429.61	2.01	20.02	1.54	0.22	1.68	0.03	0.68	0.41	201.75	1.35	200.98	3.06	192.07	35.73	201.75	1.35	NA
0619-MR-37 186	118.35	425192.6 5	3.95	20.48	2.29	0.21	2.45	0.03	0.88	0.36	202.62	1.75	197.60	4.40	138.07	53.78	202.62	1.75	NA
0619-MR-37 274	314.88	71422.82	3.17	20.10	1.09	0.22	1.43	0.03	0.93	0.65	202.76	1.85	201.16	2.61	182.44	25.36	202.76	1.85	NA
0619-MR-37 132	201.70	79765.97	2.98	19.90	1.64	0.22	1.84	0.03	0.83	0.45	202.86	1.66	203.04	3.38	205.12	38.01	202.86	1.66	NA
0619-MR-37 300	299.71	28932.34	3.54	19.70	1.23	0.23	1.64	0.03	1.09	0.67	206.65	2.23	208.50	3.10	229.42	28.32	206.65	2.23	NA
0619-MR-37 161	332.38	11918.61	2.23	20.56	0.95	0.22	1.23	0.03	0.77	0.63	206.76	1.58	200.66	2.23	129.59	22.34	206.76	1.58	NA
0619-MR-37 204	455.89	99305.49	2.39	20.09	1.16	0.23	1.71	0.03	1.25	0.73	208.83	2.58	206.80	3.20	183.69	27.11	208.83	2.58	NA
0619-MR-37 86	140.09	40909.52	3.49	20.41	1.77	0.22	1.99	0.03	0.91	0.46	210.11	1.88	205.01	3.70	146.77	41.55	210.11	1.88	NA
0619-MR-37 80	97.67	136530.5 2	4.14	20.70	1.96	0.23	2.21	0.03	1.01	0.46	214.35	2.13	206.14	4.12	113.19	46.32	214.35	2.13	NA

0619-MR-37 26	762.00	215352.5 0	1.85	19.63	0.95	0.24	1.84	0.03	1.57	0.86	215.77	3.34	217.56	3.60	237.03	21.98	215.77	3.34	NA
0619-MR-37 211	270.62	35899.11	4.71	19.81	1.03	0.24	1.38	0.03	0.92	0.67	221.17	2.00	220.75	2.75	216.30	23.92	221.17	2.00	NA
0619-MR-37 283	646.92	81058.96	3.04	19.81	0.95	0.25	1.54	0.04	1.21	0.79	228.67	2.71	227.51	3.13	215.57	22.00	228.67	2.71	NA
0619-MR-37 31	650.27	282447.6 8	3.44	19.68	0.93	0.25	1.71	0.04	1.44	0.84	229.25	3.24	229.44	3.52	231.41	21.46	229.25	3.24	NA
0619-MR-37 145	58.53	12060.11	4.38	19.73	2.95	0.26	3.08	0.04	0.91	0.29	235.42	2.10	234.48	6.46	225.11	68.15	235.42	2.10	NA
0619-MR-37 151	789.46	118048.1 5	4.72	19.45	0.91	0.26	1.42	0.04	1.09	0.77	236.22	2.53	238.30	3.02	258.83	20.92	236.22	2.53	NA
0619-MR-37 200	36.63	10715.50	7.89	20.18	3.43	0.26	3.64	0.04	1.22	0.33	237.51	2.83	231.74	7.55	173.65	80.17	237.51	2.83	NA
0619-MR-37 55	450.04	24674.31	2.90	19.54	1.03	0.27	1.26	0.04	0.73	0.58	241.60	1.73	242.17	2.72	247.67	23.75	241.60	1.73	NA
0619-MR-37 152	591.32	152299.7 6	2.23	19.75	0.95	0.27	1.57	0.04	1.24	0.79	241.72	2.95	240.02	3.35	223.42	22.05	241.72	2.95	NA
0619-MR-37 255	486.99	63574.30	1.83	19.81	0.90	0.27	1.23	0.04	0.84	0.68	243.19	2.00	240.61	2.64	215.56	20.93	243.19	2.00	NA
0619-MR-37 111	915.12	113394.3 2	5.73	19.50	0.81	0.27	1.45	0.04	1.20	0.83	244.08	2.88	244.90	3.16	252.84	18.57	244.08	2.88	NA
0619-MR-37 69	131.25	133909.4 1	3.72	19.55	1.48	0.27	1.80	0.04	1.02	0.57	245.82	2.45	245.91	3.93	246.75	34.16	245.82	2.45	NA
0619-MR-37 30	685.20	84886.02	3.20	19.79	0.64	0.27	1.23	0.04	1.05	0.86	247.45	2.55	244.70	2.67	218.37	14.72	247.45	2.55	NA
0619-MR-37 240	366.99	68206.64	2.54	19.60	1.11	0.28	1.43	0.04	0.90	0.63	250.05	2.22	249.16	3.16	240.83	25.58	250.05	2.22	NA
0619-MR-37 225	37.78	15271.68	6.20	19.65	3.56	0.28	3.77	0.04	1.24	0.33	251.59	3.07	249.95	8.36	234.63	82.19	251.59	3.07	NA
0619-MR-37 49	339.00	115996.9 8	2.45	19.55	0.96	0.31	1.28	0.04	0.84	0.66	275.39	2.26	272.40	3.05	246.79	22.13	275.39	2.26	NA
0619-MR-37 212	525.16	82804.48	1.59	19.27	0.65	0.32	1.27	0.04	1.09	0.86	279.32	2.98	279.43	3.10	280.37	14.88	279.32	2.98	NA
0619-MR-37 17	441.87	156335.2 8	2.54	19.20	0.95	0.32	1.35	0.04	0.96	0.71	280.09	2.63	280.93	3.32	287.84	21.80	280.09	2.63	NA
0619-MR-37 308	881.60	312156.1 1	4.07	18.93	0.86	0.33	1.56	0.05	1.30	0.83	288.78	3.68	292.22	3.97	319.78	19.61	288.78	3.68	NA
0619-MR-37 116	239.38	28542.06	1.56	19.41	1.07	0.33	1.53	0.05	1.09	0.71	290.66	3.10	287.62	3.84	263.00	24.68	290.66	3.10	NA
0619-MR-37 48	85.30	15842.01	1.72	18.41	2.07	0.38	2.24	0.05	0.86	0.38	319.61	2.68	327.36	6.28	382.84	46.59	319.61	2.68	NA
0619-MR-37 170	171.07	60490.85	1.57	18.17	1.48	0.41	1.74	0.05	0.91	0.52	336.82	2.99	346.63	5.12	412.88	33.18	336.82	2.99	NA
0619-MR-37 148	139.89	27478.48	0.68	18.57	1.42	0.44	1.81	0.06	1.12	0.62	371.68	4.03	370.64	5.61	364.12	32.06	371.68	4.03	NA
0619-MR-37 206	293.45	95251.77	1.99	18.51	0.92	0.44	1.47	0.06	1.15	0.78	371.71	4.14	371.66	4.58	371.35	20.70	371.71	4.14	NA
0619-MR-37 106	660.98	94080.56	1.14	18.26	0.80	0.46	1.43	0.06	1.18	0.83	380.37	4.37	383.44	4.57	401.97	17.99	380.37	4.37	NA
0619-MR-37 173	201.77	35007.25	1.54	18.71	1.07	0.45	1.37	0.06	0.86	0.63	383.52	3.20	378.43	4.34	347.35	24.23	383.52	3.20	NA
0619-MR-37 262	346.24	64314.61	4.37	18.14	0.91	0.47	1.25	0.06	0.86	0.69	387.75	3.23	391.82	4.06	415.89	20.26	387.75	3.23	NA
0619-MR-37 139	845.41	8914717. 68	3.35	18.33	0.57	0.47	1.38	0.06	1.26	0.91	388.32	4.74	388.98	4.47	392.90	12.85	388.32	4.74	NA
0619-MR-37 292	640.74	229802.7 4	3.40	18.07	0.65	0.49	1.09	0.06	0.88	0.80	402.51	3.42	405.79	3.66	424.51	14.54	402.51	3.42	94.82
0619-MR-37 117	311.96	41810.50	3.85	18.07	0.90	0.49	1.45	0.06	1.13	0.78	403.17	4.42	406.47	4.85	425.26	20.15	403.17	4.42	94.80
0619-MR-37 241	211.98	312172.2 5	0.95	17.95	0.92	0.51	1.34	0.07	0.97	0.73	412.26	3.89	416.54	4.59	440.31	20.57	412.26	3.89	93.63
0619-MR-37 182	457.82	116224.0 0	2.18	18.33	0.85	0.50	1.04	0.07	0.59	0.57	412.78	2.34	409.83	3.49	393.23	19.16	412.78	2.34	104.97
0619-MR-37 64	91.01	10430.86	1.95	18.49	1.43	0.50	1.72	0.07	0.95	0.55	417.44	3.85	410.73	5.80	373.18	32.17	417.44	3.85	111.86
0619-MR-37 93	448.03	168805.9 0	1.63	18.17	0.78	0.52	1.21	0.07	0.92	0.76	424.95	3.80	423.00	4.18	412.32	17.40	424.95	3.80	103.06
0619-MR-37 246	616.76	193676.2 7	6.28	17.40	0.70	0.54	1.18	0.07	0.95	0.81	428.04	3.94	440.81	4.23	508.07	15.40	428.04	3.94	84.25
0619-MR-37 202	993.28	199909.9 8	4.58	17.76	0.84	0.53	1.46	0.07	1.20	0.82	428.55	4.96	434.03	5.17	463.21	18.73	428.55	4.96	92.52
0619-MR-37 253	331.59	42282.00	1.48	18.07	0.79	0.54	1.23	0.07	0.94	0.77	437.30	3.99	435.29	4.35	424.69	17.54	437.30	3.99	102.97
0619-MR-37 39	403.26	18671.95	5.46	16.16	2.01	0.62	2.14	0.07	0.73	0.34	454.12	3.22	491.36	8.35	668.95	43.12	454.12	3.22	67.89
0619-MR-37 6	160.15	153911.9 2	3.42	17.95	1.33	0.56	1.60	0.07	0.89	0.56	457.07	3.94	454.25	5.86	440.03	29.54	457.07	3.94	103.87
0619-MR-37 24	2447.83	343970.8 6	5.02	17.56	0.71	0.58	1.50	0.07	1.33	0.88	461.87	5.92	466.30	5.63	488.18	15.59	461.87	5.92	94.61

0619-MR-37 159	332.30	62904.30	26.04	17.56	0.98	0.59	1.30	0.07	0.85	0.66	464.64	3.81	468.64	4.86	488.29	21.55	464.64	3.81	95.16
0619-MR-37 122	705.07	346606.4 4	3.78	17.84	0.87	0.58	1.63	0.07	1.38	0.85	465.48	6.20	463.42	6.07	453.22	19.33	465.48	6.20	102.71
0619-MR-37 125	338.59	81389.94	1.64	17.39	0.80	0.67	2.17	0.08	2.02	0.93	523.03	10.14	520.54	8.84	509.61	17.55	523.03	10.14	102.63
0619-MR-37 144	254.12	362539.2 9	1.60	17.41	1.00	0.67	1.30	0.08	0.84	0.64	525.89	4.23	522.51	5.33	507.78	22.00	525.89	4.23	103.56
0619-MR-37 63	104.14	14090.85	1.90	17.10	1.43	0.71	1.61	0.09	0.73	0.46	542.14	3.81	543.02	6.76	546.66	31.27	542.14	3.81	99.17
0619-MR-37 238	436.83	58496.93	1.84	17.14	0.65	0.71	1.02	0.09	0.79	0.77	544.08	4.13	543.66	4.31	541.88	14.24	544.08	4.13	100.41
0619-MR-37 203	306.58	35537.26	1.60	17.05	0.84	0.72	1.23	0.09	0.91	0.74	546.45	4.76	547.77	5.23	553.26	18.25	546.45	4.76	98.77
0619-MR-37 72	233.41	47451.43	1.90	17.32	0.77	0.70	1.12	0.09	0.82	0.73	546.55	4.31	541.28	4.72	519.14	16.86	546.55	4.31	105.28
0619-MR-37 7	243.51	53930.54	0.81	17.24	0.84	0.71	1.20	0.09	0.86	0.72	547.88	4.53	544.31	5.07	529.39	18.41	547.88	4.53	103.49
0619-MR-37 88	107.67	33913.04	1.94	17.33	1.11	0.71	1.32	0.09	0.71	0.54	548.56	3.75	542.51	5.53	517.11	24.26	548.56	3.75	106.08
0619-MR-37 229	114.19	32966.89	1.83	17.55	0.98	0.71	1.25	0.09	0.77	0.62	556.45	4.12	543.56	5.26	489.85	21.65	556.45	4.12	113.60
0619-MR-37 36	104.18	88748.40	1.50	17.31	1.40	0.73	1.67	0.09	0.91	0.55	562.06	4.90	553.81	7.12	519.99	30.65	562.06	4.90	108.09
0619-MR-37 138	175.04	43169.34	2.19	16.89	1.34	0.75	1.61	0.09	0.89	0.55	567.24	4.85	568.53	7.02	573.68	29.18	567.24	4.85	98.88
0619-MR-37 160	68.13	80218.65	1.36	16.87	1.71	0.75	2.04	0.09	1.11	0.55	567.33	6.05	569.17	8.89	576.53	37.14	567.33	6.05	98.41
0619-MR-37 74	384.07	97635.07	5.42	17.09	0.68	0.75	1.05	0.09	0.80	0.77	572.86	4.41	567.81	4.57	547.68	14.76	572.86	4.41	104.60
0619-MR-37 220	165.95	69246.58	1.10	17.20	0.81	0.75	1.26	0.09	0.96	0.77	575.23	5.31	567.07	5.48	534.49	17.78	575.23	5.31	107.62
0619-MR-37 301	94.05	11540.60	65.52	16.64	1.00	0.79	1.32	0.10	0.87	0.66	585.34	4.88	589.56	5.92	605.79	21.51	585.34	4.88	96.62
0619-MR-37 272	271.15	89993.03	1.35	16.79	0.78	0.79	1.16	0.10	0.86	0.74	592.51	4.88	591.25	5.20	586.39	16.84	592.51	4.88	101.04
0619-MR-37 245	99.13	27551.31	2.33	16.73	1.05	0.79	1.35	0.10	0.85	0.63	593.16	4.80	593.32	6.06	593.92	22.77	593.16	4.80	99.87
0619-MR-37 155	338.33	171407.2 3	1.52	16.70	0.84	0.80	1.15	0.10	0.78	0.68	593.20	4.44	594.17	5.18	597.90	18.26	593.20	4.44	99.21
0619-MR-37 275	363.45	84219.99	3.34	16.97	0.84	0.79	1.12	0.10	0.74	0.66	594.66	4.21	588.34	5.00	564.00	18.29	594.66	4.21	105.44
0619-MR-37 299	695.70	4270192. 12	2.94	16.48	0.67	0.83	1.44	0.10	1.27	0.88	607.31	7.38	611.46	6.62	626.84	14.56	607.31	7.38	96.88
0619-MR-37 297	215.85	41312.98	1.74	16.45	0.61	0.83	1.15	0.10	0.97	0.84	610.67	5.65	614.86	5.30	630.32	13.27	610.67	5.65	96.88
0619-MR-37 67	313.83	39391.73	1.01	16.41	0.76	0.84	1.16	0.10	0.88	0.76	612.83	5.15	617.72	5.38	635.70	16.36	612.83	5.15	96.40
0619-MR-37 3	49.30	27898.73	1.78	16.54	1.47	0.84	1.67	0.10	0.80	0.48	617.28	4.70	617.79	7.73	619.64	31.67	617.28	4.70	99.62
0619-MR-37 279	315.04	72244.98	3.62	16.38	0.73	0.85	1.15	0.10	0.89	0.78	617.52	5.27	622.25	5.37	639.52	15.69	617.52	5.27	96.56
0619-MR-37 232	29.59	10774.09	2.82	16.75	1.98	0.83	2.26	0.10	1.08	0.48	620.84	6.36	614.64	10.4 0	591.83	42.98	620.84	6.36	104.90
0619-MR-37 129	171.70	23462.11	7.82	16.52	0.85	0.86	1.15	0.10	0.77	0.67	630.95	4.64	628.85	5.38	621.28	18.31	630.95	4.64	101.56
0619-MR-37 222	193.71	99180.66	4.17	16.94	0.92	0.84	1.51	0.10	1.19	0.79	636.88	7.21	621.70	7.00	566.82	20.14	636.88	7.21	112.36
0619-MR-37 114	558.90	255014.5 4	1.77	16.54	0.72	0.87	1.73	0.10	1.57	0.91	639.34	9.56	634.98	8.15	619.45	15.50	639.34	9.56	103.21
0619-MR-37 58	91.95	46681.23	1.14	16.17	1.16	0.89	1.39	0.10	0.76	0.55	639.61	4.64	645.73	6.62	667.19	24.75	639.61	4.64	95.87
0619-MR-37 115	94.85	49987.90	1.35	16.43	1.02	0.88	1.20	0.11	0.64	0.53	644.12	3.93	641.63	5.72	632.88	21.92	644.12	3.93	101.78
0619-MR-37 259	198.07	57177.33	3.15	16.40	0.97	0.90	1.27	0.11	0.81	0.64	656.23	5.07	652.00	6.10	637.41	20.93	656.23	5.07	102.95
0619-MR-37 167	321.26	116601.7 4	4.62	16.28	0.80	0.92	1.43	0.11	1.19	0.83	665.99	7.50	663.17	6.95	653.57	17.08	665.99	7.50	101.90
0619-MR-37 185	98.09	598933.7 0	81.46	16.52	1.03	0.92	1.53	0.11	1.13	0.74	674.70	7.26	662.57	7.45	621.51	22.24	674.70	7.26	108.56
0619-MR-37 137	408.06	525936.4 4	4.30	16.05	0.73	0.96	1.00	0.11	0.69	0.69	680.18	4.45	681.07	4.98	684.04	15.60	680.18	4.45	99.43
0619-MR-37 205	222.51	106933.0 6	1.61	16.21	0.87	0.95	1.14	0.11	0.74	0.65	685.91	4.80	680.37	5.65	662.08	18.62	685.91	4.80	103.60
0619-MR-37 9	97.39	53490.35	1.38	15.32	1.08	1.04	1.66	0.12	1.26	0.76	703.52	8.39	722.52	8.56	781.95	22.61	703.52	8.39	89.97
0619-MR-37 178	142.25	329038.6 0	1.86	15.52	0.94	1.13	1.31	0.13	0.91	0.70	769.78	6.58	766.08	7.02	755.27	19.79	769.78	6.58	101.92
0619-MR-37 95	258.46	116199.0 0	4.63	14.84	0.78	1.32	1.17	0.14	0.88	0.75	854.09	7.00	852.64	6.78	848.89	16.30	854.09	7.00	100.61

0619-MR-37 14	145.82	283844.80	4.62	14.34	0.76	1.49	1.31	0.16	1.06	0.81	930.33	9.22	927.23	7.94	919.87	15.57	919.87	15.57	101.14
0619-MR-37 188	154.89	84440.57	2.41	13.96	0.66	1.68	0.92	0.17	0.64	0.70	1016.02	6.01	1002.79	5.84	973.96	13.36	973.96	13.36	104.32
0619-MR-37 196	1136.57	456899.51	3.28	13.81	0.57	1.61	1.25	0.16	1.11	0.89	962.62	9.92	972.95	7.81	996.33	11.56	996.33	11.56	96.62
0619-MR-37 223	379.48	179802.46	4.16	13.75	0.56	1.67	1.03	0.17	0.86	0.84	993.56	7.96	997.37	6.54	1005.74	11.35	1005.74	11.35	98.79
0619-MR-37 236	199.28	70384.51	2.92	13.71	0.85	1.67	1.16	0.17	0.79	0.68	992.42	7.30	998.15	7.39	1010.74	17.25	1010.74	17.25	98.19
0619-MR-37 46	87.09	556309.10	2.90	13.68	0.84	1.77	1.25	0.18	0.93	0.74	1041.62	8.92	1033.38	8.11	1015.99	17.03	1015.99	17.03	102.52
0619-MR-37 179	283.75	121903.49	3.66	13.65	0.68	1.74	0.98	0.17	0.71	0.72	1026.39	6.73	1024.30	6.33	1019.83	13.73	1019.83	13.73	100.64
0619-MR-37 171	136.44	356741.53	1.17	13.64	0.82	1.71	1.16	0.17	0.82	0.71	1006.91	7.65	1011.63	7.44	1021.85	16.62	1021.85	16.62	98.54
0619-MR-37 166	243.91	73487.94	3.67	13.63	0.71	1.77	0.97	0.18	0.67	0.68	1042.43	6.41	1036.15	6.33	1022.90	14.41	1022.90	14.41	101.91
0619-MR-37 209	50.53	16440.00	2.32	13.60	0.97	1.73	1.40	0.17	1.01	0.72	1013.78	9.45	1017.98	9.01	1026.99	19.71	1026.99	19.71	98.71
0619-MR-37 32	436.58	204115.68	3.91	13.60	0.72	1.72	1.10	0.17	0.83	0.76	1013.21	7.77	1017.84	7.04	1027.80	14.48	1027.80	14.48	98.58
0619-MR-37 198	201.37	93969.37	3.84	13.59	0.80	1.74	1.37	0.17	1.11	0.81	1022.17	10.46	1024.33	8.83	1028.93	16.27	1028.93	16.27	99.34
0619-MR-37 5	190.36	184860.98	1.01	13.54	0.47	1.81	1.03	0.18	0.91	0.89	1055.95	8.89	1049.80	6.73	1037.00	9.56	1037.00	9.56	101.83
0619-MR-37 16	195.28	323571.70	3.33	13.54	0.62	1.81	0.95	0.18	0.73	0.76	1056.13	7.08	1049.93	6.23	1037.01	12.45	1037.01	12.45	101.84
0619-MR-37 268	443.11	2061267.89	3.07	13.53	0.52	1.82	1.07	0.18	0.93	0.87	1061.67	9.14	1053.88	7.01	1037.74	10.52	1037.74	10.52	102.31
0619-MR-37 10	106.44	162607.04	3.32	13.53	0.88	1.79	1.14	0.18	0.72	0.63	1041.91	6.88	1040.85	7.41	1038.62	17.88	1038.62	17.88	100.32
0619-MR-37 226	49.56	30689.16	2.39	13.53	0.94	1.64	1.44	0.16	1.09	0.76	961.84	9.76	985.55	9.10	1038.73	19.03	1038.73	19.03	92.60
0619-MR-37 27	154.78	62941.14	2.26	13.45	0.56	1.80	1.12	0.18	0.97	0.87	1043.61	9.33	1045.48	7.30	1049.40	11.30	1049.40	11.30	99.45
0619-MR-37 221	650.06	716081.55	5.83	13.42	0.87	1.62	2.11	0.16	1.92	0.91	941.69	16.86	976.13	13.24	1054.45	17.56	1054.45	17.56	89.31
0619-MR-37 190	223.40	459681.93	3.20	13.41	0.67	1.83	1.02	0.18	0.77	0.75	1056.29	7.47	1056.20	6.70	1056.03	13.58	1056.03	13.58	100.02
0619-MR-37 234	177.22	265831.86	1.52	13.36	0.82	1.94	1.30	0.19	1.01	0.78	1110.05	10.30	1094.52	8.71	1063.76	16.43	1063.76	16.43	104.35
0619-MR-37 13	162.56	132489.58	2.41	13.29	0.74	1.94	0.99	0.19	0.65	0.66	1105.75	6.60	1094.95	6.62	1073.57	14.92	1073.57	14.92	103.00
0619-MR-37 121	74.44	51032.39	4.62	13.29	1.01	1.97	1.68	0.19	1.35	0.80	1119.33	13.83	1104.12	11.32	1074.28	20.23	1074.28	20.23	104.19
0619-MR-37 239	98.88	59976.17	3.42	13.24	0.77	1.90	1.30	0.18	1.04	0.80	1081.21	10.39	1081.48	8.64	1082.04	15.46	1082.04	15.46	99.92
0619-MR-37 284	428.61	208252.90	3.85	13.24	0.59	1.91	0.99	0.18	0.80	0.81	1083.65	7.97	1083.14	6.59	1082.15	11.73	1082.15	11.73	100.14
0619-MR-37 302	137.45	48842.19	1.94	13.23	0.72	1.88	1.07	0.18	0.80	0.74	1069.46	7.85	1074.03	7.11	1083.28	14.42	1083.28	14.42	98.72
0619-MR-37 276	408.11	197775.06	1.39	13.19	0.67	1.94	1.04	0.19	0.80	0.77	1096.48	8.05	1093.91	6.98	1088.79	13.44	1088.79	13.44	100.71
0619-MR-37 29	2871.75	1246639.35	6.74	13.19	0.61	1.82	1.17	0.17	1.00	0.85	1037.32	9.60	1054.32	7.70	1089.67	12.29	1089.67	12.29	95.20
0619-MR-37 249	2667.22	529670.01	2.52	13.18	0.58	1.81	1.39	0.17	1.26	0.91	1031.21	12.02	1050.35	9.09	1090.34	11.66	1090.34	11.66	94.58
0619-MR-37 199	736.28	790321.63	148.31	13.15	0.65	1.91	1.35	0.18	1.18	0.87	1078.87	11.73	1084.43	9.00	1095.60	13.07	1095.60	13.07	98.47
0619-MR-37 162	239.47	115302.54	2.35	13.12	0.79	1.94	1.14	0.18	0.83	0.72	1090.01	8.29	1093.37	7.66	1100.08	15.84	1100.08	15.84	99.08
0619-MR-37 59	501.13	409015.87	4.75	12.93	0.63	1.97	1.58	0.19	1.45	0.92	1094.97	14.58	1106.59	10.64	1129.50	12.52	1129.50	12.52	96.94
0619-MR-37 42	691.93	1615924.52	3.59	12.81	0.48	1.87	1.29	0.17	1.20	0.93	1031.69	11.43	1069.62	8.55	1147.77	9.61	1147.77	9.61	89.89
0619-MR-37 119	173.28	65838.37	1.59	12.79	1.20	1.84	3.61	0.17	3.40	0.94	1016.73	32.01	1060.14	23.75	1150.60	23.90	1150.60	23.90	88.37
0619-MR-37 141	98.92	1033728.24	2.72	12.78	0.75	2.15	1.14	0.20	0.86	0.75	1173.84	9.23	1166.38	7.92	1152.55	14.94	1152.55	14.94	101.85
0619-MR-37 85	132.99	90304.33	2.73	12.78	0.77	2.12	1.18	0.20	0.89	0.76	1154.55	9.44	1153.97	8.14	1152.85	15.36	1152.85	15.36	100.15
0619-MR-37 271	367.35	509083.20	3.87	12.77	0.59	2.07	1.05	0.19	0.87	0.83	1131.45	9.03	1138.91	7.19	1153.15	11.68	1153.15	11.68	98.12
0619-MR-37 128	330.84	127067.19	3.45	12.77	0.80	2.03	1.23	0.19	0.94	0.76	1110.02	9.57	1124.80	8.38	1153.44	15.87	1153.44	15.87	96.24
0619-MR-37 286	224.51	112665.53	2.36	12.77	0.64	2.08	0.90	0.19	0.63	0.70	1134.80	6.59	1141.52	6.18	1154.30	12.73	1154.30	12.73	98.31
0619-MR-37 75	173.67	76517.70	2.89	12.76	0.77	2.19	1.42	0.20	1.19	0.84	1190.19	12.94	1178.05	9.90	1155.80	15.35	1155.80	15.35	102.97

0619-MR-37 252	112.61	53380.20	2.25	12.75	0.98	2.08	1.38	0.19	0.97	0.71	1134.23	10.10	1141.84	9.44	1156.31	19.38	1156.31	19.38	98.09
0619-MR-37 219	197.34	146513.97	2.78	12.71	0.69	2.17	0.97	0.20	0.68	0.70	1177.96	7.35	1173.01	6.74	1163.85	13.65	1163.85	13.65	101.21
0619-MR-37 77	17.41	18728.73	0.10	12.70	2.01	1.89	2.57	0.17	1.60	0.62	1035.11	15.31	1077.64	17.07	1164.68	39.85	1164.68	39.85	88.88
0619-MR-37 218	37.42	35635.90	4.00	12.69	1.13	2.18	1.41	0.20	0.85	0.60	1181.22	9.19	1176.22	9.86	1167.02	22.39	1167.02	22.39	101.22
0619-MR-37 130	94.54	64288.48	2.16	12.68	0.84	2.14	1.27	0.20	0.95	0.75	1159.99	10.06	1162.61	8.77	1167.49	16.68	1167.49	16.68	99.36
0619-MR-37 71	817.72	541877.90	11.29	12.63	0.69	2.11	1.52	0.19	1.35	0.89	1138.75	14.14	1151.58	10.48	1175.85	13.73	1175.85	13.73	96.84
0619-MR-37 65	91.13	117063.61	1.46	12.60	0.82	2.13	1.22	0.20	0.90	0.74	1149.57	9.45	1160.14	8.41	1179.96	16.21	1179.96	16.21	97.42
0619-MR-37 62	650.67	378736.77	5.26	12.59	0.78	2.18	1.21	0.20	0.92	0.76	1172.09	9.90	1175.62	8.43	1182.16	15.47	1182.16	15.47	99.15
0619-MR-37 110	621.16	1408741.58	2.02	12.58	0.64	2.18	1.69	0.20	1.57	0.93	1171.43	16.80	1175.91	11.80	1184.17	12.67	1184.17	12.67	98.92
0619-MR-37 47	180.96	62723.12	2.88	12.57	0.89	2.10	1.41	0.19	1.10	0.78	1130.76	11.36	1149.72	9.70	1185.68	17.52	1185.68	17.52	95.37
0619-MR-37 285	148.99	144986.57	1.80	12.52	0.73	2.27	1.11	0.21	0.84	0.75	1208.30	9.22	1202.72	7.84	1192.72	14.44	1192.72	14.44	101.31
0619-MR-37 293	431.79	225684.60	1.03	12.42	0.65	2.28	1.08	0.21	0.87	0.80	1205.76	9.57	1206.89	7.66	1208.90	12.75	1208.90	12.75	99.74
0619-MR-37 41	162.13	153206.66	0.98	12.35	0.68	2.27	1.08	0.20	0.84	0.78	1191.37	9.17	1201.51	7.61	1219.78	13.30	1219.78	13.30	97.67
0619-MR-37 233	207.62	184390.57	3.20	12.30	0.65	2.37	1.00	0.21	0.76	0.76	1236.21	8.50	1233.32	7.11	1228.30	12.74	1228.30	12.74	100.64
0619-MR-37 251	392.83	2465426.43	4.36	12.25	0.64	2.38	0.97	0.21	0.73	0.75	1235.93	8.20	1236.00	6.94	1236.12	12.59	1236.12	12.59	99.98
0619-MR-37 104	946.43	615938.26	5.74	12.16	0.63	2.35	1.27	0.21	1.10	0.87	1214.23	12.22	1227.15	9.04	1249.90	12.24	1249.90	12.24	97.15
0619-MR-37 197	399.59	1132906.81	2.65	12.06	0.67	2.47	1.09	0.22	0.86	0.79	1260.36	9.88	1262.83	7.91	1267.03	13.12	1267.03	13.12	99.47
0619-MR-37 99	1586.22	1969820.60	18.59	11.87	0.50	2.60	1.03	0.22	0.90	0.87	1303.78	10.59	1301.16	7.55	1296.81	9.82	1296.81	9.82	100.54
0619-MR-37 45	145.31	133059.04	3.23	11.66	0.81	2.71	1.03	0.23	0.64	0.62	1330.89	7.68	1331.16	7.64	1331.57	15.62	1331.57	15.62	99.95
0619-MR-37 269	925.48	1138057.25	3.69	11.63	0.56	2.71	1.32	0.23	1.20	0.91	1329.86	14.38	1332.55	9.79	1336.86	10.73	1336.86	10.73	99.48
0619-MR-37 260	113.92	39314.58	1.56	11.55	0.75	2.87	1.05	0.24	0.73	0.70	1391.15	9.19	1375.04	7.93	1350.09	14.56	1350.09	14.56	103.04
0619-MR-37 123	327.77	301269.22	3.19	11.45	0.69	2.92	1.24	0.24	1.03	0.83	1400.54	12.92	1387.55	9.36	1367.62	13.32	1367.62	13.32	102.41
0619-MR-37 295	90.24	39885.23	1.22	11.38	0.66	2.88	0.94	0.24	0.66	0.71	1376.12	8.21	1377.05	7.07	1378.47	12.76	1378.47	12.76	99.83
0619-MR-37 105	335.17	171721.26	3.19	11.30	0.58	2.88	1.08	0.24	0.91	0.84	1365.58	11.23	1376.32	8.15	1393.01	11.13	1393.01	11.13	98.03
0619-MR-37 89	235.40	121281.00	1.24	11.21	0.73	2.65	1.06	0.22	0.77	0.73	1259.56	8.83	1315.22	7.84	1407.11	14.00	1407.11	14.00	89.51
0619-MR-37 53	181.71	152404.55	1.55	11.21	0.59	2.94	1.06	0.24	0.88	0.83	1384.05	10.90	1393.42	8.00	1407.77	11.27	1407.77	11.27	98.31
0619-MR-37 210	601.50	277962.83	4.74	11.18	0.58	3.03	1.32	0.25	1.19	0.90	1418.52	15.15	1416.08	10.11	1412.40	11.08	1412.40	11.08	100.43
0619-MR-37 118	167.05	359497.26	1.75	11.12	0.80	3.10	1.31	0.25	1.03	0.79	1438.48	13.33	1432.17	10.03	1422.80	15.27	1422.80	15.27	101.10
0619-MR-37 193	121.41	142253.14	2.02	11.07	0.75	3.16	1.08	0.25	0.78	0.72	1458.07	10.13	1447.36	8.35	1431.65	14.41	1431.65	14.41	101.85
0619-MR-37 78	154.39	141003.15	1.53	11.05	0.64	3.13	1.09	0.25	0.89	0.81	1444.84	11.47	1441.28	8.40	1436.00	12.15	1436.00	12.15	100.62
0619-MR-37 256	90.73	45101.03	1.78	11.03	0.79	3.10	1.22	0.25	0.93	0.76	1430.01	11.93	1433.81	9.38	1439.44	15.09	1439.44	15.09	99.34
0619-MR-37 44	191.77	148631.47	1.72	11.01	0.58	3.07	1.09	0.25	0.92	0.85	1414.78	11.70	1425.41	8.34	1441.30	11.08	1441.30	11.08	98.16
0619-MR-37 96	243.96	188465.38	1.26	10.97	0.59	3.19	1.03	0.25	0.85	0.82	1459.82	11.06	1455.21	7.98	1448.47	11.25	1448.47	11.25	100.78
0619-MR-37 290	381.98	418664.96	2.20	10.94	0.59	3.02	0.98	0.24	0.78	0.80	1383.57	9.74	1411.88	7.46	1454.85	11.15	1454.85	11.15	95.10
0619-MR-37 92	281.25	185049.26	1.51	10.92	0.62	3.10	1.18	0.25	1.01	0.85	1417.15	12.80	1433.58	9.08	1458.03	11.83	1458.03	11.83	97.20
0619-MR-37 109	519.04	387655.24	4.72	10.91	0.55	3.25	1.23	0.26	1.10	0.89	1475.16	14.48	1468.48	9.55	1458.81	10.54	1458.81	10.54	101.12
0619-MR-37 133	127.14	8459.54	2.63	10.90	7.57	1.28	7.68	0.10	1.33	0.17	622.43	7.88	837.38	43.85	1460.44	144.06	1460.44	144.06	42.62
0619-MR-37 143	50.69	29915.29	3.63	10.90	0.99	2.98	1.37	0.24	0.95	0.69	1363.47	11.72	1401.82	10.44	1460.62	18.77	1460.62	18.77	93.35
0619-MR-37 127	288.70	5885996.52	1.75	10.89	0.54	3.25	1.06	0.26	0.91	0.86	1471.79	11.99	1468.05	8.24	1462.62	10.34	1462.62	10.34	100.63
0619-MR-37 278	577.90	596697.73	1.71	10.85	0.62	3.17	1.33	0.25	1.18	0.88	1435.97	15.14	1449.65	10.28	1469.74	11.84	1469.74	11.84	97.70

0619-MR-37 281	201.09	83110.50	2.02	10.83	0.70	3.34	1.00	0.26	0.71	0.71	1503.64	9.56	1490.97	7.82	1472.96	13.33	1472.96	13.33	102.08
0619-MR-37 102	132.71	231814.12	1.32	10.78	0.55	3.19	0.93	0.25	0.75	0.81	1435.76	9.67	1454.44	7.20	1481.81	10.46	1481.81	10.46	96.89
0619-MR-37 267	395.00	602482.52	1.98	10.75	0.56	3.36	0.88	0.26	0.68	0.77	1498.92	9.08	1494.54	6.87	1488.32	10.55	1488.32	10.55	100.71
0619-MR-37 289	467.11	282027.35	3.13	10.59	0.55	3.42	1.09	0.26	0.94	0.87	1505.56	12.65	1510.06	8.56	1516.36	10.29	1516.36	10.29	99.29
0619-MR-37 201	372.77	659116.98	1.41	10.15	0.54	3.76	1.02	0.28	0.87	0.85	1576.08	12.13	1584.21	8.20	1595.04	10.08	1595.04	10.08	98.81
0619-MR-37 82	301.01	2745047.73	2.01	10.08	0.59	3.81	1.04	0.28	0.86	0.82	1584.95	12.09	1594.82	8.40	1607.86	11.04	1607.86	11.04	98.58
0619-MR-37 273	160.69	117239.13	1.51	9.84	0.61	4.24	1.08	0.30	0.89	0.83	1706.06	13.34	1682.15	8.86	1652.45	11.27	1652.45	11.27	103.24
0619-MR-37 277	228.50	748043.89	4.57	9.59	0.67	4.56	1.03	0.32	0.79	0.76	1776.98	12.21	1742.30	8.61	1700.91	12.37	1700.91	12.37	104.47
0619-MR-37 90	623.34	344669.60	3.28	9.44	0.56	4.36	1.43	0.30	1.31	0.92	1683.65	19.43	1703.87	11.78	1728.80	10.33	1728.80	10.33	97.39
0619-MR-37 304	351.67	615472.71	2.02	9.29	0.77	4.55	1.10	0.31	0.79	0.71	1723.32	11.89	1739.29	9.18	1758.53	14.15	1758.53	14.15	98.00
0619-MR-37 76	671.06	1788239.99	4.20	9.28	0.57	4.51	1.65	0.30	1.55	0.94	1709.47	23.32	1732.35	13.75	1760.07	10.44	1760.07	10.44	97.12
0619-MR-37 213	81.66	127401.32	1.52	9.21	0.78	4.70	1.04	0.31	0.69	0.66	1761.80	10.68	1767.54	8.75	1774.31	14.27	1774.31	14.27	99.29
0619-MR-37 298	586.30	1690160.24	8.90	9.13	0.56	4.82	1.03	0.32	0.86	0.84	1787.65	13.46	1788.87	8.65	1790.27	10.23	1790.27	10.23	99.85
0619-MR-37 235	168.37	276167.33	1.39	9.07	0.67	4.85	1.17	0.32	0.96	0.82	1786.47	14.95	1793.81	9.85	1802.35	12.23	1802.35	12.23	99.12
0619-MR-37 113	187.85	169044.85	1.60	8.98	0.65	5.00	0.98	0.33	0.73	0.74	1818.06	11.51	1819.31	8.27	1820.73	11.87	1820.73	11.87	99.85
0619-MR-37 107	81.93	107679.52	1.08	8.93	0.56	4.26	1.16	0.28	1.01	0.87	1570.23	14.13	1684.76	9.53	1830.44	10.18	1830.44	10.18	85.78
0619-MR-37 149	163.68	174552.94	1.12	8.87	0.62	5.23	1.02	0.34	0.81	0.80	1869.34	13.21	1856.94	8.72	1843.07	11.22	1843.07	11.22	101.43
0619-MR-37 257	161.13	137905.51	4.61	8.74	0.55	5.44	1.08	0.34	0.93	0.86	1909.76	15.30	1890.43	9.25	1869.26	9.99	1869.26	9.99	102.17
0619-MR-37 174	239.14	162379.92	2.27	8.53	0.60	5.02	1.63	0.31	1.51	0.93	1743.49	23.11	1822.39	13.78	1913.79	10.77	1913.79	10.77	91.10
0619-MR-37 250	54.68	84686.21	1.33	8.51	0.72	5.75	1.29	0.36	1.08	0.83	1959.85	18.17	1939.34	11.19	1917.50	12.87	1917.50	12.87	102.21
0619-MR-37 15	95.33	104001.06	1.13	7.87	0.68	6.31	1.12	0.36	0.88	0.79	1984.23	15.10	2019.66	9.78	2056.06	12.03	2056.06	12.03	96.51
0619-MR-37 25	158.77	171934.48	1.21	7.82	0.59	6.68	1.35	0.38	1.22	0.90	2073.62	21.63	2070.54	11.97	2067.47	10.41	2067.47	10.41	100.30
0619-MR-37 8	278.51	191664.78	2.68	7.75	0.68	6.61	1.00	0.37	0.73	0.73	2038.82	12.77	2060.87	8.83	2082.98	12.04	2082.98	12.04	97.88
0619-MR-37 120	141.42	720732.97	1.97	7.72	0.75	6.89	1.44	0.39	1.23	0.85	2103.17	22.04	2097.46	12.75	2091.85	13.13	2091.85	13.13	100.54
0619-MR-37 37	174.26	2470138.10	2.46	7.66	0.52	6.84	0.94	0.38	0.78	0.83	2079.13	13.91	2091.44	8.31	2103.57	9.09	2103.57	9.09	98.84
0619-MR-37 172	150.42	1075127.90	4.22	6.04	0.66	11.10	1.00	0.49	0.75	0.75	2554.99	15.86	2531.90	9.29	2513.43	11.02	2513.43	11.02	101.65
0619-MR-37 192	136.13	314617.60	2.98	5.95	0.69	10.60	1.05	0.46	0.80	0.76	2426.77	16.13	2488.36	9.77	2539.02	11.53	2539.02	11.53	95.58
0619-MR-37 242	135.59	274765.09	1.62	5.54	0.63	13.08	1.17	0.53	0.98	0.84	2723.29	21.73	2685.66	10.99	2657.44	10.50	2657.44	10.50	102.48
0619-MR-37 261	146.00	172675.63	1.67	5.37	0.85	12.79	1.56	0.50	1.31	0.84	2606.98	28.06	2664.15	14.69	2707.83	13.99	2707.83	13.99	96.28
0619-MR-37 230	284.21	691297.05	0.62	5.35	0.56	13.50	0.92	0.52	0.73	0.79	2714.78	16.10	2715.46	8.68	2715.94	9.25	2715.94	9.25	99.96
0619-MR-37 38	74.66	328919.63	1.97	5.05	0.67	14.04	1.16	0.51	0.95	0.82	2675.90	20.79	2752.41	11.02	2809.01	10.96	2809.01	10.96	95.26
0619-MR-37 296	148.05	1860631.99	1.51	4.71	0.68	16.08	1.05	0.55	0.80	0.76	2820.51	18.16	2881.43	10.02	2924.29	11.04	2924.29	11.04	96.45

Sample 0119-MR-01

0119-MR-01 Spot 147	182.94	8479.38	1.96	20.81	1.67	0.15	2.03	0.02	1.16	0.57	142.07	1.63	139.75	2.66	100.45	39.54	142.07	1.63	101.66
0119-MR-01 Spot 68	750.03	28024.61	1.73	20.49	0.99	0.15	2.14	0.02	1.89	0.89	142.42	2.67	142.11	2.83	136.95	23.16	142.42	2.67	100.22
0119-MR-01 Spot 191	258.02	6804.95	2.05	20.94	1.26	0.15	1.61	0.02	1.00	0.62	143.11	1.41	139.92	2.10	86.15	29.95	143.11	1.41	102.28
0119-MR-01 Spot 194	146.06	9833.14	3.21	20.17	2.02	0.15	2.47	0.02	1.42	0.57	143.52	2.01	145.29	3.34	174.25	47.17	143.52	2.01	98.78
0119-MR-01 Spot 238	153.12	17017.17	2.21	20.72	1.62	0.15	2.05	0.02	1.25	0.61	143.88	1.77	142.03	2.71	111.20	38.28	143.88	1.77	101.30

0119-MR-01 Spot 203	154.50	4556.82	2.07	20.98	3.02	0.15	3.42	0.02	1.60	0.47	143.96	2.28	140.43	4.48	81.14	71.62	143.96	2.28	102.51
0119-MR-01 Spot 266	182.54	8228.38	2.43	20.54	1.75	0.15	2.25	0.02	1.41	0.63	144.71	2.01	143.94	3.02	131.12	41.24	144.71	2.01	100.54
0119-MR-01 Spot 173	96.06	3813.69	2.62	21.11	2.15	0.15	2.61	0.02	1.48	0.57	144.90	2.13	140.50	3.43	66.65	51.25	144.90	2.13	103.14
0119-MR-01 Spot 16	187.80	42619.36	2.00	19.98	1.98	0.16	2.72	0.02	1.86	0.69	145.31	2.67	148.30	3.75	196.39	45.93	145.31	2.67	97.98
0119-MR-01 Spot 81	239.87	7682.60	2.09	21.19	1.87	0.15	2.32	0.02	1.37	0.59	145.36	1.97	140.46	3.05	58.43	44.72	145.36	1.97	103.49
0119-MR-01 Spot 211	191.12	133161.99	3.02	20.18	1.49	0.16	1.87	0.02	1.13	0.60	145.41	1.62	147.03	2.56	173.23	34.75	145.41	1.62	98.90
0119-MR-01 Spot 76	166.85	79701.53	1.86	19.73	1.88	0.16	2.31	0.02	1.34	0.58	145.44	1.93	150.18	3.22	225.76	43.41	145.44	1.93	96.84
0119-MR-01 Spot 35	109.36	3281.33	2.80	22.29	5.37	0.14	5.52	0.02	1.27	0.23	145.65	1.82	134.17	6.94	NA	NA	145.65	1.82	108.56
0119-MR-01 Spot 199	264.20	6063.40	1.88	21.37	1.52	0.15	2.09	0.02	1.44	0.69	145.80	2.07	139.76	2.73	38.22	36.35	145.80	2.07	104.33
0119-MR-01 Spot 196	191.38	3714.63	1.61	21.70	1.56	0.15	2.22	0.02	1.58	0.71	145.82	2.28	137.78	2.87	1.37	37.70	145.82	2.28	105.84
0119-MR-01 Spot 200	80.07	2826.21	2.18	20.51	5.80	0.15	5.96	0.02	1.40	0.23	145.94	2.01	145.34	8.07	135.61	136.28	145.94	2.01	100.41
0119-MR-01 Spot 306	219.71	5884.36	2.62	20.54	2.80	0.15	3.16	0.02	1.46	0.46	145.98	2.11	145.14	4.27	131.45	65.81	145.98	2.11	100.58
0119-MR-01 Spot 183	278.36	6075.38	1.93	21.12	1.95	0.15	2.26	0.02	1.13	0.50	146.00	1.63	141.46	2.98	65.87	46.49	146.00	1.63	103.21
0119-MR-01 Spot 27	152.37	3346.06	2.84	22.19	3.50	0.14	3.75	0.02	1.35	0.36	146.06	1.95	135.11	4.74	NA	NA	146.06	1.95	108.10
0119-MR-01 Spot 156	202.61	11219.55	2.24	21.06	1.42	0.15	2.09	0.02	1.52	0.73	146.33	2.21	142.10	2.77	72.00	33.84	146.33	2.21	102.98
0119-MR-01 Spot 291	110.58	11114.38	2.08	21.12	1.42	0.15	1.88	0.02	1.24	0.66	146.37	1.79	141.80	2.49	65.89	33.77	146.37	1.79	103.23
0119-MR-01 Spot 258	106.62	7152.37	3.64	20.11	2.83	0.16	3.17	0.02	1.42	0.45	146.38	2.06	148.41	4.37	181.01	65.89	146.38	2.06	98.63
0119-MR-01 Spot 284	227.77	100129.56	2.69	20.14	1.39	0.16	1.93	0.02	1.35	0.70	146.56	1.95	148.35	2.67	177.16	32.36	146.56	1.95	98.79
0119-MR-01 Spot 34	198.46	19970.92	1.63	20.63	1.70	0.15	2.23	0.02	1.45	0.65	146.68	2.10	145.21	3.02	121.26	39.96	146.68	2.10	101.01
0119-MR-01 Spot 8	333.65	5569.86	2.12	21.11	2.22	0.15	2.79	0.02	1.69	0.60	147.06	2.45	142.47	3.71	66.77	52.95	147.06	2.45	103.22
0119-MR-01 Spot 7	165.50	14467.16	4.40	20.38	1.74	0.16	2.33	0.02	1.55	0.67	147.08	2.25	147.26	3.19	150.11	40.69	147.08	2.25	99.88
0119-MR-01 Spot 263	110.05	2952.99	2.29	21.80	2.33	0.15	2.82	0.02	1.59	0.56	147.17	2.31	138.34	3.64	NA	NA	147.17	2.31	106.38
0119-MR-01 Spot 119	292.67	12345.83	2.60	20.88	1.03	0.15	1.87	0.02	1.56	0.83	147.23	2.27	144.12	2.51	93.33	24.42	147.23	2.27	102.15
0119-MR-01 Spot 190	526.41	51542.00	1.75	20.47	1.37	0.16	2.44	0.02	2.02	0.83	147.53	2.94	147.04	3.34	139.19	32.20	147.53	2.94	100.33
0119-MR-01 Spot 239	383.43	31455.53	1.79	20.18	1.18	0.16	1.70	0.02	1.23	0.72	147.68	1.79	149.16	2.36	172.81	27.49	147.68	1.79	99.00
0119-MR-01 Spot 78	115.78	57606.61	2.78	20.98	1.91	0.15	2.53	0.02	1.66	0.66	147.72	2.43	143.93	3.39	81.86	45.25	147.72	2.43	102.63
0119-MR-01 Spot 24	258.40	54290.89	1.93	19.81	1.44	0.16	2.07	0.02	1.48	0.72	147.84	2.16	151.95	2.92	216.45	33.42	147.84	2.16	97.30
0119-MR-01 Spot 131	136.63	21510.71	2.66	20.66	1.83	0.15	2.36	0.02	1.49	0.63	147.87	2.17	146.12	3.21	117.78	43.20	147.87	2.17	101.20
0119-MR-01 Spot 181	280.15	35647.70	2.04	20.15	1.17	0.16	1.69	0.02	1.22	0.72	147.87	1.78	149.60	2.35	177.00	27.33	147.87	1.78	98.85
0119-MR-01 Spot 130	527.15	10559.76	1.44	20.65	1.43	0.15	2.26	0.02	1.74	0.77	147.91	2.55	146.21	3.07	118.58	33.75	147.91	2.55	101.17
0119-MR-01 Spot 40	509.33	17959.75	2.80	20.31	1.00	0.16	1.64	0.02	1.30	0.79	147.93	1.90	148.51	2.27	157.84	23.46	147.93	1.90	99.61
0119-MR-01 Spot 26	170.83	3823.70	2.94	22.37	4.53	0.14	4.72	0.02	1.33	0.28	148.02	1.94	135.79	6.00	NA	NA	148.02	1.94	109.01
0119-MR-01 Spot 255	31.63	6996.85	3.97	19.28	3.21	0.17	3.65	0.02	1.73	0.47	148.09	2.53	156.03	5.27	278.48	73.50	148.09	2.53	94.91
0119-MR-01 Spot 271	118.79	5559.52	2.30	21.06	1.67	0.15	2.06	0.02	1.22	0.59	148.16	1.78	143.79	2.76	72.16	39.61	148.16	1.78	103.04
0119-MR-01 Spot 235	99.65	25220.33	2.31	19.93	2.12	0.16	2.63	0.02	1.56	0.59	148.26	2.28	151.45	3.70	201.69	49.21	148.26	2.28	97.89
0119-MR-01 Spot 215	120.60	7515.45	2.88	20.63	1.96	0.16	2.51	0.02	1.56	0.62	148.32	2.29	146.76	3.43	121.64	46.27	148.32	2.29	101.06
0119-MR-01 Spot 186	432.65	13063.00	1.38	20.79	1.08	0.15	1.97	0.02	1.65	0.84	148.35	2.43	145.73	2.68	103.37	25.52	148.35	2.43	101.79
0119-MR-01 Spot 11	183.70	21450.75	2.73	20.27	1.68	0.16	2.51	0.02	1.86	0.74	148.43	2.74	149.25	3.48	162.26	39.28	148.43	2.74	99.45
0119-MR-01 Spot 84	59.18	4604.91	4.69	19.11	5.25	0.17	5.55	0.02	1.82	0.33	148.58	2.67	157.84	8.12	299.01	119.79	148.58	2.67	94.14
0119-MR-01 Spot 297	327.66	26874.80	3.45	20.47	1.41	0.16	1.86	0.02	1.22	0.65	148.89	1.79	148.33	2.57	139.53	33.03	148.89	1.79	100.37

0119-MR-01 Spot 124	84.95	4192.55	3.84	20.80	2.30	0.15	2.65	0.02	1.31	0.50	148.96	1.94	146.20	3.61	101.62	54.44	148.96	1.94	101.89
0119-MR-01 Spot 154	719.20	24019.50	2.49	20.56	1.23	0.16	2.03	0.02	1.62	0.80	149.03	2.39	147.84	2.80	128.94	28.92	149.03	2.39	100.80
0119-MR-01 Spot 21	152.22	19996.73	2.33	20.01	1.82	0.16	2.17	0.02	1.18	0.55	149.18	1.74	151.80	3.05	192.86	42.22	149.18	1.74	98.28
0119-MR-01 Spot 33	248.67	9957.27	1.88	20.92	1.34	0.15	1.89	0.02	1.34	0.71	149.24	1.97	145.68	2.57	88.09	31.72	149.24	1.97	102.44
0119-MR-01 Spot 86	277.32	24738.94	2.64	20.18	1.44	0.16	1.95	0.02	1.31	0.67	149.32	1.93	150.70	2.73	172.57	33.59	149.32	1.93	99.08
0119-MR-01 Spot 282	154.32	4381.43	2.61	21.88	2.12	0.15	2.46	0.02	1.26	0.51	149.75	1.86	140.18	3.22	NA	NA	149.75	1.86	106.83
0119-MR-01 Spot 198	249.01	22871.81	2.93	20.35	1.63	0.16	2.34	0.02	1.67	0.72	149.98	2.48	150.19	3.26	153.40	38.22	149.98	2.48	99.86
0119-MR-01 Spot 208	133.77	3363.69	2.76	21.49	5.14	0.15	5.38	0.02	1.58	0.29	150.00	2.34	142.75	7.16	23.81	123.44	150.00	2.34	105.08
0119-MR-01 Spot 80	319.03	8651.10	1.94	20.70	1.70	0.16	2.02	0.02	1.10	0.54	150.04	1.64	147.87	2.79	113.24	40.09	150.04	1.64	101.47
0119-MR-01 Spot 52	307.08	5813.60	3.99	21.61	1.48	0.15	2.02	0.02	1.37	0.68	150.10	2.03	142.11	2.67	10.64	35.67	150.10	2.03	105.62
0119-MR-01 Spot 37	238.83	14440.34	2.61	20.18	1.38	0.16	1.79	0.02	1.14	0.64	150.14	1.69	151.55	2.52	173.58	32.25	150.14	1.69	99.07
0119-MR-01 Spot 65	143.55	3367.30	2.29	22.20	2.58	0.15	2.98	0.02	1.48	0.50	150.60	2.20	139.00	3.87	NA	NA	150.60	2.20	108.34
0119-MR-01 Spot 77	232.05	10431.51	1.13	20.17	1.69	0.16	2.07	0.02	1.20	0.58	150.96	1.79	152.38	2.93	174.39	39.50	150.96	1.79	99.07
0119-MR-01 Spot 17	134.35	76352.76	2.77	20.11	1.79	0.16	2.30	0.02	1.44	0.63	151.46	2.16	153.28	3.27	181.50	41.73	151.46	2.16	98.81
0119-MR-01 Spot 265	214.33	20986.25	1.60	20.51	1.68	0.16	2.29	0.02	1.56	0.68	151.66	2.34	150.67	3.21	135.06	39.49	151.66	2.34	100.66
0119-MR-01 Spot 4	268.22	11711.43	2.39	20.92	1.43	0.16	2.15	0.02	1.61	0.75	151.68	2.41	147.92	2.96	88.20	33.91	151.68	2.41	102.54
0119-MR-01 Spot 111	297.97	23956.94	1.91	20.21	1.07	0.16	1.49	0.02	1.04	0.70	151.92	1.56	153.02	2.11	170.15	24.90	151.92	1.56	99.28
0119-MR-01 Spot 247	686.18	333948.47	1.22	19.94	0.81	0.17	1.57	0.02	1.34	0.85	152.07	2.02	155.09	2.26	201.52	18.92	152.07	2.02	98.05
0119-MR-01 Spot 73	615.19	61986.48	2.22	20.29	1.30	0.16	2.45	0.02	2.07	0.85	152.43	3.12	152.93	3.47	160.70	30.42	152.43	3.12	99.67
0119-MR-01 Spot 201	1175.64	61751.28	4.76	20.04	0.87	0.16	1.65	0.02	1.41	0.85	152.50	2.12	154.76	2.37	189.50	20.28	152.50	2.12	98.54
0119-MR-01 Spot 177	405.61	37027.33	1.44	20.21	1.69	0.16	2.36	0.02	1.64	0.70	152.52	2.47	153.57	3.36	169.83	39.53	152.52	2.47	99.31
0119-MR-01 Spot 42	143.01	11309.00	2.25	21.49	1.98	0.15	2.48	0.02	1.49	0.60	152.64	2.25	145.17	3.35	24.69	47.42	152.64	2.25	105.15
0119-MR-01 Spot 312	288.00	4680.41	1.37	21.66	1.61	0.15	2.09	0.02	1.34	0.64	152.90	2.03	144.33	2.82	5.55	38.67	152.90	2.03	105.94
0119-MR-01 Spot 170	200.42	17357.60	3.29	20.92	1.84	0.16	2.27	0.02	1.32	0.58	152.92	2.00	149.07	3.14	88.26	43.59	152.92	2.00	102.58
0119-MR-01 Spot 32	350.65	9998.27	1.80	20.81	1.50	0.16	2.03	0.02	1.36	0.67	153.00	2.06	149.92	2.83	101.46	35.51	153.00	2.06	102.06
0119-MR-01 Spot 23	423.76	72309.98	1.31	20.38	1.52	0.16	1.93	0.02	1.19	0.62	153.37	1.80	153.15	2.74	149.72	35.58	153.37	1.80	100.15
0119-MR-01 Spot 121	229.07	5990.21	1.87	20.74	1.50	0.16	2.04	0.02	1.37	0.67	153.38	2.08	150.71	2.85	108.88	35.50	153.38	2.08	101.77
0119-MR-01 Spot 13	755.89	5079.01	1.50	17.05	3.24	0.19	3.58	0.02	1.52	0.42	153.42	2.31	180.59	5.93	552.82	70.80	153.42	2.31	84.96
0119-MR-01 Spot 212	46.46	40999.81	2.44	19.52	2.28	0.17	2.91	0.02	1.81	0.62	153.56	2.75	159.60	4.30	250.25	52.44	153.56	2.75	96.21
0119-MR-01 Spot 309	229.97	11049.58	2.94	20.96	1.19	0.16	1.73	0.02	1.26	0.73	153.76	1.91	149.61	2.40	84.25	28.12	153.76	1.91	102.78
0119-MR-01 Spot 213	89.92	39047.52	3.20	19.04	2.90	0.18	3.13	0.02	1.17	0.38	154.06	1.79	163.82	4.73	307.30	66.00	154.06	1.79	94.04
0119-MR-01 Spot 299	115.63	5857.66	4.59	21.11	2.10	0.16	2.89	0.02	1.99	0.69	154.16	3.03	148.96	4.01	67.01	50.06	154.16	3.03	103.49
0119-MR-01 Spot 144	293.36	24580.12	1.84	20.55	1.73	0.16	2.33	0.02	1.56	0.67	154.19	2.38	152.77	3.31	130.84	40.68	154.19	2.38	100.93
0119-MR-01 Spot 237	199.84	13769.76	1.55	20.40	1.50	0.16	2.29	0.02	1.73	0.76	154.53	2.64	154.11	3.27	147.68	35.17	154.53	2.64	100.27
0119-MR-01 Spot 269	113.96	35468.80	4.23	20.66	1.57	0.16	2.13	0.02	1.44	0.68	154.95	2.20	152.69	3.02	117.78	36.97	154.95	2.20	101.48
0119-MR-01 Spot 231	104.05	7398.48	5.00	21.44	1.60	0.16	1.93	0.02	1.09	0.56	155.11	1.67	147.71	2.65	30.42	38.22	155.11	1.67	105.01
0119-MR-01 Spot 103	91.07	6603.06	3.25	21.34	2.14	0.16	2.49	0.02	1.28	0.51	155.24	1.96	148.42	3.44	40.79	51.12	155.24	1.96	104.60
0119-MR-01 Spot 240	130.87	4378.45	3.02	21.28	2.59	0.16	3.09	0.02	1.68	0.54	155.84	2.59	149.35	4.29	47.52	61.92	155.84	2.59	104.35
0119-MR-01 Spot 50	636.08	88689.05	2.42	19.52	1.01	0.17	1.70	0.02	1.37	0.80	156.13	2.11	162.10	2.55	250.14	23.29	156.13	2.11	96.32
0119-MR-01 Spot 62	252.42	89623.45	2.24	19.96	1.22	0.17	1.89	0.02	1.44	0.76	156.54	2.22	159.15	2.78	198.07	28.46	156.54	2.22	98.36

0119-MR-01 Spot 281	513.51	60390.53	2.42	20.33	1.13	0.17	1.81	0.02	1.41	0.78	156.86	2.19	156.76	2.63	155.25	26.54	156.86	2.19	100.06
0119-MR-01 Spot 44	337.39	22250.65	1.83	19.78	1.05	0.17	1.73	0.02	1.37	0.80	157.11	2.13	161.06	2.57	219.57	24.18	157.11	2.13	97.55
0119-MR-01 Spot 87	330.00	7078.36	2.46	20.54	1.88	0.17	3.05	0.02	2.40	0.79	157.43	3.73	155.86	4.40	131.96	44.22	157.43	3.73	101.01
0119-MR-01 Spot 259	250.95	7130.09	2.30	20.84	1.33	0.16	1.86	0.02	1.29	0.70	157.72	2.01	154.03	2.65	97.61	31.55	157.72	2.01	102.40
0119-MR-01 Spot 96	285.71	14243.61	4.65	20.53	1.70	0.17	2.17	0.02	1.36	0.62	158.14	2.12	156.57	3.15	132.97	39.91	158.14	2.12	101.00
0119-MR-01 Spot 301	681.12	13933.05	0.76	20.62	0.76	0.17	1.54	0.03	1.34	0.87	159.21	2.11	156.94	2.25	122.73	17.94	159.21	2.11	101.45
0119-MR-01 Spot 236	388.86	208205.83	2.41	19.47	1.17	0.18	1.90	0.03	1.50	0.79	159.75	2.37	165.99	2.92	255.82	26.97	159.75	2.37	96.24
0119-MR-01 Spot 126	1061.08	43540.32	1.74	20.28	1.06	0.17	1.79	0.03	1.44	0.81	159.81	2.27	159.96	2.64	162.08	24.72	159.81	2.27	99.91
0119-MR-01 Spot 189	180.01	8787.22	2.39	20.79	2.38	0.17	2.60	0.03	1.06	0.41	159.98	1.67	156.41	3.77	102.65	56.24	159.98	1.67	102.28
0119-MR-01 Spot 49	279.73	57520.25	4.79	19.89	1.40	0.17	1.97	0.03	1.38	0.70	160.16	2.19	163.17	2.96	207.12	32.44	160.16	2.19	98.15
0119-MR-01 Spot 145	277.97	177378.65	1.86	20.02	1.03	0.17	1.68	0.03	1.33	0.79	161.11	2.12	163.11	2.53	192.15	23.88	161.11	2.12	98.78
0119-MR-01 Spot 107	263.22	8773.26	2.82	21.05	1.41	0.17	2.02	0.03	1.45	0.72	161.33	2.31	155.89	2.92	73.85	33.47	161.33	2.31	103.50
0119-MR-01 Spot 230	461.11	13458.84	2.30	20.40	1.53	0.17	2.24	0.03	1.64	0.73	161.61	2.61	160.73	3.33	147.92	35.76	161.61	2.61	100.54
0119-MR-01 Spot 88	396.18	32979.43	3.62	19.97	1.11	0.18	1.88	0.03	1.51	0.81	162.18	2.42	164.49	2.85	197.86	25.86	162.18	2.42	98.60
0119-MR-01 Spot 92	333.39	67128.74	2.72	20.16	1.50	0.17	1.88	0.03	1.14	0.61	162.66	1.83	163.52	2.84	175.89	34.90	162.66	1.83	99.48
0119-MR-01 Spot 18	235.49	16194.82	4.38	19.97	1.68	0.18	2.12	0.03	1.29	0.61	163.19	2.08	165.44	3.24	197.71	39.11	163.19	2.08	98.64
0119-MR-01 Spot 6	579.89	70047.81	3.30	20.45	1.17	0.17	1.85	0.03	1.44	0.78	163.26	2.31	161.92	2.77	142.41	27.40	163.26	2.31	100.83
0119-MR-01 Spot 133	212.25	20107.59	2.88	20.28	1.78	0.17	2.15	0.03	1.21	0.56	163.44	1.96	163.35	3.25	161.95	41.52	163.44	1.96	100.06
0119-MR-01 Spot 289	175.96	40701.36	2.49	19.86	1.84	0.18	2.34	0.03	1.45	0.62	164.91	2.37	167.91	3.63	210.31	42.67	164.91	2.37	98.22
0119-MR-01 Spot 116	493.93	11914.74	2.65	20.72	1.42	0.17	2.05	0.03	1.47	0.72	165.10	2.40	161.63	3.06	111.16	33.63	165.10	2.40	102.14
0119-MR-01 Spot 41	693.26	76886.86	3.34	19.95	1.00	0.18	1.79	0.03	1.48	0.83	165.21	2.42	167.52	2.76	200.24	23.19	165.21	2.42	98.62
0119-MR-01 Spot 252	528.24	22725.31	3.72	20.30	1.18	0.18	1.93	0.03	1.53	0.79	165.83	2.51	165.41	2.95	159.45	27.54	165.83	2.51	100.25
0119-MR-01 Spot 192	207.81	4865.33	4.70	20.98	1.53	0.17	1.98	0.03	1.26	0.64	165.92	2.06	160.55	2.94	82.02	36.31	165.92	2.06	103.35
0119-MR-01 Spot 256	272.34	71750.07	2.10	20.33	1.08	0.18	1.99	0.03	1.67	0.84	166.56	2.75	165.89	3.05	156.33	25.21	166.56	2.75	100.40
0119-MR-01 Spot 288	406.37	33163.87	1.80	20.04	1.10	0.18	1.64	0.03	1.22	0.74	166.76	2.01	168.24	2.55	189.07	25.51	166.76	2.01	99.12
0119-MR-01 Spot 287	334.06	25338.30	1.88	19.82	1.16	0.18	1.96	0.03	1.58	0.81	167.41	2.61	170.62	3.08	215.40	26.93	167.41	2.61	98.12
0119-MR-01 Spot 82	284.04	78071.21	2.31	19.73	1.51	0.18	2.02	0.03	1.35	0.67	167.80	2.24	171.69	3.20	225.52	34.81	167.80	2.24	97.74
0119-MR-01 Spot 209	197.22	25006.59	1.82	20.04	2.03	0.18	2.37	0.03	1.22	0.52	168.71	2.03	170.12	3.71	189.80	47.18	168.71	2.03	99.17
0119-MR-01 Spot 165	1158.35	239026.29	1.13	20.03	0.93	0.18	1.67	0.03	1.39	0.83	170.38	2.33	171.76	2.64	190.81	21.71	170.38	2.33	99.20
0119-MR-01 Spot 93	590.02	21988.73	1.93	20.39	0.97	0.18	1.77	0.03	1.48	0.84	170.82	2.50	169.32	2.76	148.35	22.78	170.82	2.50	100.89
0119-MR-01 Spot 205	253.75	16228.03	4.14	19.96	1.53	0.19	2.10	0.03	1.44	0.69	170.98	2.43	172.82	3.34	198.08	35.64	170.98	2.43	98.93
0119-MR-01 Spot 46	333.32	36440.89	2.43	20.53	0.93	0.18	1.44	0.03	1.09	0.76	171.21	1.84	168.64	2.23	132.78	22.00	171.21	1.84	101.52
0119-MR-01 Spot 216	391.05	74942.52	2.18	20.19	1.19	0.18	1.80	0.03	1.35	0.75	172.27	2.30	172.26	2.86	172.11	27.91	172.27	2.30	100.01
0119-MR-01 Spot 20	176.23	20311.66	2.20	20.03	1.88	0.19	2.34	0.03	1.40	0.60	172.98	2.38	174.19	3.75	190.70	43.70	172.98	2.38	99.30
0119-MR-01 Spot 303	200.38	10030.63	2.02	20.66	2.23	0.18	2.53	0.03	1.20	0.47	173.11	2.05	169.37	3.95	117.47	52.55	173.11	2.05	102.21
0119-MR-01 Spot 139	260.58	120506.01	2.27	20.33	1.30	0.19	1.82	0.03	1.27	0.70	175.80	2.20	174.45	2.91	156.18	30.38	175.80	2.20	100.77
0119-MR-01 Spot 53	243.24	60785.83	2.24	19.95	1.70	0.19	2.21	0.03	1.41	0.64	178.75	2.48	180.20	3.65	199.31	39.56	178.75	2.48	99.19
0119-MR-01 Spot 275	213.51	78821.70	3.10	20.30	1.47	0.19	2.08	0.03	1.47	0.71	180.38	2.62	178.89	3.41	159.29	34.40	180.38	2.62	100.83
0119-MR-01 Spot 51	51.59	7986.08	2.74	19.39	2.42	0.20	2.80	0.03	1.42	0.51	181.04	2.53	187.15	4.79	264.98	55.52	181.04	2.53	96.73
0119-MR-01 Spot 220	266.45	8367.10	2.94	20.44	1.70	0.19	2.27	0.03	1.51	0.67	181.93	2.71	179.18	3.74	143.00	39.85	181.93	2.71	101.54

0119-MR-01 Spot 262	283.91	18424.55	2.14	20.72	1.37	0.19	1.83	0.03	1.22	0.67	184.16	2.21	178.98	3.00	111.18	32.24	184.16	2.21	102.89
0119-MR-01 Spot 129	186.12	14617.37	3.74	20.09	1.12	0.20	1.71	0.03	1.29	0.76	186.99	2.39	186.71	2.92	183.09	26.12	186.99	2.39	100.15
0119-MR-01 Spot 36	402.52	61444.19	2.26	19.85	1.17	0.21	2.15	0.03	1.80	0.84	187.84	3.34	189.63	3.72	211.93	27.22	187.84	3.34	99.06
0119-MR-01 Spot 314	247.63	90239.55	2.49	19.43	1.12	0.21	1.56	0.03	1.09	0.70	189.53	2.03	194.92	2.77	260.58	25.63	189.53	2.03	97.24
0119-MR-01 Spot 241	93.11	11696.70	3.18	20.64	2.25	0.20	2.62	0.03	1.33	0.51	191.43	2.51	186.16	4.45	119.82	53.15	191.43	2.51	102.83
0119-MR-01 Spot 100	128.96	11119.73	5.02	19.89	1.78	0.21	2.49	0.03	1.75	0.70	191.76	3.30	192.92	4.38	207.13	41.26	191.76	3.30	99.40
0119-MR-01 Spot 250	235.49	28543.47	3.14	20.05	1.39	0.21	2.01	0.03	1.45	0.72	193.47	2.77	193.05	3.54	187.94	32.35	193.47	2.77	100.22
0119-MR-01 Spot 146	155.34	5899.34	4.96	20.82	2.78	0.20	3.14	0.03	1.45	0.46	193.62	2.77	186.72	5.35	100.22	65.81	193.62	2.77	103.70
0119-MR-01 Spot 28	146.70	28094.28	2.62	19.67	1.20	0.21	1.77	0.03	1.30	0.73	193.80	2.48	196.81	3.17	233.09	27.73	193.80	2.48	98.47
0119-MR-01 Spot 184	264.25	19058.39	3.58	20.16	1.07	0.21	1.77	0.03	1.40	0.80	195.07	2.70	193.58	3.11	175.35	24.98	195.07	2.70	100.77
0119-MR-01 Spot 302	148.45	13834.17	3.69	20.05	1.13	0.21	1.90	0.03	1.53	0.81	195.59	2.95	195.00	3.37	187.83	26.21	195.59	2.95	100.30
0119-MR-01 Spot 210	145.58	13721.07	2.60	19.99	1.31	0.21	1.93	0.03	1.42	0.74	195.75	2.74	195.70	3.44	195.09	30.39	195.75	2.74	100.03
0119-MR-01 Spot 246	227.22	10049.18	2.85	20.36	1.34	0.21	1.91	0.03	1.36	0.71	195.92	2.62	192.58	3.35	151.85	31.46	195.92	2.62	101.73
0119-MR-01 Spot 296	148.07	10327.58	3.50	20.47	1.82	0.21	2.32	0.03	1.44	0.62	196.29	2.77	191.98	4.06	139.29	42.77	196.29	2.77	102.25
0119-MR-01 Spot 174	192.34	39228.01	4.23	19.79	1.42	0.22	1.94	0.03	1.32	0.68	196.49	2.56	198.21	3.50	218.74	32.98	196.49	2.56	99.13
0119-MR-01 Spot 227	144.21	17991.83	1.84	19.66	1.45	0.22	1.92	0.03	1.26	0.66	196.71	2.45	199.57	3.48	233.53	33.36	196.71	2.45	98.57
0119-MR-01 Spot 157	405.01	27963.67	3.42	19.53	1.16	0.22	1.93	0.03	1.55	0.80	196.99	3.00	201.02	3.53	248.53	26.71	196.99	3.00	98.00
0119-MR-01 Spot 260	293.04	72773.12	2.53	20.07	0.86	0.21	1.92	0.03	1.71	0.89	197.88	3.33	196.95	3.43	185.78	20.12	197.88	3.33	100.47
0119-MR-01 Spot 285	158.04	19289.55	1.76	19.49	1.44	0.22	2.04	0.03	1.44	0.71	198.20	2.81	202.59	3.74	253.96	33.21	198.20	2.81	97.83
0119-MR-01 Spot 22	115.99	16521.70	3.20	19.78	1.30	0.22	1.91	0.03	1.41	0.74	198.43	2.75	200.07	3.47	219.46	29.99	198.43	2.75	99.18
0119-MR-01 Spot 70	266.51	101231.60	2.18	19.83	1.04	0.22	1.61	0.03	1.22	0.76	198.61	2.39	199.76	2.91	213.41	24.18	198.61	2.39	99.42
0119-MR-01 Spot 55	793.12	38261.69	2.68	19.98	1.02	0.22	1.77	0.03	1.44	0.82	198.95	2.83	198.76	3.19	196.53	23.73	198.95	2.83	100.09
0119-MR-01 Spot 185	211.46	14646.23	4.99	20.03	1.38	0.22	1.83	0.03	1.19	0.65	199.20	2.34	198.50	3.29	190.20	32.18	199.20	2.34	100.35
0119-MR-01 Spot 310	172.82	20425.85	3.17	18.39	2.90	0.24	3.12	0.03	1.15	0.37	199.49	2.25	214.79	6.04	385.98	65.13	199.49	2.25	92.88
0119-MR-01 Spot 134	159.68	7496.81	3.10	20.24	2.36	0.21	2.69	0.03	1.30	0.48	199.62	2.55	197.02	4.82	166.03	55.13	199.62	2.55	101.32
0119-MR-01 Spot 202	374.73	13468.16	3.51	20.20	1.35	0.22	2.02	0.03	1.51	0.75	200.11	2.97	197.84	3.64	170.81	31.40	200.11	2.97	101.15
0119-MR-01 Spot 67	274.29	70699.74	2.39	20.03	1.27	0.22	2.10	0.03	1.67	0.80	200.91	3.31	200.13	3.82	191.02	29.60	200.91	3.31	100.39
0119-MR-01 Spot 166	163.04	10131.72	2.50	20.58	1.58	0.21	2.12	0.03	1.41	0.67	201.17	2.80	195.46	3.77	127.11	37.15	201.17	2.80	102.92
0119-MR-01 Spot 142	43.12	14100.71	3.36	19.22	2.26	0.23	2.75	0.03	1.56	0.57	201.69	3.10	208.42	5.18	285.22	51.75	201.69	3.10	96.77
0119-MR-01 Spot 63	221.52	52408.08	2.86	20.07	1.16	0.22	1.66	0.03	1.18	0.71	201.80	2.35	200.58	3.02	186.20	27.09	201.80	2.35	100.61
0119-MR-01 Spot 117	474.20	20202.69	2.39	20.12	1.06	0.22	1.93	0.03	1.61	0.84	201.82	3.20	200.14	3.50	180.35	24.70	201.82	3.20	100.84
0119-MR-01 Spot 25	148.43	7839.86	4.57	20.31	1.81	0.22	2.18	0.03	1.21	0.56	202.68	2.41	199.21	3.94	158.21	42.36	202.68	2.41	101.75
0119-MR-01 Spot 175	59.25	163723.57	2.09	18.81	2.05	0.24	2.56	0.03	1.53	0.60	204.76	3.09	215.48	4.98	334.23	46.55	204.76	3.09	95.03
0119-MR-01 Spot 163	238.89	8231.70	1.50	19.92	1.11	0.25	1.81	0.04	1.43	0.79	227.24	3.19	225.19	3.66	203.72	25.78	227.24	3.19	100.91
0119-MR-01 Spot 251	371.78	61097.76	2.11	19.25	1.11	0.26	1.57	0.04	1.12	0.71	228.06	2.51	232.93	3.27	282.37	25.30	228.06	2.51	97.91
0119-MR-01 Spot 245	252.12	121210.40	2.25	19.61	1.10	0.25	1.83	0.04	1.47	0.80	228.91	3.30	229.85	3.77	239.52	25.36	228.91	3.30	99.59
0119-MR-01 Spot 313	242.73	8972.73	6.30	20.19	1.39	0.25	1.81	0.04	1.16	0.64	230.80	2.63	225.62	3.66	171.90	32.42	230.80	2.63	102.30
0119-MR-01 Spot 268	90.13	3324.87	5.38	21.32	2.15	0.24	2.69	0.04	1.62	0.60	230.91	3.67	214.96	5.21	43.72	51.28	230.91	3.67	107.42
0119-MR-01 Spot 290	95.90	4743.12	4.06	20.28	1.69	0.25	2.00	0.04	1.06	0.53	234.53	2.45	228.03	4.08	161.54	39.50	234.53	2.45	102.85
0119-MR-01 Spot 267	156.46	5775.13	5.22	20.24	1.21	0.25	1.69	0.04	1.18	0.70	235.04	2.73	228.92	3.47	166.49	28.24	235.04	2.73	102.67

0119-MR-01 Spot 74	88.75	28469.97	3.94	19.39	1.81	0.26	2.31	0.04	1.44	0.62	235.31	3.32	238.09	4.91	265.63	41.62	235.31	3.32	98.83
0119-MR-01 Spot 197	156.55	31590.12	1.30	19.63	1.33	0.26	2.11	0.04	1.64	0.78	236.95	3.81	236.94	4.46	236.93	30.68	236.95	3.81	100.00
0119-MR-01 Spot 38	949.61	64463.50	4.57	19.78	1.09	0.26	2.02	0.04	1.70	0.84	237.43	3.96	235.81	4.25	219.76	25.32	237.43	3.96	100.68
0119-MR-01 Spot 104	119.93	10292.18	2.52	20.03	2.03	0.26	2.55	0.04	1.55	0.61	237.98	3.62	233.65	5.32	190.36	47.10	237.98	3.62	101.85
0119-MR-01 Spot 114	77.10	58790.09	7.03	19.01	1.71	0.28	2.02	0.04	1.09	0.54	245.03	2.61	251.34	4.50	310.71	38.82	245.03	2.61	97.49
0119-MR-01 Spot 244	36.22	4111.63	3.28	20.55	2.81	0.26	3.13	0.04	1.38	0.44	245.37	3.33	234.81	6.57	130.37	66.13	245.37	3.33	104.50
0119-MR-01 Spot 224	263.78	76239.84	1.97	19.06	1.17	0.28	1.71	0.04	1.26	0.73	245.92	3.03	251.60	3.82	304.89	26.58	245.92	3.03	97.74
0119-MR-01 Spot 286	508.98	69567.00	2.12	19.70	0.89	0.27	1.62	0.04	1.36	0.84	246.28	3.28	244.62	3.52	228.76	20.44	246.28	3.28	100.68
0119-MR-01 Spot 242	401.30	28484.41	1.60	19.58	1.00	0.28	1.90	0.04	1.61	0.85	247.47	3.92	247.03	4.16	242.84	23.04	247.47	3.92	100.18
0119-MR-01 Spot 57	110.11	24798.20	2.07	20.16	1.58	0.27	2.34	0.04	1.72	0.74	250.99	4.24	243.87	5.07	175.87	36.92	250.99	4.24	102.92
0119-MR-01 Spot 308	56.24	4260.51	2.80	20.44	1.96	0.27	2.31	0.04	1.21	0.52	252.08	3.00	241.81	4.97	143.16	46.11	252.08	3.00	104.25
0119-MR-01 Spot 193	261.97	16606.27	1.92	19.56	1.17	0.29	1.60	0.04	1.09	0.68	255.84	2.73	254.79	3.60	245.13	26.89	255.84	2.73	100.41
0119-MR-01 Spot 249	134.65	12771.83	2.07	19.44	1.47	0.29	2.27	0.04	1.73	0.76	257.14	4.36	257.35	5.16	259.28	33.73	257.14	4.36	99.92
0119-MR-01 Spot 58	72.28	44660.22	3.16	19.17	1.88	0.30	2.32	0.04	1.36	0.58	264.50	3.52	267.33	5.46	292.22	43.01	264.50	3.52	98.94
0119-MR-01 Spot 311	185.54	100329.49	1.62	19.07	1.09	0.32	1.67	0.04	1.27	0.76	279.76	3.47	282.31	4.12	303.48	24.76	279.76	3.47	99.10
0119-MR-01 Spot 9	9.21	3782.51	3.41	19.17	5.15	0.33	5.50	0.05	1.93	0.35	286.64	5.42	287.24	13.76	292.16	117.64	286.64	5.42	99.79
0119-MR-01 Spot 270	404.75	90844.02	1.38	19.32	0.88	0.33	1.94	0.05	1.73	0.89	291.08	4.92	289.24	4.88	274.34	20.21	291.08	4.92	100.64
0119-MR-01 Spot 226	411.56	44793.90	3.05	18.54	1.08	0.38	1.87	0.05	1.52	0.82	320.34	4.76	326.17	5.21	367.93	24.26	320.34	4.76	98.21
0119-MR-01 Spot 148	240.20	29167.59	0.80	19.14	1.07	0.37	1.53	0.05	1.09	0.72	321.32	3.43	318.19	4.18	295.30	24.40	321.32	3.43	100.98
0119-MR-01 Spot 217	141.40	11281.55	2.51	18.55	1.80	0.38	2.39	0.05	1.57	0.66	322.30	4.95	327.65	6.69	365.82	40.51	322.30	4.95	98.37
0119-MR-01 Spot 47	74.56	3640.54	2.59	19.66	1.09	0.36	1.92	0.05	1.58	0.82	322.98	4.97	312.29	5.15	233.21	25.13	322.98	4.97	103.43
0119-MR-01 Spot 69	184.55	15879.93	2.46	19.05	1.26	0.38	1.93	0.05	1.47	0.76	325.92	4.66	323.51	5.35	306.28	28.64	325.92	4.66	100.74
0119-MR-01 Spot 101	163.68	28491.57	3.56	18.67	1.20	0.40	1.86	0.05	1.42	0.76	339.72	4.70	341.28	5.39	351.94	27.11	339.72	4.70	99.54
0119-MR-01 Spot 102	91.70	565804.71	1.29	17.85	1.52	0.46	2.06	0.06	1.39	0.68	370.59	5.01	382.13	6.56	452.66	33.76	370.59	5.01	96.98
0119-MR-01 Spot 298	117.78	12274.52	3.45	18.30	1.35	0.45	1.99	0.06	1.46	0.73	371.67	5.27	375.09	6.24	396.23	30.36	371.67	5.27	99.09
0119-MR-01 Spot 140	154.13	13362.95	3.18	18.62	1.31	0.44	1.97	0.06	1.47	0.75	373.41	5.33	371.31	6.13	358.20	29.64	373.41	5.33	100.57
0119-MR-01 Spot 261	69.70	97224.17	1.37	18.38	1.54	0.45	2.00	0.06	1.28	0.64	379.45	4.70	380.45	6.35	386.54	34.66	379.45	4.70	99.74
0119-MR-01 Spot 90	265.08	189780.10	6.22	18.24	1.15	0.46	1.86	0.06	1.47	0.79	380.53	5.42	383.93	5.96	404.50	25.75	380.53	5.42	99.11
0119-MR-01 Spot 30	439.90	44785.00	6.36	18.06	1.21	0.49	2.12	0.06	1.75	0.82	402.08	6.80	405.74	7.10	426.63	26.95	402.08	6.80	94.25
0119-MR-01 Spot 304	129.53	9931.53	2.27	18.32	1.21	0.49	1.80	0.07	1.33	0.74	407.86	5.25	405.76	6.02	393.84	27.23	407.86	5.25	103.56
0119-MR-01 Spot 152	369.85	62260.75	3.71	18.10	1.02	0.51	1.90	0.07	1.59	0.84	417.15	6.44	417.75	6.49	421.09	22.87	417.15	6.44	99.06
0119-MR-01 Spot 115	247.91	15186.20	1.22	18.27	1.23	0.51	1.75	0.07	1.25	0.71	421.46	5.09	418.32	6.00	401.01	27.47	421.46	5.09	105.10
0119-MR-01 Spot 5	252.32	69881.33	2.09	18.16	1.02	0.51	1.79	0.07	1.47	0.82	421.88	5.99	420.62	6.15	413.69	22.77	421.88	5.99	101.98
0119-MR-01 Spot 120	227.95	158124.80	3.42	18.06	1.03	0.53	1.57	0.07	1.18	0.75	432.21	4.95	431.36	5.52	426.79	23.00	432.21	4.95	101.27
0119-MR-01 Spot 112	311.78	230389.37	2.35	17.98	0.88	0.57	1.42	0.07	1.11	0.79	458.60	4.93	454.88	5.20	436.07	19.57	458.60	4.93	105.17
0119-MR-01 Spot 85	156.06	51876.39	2.45	17.57	1.26	0.59	2.11	0.07	1.69	0.80	464.47	7.58	468.35	7.92	487.37	27.89	464.47	7.58	95.30
0119-MR-01 Spot 257	185.98	60104.60	2.95	17.25	0.94	0.62	1.37	0.08	1.00	0.73	485.33	4.66	492.84	5.34	527.89	20.55	485.33	4.66	91.94
0119-MR-01 Spot 138	164.42	11799.63	2.32	17.64	0.98	0.67	1.68	0.09	1.36	0.81	529.58	6.93	520.12	6.83	478.75	21.65	529.58	6.93	110.62
0119-MR-01 Spot 12	131.38	24858.75	2.89	17.31	1.36	0.68	1.84	0.09	1.24	0.67	530.21	6.31	528.32	7.59	520.13	29.95	530.21	6.31	101.94
0119-MR-01 Spot 79	109.85	50788.65	2.17	17.08	1.27	0.71	2.25	0.09	1.86	0.83	545.69	9.75	546.33	9.52	549.02	27.65	545.69	9.75	99.39

0119-MR-01 Spot 162	99.32	26673.07	1.26	17.09	1.40	0.72	2.19	0.09	1.68	0.77	548.34	8.84	548.21	9.28	547.67	30.66	548.34	8.84	100.12
0119-MR-01 Spot 178	89.59	7760.26	1.11	17.42	1.49	0.70	1.97	0.09	1.28	0.65	548.80	6.76	540.52	8.24	505.74	32.75	548.80	6.76	108.51
0119-MR-01 Spot 2	107.57	43527.24	3.86	16.87	1.46	0.73	2.10	0.09	1.52	0.72	550.30	8.00	555.30	9.00	575.86	31.69	550.30	8.00	95.56
0119-MR-01 Spot 280	81.90	474471.38	1.92	16.84	1.44	0.73	2.24	0.09	1.72	0.77	551.41	9.11	556.99	9.62	579.87	31.17	551.41	9.11	95.09
0119-MR-01 Spot 169	125.03	90061.50	1.88	16.87	1.06	0.75	2.04	0.09	1.75	0.86	565.60	9.45	567.82	8.88	576.69	22.98	565.60	9.45	98.08
0119-MR-01 Spot 123	151.69	2404122.02	1.92	17.00	1.69	0.75	2.33	0.09	1.60	0.69	567.68	8.71	566.20	10.11	560.23	36.89	567.68	8.71	101.33
0119-MR-01 Spot 108	226.73	51773.13	33.30	16.66	0.75	0.76	1.27	0.09	1.02	0.80	568.27	5.54	575.27	5.56	603.01	16.25	568.27	5.54	94.24
0119-MR-01 Spot 279	91.82	12859.08	1.24	17.00	1.13	0.76	1.79	0.09	1.39	0.78	575.74	7.66	572.47	7.85	559.52	24.66	575.74	7.66	102.90
0119-MR-01 Spot 151	212.32	63012.97	1.83	16.65	0.93	0.79	1.44	0.10	1.10	0.76	588.45	6.16	591.84	6.44	604.83	20.08	588.45	6.16	97.29
0119-MR-01 Spot 171	662.86	67555.09	2.37	16.70	0.79	0.79	1.38	0.10	1.13	0.82	592.68	6.41	593.80	6.21	598.13	17.09	592.68	6.41	99.09
0119-MR-01 Spot 277	90.21	6110.28	1.16	17.16	1.12	0.77	2.06	0.10	1.73	0.84	592.83	9.79	581.83	9.13	539.15	24.52	592.83	9.79	109.96
0119-MR-01 Spot 232	152.80	32471.75	1.01	16.17	0.94	0.82	1.93	0.10	1.68	0.87	595.12	9.57	610.55	8.85	668.24	20.13	595.12	9.57	89.06
0119-MR-01 Spot 127	1150.24	2765918.12	7.43	16.74	0.83	0.81	1.65	0.10	1.43	0.87	601.33	8.20	599.74	7.48	593.72	17.91	601.33	8.20	101.28
0119-MR-01 Spot 276	131.65	12721.94	2.65	16.72	1.29	0.82	1.70	0.10	1.10	0.65	609.52	6.42	606.74	7.76	596.38	27.98	609.52	6.42	102.20
0119-MR-01 Spot 295	179.90	58277.49	1.82	16.62	0.91	0.83	1.57	0.10	1.27	0.81	617.91	7.50	616.06	7.23	609.26	19.72	617.91	7.50	101.42
0119-MR-01 Spot 300	333.23	92711.37	1.57	16.39	1.09	0.85	1.78	0.10	1.41	0.79	619.45	8.31	623.75	8.28	639.39	23.34	619.45	8.31	96.88
0119-MR-01 Spot 187	103.57	59680.61	1.08	16.57	1.28	0.84	1.73	0.10	1.17	0.68	622.45	6.95	620.96	8.04	615.51	27.55	622.45	6.95	101.13
0119-MR-01 Spot 75	87.82	9754.81	1.28	16.68	1.87	0.84	2.54	0.10	1.72	0.68	623.22	10.22	618.55	11.76	601.50	40.44	623.22	10.22	103.61
0119-MR-01 Spot 14	104.78	18929.71	1.15	16.22	1.31	0.91	1.88	0.11	1.35	0.72	656.20	8.40	657.32	9.10	661.16	28.08	656.20	8.40	99.25
0119-MR-01 Spot 278	163.86	83576.15	1.98	14.04	0.69	1.57	1.22	0.16	1.01	0.83	955.51	8.98	957.65	7.58	962.57	14.05	962.57	14.05	99.27
0119-MR-01 Spot 109	134.72	38788.13	1.76	14.04	0.97	1.63	1.55	0.17	1.21	0.78	989.07	11.09	981.21	9.75	963.67	19.82	963.67	19.82	102.64
0119-MR-01 Spot 71	117.83	49155.32	1.10	13.94	1.19	1.65	1.98	0.17	1.58	0.80	992.87	14.58	988.06	12.53	977.38	24.31	977.38	24.31	101.59
0119-MR-01 Spot 307	41.31	9392.79	2.39	13.93	1.08	1.62	1.65	0.16	1.25	0.75	975.37	11.29	976.29	10.36	978.34	22.09	978.34	22.09	99.70
0119-MR-01 Spot 99	109.93	18601.03	2.23	13.79	0.87	1.66	1.43	0.17	1.13	0.79	993.29	10.44	995.28	9.07	999.64	17.68	999.64	17.68	99.37
0119-MR-01 Spot 188	38.94	9028.99	5.88	13.74	1.36	1.76	1.69	0.18	0.99	0.59	1041.51	9.57	1030.48	10.93	1007.12	27.64	1007.12	27.64	103.41
0119-MR-01 Spot 29	430.11	1125131.97	35.22	13.73	1.01	1.66	1.77	0.16	1.45	0.82	984.02	13.27	991.79	11.20	1009.01	20.41	1009.01	20.41	97.52
0119-MR-01 Spot 179	211.24	25975.08	2.02	13.64	0.71	1.75	1.55	0.17	1.38	0.89	1029.69	13.09	1026.98	10.00	1021.18	14.33	1021.18	14.33	100.83
0119-MR-01 Spot 149	129.20	180194.94	3.18	13.61	0.84	1.71	1.60	0.17	1.36	0.85	1008.10	12.68	1013.61	10.23	1025.51	16.95	1025.51	16.95	98.30
0119-MR-01 Spot 128	249.48	96535.24	5.17	13.61	0.72	1.72	1.46	0.17	1.27	0.87	1013.00	11.92	1017.09	9.39	1025.88	14.58	1025.88	14.58	98.74
0119-MR-01 Spot 274	85.71	30513.12	1.27	13.60	0.79	1.73	1.59	0.17	1.38	0.87	1015.96	12.97	1019.72	10.22	1027.80	15.94	1027.80	15.94	98.85
0119-MR-01 Spot 31	256.28	69399.33	2.94	13.59	0.81	1.70	1.46	0.17	1.21	0.83	1000.74	11.18	1009.47	9.31	1028.45	16.49	1028.45	16.49	97.31
0119-MR-01 Spot 105	78.30	71191.85	3.42	13.57	1.13	1.77	1.66	0.17	1.22	0.73	1033.80	11.61	1033.36	10.77	1032.40	22.90	1032.40	22.90	100.14
0119-MR-01 Spot 153	54.70	70984.62	1.58	13.50	1.12	1.86	1.61	0.18	1.15	0.72	1080.25	11.45	1068.05	10.62	1043.22	22.65	1043.22	22.65	103.55
0119-MR-01 Spot 45	266.87	997955.31	1.47	13.47	1.11	1.72	1.92	0.17	1.57	0.82	1000.52	14.54	1015.37	12.34	1047.56	22.40	1047.56	22.40	95.51
0119-MR-01 Spot 221	39.54	10458.52	1.60	13.44	1.29	1.88	2.25	0.18	1.84	0.82	1083.34	18.33	1072.88	14.87	1051.69	25.98	1051.69	25.98	103.01
0119-MR-01 Spot 143	42.36	47781.58	2.19	13.40	1.41	1.84	1.96	0.18	1.37	0.70	1059.01	13.39	1058.50	12.92	1057.46	28.33	1057.46	28.33	100.15
0119-MR-01 Spot 113	244.71	72023.83	3.02	13.39	1.12	1.84	1.66	0.18	1.22	0.74	1059.67	11.97	1059.67	10.92	1059.69	22.56	1059.69	22.56	100.00
0119-MR-01 Spot 283	335.25	48617.00	2.18	13.37	1.07	1.85	1.71	0.18	1.33	0.78	1064.25	13.04	1063.33	11.26	1061.45	21.61	1061.45	21.61	100.26
0119-MR-01 Spot 222	160.28	38312.49	3.20	13.35	1.18	1.75	1.95	0.17	1.55	0.80	1010.35	14.51	1027.74	12.59	1064.97	23.70	1064.97	23.70	94.87
0119-MR-01 Spot 272	315.07	160752.61	3.84	13.34	0.80	1.84	1.18	0.18	0.86	0.73	1059.03	8.44	1061.49	7.76	1066.55	16.13	1066.55	16.13	99.30

0119-MR-01 Spot 159	239.56	78470.18	4.25	13.32	0.91	1.77	1.41	0.17	1.08	0.77	1015.52	10.16	1032.77	9.14	1069.52	18.19	1069.52	18.19	94.95
0119-MR-01 Spot 293	185.04	61151.79	2.37	13.29	0.67	1.87	1.34	0.18	1.16	0.87	1067.28	11.44	1069.70	8.86	1074.65	13.35	1074.65	13.35	99.31
0119-MR-01 Spot 254	96.03	37009.07	2.84	13.28	0.89	1.92	1.53	0.19	1.25	0.81	1096.43	12.58	1089.30	10.25	1075.06	17.90	1075.06	17.90	101.99
0119-MR-01 Spot 136	35.24	16766.00	3.16	13.25	1.11	1.96	1.67	0.19	1.25	0.75	1115.34	12.84	1103.51	11.25	1080.27	22.19	1080.27	22.19	103.25
0119-MR-01 Spot 182	189.45	184604.28	1.90	13.22	0.72	1.88	1.30	0.18	1.08	0.83	1066.09	10.63	1072.44	8.62	1085.40	14.52	1085.40	14.52	98.22
0119-MR-01 Spot 218	242.08	69746.51	2.70	13.19	0.86	1.84	1.59	0.18	1.34	0.84	1043.34	12.89	1058.54	10.47	1089.99	17.25	1089.99	17.25	95.72
0119-MR-01 Spot 97	115.04	21437.74	2.37	13.18	1.17	1.96	1.66	0.19	1.18	0.71	1105.06	11.98	1100.21	11.18	1090.62	23.51	1090.62	23.51	101.32
0119-MR-01 Spot 292	46.01	13788.32	1.60	13.18	1.10	1.92	1.66	0.18	1.24	0.75	1086.68	12.42	1088.30	11.08	1091.57	22.04	1091.57	22.04	99.55
0119-MR-01 Spot 219	42.70	27590.85	3.62	13.17	1.05	1.95	1.85	0.19	1.52	0.82	1102.52	15.44	1099.34	12.44	1093.07	21.10	1093.07	21.10	100.87
0119-MR-01 Spot 54	288.84	184597.87	1.86	13.07	1.02	1.88	1.65	0.18	1.29	0.78	1056.74	12.61	1073.53	10.94	1107.78	20.47	1107.78	20.47	95.39
0119-MR-01 Spot 1	68.40	18739.19	1.84	13.06	1.16	1.99	1.67	0.19	1.20	0.72	1112.87	12.31	1111.36	11.31	1108.40	23.25	1108.40	23.25	100.40
0119-MR-01 Spot 141	282.92	30648.78	3.31	12.97	0.84	2.10	1.42	0.20	1.14	0.80	1163.58	12.13	1149.48	9.75	1122.98	16.83	1122.98	16.83	103.61
0119-MR-01 Spot 135	65.34	10560.16	1.84	12.95	1.11	2.12	1.80	0.20	1.42	0.79	1171.01	15.18	1155.16	12.42	1125.56	22.11	1125.56	22.11	104.04
0119-MR-01 Spot 137	82.45	16618.17	2.15	12.92	0.92	2.06	1.49	0.19	1.17	0.79	1137.83	12.23	1135.49	10.17	1131.01	18.25	1131.01	18.25	100.60
0119-MR-01 Spot 132	465.39	202002.78	2.46	12.90	1.05	1.96	1.69	0.18	1.32	0.78	1085.63	13.21	1101.86	11.37	1134.07	20.97	1134.07	20.97	95.73
0119-MR-01 Spot 125	343.04	94196.32	1.50	12.81	1.19	2.18	2.74	0.20	2.47	0.90	1191.47	26.86	1175.76	19.08	1146.96	23.57	1146.96	23.57	103.88
0119-MR-01 Spot 273	202.10	133878.60	3.22	12.81	0.79	2.04	1.42	0.19	1.18	0.83	1116.78	12.12	1127.54	9.68	1148.36	15.71	1148.36	15.71	97.25
0119-MR-01 Spot 83	944.13	541545.28	4.27	12.73	0.90	2.13	1.65	0.20	1.38	0.84	1159.91	14.60	1159.70	11.37	1159.29	17.92	1159.29	17.92	100.05
0119-MR-01 Spot 305	55.14	35113.46	3.22	12.66	0.87	2.21	1.59	0.20	1.33	0.84	1189.65	14.41	1183.14	11.09	1171.27	17.28	1171.27	17.28	101.57
0119-MR-01 Spot 161	183.47	50998.60	6.22	12.62	0.79	2.13	1.44	0.20	1.20	0.84	1150.90	12.68	1159.92	9.96	1176.84	15.67	1176.84	15.67	97.80
0119-MR-01 Spot 150	530.21	336242.42	2.37	12.56	0.86	2.25	1.89	0.21	1.68	0.89	1202.40	18.47	1197.06	13.31	1187.44	17.05	1187.44	17.05	101.26
0119-MR-01 Spot 59	175.36	63038.58	2.04	12.38	1.04	2.29	1.68	0.21	1.32	0.78	1207.51	14.56	1210.25	11.91	1215.16	20.54	1215.16	20.54	99.37
0119-MR-01 Spot 61	122.20	77939.87	1.31	12.35	1.04	2.42	1.55	0.22	1.14	0.74	1264.03	13.13	1247.92	11.12	1220.21	20.51	1220.21	20.51	103.59
0119-MR-01 Spot 207	206.09	32782.19	2.86	12.22	1.05	2.39	1.59	0.21	1.19	0.75	1240.15	13.46	1240.57	11.36	1241.32	20.50	1241.32	20.50	99.91
0119-MR-01 Spot 72	85.07	49381.16	2.15	12.11	1.07	2.49	1.79	0.22	1.44	0.80	1275.31	16.61	1269.26	12.95	1259.01	20.81	1259.01	20.81	101.29
0119-MR-01 Spot 95	158.75	260278.84	12.53	11.70	0.88	2.63	1.50	0.22	1.21	0.81	1300.98	14.22	1310.45	11.01	1325.95	17.13	1325.95	17.13	98.12
0119-MR-01 Spot 10	80.88	64530.30	1.50	11.46	0.97	2.91	1.85	0.24	1.57	0.85	1396.31	19.77	1384.32	13.97	1365.86	18.62	1365.86	18.62	102.23
0119-MR-01 Spot 195	96.52	64556.66	3.45	11.36	0.74	2.89	1.36	0.24	1.14	0.84	1376.06	14.14	1378.65	10.28	1382.64	14.31	1382.64	14.31	99.52
0119-MR-01 Spot 110	131.43	47271.70	1.61	11.23	0.71	3.02	1.21	0.25	0.98	0.81	1418.65	12.50	1412.78	9.25	1403.93	13.66	1403.93	13.66	101.05
0119-MR-01 Spot 89	81.00	16568.42	2.78	11.21	0.81	3.00	1.35	0.24	1.07	0.80	1410.06	13.60	1408.88	10.27	1407.09	15.60	1407.09	15.60	100.21
0119-MR-01 Spot 164	299.70	83899.76	2.13	11.20	0.70	3.11	1.20	0.25	0.98	0.82	1450.59	12.76	1434.23	9.25	1410.02	13.32	1410.02	13.32	102.88
0119-MR-01 Spot 15	199.10	61552.65	1.59	11.09	1.10	3.17	1.75	0.25	1.37	0.78	1463.25	17.87	1449.16	13.53	1428.52	21.01	1428.52	21.01	102.43
0119-MR-01 Spot 233	122.99	73010.57	1.63	11.03	0.94	3.07	1.60	0.25	1.29	0.81	1415.15	16.42	1424.78	12.22	1439.16	17.85	1439.16	17.85	98.33
0119-MR-01 Spot 228	77.91	57449.55	1.79	11.03	1.13	3.16	1.80	0.25	1.40	0.78	1453.32	18.19	1447.59	13.88	1439.17	21.60	1439.17	21.60	100.98
0119-MR-01 Spot 160	263.52	61390.04	1.90	11.02	0.87	3.22	1.59	0.26	1.33	0.84	1478.63	17.57	1463.16	12.30	1440.76	16.52	1440.76	16.52	102.63
0119-MR-01 Spot 243	278.02	61965.23	2.00	11.00	0.76	3.16	1.24	0.25	0.98	0.79	1449.00	12.69	1446.67	9.53	1443.23	14.39	1443.23	14.39	100.40
0119-MR-01 Spot 206	117.90	51066.89	2.13	11.00	0.91	3.11	1.70	0.25	1.44	0.85	1426.98	18.44	1434.11	13.09	1444.70	17.35	1444.70	17.35	98.77
0119-MR-01 Spot 118	79.48	118383.11	0.98	10.98	1.16	3.16	2.02	0.25	1.66	0.82	1447.89	21.47	1447.81	15.59	1447.68	22.07	1447.68	22.07	100.01
0119-MR-01 Spot 66	239.23	241018.95	1.96	10.93	1.08	3.21	1.94	0.25	1.61	0.83	1460.39	20.99	1458.75	14.98	1456.34	20.52	1456.34	20.52	100.28
0119-MR-01 Spot 180	217.46	62226.83	2.75	10.89	0.87	3.12	1.88	0.25	1.66	0.88	1421.76	21.18	1438.19	14.43	1462.55	16.61	1462.55	16.61	97.21

0119-MR-01 Spot 168	97.67	64315.98	2.25	10.86	0.66	3.23	1.19	0.25	0.99	0.83	1459.96	12.90	1463.42	9.21	1468.41	12.55	1468.41	12.55	99.42
0119-MR-01 Spot 56	181.23	107763.62	1.38	10.84	0.95	3.16	1.49	0.25	1.15	0.77	1429.96	14.76	1446.91	11.50	1471.89	17.98	1471.89	17.98	97.15
0119-MR-01 Spot 225	35.22	150520.18	2.10	10.83	1.08	3.23	1.68	0.25	1.29	0.77	1456.76	16.83	1463.42	13.04	1473.08	20.47	1473.08	20.47	98.89
0119-MR-01 Spot 48	145.91	1370848.19	1.37	10.82	1.24	3.23	1.83	0.25	1.35	0.74	1455.80	17.65	1463.97	14.22	1475.83	23.44	1475.83	23.44	98.64
0119-MR-01 Spot 122	54.25	3181073.46	1.26	10.74	1.22	3.37	1.90	0.26	1.46	0.77	1501.73	19.50	1496.58	14.86	1489.27	23.08	1489.27	23.08	100.84
0119-MR-01 Spot 229	394.59	4164540.19	2.18	10.53	0.84	3.42	1.49	0.26	1.23	0.83	1497.07	16.46	1509.12	11.73	1526.04	15.90	1526.04	15.90	98.10
0119-MR-01 Spot 253	142.44	379371.61	2.49	10.45	0.99	3.43	1.67	0.26	1.35	0.81	1490.96	17.93	1511.36	13.14	1540.06	18.59	1540.06	18.59	96.81
0119-MR-01 Spot 172	358.83	305415.95	4.31	9.82	0.74	4.14	1.68	0.29	1.51	0.90	1666.21	22.13	1661.85	13.74	1656.32	13.76	1656.32	13.76	100.60
0119-MR-01 Spot 223	71.04	36067.93	1.97	9.73	0.92	4.14	1.50	0.29	1.18	0.79	1650.83	17.21	1661.44	12.26	1674.86	17.06	1674.86	17.06	98.57
0119-MR-01 Spot 214	97.85	164100.97	1.87	9.71	1.03	4.39	1.72	0.31	1.38	0.80	1737.52	21.09	1710.53	14.26	1677.62	18.97	1677.62	18.97	103.57
0119-MR-01 Spot 264	109.58	77162.84	3.23	9.65	0.90	4.32	1.51	0.30	1.21	0.80	1703.03	18.15	1696.81	12.43	1689.13	16.53	1689.13	16.53	100.82
0119-MR-01 Spot 98	149.52	70263.84	2.04	9.34	0.79	4.53	1.47	0.31	1.24	0.84	1725.40	18.81	1736.08	12.25	1748.96	14.45	1748.96	14.45	98.65
0119-MR-01 Spot 39	49.79	67835.29	2.53	9.32	1.08	4.72	1.70	0.32	1.30	0.77	1784.93	20.34	1770.67	14.21	1753.87	19.82	1753.87	19.82	101.77
0119-MR-01 Spot 158	159.38	1111974.55	2.24	9.28	0.79	4.38	1.28	0.29	1.01	0.79	1666.36	14.80	1708.90	10.59	1761.43	14.47	1761.43	14.47	94.60
0119-MR-01 Spot 91	134.11	1651922.39	3.50	9.04	0.92	4.80	1.78	0.31	1.53	0.86	1763.98	23.55	1785.07	14.99	1809.80	16.80	1809.80	16.80	97.47
0119-MR-01 Spot 3	179.87	74532.09	1.79	8.85	1.08	5.15	1.60	0.33	1.18	0.74	1841.94	18.97	1844.35	13.62	1847.06	19.53	1847.06	19.53	99.72
0119-MR-01 Spot 60	302.21	68519.31	1.18	8.73	0.78	5.30	2.02	0.34	1.86	0.92	1865.93	30.16	1869.23	17.25	1872.88	14.09	1872.88	14.09	99.63
0119-MR-01 Spot 94	48.50	15666.74	1.06	8.65	1.05	5.48	1.56	0.34	1.16	0.74	1903.80	19.09	1896.74	13.43	1889.01	18.93	1889.01	18.93	100.78
0119-MR-01 Spot 106	247.48	202911.52	3.31	8.35	0.97	5.44	1.76	0.33	1.47	0.84	1835.97	23.46	1890.72	15.08	1951.38	17.28	1951.38	17.28	94.09
0119-MR-01 Spot 43	97.34	60461.67	1.09	5.32	0.95	13.57	1.93	0.52	1.68	0.87	2714.12	37.24	2719.85	18.26	2724.11	15.63	2724.11	15.63	99.63

Sample 0119-MR-02

0119-MR-02 Spot 308	729.47	6149.10	1.45	15.08	2.57	0.20	2.94	0.02	1.43	0.49	142.77	2.03	189.06	5.07	815.30	53.68	142.77	2.03	75.52
0119-MR-02 Spot 254	78.88	3343.85	3.21	21.77	4.48	0.14	4.73	0.02	1.51	0.32	142.93	2.14	134.74	5.96	NA	NA	142.93	2.14	106.08
0119-MR-02 Spot 286	122.80	5906.37	2.30	21.13	1.82	0.15	2.39	0.02	1.54	0.65	143.55	2.19	139.14	3.10	64.44	43.42	143.55	2.19	103.17
0119-MR-02 Spot 183	214.52	25925.34	3.36	20.65	1.70	0.15	2.03	0.02	1.10	0.54	143.95	1.56	142.57	2.69	119.59	40.11	143.95	1.56	100.97
0119-MR-02 Spot 147	309.97	22895.88	2.13	20.37	1.30	0.15	1.80	0.02	1.24	0.69	144.21	1.77	144.63	2.42	151.53	30.51	144.21	1.77	99.71
0119-MR-02 Spot 247	153.50	7580.07	2.97	21.02	2.04	0.15	2.41	0.02	1.27	0.53	145.14	1.82	141.28	3.17	76.84	48.56	145.14	1.82	102.73
0119-MR-02 Spot 173	462.84	61669.12	0.82	20.10	1.30	0.16	2.07	0.02	1.61	0.78	145.43	2.32	147.61	2.84	182.78	30.25	145.43	2.32	98.52
0119-MR-02 Spot 251	236.82	13225.65	2.24	20.68	1.32	0.15	1.93	0.02	1.41	0.73	145.44	2.03	143.72	2.59	115.33	31.10	145.44	2.03	101.20
0119-MR-02 Spot 126	243.16	10446.37	2.86	20.93	1.70	0.15	1.96	0.02	0.97	0.49	145.49	1.39	142.16	2.59	86.94	40.33	145.49	1.39	102.34
0119-MR-02 Spot 291	268.73	5699.41	2.27	20.60	2.47	0.15	2.72	0.02	1.12	0.41	145.66	1.62	144.44	3.66	124.41	58.26	145.66	1.62	100.85
0119-MR-02 Spot 56	175.97	5888.87	2.69	21.37	1.61	0.15	1.95	0.02	1.11	0.57	146.28	1.60	140.18	2.56	38.11	38.45	146.28	1.60	104.35
0119-MR-02 Spot 176	214.69	63785.87	2.36	19.82	2.07	0.16	2.57	0.02	1.52	0.59	146.31	2.20	150.34	3.59	214.40	47.95	146.31	2.20	97.32
0119-MR-02 Spot 70	109.72	6144.70	2.52	20.21	2.03	0.16	2.37	0.02	1.21	0.51	146.36	1.76	147.73	3.26	169.65	47.49	146.36	1.76	99.08
0119-MR-02 Spot 224	90.29	8087.05	2.59	21.20	2.57	0.15	2.89	0.02	1.32	0.46	147.38	1.93	142.20	3.84	56.49	61.35	147.38	1.93	103.65
0119-MR-02 Spot 198	370.15	17255.31	1.80	20.30	1.41	0.16	2.01	0.02	1.44	0.72	147.51	2.10	148.21	2.78	159.39	32.94	147.51	2.10	99.53
0119-MR-02 Spot 76	301.08	22774.83	1.13	20.78	1.42	0.15	1.93	0.02	1.31	0.68	147.69	1.91	145.16	2.61	104.01	33.59	147.69	1.91	101.74
0119-MR-02 Spot 19	237.81	78700.24	2.87	20.27	1.56	0.16	1.96	0.02	1.18	0.60	147.70	1.72	148.60	2.71	163.06	36.50	147.70	1.72	99.39

0119-MR-02 Spot 293	310.48	23589.07	1.74	20.73	1.52	0.15	1.95	0.02	1.22	0.63	147.99	1.79	145.76	2.65	109.61	35.89	147.99	1.79	101.53
0119-MR-02 Spot 231	238.60	7626.01	2.79	21.12	1.50	0.15	1.98	0.02	1.28	0.65	148.39	1.88	143.64	2.65	65.98	35.75	148.39	1.88	103.30
0119-MR-02 Spot 18	140.29	6379.63	2.64	20.80	1.81	0.15	2.10	0.02	1.06	0.51	148.48	1.56	145.77	2.86	101.85	42.90	148.48	1.56	101.86
0119-MR-02 Spot 270	173.47	12458.33	5.28	20.56	1.83	0.16	2.41	0.02	1.56	0.65	148.57	2.29	147.47	3.30	129.78	43.09	148.57	2.29	100.75
0119-MR-02 Spot 108	222.38	6780.33	2.14	20.96	1.72	0.15	2.07	0.02	1.16	0.56	148.71	1.70	144.96	2.80	83.98	40.80	148.71	1.70	102.59
0119-MR-02 Spot 306	111.30	4771.90	2.61	22.14	2.89	0.15	3.04	0.02	0.92	0.30	148.82	1.36	137.84	3.92	NA	NA	148.82	1.36	107.96
0119-MR-02 Spot 280	449.68	13358.84	3.99	20.68	1.76	0.16	2.42	0.02	1.67	0.69	148.82	2.45	146.88	3.31	115.62	41.45	148.82	2.45	101.32
0119-MR-02 Spot 229	134.55	12930.56	3.02	20.10	1.97	0.16	2.36	0.02	1.30	0.55	148.83	1.91	150.81	3.31	181.95	46.03	148.83	1.91	98.69
0119-MR-02 Spot 111	60.59	4457.10	3.93	19.84	2.65	0.16	3.15	0.02	1.70	0.54	149.18	2.51	153.00	4.48	212.58	61.50	149.18	2.51	97.50
0119-MR-02 Spot 304	121.76	15293.29	2.71	20.44	2.20	0.16	2.65	0.02	1.48	0.56	149.25	2.18	148.86	3.67	142.66	51.66	149.25	2.18	100.26
0119-MR-02 Spot 142	167.23	5019.67	3.17	21.19	2.51	0.15	2.91	0.02	1.47	0.51	149.36	2.17	144.04	3.90	57.35	59.80	149.36	2.17	103.69
0119-MR-02 Spot 95	699.36	45378.71	1.99	20.55	1.24	0.16	2.04	0.02	1.62	0.79	149.38	2.39	148.26	2.82	130.31	29.26	149.38	2.39	100.76
0119-MR-02 Spot 205	118.25	4641.02	2.28	21.70	1.93	0.15	2.45	0.02	1.51	0.62	149.48	2.23	141.03	3.22	1.02	46.39	149.48	2.23	105.99
0119-MR-02 Spot 154	109.91	14583.16	2.73	21.01	2.04	0.15	2.48	0.02	1.42	0.57	149.52	2.10	145.35	3.36	77.69	48.38	149.52	2.10	102.87
0119-MR-02 Spot 140	30.12	3120.62	2.17	20.53	4.29	0.16	4.57	0.02	1.58	0.35	150.08	2.35	149.08	6.34	133.21	100.85	150.08	2.35	100.67
0119-MR-02 Spot 120	646.17	31326.20	1.23	20.58	1.11	0.16	1.86	0.02	1.50	0.80	150.16	2.23	148.81	2.58	127.31	26.09	150.16	2.23	100.91
0119-MR-02 Spot 74	67.18	3988.59	5.06	22.26	2.88	0.15	3.43	0.02	1.85	0.54	150.32	2.75	138.42	4.43	NA	NA	150.32	2.75	108.60
0119-MR-02 Spot 234	128.05	1990.92	4.23	23.10	2.17	0.14	2.63	0.02	1.49	0.57	150.34	2.22	133.75	3.30	NA	NA	150.34	2.22	112.41
0119-MR-02 Spot 49	426.08	19454.46	2.41	20.45	1.41	0.16	2.03	0.02	1.46	0.72	150.35	2.17	149.89	2.83	142.53	33.05	150.35	2.17	100.31
0119-MR-02 Spot 214	403.47	109404.84	1.54	20.45	1.11	0.16	1.86	0.02	1.49	0.80	150.73	2.22	150.21	2.59	141.97	26.05	150.73	2.22	100.35
0119-MR-02 Spot 150	209.36	8597.80	1.19	20.68	2.16	0.16	2.43	0.02	1.09	0.45	150.76	1.63	148.69	3.35	115.88	51.03	150.76	1.63	101.39
0119-MR-02 Spot 230	232.90	10029.28	4.15	21.38	1.45	0.15	1.83	0.02	1.12	0.61	150.97	1.68	144.33	2.46	36.47	34.61	150.97	1.68	104.60
0119-MR-02 Spot 188	155.84	8484.95	2.56	21.15	1.79	0.15	2.22	0.02	1.32	0.59	151.18	1.97	145.98	3.02	62.18	42.63	151.18	1.97	103.57
0119-MR-02 Spot 190	98.04	9005.82	2.84	20.71	2.40	0.16	2.80	0.02	1.44	0.51	151.33	2.15	149.00	3.88	112.12	56.62	151.33	2.15	101.56
0119-MR-02 Spot 252	238.77	3808.45	2.45	22.16	1.90	0.15	2.16	0.02	1.04	0.48	151.58	1.57	140.12	2.83	NA	NA	151.58	1.57	108.18
0119-MR-02 Spot 281	242.89	13458.40	2.69	20.91	1.32	0.16	1.89	0.02	1.36	0.72	152.34	2.05	148.62	2.62	89.77	31.23	152.34	2.05	102.50
0119-MR-02 Spot 9	405.58	16918.46	1.53	20.46	1.15	0.16	1.62	0.02	1.15	0.71	152.72	1.74	151.97	2.29	140.27	26.93	152.72	1.74	100.49
0119-MR-02 Spot 73	485.55	35057.88	1.73	20.21	1.37	0.16	2.25	0.02	1.78	0.79	153.34	2.70	154.36	3.22	170.04	32.04	153.34	2.70	99.34
0119-MR-02 Spot 88	433.15	22055.18	2.40	20.06	1.11	0.17	1.66	0.02	1.24	0.75	153.51	1.88	155.55	2.40	186.70	25.83	153.51	1.88	98.69
0119-MR-02 Spot 253	495.91	43083.39	2.08	20.42	1.20	0.16	1.80	0.02	1.35	0.75	153.78	2.05	153.26	2.57	145.21	28.08	153.78	2.05	100.34
0119-MR-02 Spot 124	265.51	24909.32	1.83	19.93	1.32	0.17	1.75	0.02	1.16	0.66	153.93	1.76	156.89	2.55	201.72	30.59	153.93	1.76	98.12
0119-MR-02 Spot 277	686.98	14488.07	1.94	16.98	1.41	0.20	2.12	0.02	1.58	0.75	153.93	2.40	181.82	3.52	561.64	30.73	153.93	2.40	84.66
0119-MR-02 Spot 97	302.67	14325.01	2.94	20.93	1.66	0.16	2.02	0.02	1.14	0.57	153.97	1.74	149.95	2.81	86.92	39.45	153.97	1.74	102.68
0119-MR-02 Spot 245	183.50	5001.09	2.24	21.51	1.85	0.16	2.33	0.02	1.42	0.61	154.70	2.18	146.83	3.19	21.55	44.40	154.70	2.18	105.36
0119-MR-02 Spot 85	319.47	453200.17	3.31	19.79	1.30	0.17	1.81	0.02	1.26	0.70	154.79	1.93	158.79	2.67	218.94	30.15	154.79	1.93	97.48
0119-MR-02 Spot 144	757.80	32962.55	2.38	20.25	0.79	0.17	1.53	0.02	1.32	0.86	155.01	2.02	155.61	2.21	164.74	18.41	155.01	2.02	99.61
0119-MR-02 Spot 263	682.38	75520.39	2.95	20.24	1.10	0.17	1.84	0.02	1.48	0.80	155.21	2.27	155.87	2.67	165.89	25.73	155.21	2.27	99.58
0119-MR-02 Spot 206	390.26	5757.00	2.76	21.16	1.20	0.16	1.76	0.02	1.29	0.73	155.26	1.97	149.62	2.45	61.18	28.61	155.26	1.97	103.77
0119-MR-02 Spot 174	423.75	13112.42	1.10	21.20	1.43	0.16	1.82	0.02	1.13	0.62	155.65	1.73	149.73	2.53	57.01	34.01	155.65	1.73	103.95
0119-MR-02 Spot 4	445.65	19760.98	2.39	20.81	1.20	0.16	1.79	0.02	1.33	0.74	155.70	2.05	152.37	2.53	100.83	28.31	155.70	2.05	102.19

0119-MR-02 Spot 84	237.19	16834.95	2.06	20.69	1.51	0.16	2.16	0.02	1.54	0.71	155.80	2.37	153.30	3.07	114.90	35.68	155.80	2.37	101.63
0119-MR-02 Spot 10	627.34	23916.52	2.24	20.67	1.23	0.16	1.83	0.02	1.36	0.74	156.26	2.10	153.81	2.62	116.33	29.04	156.26	2.10	101.59
0119-MR-02 Spot 71	218.45	17613.79	2.12	20.23	1.20	0.17	1.85	0.02	1.41	0.76	156.32	2.18	157.03	2.70	167.67	28.12	156.32	2.18	99.55
0119-MR-02 Spot 219	311.37	27606.05	1.65	20.74	1.30	0.16	1.84	0.02	1.30	0.71	156.85	2.01	153.94	2.62	109.39	30.73	156.85	2.01	101.89
0119-MR-02 Spot 36	57.15	2972.09	3.80	21.43	2.87	0.16	3.10	0.02	1.15	0.37	157.06	1.79	149.52	4.30	31.52	68.82	157.06	1.79	105.04
0119-MR-02 Spot 238	128.60	8089.71	2.40	21.15	2.81	0.16	3.12	0.02	1.35	0.43	157.12	2.10	151.41	4.39	62.96	66.98	157.12	2.10	103.77
0119-MR-02 Spot 2	307.11	9301.38	2.37	21.36	2.17	0.16	2.82	0.02	1.79	0.64	157.16	2.78	150.03	3.93	38.74	52.00	157.16	2.78	104.75
0119-MR-02 Spot 192	475.65	10207.27	1.84	20.81	1.31	0.16	2.11	0.02	1.66	0.78	157.47	2.57	154.02	3.02	101.20	30.98	157.47	2.57	102.24
0119-MR-02 Spot 86	317.26	13196.95	1.33	20.28	1.48	0.17	2.02	0.02	1.38	0.68	157.50	2.14	157.74	2.95	161.27	34.60	157.50	2.14	99.85
0119-MR-02 Spot 169	266.10	3726.15	3.39	21.76	3.91	0.16	4.14	0.02	1.36	0.33	157.66	2.12	147.88	5.70	NA	NA	157.66	2.12	106.61
0119-MR-02 Spot 180	489.55	39210.71	1.76	20.76	1.42	0.16	2.08	0.02	1.53	0.73	158.09	2.39	154.91	2.99	106.54	33.48	158.09	2.39	102.05
0119-MR-02 Spot 102	195.62	10649.64	2.46	20.61	1.86	0.17	2.23	0.02	1.22	0.55	158.78	1.92	156.63	3.24	124.11	43.88	158.78	1.92	101.38
0119-MR-02 Spot 103	286.21	68891.90	2.61	20.03	1.42	0.17	1.97	0.02	1.37	0.69	159.10	2.15	161.07	2.93	190.20	32.93	159.10	2.15	98.77
0119-MR-02 Spot 269	157.22	2982.21	2.88	23.03	3.53	0.15	3.83	0.03	1.48	0.39	159.64	2.34	141.93	5.07	NA	NA	159.64	2.34	112.48
0119-MR-02 Spot 100	208.88	5875.11	2.66	21.02	3.18	0.16	3.49	0.03	1.45	0.42	159.77	2.29	154.66	5.01	77.12	75.50	159.77	2.29	103.30
0119-MR-02 Spot 312	340.51	9406.16	3.43	20.77	1.51	0.17	1.91	0.03	1.17	0.61	159.83	1.85	156.41	2.77	104.93	35.65	159.83	1.85	102.18
0119-MR-02 Spot 105	281.89	11163.19	3.45	21.04	1.36	0.17	1.79	0.03	1.16	0.65	160.56	1.84	155.27	2.57	75.15	32.32	160.56	1.84	103.41
0119-MR-02 Spot 243	133.21	5604.21	1.85	21.01	2.82	0.17	3.24	0.03	1.61	0.50	161.24	2.57	156.04	4.69	77.78	66.87	161.24	2.57	103.33
0119-MR-02 Spot 81	313.45	39970.04	2.61	20.28	1.32	0.17	1.73	0.03	1.12	0.65	161.60	1.79	161.61	2.59	161.80	30.87	161.60	1.79	99.99
0119-MR-02 Spot 267	175.00	6198.47	1.54	21.42	1.96	0.16	2.39	0.03	1.36	0.57	161.84	2.17	153.80	3.40	31.65	46.99	161.84	2.17	105.23
0119-MR-02 Spot 46	922.04	22113.31	2.32	20.59	1.06	0.17	1.70	0.03	1.33	0.78	162.01	2.13	159.75	2.51	126.32	24.85	162.01	2.13	101.42
0119-MR-02 Spot 303	374.34	62956.43	2.05	20.36	1.50	0.17	2.05	0.03	1.39	0.68	162.09	2.23	161.48	3.06	152.49	35.25	162.09	2.23	100.38
0119-MR-02 Spot 123	51.11	1730.70	2.87	23.77	10.03	0.15	10.16	0.03	1.58	0.16	162.39	2.53	140.09	13.29	NA	NA	162.39	2.53	115.92
0119-MR-02 Spot 135	322.47	256405.40	1.73	20.16	1.21	0.17	1.52	0.03	0.93	0.61	162.86	1.50	163.68	2.30	175.44	28.15	162.86	1.50	99.50
0119-MR-02 Spot 315	223.73	11649.11	3.11	20.50	1.50	0.17	1.92	0.03	1.20	0.62	162.96	1.93	161.27	2.86	136.53	35.21	162.96	1.93	101.05
0119-MR-02 Spot 118	55.86	2448.71	2.62	23.35	2.68	0.15	3.10	0.03	1.56	0.50	163.35	2.52	143.23	4.14	NA	NA	163.35	2.52	114.04
0119-MR-02 Spot 107	208.04	6862.47	2.54	17.34	4.07	0.20	4.27	0.03	1.27	0.30	163.47	2.06	188.65	7.35	516.67	89.51	163.47	2.06	86.66
0119-MR-02 Spot 155	370.36	15703.07	2.33	20.30	1.03	0.17	1.61	0.03	1.24	0.77	163.70	2.01	163.39	2.43	158.87	24.06	163.70	2.01	100.19
0119-MR-02 Spot 225	504.80	104631.86	2.29	20.37	1.26	0.17	1.85	0.03	1.35	0.73	163.90	2.19	163.05	2.79	150.74	29.50	163.90	2.19	100.52
0119-MR-02 Spot 130	605.65	31007.95	2.62	20.29	1.16	0.18	1.86	0.03	1.46	0.78	164.55	2.37	164.31	2.83	160.82	27.22	164.55	2.37	100.15
0119-MR-02 Spot 136	377.77	9546.67	1.47	20.99	1.57	0.17	2.04	0.03	1.29	0.64	164.76	2.11	159.38	3.00	80.13	37.31	164.76	2.11	103.38
0119-MR-02 Spot 195	699.87	370218.80	3.15	20.11	1.08	0.18	1.84	0.03	1.50	0.81	164.90	2.44	165.96	2.82	181.02	25.07	164.90	2.44	99.36
0119-MR-02 Spot 250	217.01	16066.13	5.97	20.02	1.64	0.18	2.01	0.03	1.16	0.58	164.92	1.89	166.70	3.09	192.06	38.07	164.92	1.89	98.93
0119-MR-02 Spot 178	450.62	67971.12	2.16	20.01	1.08	0.18	2.03	0.03	1.72	0.85	165.43	2.81	167.19	3.13	192.32	25.20	165.43	2.81	98.94
0119-MR-02 Spot 80	820.81	29893.27	2.80	20.53	0.97	0.17	1.45	0.03	1.07	0.74	165.57	1.75	163.47	2.18	133.18	22.92	165.57	1.75	101.28
0119-MR-02 Spot 287	203.09	4777.31	2.90	21.22	1.59	0.17	2.23	0.03	1.56	0.70	165.61	2.55	158.60	3.27	55.08	37.90	165.61	2.55	104.42
0119-MR-02 Spot 170	220.80	18425.53	2.20	20.63	1.34	0.17	2.10	0.03	1.62	0.77	165.67	2.64	162.81	3.16	121.42	31.58	165.67	2.64	101.76
0119-MR-02 Spot 181	711.92	17452.81	3.15	20.45	1.40	0.18	1.92	0.03	1.32	0.69	165.93	2.17	164.36	2.92	141.89	32.75	165.93	2.17	100.95
0119-MR-02 Spot 117	757.46	52105.37	3.04	20.26	1.11	0.18	1.87	0.03	1.50	0.80	166.12	2.46	165.98	2.86	163.93	26.01	166.12	2.46	100.09
0119-MR-02 Spot 163	142.58	25806.88	2.88	20.33	1.91	0.18	2.34	0.03	1.36	0.58	166.37	2.23	165.69	3.58	156.03	44.63	166.37	2.23	100.41

0119-MR-02 Spot 185	401.09	23142.86	2.78	20.82	1.65	0.17	2.14	0.03	1.35	0.63	166.63	2.23	162.32	3.20	99.93	39.13	166.63	2.23	102.65
0119-MR-02 Spot 264	319.17	5809.55	2.92	21.13	1.80	0.17	2.33	0.03	1.48	0.64	167.47	2.45	160.84	3.47	64.28	42.86	167.47	2.45	104.12
0119-MR-02 Spot 310	585.49	29681.97	3.33	20.64	1.13	0.18	1.86	0.03	1.48	0.79	167.65	2.45	164.55	2.83	120.19	26.67	167.65	2.45	101.88
0119-MR-02 Spot 54	287.25	7431.96	2.36	20.91	1.78	0.17	2.23	0.03	1.34	0.60	167.86	2.22	162.78	3.35	89.61	42.26	167.86	2.22	103.12
0119-MR-02 Spot 282	1381.84	6274.29	1.47	13.20	6.20	0.28	6.47	0.03	1.86	0.29	168.31	3.08	247.72	14.22	1088.54	124.29	168.31	3.08	67.94
0119-MR-02 Spot 223	126.08	9569.00	2.14	21.25	2.13	0.17	2.56	0.03	1.41	0.55	168.38	2.35	160.82	3.80	50.91	50.83	168.38	2.35	104.70
0119-MR-02 Spot 60	1020.21	51648.94	1.71	20.34	0.87	0.18	1.68	0.03	1.43	0.85	169.07	2.39	168.14	2.60	155.21	20.42	169.07	2.39	100.55
0119-MR-02 Spot 289	572.99	27208.97	3.92	20.39	1.22	0.18	1.77	0.03	1.28	0.72	169.12	2.14	167.78	2.74	148.91	28.68	169.12	2.14	100.80
0119-MR-02 Spot 284	406.05	17073.20	2.15	20.29	0.86	0.18	1.34	0.03	1.02	0.76	169.27	1.70	168.70	2.08	160.71	20.15	169.27	1.70	100.34
0119-MR-02 Spot 298	434.00	16839.81	0.76	20.59	1.30	0.18	2.08	0.03	1.63	0.78	170.04	2.74	167.10	3.21	125.70	30.57	170.04	2.74	101.76
0119-MR-02 Spot 288	271.32	16251.66	1.88	20.64	1.23	0.18	1.57	0.03	0.98	0.62	171.43	1.66	168.02	2.44	120.35	28.98	171.43	1.66	102.03
0119-MR-02 Spot 241	810.60	987523.55	8.50	20.23	1.10	0.18	1.83	0.03	1.46	0.80	172.09	2.48	171.73	2.89	166.78	25.67	172.09	2.48	100.21
0119-MR-02 Spot 134	635.84	28835.47	1.78	20.07	1.14	0.19	1.70	0.03	1.26	0.74	172.41	2.14	173.35	2.71	186.12	26.58	172.41	2.14	99.46
0119-MR-02 Spot 93	205.08	8784.38	1.77	20.46	1.71	0.18	2.39	0.03	1.66	0.70	174.53	2.86	172.20	3.78	140.27	40.21	174.53	2.86	101.35
0119-MR-02 Spot 161	265.45	57753.95	7.36	19.57	1.56	0.19	2.11	0.03	1.41	0.67	174.95	2.44	179.81	3.47	244.26	35.98	174.95	2.44	97.29
0119-MR-02 Spot 256	391.90	21321.35	1.95	20.50	1.14	0.19	2.17	0.03	1.84	0.85	177.08	3.22	174.29	3.47	136.64	26.77	177.08	3.22	101.60
0119-MR-02 Spot 283	361.63	23412.65	2.30	20.24	1.31	0.19	1.80	0.03	1.23	0.68	177.54	2.15	176.78	2.91	166.56	30.67	177.54	2.15	100.43
0119-MR-02 Spot 29	315.73	149875.73	1.54	19.86	1.38	0.20	2.08	0.03	1.55	0.75	181.10	2.76	183.23	3.48	210.76	32.08	181.10	2.76	98.84
0119-MR-02 Spot 182	306.02	14405.79	2.19	20.30	1.06	0.20	1.79	0.03	1.44	0.81	184.51	2.62	182.67	2.99	159.01	24.70	184.51	2.62	101.00
0119-MR-02 Spot 53	264.67	28572.37	3.26	20.23	1.29	0.20	1.67	0.03	1.06	0.64	185.47	1.94	184.15	2.81	167.24	30.07	185.47	1.94	100.72
0119-MR-02 Spot 55	333.20	65958.27	2.75	19.51	1.21	0.21	1.73	0.03	1.23	0.71	188.50	2.29	193.25	3.04	251.76	27.92	188.50	2.29	97.54
0119-MR-02 Spot 51	189.54	18970.64	3.99	20.09	1.81	0.21	2.26	0.03	1.35	0.60	190.14	2.54	189.68	3.91	183.94	42.12	190.14	2.54	100.24
0119-MR-02 Spot 138	450.97	161201.08	1.71	19.98	1.28	0.21	1.93	0.03	1.44	0.75	190.83	2.71	191.27	3.36	196.78	29.84	190.83	2.71	99.77
0119-MR-02 Spot 41	346.18	13967.14	2.75	20.39	1.19	0.20	2.02	0.03	1.63	0.81	191.24	3.08	188.13	3.47	149.20	27.85	191.24	3.08	101.66
0119-MR-02 Spot 186	655.25	29911.28	2.96	19.92	1.00	0.21	1.89	0.03	1.61	0.85	192.94	3.05	193.71	3.34	203.15	23.32	192.94	3.05	99.60
0119-MR-02 Spot 149	310.36	15948.16	3.98	20.19	1.37	0.21	1.70	0.03	1.00	0.59	193.21	1.91	191.64	2.97	172.24	32.11	193.21	1.91	100.82
0119-MR-02 Spot 271	436.76	21989.20	2.20	20.18	1.11	0.21	1.89	0.03	1.53	0.81	194.69	2.93	193.04	3.32	172.99	25.95	194.69	2.93	100.85
0119-MR-02 Spot 311	77.76	5155.67	3.63	20.76	2.03	0.20	2.66	0.03	1.72	0.65	194.72	3.30	188.20	4.57	107.12	47.92	194.72	3.30	103.47
0119-MR-02 Spot 292	144.42	12143.77	3.08	20.34	1.58	0.21	2.09	0.03	1.38	0.66	195.33	2.65	192.28	3.67	154.98	36.89	195.33	2.65	101.59
0119-MR-02 Spot 1	321.65	45976.04	2.48	20.11	1.07	0.21	1.43	0.03	0.95	0.66	196.84	1.84	195.61	2.54	180.89	24.96	196.84	1.84	100.62
0119-MR-02 Spot 122	218.39	31442.45	3.02	20.37	1.40	0.21	2.09	0.03	1.55	0.74	197.23	3.01	193.70	3.68	150.90	32.83	197.23	3.01	101.82
0119-MR-02 Spot 7	216.62	6909.22	2.66	20.16	1.54	0.21	1.95	0.03	1.20	0.62	199.00	2.35	197.19	3.50	175.56	35.89	199.00	2.35	100.92
0119-MR-02 Spot 28	583.48	20791.13	4.34	20.10	1.06	0.22	1.76	0.03	1.40	0.80	200.16	2.75	198.78	3.17	182.45	24.78	200.16	2.75	100.69
0119-MR-02 Spot 6	108.04	8692.86	2.52	20.43	2.52	0.21	2.90	0.03	1.44	0.50	201.69	2.86	197.25	5.20	144.39	58.99	201.69	2.86	102.25
0119-MR-02 Spot 273	239.99	38176.07	3.80	20.28	1.26	0.22	1.74	0.03	1.20	0.69	202.05	2.38	198.93	3.14	162.01	29.54	202.05	2.38	101.57
0119-MR-02 Spot 187	253.38	22510.43	2.31	20.01	1.40	0.22	2.21	0.03	1.70	0.77	202.36	3.39	201.66	4.03	193.42	32.65	202.36	3.39	100.35
0119-MR-02 Spot 232	157.09	14202.22	3.17	20.71	1.78	0.21	2.34	0.03	1.52	0.65	202.45	3.04	195.52	4.17	112.75	42.02	202.45	3.04	103.54
0119-MR-02 Spot 208	154.66	5787.10	7.18	20.90	1.98	0.21	2.52	0.03	1.56	0.62	202.75	3.12	194.14	4.46	90.80	46.97	202.75	3.12	104.43
0119-MR-02 Spot 89	455.43	1141663.06	3.71	19.76	1.25	0.23	1.95	0.03	1.50	0.77	205.90	3.03	207.20	3.65	222.01	28.87	205.90	3.03	99.37
0119-MR-02 Spot 239	152.04	6608.15	2.66	21.36	1.90	0.21	2.35	0.03	1.39	0.59	205.94	2.81	193.13	4.14	39.31	45.56	205.94	2.81	106.63

0119-MR-02 Spot 34	130.96	18161.64	2.57	20.70	1.68	0.22	2.15	0.03	1.35	0.63	207.46	2.76	200.01	3.91	113.02	39.54	207.46	2.76	103.72
0119-MR-02 Spot 217	1055.44	1089341.71	5.81	19.58	0.91	0.23	1.75	0.03	1.49	0.85	208.19	3.06	211.03	3.34	242.93	21.03	208.19	3.06	98.65
0119-MR-02 Spot 63	200.98	26030.92	2.17	19.68	1.32	0.23	1.68	0.03	1.04	0.62	209.80	2.15	211.60	3.21	231.69	30.52	209.80	2.15	99.15
0119-MR-02 Spot 302	141.96	40431.92	2.26	19.95	1.62	0.23	2.20	0.03	1.49	0.68	212.78	3.12	211.72	4.21	199.89	37.74	212.78	3.12	100.50
0119-MR-02 Spot 11	389.74	31863.55	3.03	20.10	1.03	0.24	1.49	0.03	1.08	0.72	220.06	2.33	216.88	2.91	182.51	23.88	220.06	2.33	101.46
0119-MR-02 Spot 37	165.67	9560.30	2.88	19.66	1.89	0.25	2.10	0.04	0.92	0.44	222.67	2.02	223.65	4.22	234.02	43.64	222.67	2.02	99.56
0119-MR-02 Spot 236	205.48	12698.94	2.70	20.22	1.39	0.24	2.01	0.04	1.45	0.72	224.11	3.20	219.39	3.97	169.01	32.56	224.11	3.20	102.15
0119-MR-02 Spot 221	575.74	36744.03	1.44	19.79	0.95	0.25	1.97	0.04	1.73	0.88	226.90	3.85	226.12	4.00	218.05	22.03	226.90	3.85	100.34
0119-MR-02 Spot 165	98.28	3186.27	4.73	21.30	3.57	0.23	3.94	0.04	1.65	0.42	228.16	3.70	212.75	7.56	45.43	85.43	228.16	3.70	107.24
0119-MR-02 Spot 290	86.15	7113.51	2.71	19.49	1.78	0.26	2.24	0.04	1.36	0.61	232.07	3.10	233.99	4.68	253.36	40.93	232.07	3.10	99.18
0119-MR-02 Spot 220	861.64	40278.86	8.12	19.43	1.19	0.26	1.86	0.04	1.43	0.77	232.28	3.25	234.87	3.90	260.90	27.38	232.28	3.25	98.90
0119-MR-02 Spot 272	77.92	5993.98	2.29	20.02	3.13	0.25	3.44	0.04	1.42	0.41	234.09	3.27	230.32	7.09	192.03	72.86	234.09	3.27	101.64
0119-MR-02 Spot 259	345.81	27296.55	3.09	19.50	1.26	0.26	1.90	0.04	1.42	0.75	234.15	3.27	235.77	4.00	252.00	29.10	234.15	3.27	99.31
0119-MR-02 Spot 199	359.45	335998.82	1.35	19.73	1.01	0.26	1.50	0.04	1.11	0.74	237.91	2.59	236.75	3.17	225.22	23.41	237.91	2.59	100.49
0119-MR-02 Spot 79	59.03	2107.61	6.92	22.37	2.32	0.23	2.77	0.04	1.51	0.55	240.56	3.56	213.68	5.33	NA	NA	240.56	3.56	112.58
0119-MR-02 Spot 184	233.41	7677.91	1.24	20.19	2.29	0.26	2.80	0.04	1.62	0.58	243.69	3.87	237.09	5.93	172.14	53.41	243.69	3.87	102.78
0119-MR-02 Spot 152	35.96	2477.04	1.27	21.06	6.70	0.26	6.97	0.04	1.91	0.27	250.56	4.69	234.15	14.58	72.52	159.56	250.56	4.69	107.01
0119-MR-02 Spot 233	121.70	30098.04	22.58	19.69	1.45	0.29	1.86	0.04	1.16	0.63	261.69	2.99	258.50	4.25	229.61	33.56	261.69	2.99	101.24
0119-MR-02 Spot 260	474.26	24131.57	4.91	19.27	1.13	0.32	1.87	0.04	1.48	0.79	280.48	4.07	280.37	4.57	279.47	25.96	280.48	4.07	100.04
0119-MR-02 Spot 295	56.45	25823.12	2.47	19.04	1.76	0.33	2.22	0.05	1.36	0.61	288.40	3.83	290.46	5.62	307.01	40.17	288.40	3.83	99.29
0119-MR-02 Spot 203	215.60	11506.06	1.83	19.53	1.20	0.33	1.71	0.05	1.21	0.71	296.72	3.50	291.35	4.32	248.58	27.76	296.72	3.50	101.84
0119-MR-02 Spot 47	168.71	21791.92	0.96	18.85	1.10	0.35	1.76	0.05	1.37	0.78	300.67	4.04	304.07	4.63	330.26	24.99	300.67	4.04	98.88
0119-MR-02 Spot 275	266.39	61567.91	0.92	19.30	1.33	0.35	1.75	0.05	1.13	0.65	307.91	3.40	304.26	4.59	276.45	30.47	307.91	3.40	101.20
0119-MR-02 Spot 179	148.87	16953.76	0.80	19.10	1.47	0.36	1.85	0.05	1.13	0.61	316.48	3.49	314.52	5.02	300.05	33.53	316.48	3.49	100.62
0119-MR-02 Spot 83	280.73	398648.43	1.16	18.64	1.08	0.38	1.54	0.05	1.10	0.71	319.95	3.43	324.27	4.27	355.44	24.37	319.95	3.43	98.67
0119-MR-02 Spot 44	464.60	44216.31	4.90	19.04	1.18	0.38	1.92	0.05	1.51	0.79	325.72	4.80	323.39	5.32	306.69	26.92	325.72	4.80	100.72
0119-MR-02 Spot 307	267.63	77487.03	1.49	18.99	0.99	0.38	1.52	0.05	1.15	0.76	326.92	3.66	325.21	4.22	312.95	22.53	326.92	3.66	100.53
0119-MR-02 Spot 235	313.51	25159.68	2.44	15.23	0.94	0.48	1.56	0.05	1.24	0.80	332.51	4.03	397.41	5.13	794.70	19.78	332.51	4.03	83.67
0119-MR-02 Spot 314	161.03	71703.47	3.63	19.07	1.29	0.39	1.73	0.05	1.14	0.66	338.52	3.77	334.09	4.92	303.35	29.54	338.52	3.77	101.33
0119-MR-02 Spot 50	322.55	21266.35	1.95	18.99	1.04	0.39	1.49	0.05	1.06	0.71	339.72	3.52	336.34	4.26	313.03	23.67	339.72	3.52	101.01
0119-MR-02 Spot 61	336.46	38192.68	3.21	18.59	0.59	0.43	1.36	0.06	1.23	0.90	362.76	4.34	362.57	4.16	361.33	13.25	362.76	4.34	100.05
0119-MR-02 Spot 65	418.43	29228.17	10.05	18.25	1.04	0.48	1.50	0.06	1.08	0.72	398.15	4.19	398.87	4.95	403.00	23.25	398.15	4.19	99.82
0119-MR-02 Spot 309	462.75	54733.79	23.93	18.07	1.01	0.50	1.43	0.07	1.01	0.71	406.70	3.99	409.54	4.81	425.55	22.42	406.70	3.99	95.57
0119-MR-02 Spot 158	457.20	112415.51	0.93	17.98	0.69	0.50	1.21	0.07	1.00	0.82	409.59	3.97	413.68	4.13	436.56	15.31	409.59	3.97	93.82
0119-MR-02 Spot 151	185.62	78042.49	1.95	18.21	1.09	0.50	1.68	0.07	1.28	0.76	412.43	5.11	411.64	5.69	407.19	24.41	412.43	5.11	101.29
0119-MR-02 Spot 194	146.97	25347.16	1.18	18.65	1.00	0.49	1.39	0.07	0.97	0.70	417.31	3.90	407.81	4.66	354.40	22.49	417.31	3.90	117.75
0119-MR-02 Spot 116	230.38	32839.01	1.42	18.33	1.07	0.51	1.80	0.07	1.45	0.80	420.39	5.90	416.26	6.16	393.43	24.01	420.39	5.90	106.85
0119-MR-02 Spot 240	133.64	12466.54	0.96	17.69	1.38	0.54	2.02	0.07	1.47	0.73	435.06	6.19	440.99	7.22	472.03	30.59	435.06	6.19	92.17
0119-MR-02 Spot 98	98.79	131886.42	2.21	17.74	1.31	0.60	1.69	0.08	1.05	0.63	480.41	4.88	477.99	6.42	466.42	29.12	480.41	4.88	103.00
0119-MR-02 Spot 5	411.15	92986.29	8.61	17.85	0.96	0.61	1.54	0.08	1.20	0.78	488.16	5.65	482.00	5.90	452.78	21.27	488.16	5.65	107.81

0119-MR-02 Spot 285	144.41	61129.36	4.83	17.16	1.34	0.67	1.88	0.08	1.32	0.70	514.31	6.54	518.79	7.64	538.52	29.28	514.31	6.54	95.51
0119-MR-02 Spot 94	323.60	58728.41	2.97	17.42	0.75	0.66	1.68	0.08	1.51	0.90	518.98	7.51	516.61	6.81	506.09	16.47	518.98	7.51	102.55
0119-MR-02 Spot 3	164.29	60812.27	2.86	17.17	1.02	0.69	1.91	0.09	1.61	0.84	527.85	8.17	529.82	7.88	538.31	22.39	527.85	8.17	98.06
0119-MR-02 Spot 78	93.87	8571.33	1.48	17.82	1.99	0.66	2.43	0.09	1.39	0.57	529.59	7.06	515.96	9.82	456.01	44.22	529.59	7.06	116.14
0119-MR-02 Spot 257	46.78	11956.84	1.32	16.70	1.92	0.73	2.45	0.09	1.53	0.62	545.28	8.00	555.62	10.50	598.23	41.56	545.28	8.00	91.15
0119-MR-02 Spot 145	65.86	7823.86	0.71	17.05	1.56	0.73	2.15	0.09	1.48	0.69	559.92	7.95	558.67	9.24	553.57	34.00	559.92	7.95	101.15
0119-MR-02 Spot 213	424.87	319386.97	2.31	16.33	0.90	0.79	1.78	0.09	1.53	0.86	575.75	8.43	590.42	7.95	647.21	19.33	575.75	8.43	88.96
0119-MR-02 Spot 57	136.62	11032.20	3.10	16.92	1.20	0.76	1.60	0.09	1.06	0.66	576.40	5.84	575.14	7.02	570.16	26.06	576.40	5.84	101.09
0119-MR-02 Spot 42	817.61	76318.48	3.27	16.76	0.67	0.77	1.44	0.09	1.27	0.89	576.44	7.02	579.28	6.34	590.43	14.46	576.44	7.02	97.63
0119-MR-02 Spot 249	219.17	65537.73	1.75	17.07	1.37	0.76	1.94	0.09	1.38	0.71	582.92	7.67	576.40	8.54	550.79	29.90	582.92	7.67	105.83
0119-MR-02 Spot 216	695.04	45893.75	4.96	16.83	0.93	0.79	2.05	0.10	1.82	0.89	590.61	10.29	588.78	9.14	581.73	20.18	590.61	10.29	101.53
0119-MR-02 Spot 87	160.72	61643.86	1.38	14.96	1.26	0.89	2.04	0.10	1.61	0.79	596.07	9.15	647.64	9.77	831.80	26.20	596.07	9.15	71.66
0119-MR-02 Spot 296	207.62	64973.26	2.67	16.91	0.84	0.79	1.51	0.10	1.26	0.83	597.82	7.20	592.34	6.79	571.40	18.18	597.82	7.20	104.62
0119-MR-02 Spot 66	33.32	17595.77	1.54	16.74	1.32	0.80	1.90	0.10	1.36	0.72	599.50	7.79	598.13	8.58	592.94	28.71	599.50	7.79	101.11
0119-MR-02 Spot 14	113.27	24576.05	1.24	16.29	1.38	0.84	2.03	0.10	1.49	0.73	609.38	8.67	618.59	9.40	652.44	29.53	609.38	8.67	93.40
0119-MR-02 Spot 171	73.34	10194.52	1.73	17.19	1.79	0.80	2.40	0.10	1.61	0.67	612.73	9.41	596.39	10.85	534.76	39.10	612.73	9.41	114.58
0119-MR-02 Spot 227	133.62	145421.08	1.44	16.71	0.88	0.83	1.59	0.10	1.32	0.83	614.72	7.73	610.86	7.28	596.56	19.07	614.72	7.73	103.04
0119-MR-02 Spot 211	179.55	55702.09	2.71	16.54	1.09	0.86	1.58	0.10	1.14	0.72	632.01	6.84	629.13	7.39	618.77	23.60	632.01	6.84	102.14
0119-MR-02 Spot 13	109.60	25034.01	1.25	16.67	1.20	0.86	1.80	0.10	1.33	0.74	636.54	8.08	629.09	8.42	602.37	26.05	636.54	8.08	105.67
0119-MR-02 Spot 128	111.80	32901.52	1.56	16.46	1.06	0.87	1.62	0.10	1.23	0.76	640.37	7.47	637.88	7.67	629.07	22.80	640.37	7.47	101.80
0119-MR-02 Spot 191	187.04	63464.41	1.89	16.61	1.01	0.88	1.65	0.11	1.30	0.79	648.76	8.04	640.18	7.81	610.01	21.75	648.76	8.04	106.35
0119-MR-02 Spot 166	410.62	70534.63	4.31	14.15	1.01	1.12	1.64	0.11	1.29	0.79	699.82	8.54	761.39	8.79	946.69	20.79	699.82	8.54	73.92
0119-MR-02 Spot 72	276.53	101273.45	3.22	14.26	0.91	1.36	1.43	0.14	1.10	0.77	845.89	8.76	869.99	8.37	931.86	18.71	845.89	8.76	90.77
0119-MR-02 Spot 101	86.61	352539.78	2.96	14.33	1.26	1.53	1.88	0.16	1.40	0.74	949.73	12.34	941.31	11.55	921.68	25.91	921.68	25.91	103.04
0119-MR-02 Spot 26	45.21	10568.06	1.69	14.20	1.04	1.58	1.53	0.16	1.12	0.73	973.29	10.13	963.16	9.53	940.11	21.40	940.11	21.40	103.53
0119-MR-02 Spot 48	249.91	78791.90	1.67	14.09	0.71	1.55	1.25	0.16	1.03	0.82	946.80	9.08	949.54	7.73	955.88	14.58	955.88	14.58	99.05
0119-MR-02 Spot 24	273.51	46374.05	4.06	14.06	0.94	1.61	1.52	0.16	1.20	0.79	980.64	10.90	974.30	9.55	960.06	19.25	960.06	19.25	102.14
0119-MR-02 Spot 92	107.21	68865.91	2.90	14.05	0.97	1.63	1.38	0.17	0.98	0.71	991.73	8.99	982.24	8.66	961.12	19.78	961.12	19.78	103.18
0119-MR-02 Spot 129	108.67	326966.03	4.83	14.05	0.80	1.57	1.41	0.16	1.16	0.82	959.21	10.34	960.08	8.75	962.07	16.35	962.07	16.35	99.70
0119-MR-02 Spot 268	168.37	71644.54	1.06	14.02	1.01	1.60	1.45	0.16	1.04	0.72	974.57	9.45	972.01	9.10	966.23	20.65	966.23	20.65	100.86
0119-MR-02 Spot 45	31.78	18476.30	2.48	13.88	1.16	1.64	1.83	0.17	1.42	0.77	984.51	12.94	984.99	11.54	986.08	23.54	986.08	23.54	99.84
0119-MR-02 Spot 294	79.81	188701.32	3.27	13.86	1.22	1.66	1.81	0.17	1.34	0.74	995.60	12.36	993.46	11.48	988.76	24.82	988.76	24.82	100.69
0119-MR-02 Spot 109	93.40	31932.22	1.35	13.76	1.08	1.67	1.71	0.17	1.32	0.77	991.43	12.15	995.38	10.84	1004.06	21.95	1004.06	21.95	98.74
0119-MR-02 Spot 38	77.27	71153.37	2.48	13.75	1.02	1.69	1.55	0.17	1.16	0.75	1005.91	10.85	1005.64	9.87	1005.04	20.65	1005.04	20.65	100.09
0119-MR-02 Spot 276	218.57	237255.35	6.16	13.72	1.08	1.68	1.78	0.17	1.41	0.79	995.51	13.03	1000.01	11.32	1009.88	21.95	1009.88	21.95	98.58
0119-MR-02 Spot 215	166.25	17769.71	3.45	13.70	1.04	1.71	1.60	0.17	1.22	0.76	1013.27	11.42	1013.00	10.25	1012.41	20.97	1012.41	20.97	100.09
0119-MR-02 Spot 148	256.98	68550.77	4.18	13.68	0.80	1.71	1.53	0.17	1.30	0.85	1012.08	12.19	1013.14	9.80	1015.42	16.24	1015.42	16.24	99.67
0119-MR-02 Spot 297	66.75	75983.48	2.20	13.68	1.01	1.67	1.75	0.17	1.43	0.82	988.90	13.12	997.35	11.14	1015.93	20.53	1015.93	20.53	97.34
0119-MR-02 Spot 121	162.40	31396.37	4.40	13.65	1.09	1.70	1.64	0.17	1.22	0.75	1004.22	11.38	1009.17	10.47	1019.90	22.04	1019.90	22.04	98.46
0119-MR-02 Spot 248	53.91	39008.98	2.06	13.64	1.11	1.74	1.56	0.17	1.10	0.70	1022.81	10.39	1022.36	10.07	1021.38	22.53	1021.38	22.53	100.14

0119-MR-02 Spot 255	137.73	23519.49	1.07	13.62	0.97	1.71	1.69	0.17	1.39	0.82	1008.08	12.93	1013.47	10.83	1025.12	19.55	1025.12	19.55	98.34
0119-MR-02 Spot 8	289.90	753909.48	5.75	13.61	0.78	1.77	1.59	0.17	1.39	0.87	1038.01	13.28	1034.25	10.32	1026.30	15.83	1026.30	15.83	101.14
0119-MR-02 Spot 200	172.64	79832.63	2.86	13.59	0.85	1.71	1.33	0.17	1.02	0.77	1002.87	9.46	1011.02	8.50	1028.69	17.26	1028.69	17.26	97.49
0119-MR-02 Spot 305	1014.06	6758106.56	8.34	13.56	0.80	1.79	1.56	0.18	1.34	0.86	1045.28	12.89	1041.62	10.15	1033.95	16.25	1033.95	16.25	101.10
0119-MR-02 Spot 35	430.72	193059.35	8.72	13.56	0.90	1.69	1.48	0.17	1.18	0.79	989.68	10.81	1003.65	9.45	1034.27	18.22	1034.27	18.22	95.69
0119-MR-02 Spot 132	207.16	32045.41	3.05	13.51	0.86	1.76	1.43	0.17	1.13	0.80	1023.05	10.73	1029.02	9.22	1041.72	17.47	1041.72	17.47	98.21
0119-MR-02 Spot 12	200.21	67726.16	9.11	13.48	0.98	1.66	1.60	0.16	1.27	0.79	969.88	11.40	993.38	10.14	1045.66	19.75	1045.66	19.75	92.75
0119-MR-02 Spot 168	78.68	31056.91	2.21	13.46	0.97	1.87	1.74	0.18	1.44	0.83	1079.35	14.34	1069.39	11.48	1049.15	19.51	1049.15	19.51	102.88
0119-MR-02 Spot 141	195.38	30184.47	2.61	13.38	0.79	1.82	1.42	0.18	1.18	0.83	1050.41	11.48	1053.95	9.32	1061.32	15.83	1061.32	15.83	98.97
0119-MR-02 Spot 153	241.42	80853.80	10.01	13.36	0.88	1.86	1.73	0.18	1.49	0.86	1069.28	14.66	1067.64	11.41	1064.31	17.64	1064.31	17.64	100.47
0119-MR-02 Spot 119	110.43	72778.33	3.81	13.32	1.04	1.88	1.66	0.18	1.30	0.78	1075.98	12.84	1074.03	11.02	1070.09	20.94	1070.09	20.94	100.55
0119-MR-02 Spot 204	194.74	69938.48	1.26	13.32	0.95	1.90	1.77	0.18	1.49	0.84	1087.31	14.90	1081.60	11.75	1070.13	19.06	1070.13	19.06	101.61
0119-MR-02 Spot 202	258.14	1080692.51	2.51	13.29	0.90	1.93	1.63	0.19	1.37	0.84	1102.29	13.84	1092.96	10.94	1074.43	18.04	1074.43	18.04	102.59
0119-MR-02 Spot 40	244.39	136905.40	3.18	13.22	0.93	1.90	1.35	0.18	0.98	0.72	1079.14	9.70	1080.94	8.97	1084.57	18.64	1084.57	18.64	99.50
0119-MR-02 Spot 96	218.75	36339.33	2.42	13.20	0.77	1.90	1.33	0.18	1.08	0.82	1077.64	10.74	1080.78	8.82	1087.13	15.35	1087.13	15.35	99.13
0119-MR-02 Spot 197	46.10	9411.82	1.99	13.20	1.11	2.03	1.94	0.19	1.59	0.82	1142.63	16.70	1124.06	13.22	1088.33	22.28	1088.33	22.28	104.99
0119-MR-02 Spot 17	360.94	184167.02	6.03	13.14	0.89	1.95	1.37	0.19	1.04	0.76	1100.07	10.49	1098.89	9.20	1096.56	17.92	1096.56	17.92	100.32
0119-MR-02 Spot 59	123.57	37575.58	1.16	13.10	1.06	1.85	1.63	0.18	1.24	0.76	1046.41	11.94	1064.95	10.72	1103.16	21.08	1103.16	21.08	94.85
0119-MR-02 Spot 67	123.26	48918.57	1.69	13.09	1.05	1.94	1.63	0.18	1.25	0.76	1091.88	12.55	1096.22	10.96	1104.85	21.09	1104.85	21.09	98.83
0119-MR-02 Spot 201	54.18	11776.72	1.35	13.08	1.31	1.93	2.14	0.18	1.70	0.79	1086.85	16.98	1093.06	14.34	1105.43	26.07	1105.43	26.07	98.32
0119-MR-02 Spot 69	261.59	119988.44	2.02	13.05	0.98	1.94	1.58	0.18	1.24	0.78	1087.44	12.39	1095.40	10.58	1111.23	19.53	1111.23	19.53	97.86
0119-MR-02 Spot 226	290.68	261749.44	5.23	13.01	1.07	2.02	1.69	0.19	1.30	0.77	1125.67	13.47	1122.42	11.45	1116.15	21.31	1116.15	21.31	100.85
0119-MR-02 Spot 237	321.86	201510.36	6.04	12.96	0.98	2.08	1.76	0.20	1.46	0.83	1151.25	15.38	1142.09	12.04	1124.72	19.49	1124.72	19.49	102.36
0119-MR-02 Spot 52	158.57	90958.34	2.33	12.93	0.99	2.05	1.59	0.19	1.25	0.78	1135.64	13.00	1133.62	10.89	1129.75	19.75	1129.75	19.75	100.52
0119-MR-02 Spot 261	47.15	281943.84	1.35	12.88	1.27	1.96	1.89	0.18	1.40	0.74	1081.73	13.98	1100.37	12.73	1137.44	25.31	1137.44	25.31	95.10
0119-MR-02 Spot 58	60.87	8757.22	4.92	12.86	1.14	2.13	1.77	0.20	1.35	0.76	1169.98	14.47	1159.74	12.24	1140.65	22.69	1140.65	22.69	102.57
0119-MR-02 Spot 30	308.39	79271.46	4.95	12.72	0.96	2.12	1.66	0.20	1.35	0.81	1152.75	14.21	1155.99	11.43	1162.05	19.12	1162.05	19.12	99.20
0119-MR-02 Spot 25	657.43	1075880.30	5.03	12.62	0.85	2.18	1.62	0.20	1.38	0.85	1174.08	14.82	1175.25	11.29	1177.42	16.81	1177.42	16.81	99.72
0119-MR-02 Spot 23	92.36	33661.81	2.14	12.61	0.74	2.18	1.59	0.20	1.41	0.88	1173.66	15.14	1175.28	11.11	1178.27	14.70	1178.27	14.70	99.61
0119-MR-02 Spot 21	374.02	62368.11	3.51	12.54	0.83	2.25	1.34	0.21	1.05	0.78	1202.64	11.53	1197.84	9.43	1189.20	16.43	1189.20	16.43	101.13
0119-MR-02 Spot 218	79.14	152036.58	1.35	12.50	1.27	2.26	1.99	0.21	1.54	0.77	1202.88	16.89	1200.20	14.03	1195.35	24.95	1195.35	24.95	100.63
0119-MR-02 Spot 244	34.21	21439.39	3.15	12.48	1.15	2.33	1.68	0.21	1.22	0.73	1234.71	13.72	1221.69	11.92	1198.75	22.69	1198.75	22.69	103.00
0119-MR-02 Spot 157	158.82	79117.24	4.18	12.29	1.10	2.27	1.63	0.20	1.20	0.74	1189.86	13.05	1204.07	11.47	1229.68	21.54	1229.68	21.54	96.76
0119-MR-02 Spot 112	58.91	19842.84	1.62	12.04	1.06	2.57	1.65	0.22	1.27	0.77	1306.46	14.97	1292.67	12.05	1269.85	20.59	1269.85	20.59	102.88
0119-MR-02 Spot 279	107.20	62066.50	2.55	11.58	1.07	2.86	1.65	0.24	1.26	0.76	1386.46	15.69	1370.39	12.41	1345.40	20.62	1345.40	20.62	103.05
0119-MR-02 Spot 104	80.78	39102.41	1.32	11.37	1.13	2.61	1.65	0.22	1.20	0.73	1256.96	13.75	1303.18	12.14	1380.08	21.77	1380.08	21.77	91.08
0119-MR-02 Spot 90	70.65	86877.59	1.86	11.34	1.12	2.93	1.95	0.24	1.59	0.82	1392.46	19.97	1389.66	14.74	1385.34	21.45	1385.34	21.45	100.51
0119-MR-02 Spot 99	204.01	592006.73	3.31	11.32	0.77	2.90	1.48	0.24	1.26	0.85	1378.43	15.67	1382.55	11.16	1388.90	14.72	1388.90	14.72	99.25
0119-MR-02 Spot 164	133.86	30348.22	1.15	11.22	1.01	3.09	1.65	0.25	1.30	0.79	1445.02	16.87	1429.39	12.66	1406.18	19.40	1406.18	19.40	102.76
0119-MR-02 Spot 22	201.40	34131.14	181.77	11.14	0.90	3.05	1.35	0.25	1.01	0.75	1421.16	12.90	1420.67	10.36	1419.92	17.21	1419.92	17.21	100.09

0119-MR-02 Spot 15	117.61	21585.22	1.85	11.11	0.99	3.08	1.42	0.25	1.02	0.72	1427.85	13.01	1426.91	10.87	1425.51	18.90	1425.51	18.90	100.16
0119-MR-02 Spot 114	152.14	741542.44	1.35	11.06	0.91	3.13	1.45	0.25	1.14	0.78	1445.34	14.74	1440.86	11.20	1434.23	17.27	1434.23	17.27	100.78
0119-MR-02 Spot 137	121.58	198058.70	1.98	11.04	0.96	3.13	1.51	0.25	1.17	0.77	1442.96	15.13	1440.20	11.65	1436.10	18.31	1436.10	18.31	100.48
0119-MR-02 Spot 20	101.25	32865.95	1.95	11.03	0.87	3.09	1.44	0.25	1.14	0.79	1425.72	14.60	1430.98	11.03	1438.78	16.66	1438.78	16.66	99.09
0119-MR-02 Spot 113	371.73	181832.83	3.07	10.96	0.89	3.20	1.52	0.25	1.24	0.81	1462.00	16.16	1457.22	11.77	1450.25	16.89	1450.25	16.89	100.81
0119-MR-02 Spot 32	84.58	27333.17	1.24	10.94	0.86	3.23	1.40	0.26	1.11	0.79	1472.82	14.63	1465.20	10.88	1454.15	16.31	1454.15	16.31	101.28
0119-MR-02 Spot 246	257.33	622805.36	2.55	10.89	0.75	3.12	1.31	0.25	1.07	0.82	1421.44	13.60	1437.91	10.04	1462.33	14.32	1462.33	14.32	97.20
0119-MR-02 Spot 31	101.03	48322.31	20.85	10.83	0.97	3.29	1.52	0.26	1.17	0.77	1480.93	15.52	1478.22	11.85	1474.33	18.38	1474.33	18.38	100.45
0119-MR-02 Spot 127	83.99	18315.32	1.42	10.78	1.11	3.40	2.07	0.27	1.75	0.84	1520.89	23.65	1504.60	16.23	1481.71	21.01	1481.71	21.01	102.64
0119-MR-02 Spot 222	109.40	321041.71	1.61	10.77	0.79	3.36	1.35	0.26	1.09	0.81	1504.98	14.67	1496.13	10.57	1483.61	15.03	1483.61	15.03	101.44
0119-MR-02 Spot 193	263.62	285596.51	1.48	10.67	0.75	3.41	1.29	0.26	1.05	0.81	1511.00	14.17	1507.24	10.15	1501.94	14.21	1501.94	14.21	100.60
0119-MR-02 Spot 16	421.05	2164471.20	5.36	10.30	1.09	3.34	1.66	0.25	1.25	0.76	1436.89	16.14	1490.79	12.97	1568.31	20.39	1568.31	20.39	91.62
0119-MR-02 Spot 62	88.03	73639.08	1.84	10.01	0.91	3.88	1.64	0.28	1.36	0.83	1602.85	19.34	1610.56	13.22	1620.64	16.88	1620.64	16.88	98.90
0119-MR-02 Spot 228	30.91	27555.57	1.00	10.00	1.37	3.96	1.87	0.29	1.28	0.68	1627.70	18.46	1625.65	15.20	1622.99	25.44	1622.99	25.44	100.29
0119-MR-02 Spot 189	231.66	202299.97	1.16	9.98	0.90	4.05	1.56	0.29	1.28	0.82	1656.75	18.68	1643.73	12.72	1627.10	16.69	1627.10	16.69	101.82
0119-MR-02 Spot 162	76.16	71759.21	2.24	9.94	0.99	4.03	1.85	0.29	1.56	0.84	1644.38	22.58	1640.03	15.01	1634.43	18.43	1634.43	18.43	100.61
0119-MR-02 Spot 156	48.94	27199.15	0.16	9.83	0.93	4.12	1.81	0.29	1.55	0.86	1661.46	22.70	1658.78	14.78	1655.36	17.26	1655.36	17.26	100.37
0119-MR-02 Spot 68	87.41	72847.11	1.50	9.73	0.98	4.03	1.66	0.28	1.34	0.81	1615.78	19.12	1641.01	13.50	1673.46	18.13	1673.46	18.13	96.55
0119-MR-02 Spot 196	231.51	50679.50	14.32	9.60	0.84	4.31	1.66	0.30	1.43	0.86	1693.49	21.27	1695.66	13.65	1698.34	15.45	1698.34	15.45	99.71
0119-MR-02 Spot 139	259.01	72378.95	4.04	9.60	0.81	4.38	1.44	0.31	1.19	0.83	1717.50	17.99	1709.32	11.92	1699.30	14.89	1699.30	14.89	101.07
0119-MR-02 Spot 146	92.53	228284.09	1.88	9.58	0.90	4.39	1.61	0.30	1.34	0.83	1715.75	20.18	1709.71	13.33	1702.30	16.49	1702.30	16.49	100.79
0119-MR-02 Spot 133	236.21	86603.82	3.02	9.54	0.97	4.34	1.58	0.30	1.25	0.79	1692.63	18.64	1700.49	13.07	1710.18	17.84	1710.18	17.84	98.97
0119-MR-02 Spot 212	281.63	2479409.87	3.44	9.40	0.82	4.56	1.61	0.31	1.38	0.86	1745.66	21.16	1742.28	13.38	1738.21	14.96	1738.21	14.96	100.43
0119-MR-02 Spot 177	146.95	1553432.14	2.09	9.38	0.88	4.67	1.37	0.32	1.04	0.76	1777.68	16.23	1761.34	11.43	1741.99	16.15	1741.99	16.15	102.05
0119-MR-02 Spot 172	159.22	66954.35	4.17	9.37	0.90	4.69	1.60	0.32	1.32	0.83	1784.92	20.62	1765.89	13.37	1743.43	16.40	1743.43	16.40	102.38
0119-MR-02 Spot 160	230.70	119537.54	2.82	9.35	1.16	4.59	1.87	0.31	1.47	0.79	1749.38	22.58	1748.21	15.62	1746.80	21.18	1746.80	21.18	100.15
0119-MR-02 Spot 33	202.94	310313.59	1.41	9.30	0.82	4.52	1.45	0.31	1.19	0.82	1717.62	17.93	1735.30	12.02	1756.66	15.02	1756.66	15.02	97.78
0119-MR-02 Spot 258	58.49	38607.54	1.72	9.13	1.03	4.88	1.78	0.32	1.45	0.81	1805.50	22.78	1798.95	14.99	1791.35	18.83	1791.35	18.83	100.79
0119-MR-02 Spot 265	97.82	37666.82	2.99	9.12	0.70	4.87	1.32	0.32	1.12	0.85	1798.79	17.52	1796.33	11.11	1793.47	12.81	1793.47	12.81	100.30
0119-MR-02 Spot 110	197.22	693402.89	4.45	9.12	0.94	4.80	1.39	0.32	1.02	0.74	1779.12	15.93	1785.75	11.71	1793.49	17.20	1793.49	17.20	99.20
0119-MR-02 Spot 27	495.38	293437.06	4.53	8.96	0.77	5.06	1.63	0.33	1.44	0.88	1833.92	22.99	1829.48	13.83	1824.40	13.91	1824.40	13.91	100.52
0119-MR-02 Spot 209	57.16	31725.34	5.29	8.86	0.75	5.24	1.44	0.34	1.24	0.86	1869.98	20.08	1858.66	12.32	1846.00	13.51	1846.00	13.51	101.30
0119-MR-02 Spot 39	37.10	61038.25	2.50	8.77	1.14	5.26	1.69	0.33	1.25	0.74	1860.24	20.12	1861.94	14.42	1863.81	20.64	1863.81	20.64	99.81
0119-MR-02 Spot 301	147.55	435421.77	3.86	8.26	0.68	5.82	1.33	0.35	1.14	0.86	1931.01	19.06	1950.00	11.50	1970.21	12.04	1970.21	12.04	98.01
0119-MR-02 Spot 125	161.70	90195.79	2.71	8.16	0.90	6.10	1.46	0.36	1.16	0.79	1987.10	19.79	1989.60	12.77	1992.20	15.93	1992.20	15.93	99.74
0119-MR-02 Spot 274	133.85	71733.99	1.86	8.15	1.51	5.13	2.41	0.30	1.88	0.78	1707.03	28.22	1840.44	20.50	1994.81	26.83	1994.81	26.83	85.57
0119-MR-02 Spot 175	73.38	83207.11	2.24	7.96	0.87	6.29	1.41	0.36	1.10	0.78	1998.55	18.97	2017.49	12.34	2036.91	15.46	2036.91	15.46	98.12
0119-MR-02 Spot 262	200.68	81665.67	1.55	7.89	0.88	6.39	1.44	0.37	1.14	0.79	2010.14	19.76	2031.16	12.67	2052.56	15.52	2052.56	15.52	97.93
0119-MR-02 Spot 210	277.54	68530.86	3.28	7.68	0.77	6.84	1.43	0.38	1.21	0.84	2082.60	21.46	2091.33	12.70	2099.92	13.60	2099.92	13.60	99.18
0119-MR-02 Spot 242	136.39	319279.86	4.42	7.66	0.92	6.28	1.59	0.35	1.30	0.82	1930.73	21.66	2016.00	13.92	2104.50	16.07	2104.50	16.07	91.74

0119-MR-02 Spot 91	145.04	100944.51	1.44	5.64	0.87	12.27	1.44	0.50	1.15	0.80	2621.67	24.78	2625.50	13.53	2628.44	14.41	2628.44	14.41	99.74
0119-MR-02 Spot 43	59.94	177224.40	3.45	5.41	0.73	13.27	1.70	0.52	1.53	0.90	2702.64	33.85	2699.12	16.06	2696.48	12.13	2696.48	12.13	100.23
0119-MR-02 Spot 167	72.18	43656.66	1.05	5.31	0.84	13.50	1.48	0.52	1.23	0.83	2700.43	27.05	2715.63	14.03	2726.95	13.78	2726.95	13.78	99.03
0119-MR-02 Spot 64	189.97	1051492.21	3.03	4.93	0.75	14.36	1.29	0.51	1.05	0.81	2674.36	22.95	2774.09	12.25	2847.43	12.24	2847.43	12.24	93.92
0119-MR-02 Spot 115	278.58	256471.54	2.20	4.80	0.78	15.79	1.43	0.55	1.20	0.84	2825.91	27.53	2864.30	13.69	2891.39	12.63	2891.39	12.63	97.74
0119-MR-02 Spot 75	216.12	78734.36	2.10	4.69	0.79	17.44	1.35	0.59	1.10	0.81	3006.51	26.38	2959.56	13.00	2927.79	12.80	2927.79	12.80	102.69

Sample P01-3

P01-3 Spot-29	78.26	1913.77	4.29	22.14	7.46	0.14	7.56	0.02	1.19	0.16	143.90	1.69	133.51	9.46	NA	NA	143.90	1.69	107.78
P01-3 Spot-163	666.04	22655.77	1.41	20.40	1.25	0.15	2.12	0.02	1.71	0.81	144.64	2.44	144.82	2.86	147.72	29.32	144.64	2.44	99.88
P01-3 Spot-10	108.41	6049.04	3.15	20.61	1.88	0.15	2.34	0.02	1.40	0.60	144.65	2.01	143.48	3.13	124.22	44.17	144.65	2.01	100.81
P01-3 Spot-126	104.53	2263.36	3.68	22.54	2.26	0.14	2.70	0.02	1.48	0.55	146.24	2.14	133.29	3.37	NA	NA	146.24	2.14	109.71
P01-3 Spot- 5	113.30	15463.50	3.48	19.96	1.34	0.16	1.91	0.02	1.37	0.72	146.69	1.98	149.75	2.66	198.40	31.05	146.69	1.98	97.96
P01-3 Spot-200	222.85	3767.89	3.17	21.07	1.33	0.15	1.95	0.02	1.43	0.73	147.16	2.08	142.83	2.60	71.55	31.67	147.16	2.08	103.03
P01-3 Spot-194	1022.96	392934.73	1.32	20.17	0.83	0.16	1.79	0.02	1.59	0.89	147.53	2.32	149.14	2.49	174.74	19.45	147.53	2.32	98.92
P01-3 Spot-210	65.95	6918.04	3.54	20.30	2.48	0.16	2.95	0.02	1.59	0.54	147.78	2.33	148.45	4.07	159.28	58.08	147.78	2.33	99.54
P01-3 Spot-309	146.31	5955.97	3.35	21.32	2.35	0.15	2.85	0.02	1.62	0.57	147.81	2.36	141.85	3.77	43.41	56.07	147.81	2.36	104.20
P01-3 Spot-308	341.06	9449.86	1.26	20.83	1.50	0.15	1.89	0.02	1.15	0.61	147.83	1.69	144.95	2.55	98.10	35.40	147.83	1.69	101.99
P01-3 Spot-111	301.33	12674.83	3.44	20.46	1.26	0.16	1.98	0.02	1.53	0.77	148.00	2.24	147.59	2.72	140.94	29.50	148.00	2.24	100.28
P01-3 Spot-190	39.97	7038.23	2.30	20.09	3.52	0.16	3.82	0.02	1.48	0.39	148.28	2.17	150.39	5.34	183.67	82.13	148.28	2.17	98.60
P01-3 Spot-281	124.56	5038.99	2.99	22.08	2.21	0.15	2.64	0.02	1.43	0.54	149.00	2.11	138.36	3.41	NA	NA	149.00	2.11	107.70
P01-3 Spot-81	563.28	48681.17	1.57	20.65	1.18	0.16	2.14	0.02	1.79	0.83	149.14	2.64	147.40	2.94	119.48	27.84	149.14	2.64	101.18
P01-3 Spot-219	446.80	18269.75	2.32	20.25	1.41	0.16	2.30	0.02	1.82	0.79	149.22	2.69	150.14	3.21	164.68	32.90	149.22	2.69	99.39
P01-3 Spot-152	2101.76	765602.74	1.99	19.88	0.99	0.16	1.67	0.02	1.35	0.81	149.27	1.99	152.80	2.37	208.03	22.84	149.27	1.99	97.69
P01-3 Spot-106	121.44	2933.08	3.54	21.80	2.18	0.15	2.51	0.02	1.23	0.49	149.51	1.82	140.45	3.29	NA	NA	149.51	1.82	106.45
P01-3 Spot-72	73.81	3307.79	2.65	21.65	2.21	0.15	2.58	0.02	1.32	0.51	149.61	1.95	141.43	3.40	6.18	53.24	149.61	1.95	105.79
P01-3 Spot-267	141.12	5974.92	2.69	20.88	2.02	0.16	2.53	0.02	1.52	0.60	149.83	2.25	146.49	3.45	92.71	47.95	149.83	2.25	102.28
P01-3 Spot- 1	208.52	24512.92	5.94	20.14	1.67	0.16	2.32	0.02	1.62	0.70	149.95	2.40	151.64	3.27	178.04	38.83	149.95	2.40	98.89
P01-3 Spot-169	119.79	4106.15	2.87	21.35	3.61	0.15	3.83	0.02	1.28	0.33	150.28	1.90	143.89	5.13	39.73	86.30	150.28	1.90	104.44
P01-3 Spot-295	80.89	3924.43	2.64	22.57	2.68	0.14	3.07	0.02	1.49	0.49	150.68	2.23	136.94	3.93	NA	NA	150.68	2.23	110.03
P01-3 Spot-273	323.17	5686.81	1.80	21.58	2.03	0.15	2.56	0.02	1.57	0.61	150.82	2.33	142.94	3.42	13.96	48.73	150.82	2.33	105.52
P01-3 Spot-130	845.84	41505.21	1.57	20.40	0.90	0.16	1.47	0.02	1.16	0.79	150.88	1.73	150.70	2.06	147.84	21.07	150.88	1.73	100.12
P01-3 Spot-26	295.72	26497.39	3.44	20.71	1.49	0.16	2.07	0.02	1.44	0.69	150.93	2.14	148.66	2.86	112.47	35.13	150.93	2.14	101.53
P01-3 Spot-147	520.82	18396.60	2.34	20.35	1.07	0.16	1.82	0.02	1.47	0.81	151.41	2.20	151.56	2.56	153.76	24.94	151.41	2.20	99.91
P01-3 Spot-192	887.29	31544.31	2.34	19.98	1.20	0.16	1.76	0.02	1.28	0.73	151.60	1.92	154.33	2.52	196.52	27.96	151.60	1.92	98.23
P01-3 Spot-255	157.84	6085.91	4.06	21.54	2.31	0.15	2.71	0.02	1.41	0.52	151.64	2.11	143.96	3.63	19.16	55.48	151.64	2.11	105.34
P01-3 Spot-135	435.10	103432.61	5.68	20.08	1.44	0.16	1.85	0.02	1.16	0.63	151.66	1.74	153.66	2.64	184.61	33.59	151.66	1.74	98.70
P01-3 Spot-230	832.22	63030.00	2.85	20.43	1.24	0.16	1.99	0.02	1.56	0.78	152.56	2.35	152.05	2.82	144.14	29.17	152.56	2.35	100.33
P01-3 Spot-304	576.38	69728.52	1.95	20.28	1.14	0.16	1.86	0.02	1.47	0.79	152.84	2.22	153.39	2.65	161.88	26.72	152.84	2.22	99.64

P01-3 Spot-236	869.20	74329.54	1.83	19.95	1.15	0.17	1.92	0.02	1.54	0.80	153.33	2.34	156.19	2.79	199.88	26.71	153.33	2.34	98.16
P01-3 Spot-177	901.40	20521.07	1.32	20.83	1.14	0.16	1.94	0.02	1.58	0.81	153.53	2.39	150.21	2.71	98.23	26.86	153.53	2.39	102.21
P01-3 Spot-257	115.71	6641.81	2.69	20.86	1.76	0.16	2.26	0.02	1.41	0.62	153.70	2.14	150.18	3.15	95.03	41.74	153.70	2.14	102.34
P01-3 Spot-40	530.38	20897.58	1.11	20.60	1.08	0.16	1.85	0.02	1.50	0.81	155.13	2.30	153.29	2.63	124.89	25.30	155.13	2.30	101.20
P01-3 Spot-254	166.54	4684.71	3.58	21.53	2.48	0.16	2.91	0.02	1.53	0.53	155.54	2.35	147.47	4.00	19.56	59.50	155.54	2.35	105.47
P01-3 Spot-224	428.06	11916.95	1.95	20.54	1.22	0.16	1.81	0.02	1.34	0.74	155.98	2.07	154.46	2.60	131.27	28.70	155.98	2.07	100.98
P01-3 Spot-137	555.46	31079.17	1.60	20.14	1.06	0.17	1.86	0.02	1.53	0.82	156.62	2.36	157.94	2.72	177.69	24.64	156.62	2.36	99.17
P01-3 Spot-139	920.95	79431.95	2.32	20.07	1.10	0.17	1.99	0.02	1.66	0.83	157.17	2.57	158.97	2.92	185.83	25.58	157.17	2.57	98.87
P01-3 Spot-312	439.93	64820.09	2.05	20.45	1.70	0.17	2.22	0.02	1.43	0.64	157.29	2.23	156.32	3.22	141.73	39.87	157.29	2.23	100.62
P01-3 Spot-20	716.41	23089.28	3.28	20.21	1.06	0.17	1.78	0.02	1.42	0.80	158.27	2.23	159.01	2.62	170.01	24.85	158.27	2.23	99.54
P01-3 Spot-63	735.68	68913.36	1.33	20.05	1.01	0.17	1.74	0.02	1.42	0.81	158.32	2.21	160.19	2.58	187.94	23.49	158.32	2.21	98.83
P01-3 Spot-167	351.61	65113.93	3.72	19.98	1.11	0.17	1.74	0.02	1.34	0.77	158.40	2.09	160.78	2.58	195.93	25.70	158.40	2.09	98.52
P01-3 Spot-60	311.65	5152.73	4.04	21.69	2.08	0.16	2.72	0.02	1.75	0.64	159.16	2.75	149.66	3.78	1.56	50.19	159.16	2.75	106.35
P01-3 Spot-272	326.48	62631.74	2.59	19.92	1.38	0.17	1.98	0.03	1.42	0.72	159.57	2.24	162.33	2.97	202.82	31.97	159.57	2.24	98.30
P01-3 Spot-180	438.80	43280.43	2.39	20.34	1.11	0.17	1.67	0.03	1.25	0.75	160.11	1.97	159.74	2.47	154.38	26.03	160.11	1.97	100.23
P01-3 Spot-183	339.89	7320.40	1.72	21.09	2.34	0.16	2.76	0.03	1.47	0.53	160.36	2.33	154.69	3.96	68.70	55.66	160.36	2.33	103.66
P01-3 Spot-209	380.39	16210.90	2.03	20.49	1.17	0.17	1.96	0.03	1.57	0.80	161.30	2.50	159.81	2.90	137.81	27.59	161.30	2.50	100.93
P01-3 Spot-243	1487.61	266284.29	2.93	20.33	1.01	0.17	1.81	0.03	1.50	0.83	162.44	2.40	162.01	2.71	155.77	23.72	162.44	2.40	100.26
P01-3 Spot-109	490.16	38927.85	2.05	20.46	1.04	0.17	1.84	0.03	1.52	0.82	162.72	2.44	161.34	2.75	141.18	24.45	162.72	2.44	100.85
P01-3 Spot-37	212.92	415771.66	2.21	19.22	1.56	0.18	2.09	0.03	1.39	0.67	162.84	2.24	170.99	3.29	285.27	35.65	162.84	2.24	95.23
P01-3 Spot- 2	1168.18	75894.00	3.59	19.95	1.00	0.18	1.81	0.03	1.51	0.83	162.87	2.43	165.24	2.76	199.37	23.20	162.87	2.43	98.56
P01-3 Spot-131	678.33	39510.08	2.26	20.31	1.06	0.17	2.07	0.03	1.77	0.86	162.92	2.85	162.60	3.10	158.01	24.78	162.92	2.85	100.19
P01-3 Spot-211	274.84	6212.67	5.95	21.43	2.26	0.17	2.78	0.03	1.62	0.58	163.56	2.62	155.32	4.00	31.47	54.04	163.56	2.62	105.30
P01-3 Spot-51	1046.88	30866.38	2.42	20.19	1.03	0.18	1.99	0.03	1.70	0.85	163.59	2.74	164.11	3.01	171.58	24.14	163.59	2.74	99.68
P01-3 Spot-66	523.98	331144.92	4.24	20.11	1.37	0.18	2.05	0.03	1.52	0.74	164.01	2.47	165.14	3.12	181.38	31.87	164.01	2.47	99.31
P01-3 Spot-113	941.03	49053.28	1.86	20.11	0.95	0.18	2.06	0.03	1.83	0.89	164.37	2.97	165.48	3.15	181.40	22.19	164.37	2.97	99.33
P01-3 Spot- 7	266.13	159993.00	2.45	19.97	1.46	0.18	1.87	0.03	1.17	0.62	164.95	1.90	167.08	2.88	197.32	33.92	164.95	1.90	98.73
P01-3 Spot-118	462.35	98681.03	1.98	20.32	1.38	0.18	1.87	0.03	1.26	0.68	164.99	2.05	164.45	2.83	156.71	32.23	164.99	2.05	100.33
P01-3 Spot-205	564.64	29470.83	2.04	19.94	1.28	0.18	2.31	0.03	1.93	0.83	165.21	3.14	167.54	3.57	200.68	29.70	165.21	3.14	98.61
P01-3 Spot-143	37.98	5489.51	4.61	19.48	3.61	0.18	3.98	0.03	1.68	0.42	165.22	2.74	171.23	6.27	255.11	82.93	165.22	2.74	96.49
P01-3 Spot-14	238.80	9172.94	3.16	20.56	1.12	0.17	1.78	0.03	1.38	0.78	166.00	2.26	163.62	2.69	129.36	26.45	166.00	2.26	101.45
P01-3 Spot-245	622.22	208272.05	6.39	20.10	1.25	0.18	2.16	0.03	1.76	0.81	166.43	2.88	167.49	3.33	182.47	29.16	166.43	2.88	99.37
P01-3 Spot-278	296.03	9074.91	5.30	20.74	1.44	0.17	2.19	0.03	1.65	0.75	166.60	2.71	162.87	3.29	108.90	33.97	166.60	2.71	102.29
P01-3 Spot-103	766.60	68928.40	1.73	20.02	1.16	0.18	1.67	0.03	1.21	0.72	166.67	1.98	168.30	2.60	191.28	27.04	166.67	1.98	99.03
P01-3 Spot-195	300.90	13222.57	1.21	20.93	1.74	0.17	2.22	0.03	1.38	0.62	167.09	2.27	161.94	3.33	87.23	41.39	167.09	2.27	103.18
P01-3 Spot-306	130.45	16068.93	3.41	21.02	1.95	0.17	2.34	0.03	1.29	0.55	167.13	2.13	161.31	3.48	76.69	46.23	167.13	2.13	103.61
P01-3 Spot-280	498.12	29152.03	6.64	20.16	0.95	0.18	1.83	0.03	1.57	0.86	167.24	2.59	167.78	2.83	175.38	22.11	167.24	2.59	99.68
P01-3 Spot-296	414.07	28411.40	2.37	20.33	1.18	0.18	1.79	0.03	1.34	0.75	167.40	2.22	166.67	2.75	156.34	27.61	167.40	2.22	100.44
P01-3 Spot-77	1094.17	242112.51	3.99	20.29	0.93	0.18	2.03	0.03	1.80	0.89	168.14	2.99	167.65	3.13	160.85	21.83	168.14	2.99	100.29
P01-3 Spot-186	448.30	20323.19	2.17	20.45	1.43	0.18	2.02	0.03	1.42	0.70	168.34	2.36	166.61	3.10	142.11	33.63	168.34	2.36	101.04

P01-3 Spot-97	820.71	20344.66	4.02	20.74	0.89	0.18	1.59	0.03	1.32	0.83	168.43	2.20	164.51	2.42	108.53	20.93	168.43	2.20	102.38
P01-3 Spot-99	428.84	89726.33	1.95	20.18	1.27	0.18	2.11	0.03	1.69	0.80	168.49	2.80	168.83	3.28	173.58	29.66	168.49	2.80	99.80
P01-3 Spot- 9	912.01	47008.69	3.62	20.26	0.91	0.18	1.67	0.03	1.39	0.84	168.65	2.32	168.30	2.58	163.48	21.36	168.65	2.32	100.20
P01-3 Spot-164	337.65	197489.64	2.17	17.46	2.64	0.21	3.00	0.03	1.42	0.48	168.97	2.37	193.20	5.27	500.53	58.07	168.97	2.37	87.46
P01-3 Spot-231	835.45	33604.59	7.34	20.16	1.01	0.18	1.80	0.03	1.49	0.83	169.69	2.49	170.09	2.81	175.70	23.49	169.69	2.49	99.76
P01-3 Spot-289	313.66	24976.70	3.17	20.45	1.22	0.18	1.93	0.03	1.49	0.77	169.83	2.50	168.00	2.99	142.32	28.71	169.83	2.50	101.09
P01-3 Spot-21	955.06	67103.67	2.07	19.98	0.89	0.18	1.73	0.03	1.49	0.86	170.04	2.49	171.81	2.74	196.34	20.72	170.04	2.49	98.97
P01-3 Spot-93	609.19	21761.73	4.93	20.46	0.90	0.18	1.93	0.03	1.70	0.88	170.49	2.87	168.53	2.99	141.13	21.09	170.49	2.87	101.16
P01-3 Spot-285	1047.95	105196.53	2.68	20.32	1.07	0.18	1.95	0.03	1.63	0.84	170.83	2.75	169.92	3.05	157.28	25.02	170.83	2.75	100.53
P01-3 Spot-241	461.37	34893.05	2.69	20.47	0.81	0.18	1.83	0.03	1.65	0.90	170.97	2.78	168.90	2.85	140.07	19.01	170.97	2.78	101.22
P01-3 Spot-214	279.11	1389738.79	5.20	19.93	1.15	0.19	1.57	0.03	1.06	0.68	171.01	1.79	173.12	2.49	201.96	26.69	171.01	1.79	98.79
P01-3 Spot-305	824.50	30333.94	6.97	20.70	1.06	0.18	1.71	0.03	1.34	0.78	171.23	2.27	167.41	2.64	113.72	24.99	171.23	2.27	102.28
P01-3 Spot-275	662.43	31607.11	4.19	20.47	1.06	0.18	1.84	0.03	1.50	0.82	171.73	2.55	169.60	2.88	139.98	24.91	171.73	2.55	101.26
P01-3 Spot-75	354.16	11483.90	2.25	20.54	1.67	0.18	2.14	0.03	1.35	0.63	172.69	2.30	169.97	3.36	132.27	39.24	172.69	2.30	101.60
P01-3 Spot-121	193.74	9682.13	2.39	20.32	1.31	0.18	1.76	0.03	1.18	0.67	173.43	2.01	172.30	2.78	156.82	30.56	173.43	2.01	100.66
P01-3 Spot-229	216.04	11661.79	2.44	20.43	2.07	0.19	2.81	0.03	1.90	0.68	174.65	3.28	172.61	4.46	144.74	48.61	174.65	3.28	101.18
P01-3 Spot-185	721.54	91291.29	1.52	20.21	1.26	0.19	2.12	0.03	1.71	0.81	175.20	2.95	174.85	3.40	170.05	29.31	175.20	2.95	100.20
P01-3 Spot-188	405.20	65598.52	2.17	20.33	0.96	0.19	1.75	0.03	1.47	0.84	175.23	2.54	173.91	2.80	155.90	22.40	175.23	2.54	100.76
P01-3 Spot-217	551.78	60461.95	1.10	20.05	0.93	0.19	1.73	0.03	1.46	0.84	175.72	2.52	176.62	2.80	188.71	21.61	175.72	2.52	99.49
P01-3 Spot-19	761.88	295402.14	7.43	20.29	1.14	0.19	2.10	0.03	1.77	0.84	176.16	3.07	175.09	3.38	160.72	26.65	176.16	3.07	100.61
P01-3 Spot-262	384.55	65186.94	2.39	20.08	1.16	0.19	1.84	0.03	1.43	0.78	176.39	2.49	176.97	2.99	184.67	26.95	176.39	2.49	99.67
P01-3 Spot-124	365.53	23617.53	22.79	20.03	1.16	0.19	1.83	0.03	1.42	0.77	178.28	2.50	179.18	3.01	190.96	27.00	178.28	2.50	99.50
P01-3 Spot-298	158.81	3029.43	3.29	21.34	3.17	0.18	3.42	0.03	1.28	0.37	178.38	2.25	169.12	5.32	41.43	75.84	178.38	2.25	105.48
P01-3 Spot-206	429.47	66696.58	7.71	19.62	1.48	0.20	2.19	0.03	1.61	0.73	179.36	2.85	183.60	3.68	238.43	34.21	179.36	2.85	97.69
P01-3 Spot-284	333.45	13074.36	1.84	20.58	1.43	0.19	2.25	0.03	1.74	0.77	180.75	3.10	177.03	3.66	127.57	33.73	180.75	3.10	102.10
P01-3 Spot-140	583.04	23200.60	1.74	19.86	1.82	0.20	2.43	0.03	1.61	0.66	181.12	2.88	183.20	4.08	210.13	42.19	181.12	2.88	98.86
P01-3 Spot-212	255.43	12152.19	1.95	20.45	1.71	0.19	2.10	0.03	1.21	0.57	181.62	2.16	178.78	3.44	141.46	40.26	181.62	2.16	101.59
P01-3 Spot-201	614.25	30159.33	1.45	20.21	1.16	0.20	1.88	0.03	1.47	0.78	181.98	2.64	181.09	3.11	169.42	27.20	181.98	2.64	100.49
P01-3 Spot-307	601.44	73283.71	10.79	19.85	1.07	0.20	1.91	0.03	1.58	0.83	182.11	2.84	184.20	3.22	211.21	24.73	182.11	2.84	98.86
P01-3 Spot-35	199.81	141058.49	2.25	19.94	1.56	0.20	1.97	0.03	1.21	0.61	182.95	2.18	184.25	3.33	200.85	36.28	182.95	2.18	99.30
P01-3 Spot-226	621.78	19627.33	1.53	20.52	1.10	0.20	1.72	0.03	1.32	0.77	188.40	2.45	184.45	2.89	134.18	25.80	188.40	2.45	102.14
P01-3 Spot-91	428.89	12019.23	3.09	20.23	1.14	0.20	1.89	0.03	1.52	0.80	188.76	2.82	187.17	3.24	167.14	26.54	188.76	2.82	100.85
P01-3 Spot-65	531.29	194316.37	1.52	20.13	1.41	0.20	2.02	0.03	1.45	0.72	189.98	2.71	189.12	3.49	178.38	32.92	189.98	2.71	100.45
P01-3 Spot-138	240.26	9741.10	2.57	20.17	1.87	0.20	2.23	0.03	1.21	0.54	190.25	2.27	189.02	3.85	173.69	43.67	190.25	2.27	100.65
P01-3 Spot-125	325.46	93552.06	2.36	19.88	1.20	0.21	1.90	0.03	1.48	0.78	190.46	2.78	191.75	3.32	207.66	27.75	190.46	2.78	99.33
P01-3 Spot-249	345.65	181590.84	3.41	20.18	1.28	0.21	2.25	0.03	1.85	0.82	190.69	3.48	189.39	3.88	173.24	29.78	190.69	3.48	100.68
P01-3 Spot-17	697.55	19626.73	1.11	20.14	1.24	0.21	2.24	0.03	1.87	0.83	191.09	3.52	190.13	3.89	178.23	28.88	191.09	3.52	100.50
P01-3 Spot-122	333.94	9734.90	2.84	20.48	1.31	0.20	1.91	0.03	1.39	0.73	192.63	2.65	188.59	3.29	138.29	30.78	192.63	2.65	102.14
P01-3 Spot-166	268.29	21063.27	4.05	19.80	1.14	0.21	1.68	0.03	1.24	0.74	192.86	2.35	194.73	2.98	217.49	26.34	192.86	2.35	99.04
P01-3 Spot-22	986.34	34414.66	3.38	19.62	1.06	0.21	1.82	0.03	1.48	0.81	193.06	2.81	196.53	3.25	238.43	24.36	193.06	2.81	98.23

P01-3 Spot-94	578.55	56232.01	2.38	20.26	1.14	0.21	2.03	0.03	1.68	0.83	193.13	3.20	190.91	3.54	163.59	26.73	193.13	3.20	101.16
P01-3 Spot-303	307.55	53515.95	1.48	19.76	1.55	0.21	1.98	0.03	1.24	0.63	193.31	2.36	195.54	3.52	222.51	35.76	193.31	2.36	98.86
P01-3 Spot-105	153.05	6820.24	3.59	20.68	2.14	0.20	2.54	0.03	1.37	0.54	194.10	2.61	188.26	4.36	115.60	50.49	194.10	2.61	103.10
P01-3 Spot-38	321.17	16810.40	1.65	20.32	1.39	0.21	1.91	0.03	1.31	0.69	194.70	2.52	191.84	3.34	156.85	32.42	194.70	2.52	101.49
P01-3 Spot-43	264.17	62182.89	3.87	19.84	1.26	0.21	1.88	0.03	1.39	0.74	194.92	2.68	196.31	3.35	212.99	29.13	194.92	2.68	99.29
P01-3 Spot-290	878.38	52682.10	2.45	20.01	1.00	0.21	1.63	0.03	1.29	0.79	195.05	2.48	194.92	2.89	193.31	23.20	195.05	2.48	100.07
P01-3 Spot-47	163.27	6509.31	4.84	20.19	2.14	0.21	2.59	0.03	1.46	0.56	195.50	2.82	193.73	4.57	172.30	49.95	195.50	2.82	100.91
P01-3 Spot-13	944.98	243046.43	3.61	19.91	0.86	0.21	1.76	0.03	1.53	0.87	195.53	2.95	196.19	3.14	204.06	20.03	195.53	2.95	99.67
P01-3 Spot-71	164.26	9753.78	4.14	19.99	1.40	0.21	2.47	0.03	2.03	0.82	195.67	3.91	195.64	4.39	195.30	32.56	195.67	3.91	100.02
P01-3 Spot-207	249.77	26043.12	2.68	19.58	1.07	0.22	1.65	0.03	1.26	0.76	195.86	2.44	199.51	2.99	242.88	24.54	195.86	2.44	98.17
P01-3 Spot-120	666.10	33909.19	3.79	20.02	0.99	0.21	1.90	0.03	1.62	0.85	196.01	3.12	195.65	3.38	191.36	23.10	196.01	3.12	100.18
P01-3 Spot-116	292.98	8439.69	2.49	20.35	1.50	0.21	2.01	0.03	1.33	0.66	197.25	2.58	193.93	3.54	153.75	35.21	197.25	2.58	101.71
P01-3 Spot-208	265.31	67906.90	3.45	18.57	1.20	0.23	1.84	0.03	1.40	0.76	197.79	2.73	211.25	3.52	364.19	27.02	197.79	2.73	93.63
P01-3 Spot-203	95.42	3024.27	2.29	21.14	1.84	0.20	2.46	0.03	1.63	0.66	198.03	3.18	187.98	4.22	63.54	43.82	198.03	3.18	105.35
P01-3 Spot-142	391.52	13466.51	2.78	20.34	1.42	0.21	1.76	0.03	1.04	0.59	198.86	2.03	195.47	3.13	154.69	33.31	198.86	2.03	101.74
P01-3 Spot-33	148.26	2760.68	3.46	22.47	1.64	0.19	2.49	0.03	1.87	0.75	200.04	3.68	179.46	4.09	NA	NA	200.04	3.68	111.47
P01-3 Spot-271	124.75	9280.18	2.82	20.12	1.86	0.22	2.25	0.03	1.26	0.56	200.76	2.50	199.17	4.06	180.44	43.28	200.76	2.50	100.79
P01-3 Spot-64	386.41	58301.28	3.17	19.86	0.92	0.22	1.56	0.03	1.27	0.81	201.63	2.51	202.29	2.87	210.05	21.23	201.63	2.51	99.67
P01-3 Spot-149	257.80	138930.74	2.16	19.42	1.21	0.23	1.65	0.03	1.13	0.68	201.89	2.24	206.69	3.09	261.75	27.78	201.89	2.24	97.68
P01-3 Spot-313	798.47	68015.75	2.18	19.66	0.95	0.22	1.61	0.03	1.30	0.81	202.98	2.59	205.45	3.00	233.84	22.04	202.98	2.59	98.80
P01-3 Spot-144	172.69	312512.93	3.46	19.48	1.78	0.23	2.23	0.03	1.35	0.60	203.68	2.70	207.80	4.20	254.85	40.95	203.68	2.70	98.02
P01-3 Spot-108	714.72	81879.30	1.73	19.67	1.07	0.23	1.82	0.03	1.47	0.81	204.33	2.96	206.56	3.40	232.12	24.70	204.33	2.96	98.92
P01-3 Spot-266	427.06	505879.68	2.57	19.81	0.83	0.23	1.43	0.03	1.17	0.82	205.93	2.37	206.79	2.68	216.71	19.16	205.93	2.37	99.58
P01-3 Spot-301	383.96	19994.71	3.16	20.01	1.29	0.23	2.17	0.03	1.74	0.80	209.55	3.60	208.15	4.08	192.40	29.95	209.55	3.60	100.67
P01-3 Spot-246	94.56	7805.36	4.76	20.15	1.93	0.23	2.43	0.03	1.48	0.61	211.82	3.08	208.95	4.60	176.78	45.11	211.82	3.08	101.37
P01-3 Spot-58	110.18	9898.44	3.86	19.98	1.94	0.23	2.36	0.03	1.34	0.57	213.22	2.81	211.82	4.50	196.28	45.03	213.22	2.81	100.66
P01-3 Spot-150	235.02	20873.23	3.49	19.72	1.38	0.24	1.88	0.03	1.28	0.68	215.56	2.70	216.53	3.66	227.12	31.82	215.56	2.70	99.55
P01-3 Spot-159	763.84	65779.18	1.67	19.77	0.90	0.24	1.75	0.03	1.50	0.86	218.21	3.21	218.46	3.44	221.14	20.90	218.21	3.21	99.89
P01-3 Spot-168	230.66	8150.81	1.86	20.12	2.18	0.24	2.63	0.04	1.46	0.56	224.05	3.22	220.30	5.20	180.50	50.84	224.05	3.22	101.70
P01-3 Spot- 3	400.42	13080.12	1.58	19.74	1.64	0.25	2.14	0.04	1.37	0.64	227.80	3.08	227.47	4.36	224.02	37.95	227.80	3.08	100.15
P01-3 Spot-282	965.65	39180.77	5.67	19.81	0.96	0.25	1.70	0.04	1.40	0.83	230.68	3.18	229.34	3.49	215.63	22.21	230.68	3.18	100.58
P01-3 Spot-56	518.68	51667.75	1.82	19.90	1.09	0.26	2.09	0.04	1.79	0.85	240.11	4.21	236.94	4.42	205.54	25.18	240.11	4.21	101.34
P01-3 Spot-215	799.18	86039.15	2.85	19.61	0.96	0.27	2.12	0.04	1.89	0.89	243.14	4.50	242.82	4.57	239.73	22.19	243.14	4.50	100.13
P01-3 Spot-179	153.42	8160.50	3.92	20.13	1.64	0.26	2.06	0.04	1.24	0.60	243.33	2.97	237.37	4.36	178.69	38.27	243.33	2.97	102.51
P01-3 Spot-256	317.79	9511.15	1.37	20.07	1.45	0.26	2.01	0.04	1.40	0.70	243.77	3.35	238.38	4.28	185.60	33.67	243.77	3.35	102.26
P01-3 Spot-82	121.77	4926.67	0.58	20.84	1.84	0.26	2.21	0.04	1.22	0.55	243.92	2.93	230.69	4.56	97.96	43.59	243.92	2.93	105.73
P01-3 Spot-283	356.61	126506.72	1.89	19.45	1.00	0.27	1.78	0.04	1.47	0.83	243.95	3.53	245.28	3.88	258.07	23.03	243.95	3.53	99.46
P01-3 Spot-234	182.24	47697.05	1.54	19.57	1.22	0.28	2.25	0.04	1.88	0.84	248.72	4.60	248.24	4.95	243.71	28.13	248.72	4.60	100.19
P01-3 Spot-227	271.47	22023.74	1.39	20.22	1.17	0.27	1.93	0.04	1.53	0.80	249.65	3.76	242.02	4.15	168.57	27.29	249.65	3.76	103.15
P01-3 Spot-44	418.72	14498.07	1.60	19.30	1.50	0.29	1.97	0.04	1.27	0.65	253.83	3.17	256.00	4.46	275.92	34.45	253.83	3.17	99.15

P01-3 Spot-222	291.76	15824.06	4.21	19.68	1.16	0.29	2.07	0.04	1.71	0.83	257.49	4.31	254.98	4.66	231.90	26.82	257.49	4.31	100.99
P01-3 Spot-80	203.56	32362.17	3.30	19.45	1.00	0.29	1.54	0.04	1.17	0.76	258.26	2.97	258.33	3.51	258.89	22.91	258.26	2.97	99.98
P01-3 Spot-92	634.36	31156.63	0.92	19.45	1.10	0.30	1.96	0.04	1.61	0.83	270.33	4.27	269.12	4.62	258.58	25.37	270.33	4.27	100.45
P01-3 Spot-28	785.92	13506.64	0.61	19.53	1.38	0.31	2.04	0.04	1.50	0.74	272.88	4.01	270.42	4.83	249.18	31.71	272.88	4.01	100.91
P01-3 Spot-24	561.01	30232.38	2.23	19.35	0.93	0.31	1.63	0.04	1.34	0.82	274.08	3.59	273.64	3.90	269.80	21.22	274.08	3.59	100.16
P01-3 Spot-250	384.94	138527.15	1.90	19.61	1.13	0.31	1.83	0.04	1.43	0.79	276.67	3.88	272.74	4.37	239.13	26.05	276.67	3.88	101.44
P01-3 Spot-88	312.49	49637.56	0.75	19.44	1.17	0.33	1.92	0.05	1.52	0.79	292.66	4.35	288.97	4.82	259.21	26.79	292.66	4.35	101.28
P01-3 Spot-160	426.65	1797892.67	2.96	18.91	0.86	0.35	1.45	0.05	1.17	0.81	298.74	3.40	301.44	3.78	322.42	19.48	298.74	3.40	99.10
P01-3 Spot-270	64.92	8441.85	0.85	19.26	1.43	0.34	2.01	0.05	1.40	0.70	299.89	4.11	297.68	5.17	280.38	32.77	299.89	4.11	100.74
P01-3 Spot-240	587.39	25269.97	9.75	18.99	0.84	0.35	1.72	0.05	1.49	0.87	300.35	4.39	301.80	4.48	313.02	19.20	300.35	4.39	99.52
P01-3 Spot-248	277.28	24975.57	1.99	19.00	1.06	0.35	1.86	0.05	1.52	0.82	302.36	4.50	303.53	4.87	312.55	24.10	302.36	4.50	99.61
P01-3 Spot-237	246.74	30882.80	0.90	19.25	1.44	0.35	2.14	0.05	1.59	0.74	307.13	4.76	304.19	5.63	281.73	32.91	307.13	4.76	100.97
P01-3 Spot-176	654.32	58443.27	0.88	18.71	0.99	0.38	1.60	0.05	1.25	0.79	325.41	3.98	328.10	4.48	347.27	22.31	325.41	3.98	99.18
P01-3 Spot-50	313.28	30840.42	1.64	18.94	1.26	0.38	2.27	0.05	1.90	0.83	327.95	6.06	326.82	6.36	318.75	28.55	327.95	6.06	100.35
P01-3 Spot-260	492.45	48522.21	1.75	19.22	0.98	0.38	1.84	0.05	1.55	0.85	334.69	5.07	328.60	5.16	285.73	22.46	334.69	5.07	101.85
P01-3 Spot-156	427.67	229432.68	1.88	18.78	1.00	0.39	1.82	0.05	1.52	0.83	337.67	4.99	337.77	5.22	338.43	22.71	337.67	4.99	99.97
P01-3 Spot-110	230.05	10672811.45	2.28	18.75	1.07	0.42	1.53	0.06	1.10	0.72	356.86	3.81	354.88	4.59	341.95	24.22	356.86	3.81	100.56
P01-3 Spot-25	658.42	994619.37	2.62	18.23	1.02	0.45	1.90	0.06	1.61	0.84	375.87	5.86	379.93	6.03	404.70	22.91	375.87	5.86	98.93
P01-3 Spot-79	312.08	15756.46	3.05	18.59	1.32	0.45	2.01	0.06	1.51	0.75	380.21	5.57	377.50	6.33	360.93	29.88	380.21	5.57	100.72
P01-3 Spot-269	491.13	124160.78	1.67	18.34	1.12	0.46	2.00	0.06	1.66	0.83	381.71	6.14	383.13	6.37	391.71	25.03	381.71	6.14	99.63
P01-3 Spot-247	272.99	31404.11	1.78	18.79	1.04	0.46	1.77	0.06	1.43	0.81	393.00	5.46	385.00	5.67	337.18	23.50	393.00	5.46	102.08
P01-3 Spot-45	362.06	33225.30	3.96	18.55	0.80	0.47	1.91	0.06	1.74	0.91	395.74	6.66	391.43	6.21	366.02	17.99	395.74	6.66	101.10
P01-3 Spot-299	370.61	38954.74	5.40	18.28	1.21	0.48	1.82	0.06	1.37	0.75	396.33	5.25	396.79	5.99	399.44	27.06	396.33	5.25	99.88
P01-3 Spot-36	145.53	40473.69	1.44	18.35	1.19	0.48	1.49	0.06	0.90	0.60	400.63	3.48	399.13	4.91	390.44	26.70	400.63	3.48	102.61
P01-3 Spot-251	168.16	24110.28	2.03	18.16	0.93	0.49	1.46	0.06	1.13	0.77	405.69	4.42	406.96	4.90	414.20	20.83	405.69	4.42	97.95
P01-3 Spot-302	112.16	19308.20	2.26	17.80	1.43	0.51	1.72	0.07	0.96	0.56	410.14	3.82	417.51	5.88	458.49	31.62	410.14	3.82	89.45
P01-3 Spot-259	261.49	40885.17	5.92	18.07	1.05	0.50	1.68	0.07	1.31	0.78	411.70	5.21	413.72	5.70	424.96	23.46	411.70	5.21	96.88
P01-3 Spot-30	334.36	45086.00	2.20	17.94	0.95	0.51	1.94	0.07	1.70	0.87	413.81	6.81	418.08	6.66	441.70	21.08	413.81	6.81	93.68
P01-3 Spot-261	474.72	60741.47	6.91	18.44	0.98	0.50	1.99	0.07	1.73	0.87	415.05	6.95	409.76	6.71	380.07	22.12	415.05	6.95	109.20
P01-3 Spot-220	497.84	47835.98	5.42	17.35	1.27	0.53	2.18	0.07	1.78	0.81	415.85	7.16	431.36	7.67	515.05	27.81	415.85	7.16	80.74
P01-3 Spot-276	498.36	77956.06	6.48	18.11	0.88	0.51	1.93	0.07	1.71	0.89	416.96	6.92	417.37	6.60	419.61	19.75	416.96	6.92	99.37
P01-3 Spot-161	246.61	21622.99	2.57	18.01	1.10	0.52	1.75	0.07	1.36	0.78	421.01	5.55	422.80	6.06	432.53	24.59	421.01	5.55	97.34
P01-3 Spot-48	468.21	174004.93	1.05	17.50	0.97	0.54	2.08	0.07	1.84	0.89	423.89	7.54	435.28	7.35	496.04	21.28	423.89	7.54	85.46
P01-3 Spot-158	307.88	77424.57	2.00	17.55	1.65	0.55	2.28	0.07	1.57	0.69	433.17	6.56	442.34	8.16	490.31	36.46	433.17	6.56	88.35
P01-3 Spot-18	563.97	66344.31	2.27	18.12	0.74	0.54	1.69	0.07	1.52	0.90	438.25	6.44	435.22	5.98	419.17	16.45	438.25	6.44	104.55
P01-3 Spot-145	90.73	13257.88	1.58	18.08	1.30	0.55	1.83	0.07	1.29	0.70	447.65	5.57	443.78	6.58	423.71	28.96	447.65	5.57	105.65
P01-3 Spot-204	481.06	61444.56	1.58	17.45	0.99	0.58	1.87	0.07	1.59	0.85	456.60	7.00	464.37	6.98	502.98	21.86	456.60	7.00	90.78
P01-3 Spot-123	124.84	18409.47	1.60	18.12	1.62	0.57	2.11	0.07	1.36	0.64	465.20	6.09	457.49	7.78	418.92	36.17	465.20	6.09	111.05
P01-3 Spot-293	189.60	16004.53	2.51	17.65	1.29	0.59	1.79	0.07	1.24	0.69	465.79	5.59	467.75	6.72	477.34	28.57	465.79	5.59	97.58
P01-3 Spot-170	252.22	16755.56	2.80	17.90	1.05	0.59	1.78	0.08	1.43	0.81	478.42	6.61	472.97	6.72	446.62	23.33	478.42	6.61	107.12

P01-3 Spot-90	114.69	37955.86	4.66	18.02	1.20	0.59	1.58	0.08	1.03	0.65	481.50	4.77	472.84	5.98	431.01	26.83	481.50	4.77	111.72
P01-3 Spot-242	299.30	26592.11	0.84	17.40	1.10	0.69	1.98	0.09	1.64	0.83	539.71	8.50	533.75	8.21	508.35	24.24	539.71	8.50	106.17
P01-3 Spot-258	182.82	46456.51	1.47	17.30	1.11	0.70	1.78	0.09	1.39	0.78	545.68	7.29	541.04	7.48	521.55	24.42	545.68	7.29	104.63
P01-3 Spot-119	356.25	25647.41	4.13	16.97	1.02	0.72	1.51	0.09	1.12	0.74	546.55	5.88	549.76	6.43	563.05	22.18	546.55	5.88	97.07
P01-3 Spot-274	1326.00	1587506.95	15.22	17.08	0.95	0.73	2.02	0.09	1.78	0.88	555.32	9.48	554.14	8.62	549.29	20.75	555.32	9.48	101.10
P01-3 Spot-213	218.14	17170.36	1.61	17.06	1.11	0.73	1.83	0.09	1.46	0.80	556.00	7.77	555.09	7.83	551.31	24.19	556.00	7.77	100.85
P01-3 Spot-101	252.31	63310.86	2.72	16.86	1.02	0.74	1.69	0.09	1.35	0.80	558.57	7.20	562.39	7.30	577.91	22.23	558.57	7.20	96.65
P01-3 Spot-127	205.91	15895.34	3.43	16.92	1.18	0.75	1.92	0.09	1.52	0.79	565.04	8.21	566.06	8.34	570.18	25.63	565.04	8.21	99.10
P01-3 Spot-225	180.06	23172.54	1.88	16.93	1.60	0.77	2.07	0.09	1.31	0.63	582.35	7.30	579.54	9.15	568.56	34.89	582.35	7.30	102.43
P01-3 Spot-32	294.23	69883.94	2.28	16.87	0.69	0.78	1.29	0.10	1.09	0.84	586.92	6.09	584.81	5.71	576.65	14.95	586.92	6.09	101.78
P01-3 Spot-277	735.44	75274.33	47.90	16.59	1.07	0.80	2.14	0.10	1.85	0.87	593.50	10.49	597.53	9.65	612.82	23.15	593.50	10.49	96.85
P01-3 Spot-148	45.39	15549.93	1.68	16.93	1.42	0.79	2.19	0.10	1.67	0.76	594.39	9.47	589.09	9.80	568.72	30.98	594.39	9.47	104.51
P01-3 Spot-12	289.35	73178.53	0.76	16.70	1.02	0.80	1.77	0.10	1.45	0.82	597.52	8.27	597.76	8.02	598.67	22.16	597.52	8.27	99.81
P01-3 Spot-198	389.86	36013.43	2.80	16.33	1.16	0.82	1.78	0.10	1.35	0.76	599.97	7.75	609.88	8.17	646.87	24.91	599.97	7.75	92.75
P01-3 Spot-16	393.45	123812.04	2.64	16.35	0.99	0.83	1.76	0.10	1.46	0.83	605.41	8.45	613.53	8.12	643.64	21.18	605.41	8.45	94.06
P01-3 Spot-310	981.33	140747.78	2.09	16.59	1.02	0.82	1.72	0.10	1.39	0.81	606.99	8.04	608.30	7.88	613.18	22.03	606.99	8.04	98.99
P01-3 Spot-197	103.57	487396.54	1.96	16.42	1.09	0.83	1.85	0.10	1.49	0.81	607.67	8.66	613.49	8.50	635.05	23.40	607.67	8.66	95.69
P01-3 Spot-146	83.90	11431.05	2.77	16.56	1.16	0.83	1.73	0.10	1.29	0.74	615.57	7.57	615.81	8.00	616.70	25.01	615.57	7.57	99.82
P01-3 Spot-264	472.38	40381.13	0.75	16.46	1.11	0.85	1.89	0.10	1.53	0.81	622.87	9.06	624.44	8.80	630.15	23.88	622.87	9.06	98.84
P01-3 Spot-49	144.71	481581.16	1.10	16.51	0.98	0.85	1.91	0.10	1.63	0.86	624.18	9.73	623.99	8.89	623.29	21.18	624.18	9.73	100.14
P01-3 Spot-41	57.10	12606.38	1.99	16.75	1.64	0.85	2.16	0.10	1.41	0.65	634.25	8.50	624.93	10.08	591.30	35.51	634.25	8.50	107.26
P01-3 Spot-297	187.51	23568.27	3.11	16.81	1.19	0.85	1.98	0.10	1.58	0.80	637.81	9.62	626.01	9.25	583.58	25.77	637.81	9.62	109.29
P01-3 Spot-311	211.89	40603.68	4.14	16.50	1.06	0.87	1.87	0.10	1.54	0.82	641.67	9.43	637.86	8.86	624.37	22.83	641.67	9.43	102.77
P01-3 Spot-154	446.65	75460.74	7.56	16.65	0.94	0.89	1.80	0.11	1.53	0.85	656.55	9.57	645.05	8.58	604.97	20.26	656.55	9.57	108.53
P01-3 Spot-15	86.62	84325.53	10.24	15.41	1.46	1.03	2.06	0.12	1.46	0.71	704.54	9.76	720.35	10.65	769.91	30.68	704.54	9.76	91.51
P01-3 Spot-173	153.98	23418.43	2.52	15.38	0.95	1.15	1.56	0.13	1.23	0.79	779.48	9.07	778.18	8.46	774.41	19.96	779.48	9.07	100.66
P01-3 Spot-232	196.63	21922.48	2.74	14.78	1.11	1.36	1.62	0.15	1.17	0.73	875.50	9.61	870.26	9.44	856.92	23.01	875.50	9.61	102.17
P01-3 Spot-84	413.16	165566.06	3.24	14.27	0.91	1.51	1.68	0.16	1.41	0.84	938.09	12.34	935.64	10.29	929.88	18.78	929.88	18.78	100.88
P01-3 Spot-133	163.57	15981.58	4.96	14.06	0.90	1.63	1.65	0.17	1.38	0.84	990.73	12.66	981.37	10.37	960.50	18.50	960.50	18.50	103.15
P01-3 Spot-136	91.13	26557.52	2.11	13.97	0.82	1.62	1.57	0.16	1.34	0.85	977.64	12.15	976.27	9.87	973.19	16.83	973.19	16.83	100.46
P01-3 Spot-67	410.49	68381.30	3.38	13.93	1.13	1.57	2.03	0.16	1.69	0.83	951.98	14.94	960.12	12.61	978.80	22.97	978.80	22.97	97.26
P01-3 Spot-187	29.43	15534.82	0.95	13.84	1.26	1.64	1.71	0.17	1.15	0.68	985.06	10.53	987.19	10.77	991.93	25.56	991.93	25.56	99.31
P01-3 Spot-216	302.07	87778.43	2.94	13.82	0.98	1.61	1.89	0.16	1.61	0.85	964.61	14.46	973.98	11.83	995.16	19.90	995.16	19.90	96.93
P01-3 Spot-162	124.71	21000.39	3.90	13.81	1.11	1.74	1.72	0.17	1.32	0.76	1038.99	12.63	1025.31	11.13	996.18	22.63	996.18	22.63	104.30
P01-3 Spot-85	260.34	78854.15	1.73	13.80	1.11	1.63	1.67	0.16	1.25	0.75	972.80	11.31	980.56	10.53	997.98	22.57	997.98	22.57	97.48
P01-3 Spot-174	66.88	27430.87	1.68	13.78	1.09	1.75	1.72	0.18	1.32	0.77	1040.02	12.72	1027.76	11.10	1001.74	22.16	1001.74	22.16	103.82
P01-3 Spot-292	240.12	246681.96	3.87	13.74	1.05	1.75	1.73	0.17	1.37	0.79	1034.13	13.12	1025.52	11.16	1007.17	21.27	1007.17	21.27	102.68
P01-3 Spot-76	564.51	197755.75	3.64	13.69	0.98	1.73	1.85	0.17	1.57	0.85	1020.39	14.81	1018.65	11.91	1014.88	19.91	1014.88	19.91	100.54
P01-3 Spot-52	353.95	51244.55	4.09	13.68	1.07	1.67	2.09	0.17	1.79	0.86	989.99	16.47	998.04	13.28	1015.75	21.67	1015.75	21.67	97.46
P01-3 Spot-239	113.38	19674.94	2.87	13.68	1.07	1.77	1.90	0.18	1.57	0.83	1041.59	15.08	1033.34	12.31	1015.90	21.67	1015.90	21.67	102.53

P01-3 Spot-314	124.64	52657.90	2.51	13.59	1.21	1.76	1.71	0.17	1.21	0.71	1029.82	11.54	1029.40	11.09	1028.50	24.53	1028.50	24.53	100.13
P01-3 Spot-59	131.78	131599.64	1.37	13.57	1.15	1.71	1.87	0.17	1.47	0.79	1004.20	13.71	1013.08	11.98	1032.31	23.23	1032.31	23.23	97.28
P01-3 Spot-31	206.27	559082.68	3.30	13.55	0.92	1.78	1.56	0.18	1.26	0.81	1039.73	12.07	1038.18	10.14	1034.91	18.66	1034.91	18.66	100.47
P01-3 Spot-117	82.93	38391.91	2.91	13.55	0.95	1.78	1.59	0.17	1.27	0.80	1037.67	12.20	1036.96	10.31	1035.42	19.15	1035.42	19.15	100.22
P01-3 Spot-73	137.40	25092.03	3.21	13.55	0.88	1.85	1.60	0.18	1.34	0.83	1079.74	13.30	1065.18	10.58	1035.46	17.88	1035.46	17.88	104.28
P01-3 Spot-287	238.52	40973.41	5.94	13.54	0.69	1.77	1.40	0.17	1.22	0.87	1036.04	11.66	1036.16	9.11	1036.40	14.03	1036.40	14.03	99.96
P01-3 Spot-102	449.65	185398.94	6.41	13.49	1.02	1.60	1.80	0.16	1.49	0.83	937.76	13.01	970.08	11.27	1044.06	20.50	1044.06	20.50	89.82
P01-3 Spot-165	77.86	282454.13	2.02	13.45	0.94	1.87	1.80	0.18	1.54	0.85	1081.48	15.32	1070.96	11.92	1049.62	18.89	1049.62	18.89	103.04
P01-3 Spot-34	153.80	104425.30	2.70	13.40	0.90	1.87	1.40	0.18	1.07	0.77	1077.26	10.61	1070.62	9.24	1057.12	18.09	1057.12	18.09	101.91
P01-3 Spot-27	62.44	89847.38	2.17	13.37	1.00	1.81	1.59	0.18	1.23	0.78	1043.42	11.87	1049.64	10.39	1062.64	20.18	1062.64	20.18	98.19
P01-3 Spot-39	464.42	70245.95	3.05	13.34	0.89	1.65	2.05	0.16	1.84	0.90	955.61	16.37	989.90	12.94	1066.72	17.87	1066.72	17.87	89.58
P01-3 Spot-61	500.46	87372.75	4.09	13.33	1.12	1.87	2.10	0.18	1.78	0.85	1069.87	17.59	1069.29	13.91	1068.14	22.41	1068.14	22.41	100.16
P01-3 Spot-184	86.43	62010.10	3.29	13.32	1.08	1.80	1.69	0.17	1.30	0.77	1033.43	12.40	1045.16	11.01	1069.76	21.65	1069.76	21.65	96.60
P01-3 Spot-181	99.98	185232.24	1.43	13.32	0.99	1.95	1.37	0.19	0.95	0.69	1111.89	9.73	1097.76	9.20	1069.86	19.80	1069.86	19.80	103.93
P01-3 Spot-89	1522.95	119356.01	58.15	13.32	0.68	1.67	1.50	0.16	1.34	0.89	961.98	11.94	995.48	9.51	1070.04	13.65	1070.04	13.65	89.90
P01-3 Spot-96	113.04	57912.14	2.22	13.30	0.95	1.85	1.63	0.18	1.32	0.81	1056.55	12.89	1062.05	10.71	1073.39	19.00	1073.39	19.00	98.43
P01-3 Spot-244	77.60	21464.86	1.71	13.29	1.12	1.90	1.99	0.18	1.65	0.83	1082.77	16.40	1079.87	13.22	1074.04	22.41	1074.04	22.41	100.81
P01-3 Spot-157	1224.65	353260.76	3.11	13.29	0.66	1.67	1.58	0.16	1.44	0.91	963.56	12.85	998.11	10.04	1074.84	13.19	1074.84	13.19	89.65
P01-3 Spot-100	250.93	84574.84	1.73	13.28	0.97	1.89	1.57	0.18	1.23	0.79	1081.24	12.27	1079.23	10.43	1075.18	19.47	1075.18	19.47	100.56
P01-3 Spot-95	355.89	125774.62	3.15	13.21	0.80	1.92	1.59	0.18	1.38	0.86	1086.37	13.76	1086.58	10.63	1086.99	16.13	1086.99	16.13	99.94
P01-3 Spot-291	467.42	62853.74	2.77	13.02	0.92	1.93	1.99	0.18	1.77	0.89	1080.32	17.63	1091.98	13.35	1115.34	18.28	1115.34	18.28	96.86
P01-3 Spot-141	1313.31	58405.28	32.37	13.01	0.98	1.78	1.81	0.17	1.52	0.84	1001.44	14.13	1038.30	11.77	1116.77	19.51	1116.77	19.51	89.67
P01-3 Spot-279	431.03	95605.24	3.36	12.96	0.93	2.06	1.76	0.19	1.49	0.85	1140.56	15.60	1134.89	12.02	1124.08	18.60	1124.08	18.60	101.47
P01-3 Spot-228	192.63	136124.03	8.38	12.73	0.97	2.19	1.70	0.20	1.40	0.82	1188.67	15.19	1178.38	11.86	1159.52	19.22	1159.52	19.22	102.51
P01-3 Spot-235	110.78	42918.37	2.79	12.56	1.35	2.26	2.07	0.21	1.57	0.76	1207.14	17.28	1199.89	14.56	1186.86	26.63	1186.86	26.63	101.71
P01-3 Spot-53	152.42	150674.01	2.29	12.44	0.88	2.12	1.48	0.19	1.19	0.80	1129.72	12.33	1156.23	10.21	1206.28	17.29	1206.28	17.29	93.65
P01-3 Spot-155	384.74	77206.44	8.65	12.42	1.03	2.23	1.45	0.20	1.02	0.70	1181.65	11.02	1191.09	10.17	1208.25	20.28	1208.25	20.28	97.80
P01-3 Spot-265	61.03	22704.16	1.30	11.98	1.15	2.42	1.83	0.21	1.42	0.78	1232.15	15.89	1249.25	13.13	1278.83	22.47	1278.83	22.47	96.35
P01-3 Spot-153	97.16	38599.90	2.64	11.92	1.07	2.56	1.62	0.22	1.22	0.75	1291.00	14.25	1290.41	11.83	1289.40	20.76	1289.40	20.76	100.12
P01-3 Spot-294	184.10	56831.26	3.18	11.90	0.99	2.65	1.72	0.23	1.40	0.82	1329.59	16.88	1315.75	12.66	1293.24	19.17	1293.24	19.17	102.81
P01-3 Spot-62	111.36	26408.54	3.07	11.85	1.15	2.71	1.87	0.23	1.48	0.79	1351.79	18.01	1331.84	13.89	1299.89	22.34	1299.89	22.34	103.99
P01-3 Spot-172	400.42	475640.83	2.39	11.48	0.75	2.70	1.45	0.22	1.25	0.86	1306.53	14.74	1327.39	10.76	1361.19	14.36	1361.19	14.36	95.98
P01-3 Spot-114	268.48	71409.85	2.64	11.43	0.96	2.89	1.78	0.24	1.50	0.84	1386.08	18.69	1379.64	13.42	1369.68	18.44	1369.68	18.44	101.20
P01-3 Spot-132	126.24	73592.12	1.18	11.34	0.96	2.84	1.51	0.23	1.16	0.77	1353.59	14.15	1366.18	11.31	1385.89	18.44	1385.89	18.44	97.67
P01-3 Spot-42	92.01	42668.56	2.27	11.30	0.82	3.02	1.53	0.25	1.29	0.84	1424.63	16.48	1411.99	11.67	1392.96	15.82	1392.96	15.82	102.27
P01-3 Spot-268	190.50	64775.55	2.24	11.17	0.76	3.03	1.53	0.25	1.33	0.87	1417.28	16.92	1416.45	11.71	1415.20	14.58	1415.20	14.58	100.15
P01-3 Spot-221	176.01	131086.86	1.92	11.10	0.82	3.14	1.47	0.25	1.22	0.83	1451.74	15.91	1441.47	11.35	1426.34	15.68	1426.34	15.68	101.78
P01-3 Spot-233	101.31	240438.00	2.47	11.09	1.00	3.20	1.70	0.26	1.37	0.81	1478.50	18.16	1458.06	13.17	1428.39	19.15	1428.39	19.15	103.51
P01-3 Spot-238	228.54	185018.21	1.31	11.05	1.02	3.23	1.56	0.26	1.18	0.76	1483.76	15.67	1464.05	12.12	1435.55	19.51	1435.55	19.51	103.36
P01-3 Spot-129	181.24	1297437.14	2.98	11.05	0.96	3.12	1.67	0.25	1.37	0.82	1437.70	17.62	1436.93	12.84	1435.76	18.27	1435.76	18.27	100.14

P01-3 Spot-196	175.06	62203.06	1.56	11.01	0.82	3.15	1.57	0.25	1.33	0.85	1448.42	17.31	1446.16	12.08	1442.82	15.65	1442.82	15.65	100.39
P01-3 Spot-57	410.08	265438.42	2.08	10.95	0.81	3.12	1.50	0.25	1.26	0.84	1426.61	16.10	1436.82	11.50	1451.94	15.42	1451.94	15.42	98.26
P01-3 Spot-315	138.67	45545.44	1.60	10.90	0.93	3.02	1.52	0.24	1.20	0.79	1380.63	14.91	1412.48	11.57	1460.82	17.63	1460.82	17.63	94.51
P01-3 Spot-288	268.95	147073.36	4.03	10.89	0.79	3.28	1.56	0.26	1.35	0.86	1484.18	17.92	1475.82	12.16	1463.80	14.92	1463.80	14.92	101.39
P01-3 Spot-107	111.63	203918.28	2.71	10.76	1.00	3.40	1.52	0.27	1.15	0.76	1518.37	15.57	1504.80	11.95	1485.74	18.90	1485.74	18.90	102.20
P01-3 Spot-128	353.99	295882.47	4.01	10.71	0.97	3.39	1.56	0.26	1.22	0.78	1507.01	16.40	1501.66	12.21	1494.10	18.30	1494.10	18.30	100.86
P01-3 Spot-171	109.94	313605.09	2.38	10.66	0.89	3.39	1.61	0.26	1.34	0.83	1500.20	17.92	1501.58	12.60	1503.51	16.79	1503.51	16.79	99.78
P01-3 Spot-218	155.27	29987.12	2.31	10.65	0.97	3.31	1.77	0.26	1.48	0.84	1466.72	19.39	1482.28	13.76	1504.60	18.24	1504.60	18.24	97.48
P01-3 Spot-23	245.81	282405.73	1.36	10.60	0.93	3.16	1.90	0.24	1.66	0.87	1400.27	20.86	1446.29	14.65	1514.59	17.53	1514.59	17.53	92.45
P01-3 Spot- 6	113.94	32764.75	1.79	10.53	0.86	3.37	1.44	0.26	1.16	0.80	1478.20	15.34	1498.42	11.30	1527.12	16.14	1527.12	16.14	96.80
P01-3 Spot-193	174.91	49955.16	4.41	10.51	1.03	3.47	1.58	0.26	1.20	0.76	1514.30	16.16	1520.71	12.45	1529.62	19.38	1529.62	19.38	99.00
P01-3 Spot-191	340.18	80544.56	2.44	9.81	1.28	4.09	1.98	0.29	1.51	0.76	1645.78	21.94	1651.62	16.15	1659.04	23.68	1659.04	23.68	99.20
P01-3 Spot-104	378.68	207459.53	6.81	9.75	0.78	3.83	1.62	0.27	1.41	0.87	1545.99	19.45	1599.46	13.02	1670.61	14.48	1670.61	14.48	92.54
P01-3 Spot-134	192.26	132395.07	1.53	9.74	0.77	4.12	1.35	0.29	1.11	0.82	1647.94	16.11	1658.72	11.04	1672.38	14.28	1672.38	14.28	98.54
P01-3 Spot-78	183.37	72577.76	2.59	9.70	1.10	4.05	1.73	0.29	1.34	0.77	1618.94	19.11	1645.16	14.07	1678.80	20.25	1678.80	20.25	96.43
P01-3 Spot-223	193.29	31439.28	2.48	9.48	0.95	4.58	2.25	0.32	2.04	0.91	1765.85	31.48	1745.80	18.75	1721.85	17.47	1721.85	17.47	102.56
P01-3 Spot-182	215.73	309968.49	1.47	9.15	0.78	4.75	1.40	0.32	1.17	0.83	1766.24	18.01	1775.53	11.76	1786.46	14.19	1786.46	14.19	98.87
P01-3 Spot-54	149.77	70289.96	3.27	9.05	0.99	4.85	1.73	0.32	1.42	0.82	1784.60	22.14	1794.47	14.56	1805.95	17.95	1805.95	17.95	98.82
P01-3 Spot-74	246.71	65024.72	1.64	8.59	0.72	5.29	1.47	0.33	1.28	0.87	1837.72	20.47	1867.37	12.53	1900.51	12.88	1900.51	12.88	96.70
P01-3 Spot-189	31.77	39402.37	1.03	8.08	0.91	6.32	1.80	0.37	1.55	0.86	2031.44	26.95	2021.46	15.74	2011.27	16.16	2011.27	16.16	101.00
P01-3 Spot-46	101.88	52309.95	1.04	7.71	0.96	6.75	1.89	0.38	1.63	0.86	2064.45	28.82	2079.14	16.75	2093.70	16.93	2093.70	16.93	98.60
P01-3 Spot-55	156.00	100227.63	4.29	7.36	1.03	7.20	1.65	0.38	1.29	0.78	2097.04	23.11	2136.34	14.71	2174.34	17.90	2174.34	17.90	96.44
P01-3 Spot-175	104.98	375536.74	1.04	6.22	0.80	9.82	1.53	0.44	1.30	0.85	2363.25	25.71	2417.75	14.06	2463.94	13.50	2463.94	13.50	95.91
P01-3 Spot-112	186.90	114171.56	5.58	6.04	0.93	10.64	1.56	0.47	1.25	0.80	2466.36	25.59	2492.19	14.47	2513.29	15.70	2513.29	15.70	98.13
P01-3 Spot-252	29.15	79482.16	1.59	5.85	1.28	12.01	1.93	0.51	1.45	0.75	2656.38	31.58	2605.04	18.11	2565.34	21.33	2565.34	21.33	103.55
P01-3 Spot-98	251.31	96781.85	3.63	5.81	0.86	10.65	1.55	0.45	1.29	0.83	2392.46	25.76	2493.19	14.40	2576.29	14.42	2576.29	14.42	92.86
P01-3 Spot-253	281.74	58804.88	2.76	5.42	1.00	12.01	1.72	0.47	1.40	0.81	2493.01	28.93	2605.52	16.11	2694.16	16.49	2694.16	16.49	92.53
P01-3 Spot- 4	30.90	35024.43	6.82	5.37	0.98	12.22	1.50	0.48	1.14	0.76	2510.66	23.70	2621.72	14.12	2708.62	16.19	2708.62	16.19	92.69
P01-3 Spot-202	354.01	594363.81	1.87	5.35	0.87	12.90	1.61	0.50	1.36	0.84	2618.25	29.17	2672.24	15.20	2713.34	14.40	2713.34	14.40	96.50
P01-3 Spot-263	54.61	103145.90	1.95	5.21	0.94	14.54	1.77	0.55	1.50	0.85	2821.46	34.18	2785.38	16.78	2759.34	15.41	2759.34	15.41	102.25
P01-3 Spot-178	847.79	4618179.12	5.77	3.24	0.94	25.07	1.87	0.59	1.61	0.86	2983.63	38.56	3311.09	18.25	3515.79	14.53	3515.79	14.53	84.86

U-Pb Dataset References for KDE and MDS Analysis

Sample Name	Unit	Age	Reference	KDE/MDS Group
0619-MR-22	Great Valley Group	Jurassic	***This Study***	Lower Cretaceous strata GVG- Forearc This Study
0619-MR-23	Great Valley Group	Jurassic	***This Study***	Lower Cretaceous strata GVG- Forearc This Study
0619-MR-24	Great Valley Group	Jurassic	***This Study***	Lower Cretaceous strata GVG- Forearc This Study
P01_3	Great Valley Group	Jurassic	***This Study***	Upper Jurassic strata GVG- This Study
0119-MR-01	Great Valley Group	Jurassic	***This Study***	Upper Jurassic strata GVG- This Study
0119-MR-02	Great Valley Group	Jurassic	***This Study***	Upper Jurassic strata GVG- This Study
0619-MR-16	Great Valley Group	Jurassic	***This Study***	Upper Jurassic strata GVG- This Study
0619-MR-17	Great Valley Group	Jurassic	***This Study***	Upper Jurassic strata GVG- This Study
0619-MR-30	Great Valley Group	Jurassic	***This Study***	Upper Jurassic strata GVG- This Study
0619-MR-35	Great Valley Group	Jurassic	***This Study***	Upper Jurassic strata GVG- This Study
0619-MR-36	Great Valley Group	Jurassic	***This Study***	Upper Jurassic strata GVG- This Study
0619-MR-37	Great Valley Group	Jurassic	***This Study***	Upper Jurassic strata GVG- This Study
0619-MR-26	Ophiolitic breccia	Jurassic	***This Study***	breccia
0619-MR-27	Ophiolitic breccia	Jurassic	***This Study***	breccia
UPPERMONTEITH	Foreland	Berriasian	Raines et al. (2013)	Lower Cretaceous strata- Foreland
CARBONCREEKRD	Foreland	Valanginian	Raines et al. (2013)	Lower Cretaceous strata- Foreland
PH01-02	Great Valley Group	Jurassic	Orme and Surpless (2019)	Upper Jurassic strata GVG- Forearc published
PH07-08	Great Valley Group	Jurassic	Orme and Surpless (2019)	Upper Jurassic strata GVG- Forearc published
PH14-15	Great Valley Group	Jurassic	Orme and Surpless (2019)	Upper Jurassic strata GVG- Forearc published
PH12-13	Great Valley Group	Jurassic	Orme and Surpless (2019)	Upper Jurassic strata GVG- Forearc published
PH10-11	Great Valley Group	Jurassic	Orme and Surpless (2019)	Upper Jurassic strata GVG- Forearc published
JR03-04	Great Valley Group	Jurassic	Orme and Surpless (2019)	Upper Jurassic strata GVG- Forearc published
DO61217-9	Great Valley Group	Jurassic	Orme and Surpless (2019)	Upper Jurassic strata GVG- Forearc published

JR06-07	Great Valley Group	Jurassic	Orme and Surpless (2019)	Upper Jurassic strata GVG- Forearc published
JR08-09	Great Valley Group	Jurassic	Orme and Surpless (2019)	Upper Jurassic strata GVG- Forearc published
DO61217-3	Great Valley Group	Jurassic	Orme and Surpless (2019)	Upper Jurassic strata GVG- Forearc published
DO61217-4	Great Valley Group	Jurassic	Orme and Surpless (2019)	Upper Jurassic strata GVG- Forearc published
DO61217-7	Great Valley Group	Jurassic	Orme and Surpless (2019)	Upper Jurassic strata GVG- Forearc published
DO61217-8	Great Valley Group	Jurassic	Orme and Surpless (2019)	Upper Jurassic strata GVG- Forearc published
JR16-17	Great Valley Group	Jurassic	Orme and Surpless (2019)	Upper Jurassic strata GVG- Forearc published
DO61417-2	Great Valley Group	Jurassic	Orme and Surpless (2019)	Upper Jurassic strata GVG- Forearc published
DO61417-3	Great Valley Group	Jurassic	Orme and Surpless (2019)	Upper Jurassic strata GVG- Forearc published
DO61517-2	Great Valley Group	Jurassic	Orme and Surpless (2019)	Upper Jurassic strata GVG- Forearc published
DO61417-6	Great Valley Group	Jurassic	Orme and Surpless (2019)	Upper Jurassic strata GVG- Forearc published
DO61417-7	Great Valley Group	Jurassic	Orme and Surpless (2019)	Upper Jurassic strata GVG- Forearc published
DO61417-4	Great Valley Group	Jurassic	Orme and Surpless (2019)	Upper Jurassic strata GVG- Forearc published
10-GVG-16	Great Valley Group	Jurassic	Surpless (2014)	Upper Jurassic strata GVG- Forearc published
KDS109	Great Valley Group	Jurassic	Surpless (2014)	Upper Jurassic strata GVG- Forearc published
JC-04-12	Great Valley Group	Jurassic	Surpless et al. (2006)	Upper Jurassic strata GVG- Forearc published
JC-04-14	Great Valley Group	Jurassic	Surpless et al. (2006)	Upper Jurassic strata GVG- Forearc published
JC-04-20	Great Valley Group	Jurassic	Surpless et al. (2006)	Upper Jurassic strata GVG- Forearc published
JC-04-17	Great Valley Group	Jurassic	Surpless et al. (2006)	Upper Jurassic strata GVG- Forearc published
JC-04-18	Great Valley Group	Jurassic	Surpless et al. (2006)	Upper Jurassic strata GVG- Forearc published
JC-04-19	Great Valley Group	Jurassic	Surpless et al. (2006)	Upper Jurassic strata GVG- Forearc published
KDS108	Great Valley Group	Jurassic	Surpless et al. (2006)	Upper Jurassic strata GVG- Forearc published
L17	Great Valley Group	Jurassic	Wright and Wyld (2007)	Upper Jurassic strata GVG- Forearc published
E9	Great Valley Group	Jurassic	Wright and Wyld (2007)	Upper Jurassic strata GVG- Forearc published

Salt Creek	Rattlesnake Creek terrane cover sequence	Upper Jurassic	LaMaskin et al. (2021)	Upper Jurassic strata- RattsnakeCk and W Klamath terranes in Klamath Mountains
Dubakella W	Rattlesnake Creek terrane cover sequence	Upper Jurassic	LaMaskin et al. (2021)	Upper Jurassic strata- RattsnakeCk and W Klamath terranes in Klamath Mountains
Dubakella E	Rattlesnake Creek terrane cover sequence	Upper Jurassic	LaMaskin et al. (2021)	Upper Jurassic strata- RattsnakeCk and W Klamath terranes in Klamath Mountains
16KM011	Rattlesnake Creek terrane cover sequence	Upper Jurassic	LaMaskin et al. (2021)	Upper Jurassic strata- RattsnakeCk and W Klamath terranes in Klamath Mountains
12TL041	Galice Fm	Upper Jurassic	LaMaskin et al. (2021)	Upper Jurassic strata- RattsnakeCk and W Klamath terranes in Klamath Mountains

15KM50	Galice Fm	Upper Jurassic	LaMaskin et al. (2021)	Upper Jurassic strata- RattsnakeCk and W Klamath terranes in Klamath Mountains
14CM43	Galice Fm	Upper Jurassic	LaMaskin et al. (2021)	Upper Jurassic strata- RattsnakeCk and W Klamath terranes in Klamath Mountains
19KM1	Galice Fm	Upper Jurassic	LaMaskin et al. (2021)	Upper Jurassic strata- RattsnakeCk and W Klamath terranes in Klamath Mountains
CP53	Foreland	Kimmeridgian	Dickinson and Gehrels (2008b)	Jurassic strata- Foreland
CP49	Foreland	Kimmeridgian	Dickinson and Gehrels (2008b)	Jurassic strata- Foreland
CP52	Foreland	Kimmeridgian	Dickinson and Gehrels (2008b)	Jurassic strata- Foreland
CP41	Foreland	Kimmeridgian	Dickinson and Gehrels (2008b)	Jurassic strata- Foreland
CP25	Foreland	Kimmeridgian	Dickinson and Gehrels (2008b)	Jurassic strata- Foreland
CP29	Foreland	Kimmeridgian	Dickinson and Gehrels (2008b)	Jurassic strata- Foreland
CP36	Foreland	Kimmeridgian	Dickinson and Gehrels (2008b)	Jurassic strata- Foreland
CP19	Foreland	Kimmeridgian	Dickinson and Gehrels (2008b)	Jurassic strata- Foreland
CP35	Foreland	Kimmeridgian	Dickinson and Gehrels (2008b)	Jurassic strata- Foreland
CP21	Foreland	Kimmeridgian	Dickinson and Gehrels (2008b)	Jurassic strata- Foreland
CP13	Foreland	Kimmeridgian	Dickinson and Gehrels (2008b)	Jurassic strata- Foreland
Jwnw	Foreland	Lower Jurassic	Dickinson and Gehrels (2009)	Jurassic strata- Foreland
Jnnw	Foreland	Lower Jurassic	Dickinson and Gehrels (2009)	Jurassic strata- Foreland
Jenw	Foreland	Middle Jurassic	Dickinson and Gehrels (2009)	Jurassic strata- Foreland
DOL	Foreland	Lower Jurassic	Dickinson and Gehrels (2009)	Jurassic strata- Foreland
CP1	Foreland	Lower Jurassic	Dickinson and Gehrels (2009)	Jurassic strata- Foreland
CP3	Foreland	Lower Jurassic	Dickinson and Gehrels (2009)	Jurassic strata- Foreland
CP10	Foreland	Lower Jurassic	Dickinson and Gehrels (2009)	Jurassic strata- Foreland
CP12	Foreland	Lower Jurassic	Dickinson and Gehrels (2009)	Jurassic strata- Foreland
CP15	Foreland	Middle Jurassic	Dickinson and Gehrels (2009)	Jurassic strata- Foreland
CP16	Foreland	Middle Jurassic	Dickinson and Gehrels (2009)	Jurassic strata- Foreland
CP24	Foreland	Middle Jurassic	Dickinson and Gehrels (2009)	Jurassic strata- Foreland
CP30	Foreland	Lower Jurassic	Dickinson and Gehrels (2009)	Jurassic strata- Foreland
CP37	Foreland	Lower Jurassic	Dickinson and Gehrels (2009)	Jurassic strata- Foreland
CP43	Foreland	Middle Jurassic	Dickinson and Gehrels (2009)	Jurassic strata- Foreland
CP45	Foreland	Middle Jurassic	Dickinson and Gehrels (2009)	Jurassic strata- Foreland
CP54	Foreland	Middle Jurassic	Dickinson and Gehrels (2009)	Jurassic strata- Foreland

1GRX	Foreland	Kimmeridgian	Fuentes et al. (2011)	Jurassic strata- Foreland
1GRZ	Foreland	Kimmeridgian	Fuentes et al. (2011)	Jurassic strata- Foreland
1GR14	Foreland	Middle Jurassic	Fuentes et al. (2011)	Jurassic strata- Foreland
CCR02-10	Foreland	Upper Jurassic	May et al. (2013)	Jurassic strata- Foreland
CCR03-10	Foreland	Upper Jurassic	May et al. (2013)	Jurassic strata- Foreland
MH03-10	Foreland	Upper Jurassic	May et al. (2013)	Jurassic strata- Foreland
CCR01-10	Foreland	Middle Jurassic	May et al. (2013)	Jurassic strata- Foreland
MH0210	Foreland	Middle Jurassic	May et al. (2013)	Jurassic strata- Foreland
NL01-08	Foreland	Middle Jurassic	May et al. (2013)	Jurassic strata- Foreland
AK719062	Foreland	Kimmeridgian	Laskowski et al. (2013)	Jurassic strata- Foreland
PROSPECTCREEK	Foreland	Tithonian	Raines et al. (2013)	Jurassic strata- Foreland
BASALKOOTENAY	Foreland	Tithonian	Raines et al. (2013)	Jurassic strata- Foreland
GCMONACH	Foreland	Tithonian	Raines et al. (2013)	Jurassic strata- Foreland
51103	Foreland	Upper Jurassic	Painter et al. (2014)	Jurassic strata- Foreland
51108	Foreland	Upper Jurassic	Painter et al. (2014)	Jurassic strata- Foreland
51214	Foreland	Upper Jurassic	Painter et al. (2014)	Jurassic strata- Foreland
CP8	Foreland	Lower Triassic	Dickinson and Gehrels (2008a)	Triassic strata- Foreland
CP11	Foreland	Upper Triassic	Dickinson and Gehrels (2008a)	Triassic strata- Foreland
CP17	Foreland	Upper Triassic	Dickinson and Gehrels (2008a)	Triassic strata- Foreland
CP18	Foreland	Upper Triassic	Dickinson and Gehrels (2008a)	Triassic strata- Foreland
CP20	Foreland	Upper Triassic	Dickinson and Gehrels (2008a)	Triassic strata- Foreland
CP38	Foreland	Upper Triassic	Dickinson and Gehrels (2008a)	Triassic strata- Foreland
CP42	Foreland	Upper Triassic	Dickinson and Gehrels (2008a)	Triassic strata- Foreland
CP44	Foreland	Upper Triassic	Dickinson and Gehrels (2008a)	Triassic strata- Foreland
CP47	Foreland	Upper Triassic	Dickinson and Gehrels (2008a)	Triassic strata- Foreland
CP50	Foreland	Upper Triassic	Dickinson and Gehrels (2008a)	Triassic strata- Foreland
CPCP319-2	Foreland	Lower Triassic	Giesler (2019)	Triassic strata- Foreland
CPCP335-1	Foreland	Lower Triassic	Giesler (2019)	Triassic strata- Foreland
CPCP349-3	Foreland	Lower Triassic	Giesler (2019)	Triassic strata- Foreland
CPCP383-2	Foreland	Lower Triassic	Giesler (2019)	Triassic strata- Foreland
BR01-10	Foreland	Lower Triassic	May et al. (2013)	Triassic strata- Foreland
050508-1	Foreland	Upper Triassic	Riggs et al. (2013)	Triassic strata- Foreland
LongLogs	Foreland	Upper Triassic	Riggs et al. (2013)	Triassic strata- Foreland
030509-3	Foreland	Upper Triassic	Riggs et al. (2013)	Triassic strata- Foreland
111308-2	Foreland	Upper Triassic	Riggs et al. (2013)	Triassic strata- Foreland
111408-1	Foreland	Upper Triassic	Riggs et al. (2013)	Triassic strata- Foreland

ShooFly	Northern Sierra terrane (NE Ca)	Cambrian_Devonian	Harding et al. (2000)	Pz strata- northern Sierra Terrane
Picayune_Arlington	Northern Sierra terrane (NE Ca)	Devonian_Permian	Spurlin et al. (2000)	Pz strata- northern Sierra Terrane
AMQ	Klamath terrane	Pre-Devonian	Wallin et al. (2000)	Pz strata- Klamath Terrane
PZK	Klamath terrane	Devonian_Permian	Gehrels and Miller (2000)	Pz strata- Klamath Terrane
Chinle	Passive margin	Upper Triassic	Gehrels and Pecha (2014)	Neoproterozoic-Triassic strata- NA western margin
Osobb	Passive margin	Upper Triassic	Gehrels and Pecha (2014)	Neoproterozoic-Triassic strata- NA western margin
Battle	Passive margin	Pennsylvanian	Gehrels and Pecha (2014)	Neoproterozoic-Triassic strata- NA western margin
Tonka	Passive margin	Mississippian	Gehrels and Pecha (2014)	Neoproterozoic-Triassic strata- NA western margin
Oxyoke	Passive margin	Middle Devonian	Gehrels and Pecha (2014)	Neoproterozoic-Triassic strata- NA western margin
Valmy	Passive margin	Ordovician	Gehrels and Pecha (2014)	Neoproterozoic-Triassic strata- NA western margin
Eureka	Passive margin	Middle Ordovician	Gehrels and Pecha (2014)	Neoproterozoic-Triassic strata- NA western margin
Vinini	Passive margin	Lower or Middle Ordovician	Gehrels and Pecha (2014)	Neoproterozoic-Triassic strata- NA western margin
Osgood	Passive margin	Lower Cambrian	Gehrels and Pecha (2014)	Neoproterozoic-Triassic strata- NA western margin
Zabriskie	Passive margin	Lower Cambrian	Gehrels and Pecha (2014)	Neoproterozoic-Triassic strata- NA western margin
WoodCanyon1	Passive margin	Upper Neoproterozoic-Lower Cambrian	Gehrels and Pecha (2014)	Neoproterozoic-Triassic strata- NA western margin
WoodCanyon2	Passive margin	Upper Neoproterozoic-Lower Cambrian	Gehrels and Pecha (2014)	Neoproterozoic-Triassic strata- NA western margin
Geertsen	Passive margin	Neoproterozoic-lower Cambrian	Gehrels and Pecha (2014)	Neoproterozoic-Triassic strata- NA western margin
Mutual Fm	Passive margin	Neoproterozoic	Gehrels and Pecha (2014)	Neoproterozoic-Triassic strata- NA western margin
Caddy Canyon Quartzite	Passive margin	Neoproterozoic	Gehrels and Pecha (2014)	Neoproterozoic-Triassic strata- NA western margin
Ardill	Central Sierra Nevada batholith	Mesozoic	Ardill et al. (2018, 2020)	central Sierra Nevada batholith
Attia	Central Sierra Nevada batholith	Mesozoic	Attia et al. (2020, 2021)	central Sierra Nevada batholith
Barth	Central Sierra Nevada batholith	Mesozoic	Barth et al. (2011, 2018)	central Sierra Nevada batholith
Cao	Central Sierra Nevada batholith	Mesozoic	Cao et al. (2015); Cao (2016)	central Sierra Nevada batholith
Ratschbacher	Central Sierra Nevada batholith	Mesozoic	Ratschbacher et al. (2018)	central Sierra Nevada batholith
Saleeby	Central Sierra Nevada batholith	Mesozoic	Saleeby (1982); Saleeby et al. (1989)	central Sierra Nevada batholith
Stern	Central Sierra Nevada batholith	Mesozoic	Stern et al. (1981)	central Sierra Nevada batholith
Tobisch	Central Sierra Nevada batholith	Mesozoic	Tobisch et al. (2000)	central Sierra Nevada batholith

References

Ardill, K.A., Paterson, S.R., and Memeti, V., 2018, Spatiotemporal magmatic focusing in upper-mid crustal plutons of the Sierra Nevada arc: Earth and Planetary Science Letters, v. 498, p. 88–100, https://doi.org/10.1016/j.epsl.2018.06.023.

Ardill, K.E., Memeti, V., and Paterson, S.R., 2020, Reconstructing the physical and chemical development of a pluton-porphyry complex in a tectonically re-organized arc crustal section, Tioga Pass, Sierra Nevada: Lithosphere, v. 2020, no. 1, p. 1–26, https://doi.org/10.2113/2020/8872875.

Attia, S., Cottle, J.M., and Paterson, S.R., 2020, The erupted zircon record of continental crust formation during mantle driven arc flare-ups: Geology, v. 48, no. 5, p. 446–451, https://doi.org/10.1130/G46991.1.

Attia, S., Paterson, S.R., Saleeb, J., and Cao, W., 2021, Detrital zircon provenance and depositional links of Mesozoic Sierra Nevada intra-arc strata: Geosphere, v. 17, p. 1– 32, https://doi.org/10.1130/GES02296.1.

Barth, A.P., Walker, J.D., Wooden, J.L., Riggs, N.R., and Schweickert, R.A., 2011, Birth of the Sierra Nevada magmatic arc: Early Mesozoic plutonism and volcanism in the east-central Sierra Nevada of California: Geosphere, v. 7, p. 877–897, https://doi.org/10.1130/GES00661.1.

Barth, A.P., Wooden, J.L., Riggs, N.R., Walker, J.D., Tani, K., Penniston-Dorland, S.C., Jacobson, C.E., Laughlin, J.A., and Hiramatsu, R., 2018, Marine volcaniclastic record of early arc evolution in the Eastern Ritter Range pendant, Central Sierra Nevada, California: Geochemistry, Geophysics, Geosystems, v. 19, p. 2543–2559, https://doi.org/10.1029/2018GC007456.

Cao, W., 2016, Links, tempos, and mass balances of cyclic deformation and magmatism in arcs: A case study on the Mesozoic Sierra Nevada arc integrating geological mapping, geochronology, geobarometry, strain analyses and numerical simulations [Ph.D. thesis]: Los Angeles, University of Southern California, 413 p.

Cao, W., Paterson, S.R., Memeti, V., Mundil, R., Anderson, L., and Schmidt, K., 2015, Tracking paleodeformation fields in the Mesozoic central Sierra Nevada arc: Implications for intra-arc cyclic deformation and arc tempos: Lithosphere, v. 7, p. 296–320, https://doi.org/10.1130/L389.1.

Dickinson and Gehrels, 2008a, U-Pb ages of detrital zircons in relation to paleogeography: Triassic paleodrainage networks and sediment dispersal across southwest Laurentia: Journal of Sedimentary Research, v. 78, 745–764.

Dickinson and Gehrels, 2008b, Sediment delivery to the Cordilleran foreland basin: Insights from U–Pb ages of detrital zircons in Upper Jurassic and Cretaceous strata of the Colorado Plateau: American Journal of Science, v. 308, 1041–1082.

Dickinson and Gehrels, 2009, U–Pb ages of detrital zircons in Jurassic eolian and associated sandstones of the Colorado Plateau: Evidence for transcontinental dispersal and intraregional recycling of sediment: Geological Society of America Bulletin, v. 121, 408–433.

Fuentes, F., DeCelles, G., Constenius, K.N., and Gehrels, G.E., 2011, Evolution of the Cordilleran foreland basin system in northwestern Montana, USA: Geological Society of America Bulletin, v. 123, p. 507-533.

Gehrels, G.E., and Miller, M.M., 2000, Detrital zircon geochronologic study of Upper Paleozoic strata in the eastern Klamath terrane, northern California, in Gehrels, G.E., and Soreghan, M.J., eds., Paleozoic and Triassic Paleogeography and Tectonics of Western Nevada and Northern California: Geological Society of America Special Paper 347, p. 99–108, https:// doi.org/10.1130/0-8137-2347-7.99.

Gehrels, G., and Pecha, M., 2014, Detrital zircon U-Pb geochronology and Hf isotope geochemistry of Paleozoic and Triassic passive margin strata of western North America: Geosphere, v. 10, no. 1, p. 49–65, https://doi.org/10.1130/GES00889.1.

Giesler, D.M., 2019, U-Th-Pb LA-ICP-MS detrital zircon analysis of the Triassic Chinle and Moenkopi Formations and Permian Coconino Sandstone of Chinde Point, Petrified Forest National Park, Arizona: MS thesis, University of Arizona, Tucson, 65 p.

Harding, J.P., Gehrels, G.E., Harwood, D.S., and Girty, G.H., 2000, Detrital zircon geochronology of the Shoo Fly complex, northern Sierra terrane, northeastern California, in Soreghan, M.J., and Gehrels, G.E., eds., Paleozoic and Triassic Paleogeography and Tectonics of Western Nevada and Northern California: Geological Society of America Special Paper 347, p. 43–55.

LaMaskin, T. A., Rivas, J. A., Barbeau, D. L., Schwartz, J. J., Russell, J. A., and Chapman, A. D., 2021, A crucial geologic test of Late Jurassic exotic collision versus endemic re-accretion in the Klamath Mountains Province, western United States, with implications for the assembly of western North America, Geological Society of America Bulletin, doi: https://doi.org/10.1130/B35981.1

Laskowski, A.K., DeCelles, G., and Gehrels, G.E., 2013, Detrital zircon geochronology of

Cordilleran retroarc foreland basin strata, western North America: Tectonics, v. 32, p. 1027-1048.

May, S.R., Gray, G.G., Summa, L.L., Stewart, N.R., Gehrels, G.E., and Pecha, M.E., 2013, Detrital zircon geochronology from the Bighorn Basin, Wyoming, USA: Implications for tectonostratigraphic evolution and paleogeography: Geological Society of America Bulletin, v. 125, p. 1403-1422.

Orme, D. A., and Surpless, K. D. (2019). The birth of a forearc: The basal Great Valley Group, California, USA. Geology.

Painter, C.S., Carrapa, B., DeCelles, P.G., Gehrels, G.E., and Thomson, S.N., 2014, Exhumation of the North American Cordillera revealed by multi-dating of Upper Jurassic-Upper Cretaceous foreland basin deposits: Geological Society of America Bulletin, v. 126, p. 1439-1464.

Raines, M.K., Hubbard, S.M., Kukulski, R.B., Leier, A.L., and Gehrels, G.E., 2013, Sediment dispersal in an evolving foreland: Detrital zircon geochronology from Upper Jurassic and lowermost Cretaceous strata, Alberta Basin, Canada: Geological Society of America Bulletin, v. 125, p. 741–755, https://doi.org/10.1130/ B30671.1.

Ratschbacher, B. C., Keller, C. B., Schoene, B., Paterson, S. R., Anderson, J. L., Okaya, D., and Lippoldt, R., 2018, A new workflow to assess emplacement duration and melt residence time of compositionally diverse magmas emplaced in a sub-volcanic reservoir: Journal of Petrology, 59(9), 1787–1809. https://doi.org/10.1093/petrology/egy079.

Riggs, N.R., Reynolds, S.J., Linder, P.J., Howel, E.R., Barth, A.P., Parker, W.G., and Walker, J.D., 2013, The Early Mesozoic Cordilleran arc and Late Triassic paleotopography: The detrital record in Upper Triassic sedimentary successions on and off the Colorado Plateau: Geosphere, v. 9, p. 602-613.

Saleeby, J.B., 1982, Polygenetic ophiolite belt of the California Sierra Nevada; Geochronological and tectonostratigraphic development: Journal of Geophysical Research, B, v. 87, no. 3, p. 1803–1824.

Saleeby, J.B., Shaw, H.F., Niemeyer, S., Edelman, S.H., and Moores, E.M., 1989, U/Pb, Sm/Nd and Rb/Sr geochronological and isotopic study of northern Sierra Nevada ophiolitic assemblages, California: Contributions to Mineralogy and Petrology, v. 102, p. 205–220, https://doi.org/10.1007/BF00375341.

Spurlin, M.S., Gehrels, G.E., and Harwood, D.S., 2000, Detrital zircon geochronology of upper Paleozoic and lower Mesozoic strata of the northern Sierra terrane, northeastern California, in Soreghan, M.J., and Gehrels, G.E., eds., Paleozoic and Triassic Paleogeography and Tectonics of Western Nevada and Northern California: Geological

Society of America Special Paper 347, p. 89–98, https://doi.org/10.1130/0-8137-2347-7.89.

Stern, T.W., Bateman, P.C., Morgan, B.A., Newell, M.F., and Peck, D.L., 1981, Isotopic U-Pb ages of zircons from granitoids of the central Sierra Nevada, California: U.S. Geological Survey Professional Paper 1185, 17 p., https://doi.org/10.3133/pp1185.

Surpless, K.D., 2014, Geochemistry of the Great Valley Group: An integrated provenance record: International Geology Review, v. 57, p. 747–766, https://doi.org/10.1080/00206814.2014.923347.

Surpless, K.D., Graham, S.A., Covault, J.A., and Wooden, J.L., 2006, Does the Great Valley Group contain Jurassic strata? Reevaluation of the age and early evolution of a classic forearc basin: Geology, v. 34, p. 21–24, https:// doi.org/10.1130/G21940.1.

Tobisch, O.T., Fiske, R.S., Saleeby, J.B., Holt, E., and Sorensen, S.S., 2000, Steep tilting of metavolcanic rocks by multiple mechanisms, central Sierra Nevada, California: Geological Society of America Bulletin, v. 112, p. 1043–1058, https://doi.org/10.1130/0016-7606(2000)112<1043:STOMRB>2.0.CO;2.

Wallin, E.T., Noto, R.C., and Gehrels, G.E., 2000, Provenance of the Antelope Mountain Quartzite, Yreka terrane, California: Evidence for large-scale late Paleozoic sinistral displacement along the North American Cordilleran margin and implications for the mid-Paleozoic fringing-arc model, in Soreghan, M.J., and Gehrels, G.E., eds., Paleozoic and Triassic Paleogeography and Tectonics of Western Nevada and Northern California: Geological Society of America Special Paper 347, p. 119–131, https://doi.org/10.1130/0-8137-2347- 7.119.

Wright, J.E., and Wyld, S.J., 2007, Alternative tectonic model for Late Jurassic through Early Cretaceous evolution of the Great Valley Group, California, in Cloos, M., Carlson, W.D., Gilbert, M.C., Liou, J.G., and Sorenson, S.S., eds., Convergent Margin Terranes and Associated Regions: A Tribute to W.G. Ernst: Geological Society of America Special Paper 419, p. 81–95, https://doi.org/10.1130/2007.2419(04).

APPENDIX B

SUMMARY OF ARCHEAN–MESOZOIC SOURCES IN NORTH AMERICA AND PUBLISHED REFERENCES

U-Pb Zircon Age Signatures in North America

Archean–Paleozoic provinces within North America include rocks of northern Laurentia (>1.8 Ga), Yavapai and Mazatzal provinces (1.8–1.6 Ga), midcontinent igneous rocks (1.48–1.34 Ga), Grenville (1.2–1.0 Ga), Appalachian (700–400 Ma), and Antler orogens (Late Devonian to Middle Mississippian) (Gehrels and Pecha 2014, and references therein). Specifically, Archean crust in northern Laurentia (Fig. S1) include the Hearne, Nain, Rae, Sask, Slave, Superior, and Wyoming cratons (Whitmeyer and Karlstrom 2007; Condie et al. 2009). Zircon grains derived from these sources yield ages of 3.5 Ga to 2.6 Ga (e.g., Cawood and Nemchin 2001; Bickford et al. 2006; Schmitz et al. 2006; Condie et al. 2009). Zircon ages between 2.5 Ga and 1.8 Ga are interpreted to reflect northern Laurentian sources that may have been associated with rifting events (2.4–2.0 Ga) and subsequent collisional events (2.0 Ga and 1.80 Ga) (Sims et al. 1993; Whitmeyer and Karlstrom 2007). The Canadian Shield region and north-central United States expose basement rocks of the Proterozoic Trans-Hudson and Penokean orogenic events which are reported to have occurred between 1.85–1.78 Ga and 1.88–1.83 Ga, respectively (Van Schmus 1976; Schulz and Cannon 2007; Whitmeyer and Karlstrom 2007).

Laurentian Proterozoic basement rocks also include the Paleoproterozoic Yavapai and Mazatzal provinces, along with the Mesoproterozoic magmatic and Grenville provinces (Fig. S1). Paleoproterozoic basement rocks of Laurentia extend from southwestern Arizona to the southern Great Lakes region (Hoffman 1989; Whitmeyer and Karlstrom 2007; Gehrels and Pecha 2014) (Fig. S1). Yavapai basement rocks contain zircon ages of 1.8–1.7 Ga (Condie and Knoper 1986; Karlstrom et al. 1987; Bickford et al. 1989, 2008; Gehrels et al. 2011) (Fig. S1). Mazatzal basement rocks comprise zircon ages of 1.76–1.6 Ga (Karlstrom and Bowring 1988;

Karlstrom et al. 1993; Whitmeyer and Karlstrom 2007; Gehrels et al. 2011; Gehrels and Pecha 2014). Mesoproterozoic magmatism in Laurentia includes the granite-rhyolite province in the midcontinent region of the United States and alkaline "A-type" granites in western Laurentia (Fig. S1); these rocks contain zircon ages between ~1.5–1.35 Ga (Bickford et al. 2015). Additionally, Mesoproterozoic plutons are reported to range between 1.48–1.34 Ga near the western Rocky Mountains region of the United States (Bickford et al. 2015) (Fig. S1). Mesoproterozoic Grenville province extends intermittently from northeastern Canada to the southern United States and southward into Mexico; Grenville-age rocks yield a zircon age range of 1.3–0.9 Ga (Rivers 1997; Bickford et al. 2000; Heumann et al. 2006; Whitmeyer and Karlstrom 2007).

Neoproterozoic–early Paleozoic rift related rocks include those that formed during the early stages of rifting along the eastern margin of Laurentia, as well as those associated with rifting along the western margin of Laurentia (Whitmeyer and Karlstrom 2007). Igneous suites ranging from ~800–500 Ma are found in the mid-continent (e.g., Amarillo-Wichita uplift) (Fig. S1) and in the Cordilleran passive margin in the western United States and Canada (Evans and Zartman 1988; Colpron et al. 2002; Lund et al. 2010; Thomas et al. 2012; Hanson et al. 2013; Campbell et al. 2019).

Multiple collisional events that resulted with the production of zircon-rich plutons and metamorphic rocks are well-documented within the Paleozoic Appalachian orogen (Becker et al. 2005, 2006; Bream et al. 2004; Park et al. 2010) (Fig. S1). Specifically, the Taconic orogeny includes volcanic rocks that formed between 550–500 Ma; followed by metamorphism and magmatism that occurred between 470–440 Ma (Hatcher et al. 1989; Drake et al. 1989).

Subsequently, the Devonian to Early Mississippian Acadian orogeny generated plutonism between 423–315 Ma (Osberg et al. 1989; Bradley et al. 2000). The youngest Appalachian collisional event, the Alleghenian orogeny, resulted in 330–265 Ma plutonism (Hatcher et al. 1989). In southeastern United States and northeastern Mexico are basement and igneous rocks of various peri-Gondwanan terranes (Fig. S1).

Proximal to our study region, the Klamath Mountains Province of southern Oregon and northern California comprise terranes that consist of Neoproterozoic–Late Jurassic tectonostratigraphic units that are intruded by early Paleozoic to Early Cretaceous plutons (Irwin 1972; Hacker et al. 1995; Irwin 2003; Snoke and Barnes 2006; Dickinson 2008). Specifically, the Klamath Mountains Province include Paleozoic (Silurian–Devonian) sedimentary strata with prominent detrital zircon age groups of 450–400 Ma, 476–381 Ma, 2.0–1.0 Ga, 2.5–1.7 Ga, and 2.7 Ga (Wallin et al. 1995, 2000; Grove et al. 2008; Lindsley-Griffin et al. 2008). Mesozoic terranes (Middle Triassic–Early Jurassic) are documented to contain Archean and early Proterozoic to Jurassic detrital zircon ages (Irwin 1972; Wright 1982; Hacker and Ernst 1993; Scherer and Ernst 2008; Scherer et al. 2010; Ernst et al. 2017).

Accreted terranes of the Sierra Nevada in northern California include the northern Sierra terrane, part of the western foothills metamorphic belt, and contains metasedimentary rock units with detrital zircons interpreted to have been sourced from Ediacaran and mid-Silurian igneous rocks (Saleeby et al. 1987; Saleeby 1990), along with local deformed cratonal strata (Harding et al. 2000). The foothills metamorphic belt also includes terranes that accreted prior to the Middle Jurassic (e.g., Early Jurassic arc complexes such as Slate Creek, older Smartville, Penon Blanco,

Fiddle Creek), along with an accretionary complex (i.e., the Calaveras complex) (Shervais et al. 2005) or accreted during the Late Jurassic Nevadan orogeny.

Along southwestern Laurentia, a belt of Permian–Middle Triassic arc-related magmatic rocks extending from the southwestern United States (e.g., Barth et al. 1990, 1997; Barth and Wooden 2006; Miller et al. 1995) to eastern and southern Mexico (Torres et al. 1999; Weber et al. 2007; Ducea et al. 2004) documents the earliest Cordilleran arc magmatism (Walker 1988; Miller et al. 1995; Barth et al. 1997; Barth and Wooden 2006; Arvizu et al. 2009; Riggs et al. 2009; Arvizu and Iriondo 2015; Saleeby and Dunne 2015; Cecil et al. 2018; Lodes et al. 2020; Dobbs et al. 2021). Sierra Nevadan arc magmatism includes magmatic high flux periods during Triassic (265–200 Ma), Middle and Late Jurassic (194–130 Ma), and mid-Cretaceous (124–76 Ma) time, with each episode involving varying depths of emplacement and magma addition rates (Paterson and Ducea 2015). Permo–Triassic to Cretaceous intra-arc strata of the Sierra Nevada reflect derivation from proximal arc activity, as well as the pre-Mesozoic sources from southwestern Laurentia (e.g., 1400–900 Ma, 500–300 Ma age peaks; Attia et al. 2021).

Detrital zircons from Neoproterozoic–Paleozoic passive margin strata in western North America collectively represent recycling of uplifted strata containing grains that were sourced from and >1.8 Ga rocks in northern Laurentia, Yavapai and Mazatzal provinces, midcontinent granitoids, the Grenville, Appalachian, and the Antler orogens (Leary et al. 2020, and references therein). In contrast, detrital zircons from Triassic passive margin strata are interpreted to represent derivation from nearby basement rocks, the Appalachian orogen, and Permian–Triassic igneous rocks from Cordilleran magmatism along southwestern Laurentia (Leary et al. 2020, and references therein). Pre-Mesozoic detrital zircon ages documented in Jurassic forearc and

retroarc strata of the North American Cordillera indicate shared sources of North American affinity; these grains reflect recycling of uplifted older strata and do not represent primary source signals from Laurentian basement (DeGraaff-Surpless et al. 2002; Orme and Surpless 2019; Balgord et al. 2021; Schwartz et al. 2021).

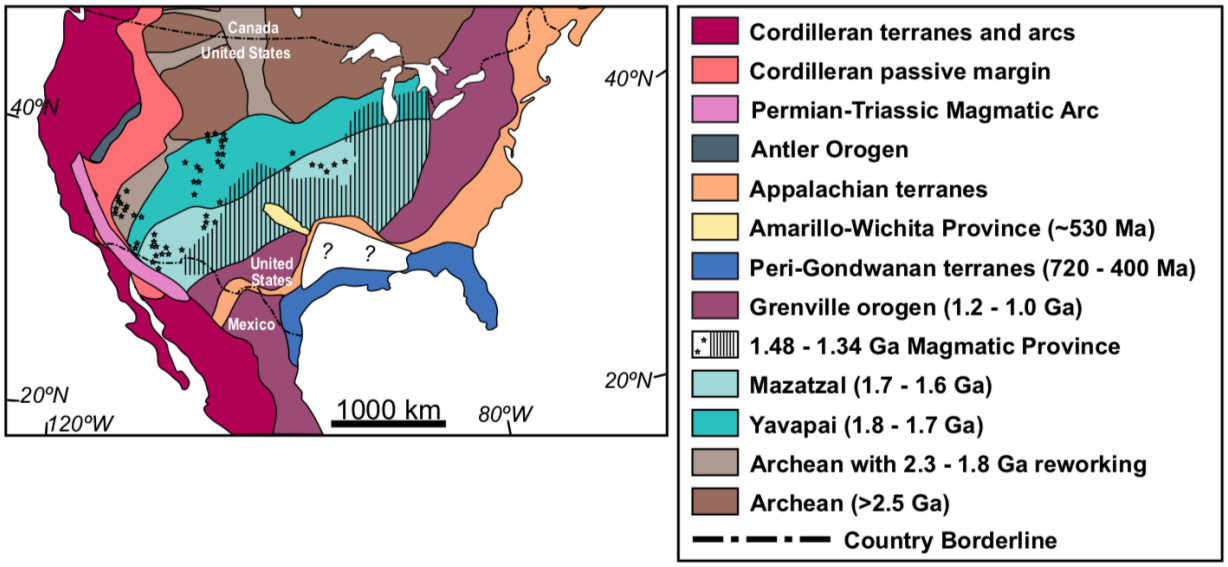


Figure S1: Crustal provinces within North America. Modified from Gehrels et al. (2011).

Literature Cited

Arvizu, H.E., and Iriondo, A., 2015, Temporal and geologic control of Permo-Triassic magmatism in Sierra Los Tanques, NW Mexico: Evidence of the initiation of cordilleran arc magmatism in SW Laurentia: Bulletin of the Geological Society of Mexico, v. 67, p. 545–586.

Arvizu, H.E., Iriondo, A., Izaguirre, A., Chavez-Cabello, G., Kamenov, G.D., Solis-Pichardo, G., Foster, D.A., and Lozano-Santa Cruz, R., 2009, Rocas graniticas permicas en la Sierra Pinta, NW de Sonora, Mexico: Magmatismo de subduccion asociado al inicio del margen continental activo del SW de Norteamerica: Revista Mexicana de Ciencias Geológicas, v. 26, p. 709–728.

Attia, S., Paterson, S. R., Saleeby, J., and Cao, W., 2021, Detrital zircon provenance and depositional links of Mesozoic Sierra Nevada intra-arc strata: Geosphere, 17, 1422-1453

Balgord, E.A., Yonkee, W.A., Wells, M.L., Gentry, A., and Laskowski, A.K., 2021, Arc tempos, tectonic styles, and sedimentation patterns during evolution of the North American Cordillera: Constraints from the retroarc detrital zircon archive: Earth-Science Reviews, v. 216, 103557, https://doi.org/10.1016/j.earscirev.2021.103557.

Barth, A.P., and Wooden, J.L., 2006, Timing of magmatism following initial convergence at a passive margin, southwestern U.S. Cordillera, and ages of lower crustal magma sources: The Journal of Geology, v. 114, p. 231–245, https://doi.org/10.1086/499573.

Barth, A.P., Tosdal, R.M., and Wooden, J.L., 1990, A petrologic comparison of Triassic plutonism in the San Gabriel and Mule Mountains, southern California: Journal of Geophysical Research, v. 95, no. B12, p. 20075– 20096, http://doi.org/10.1029/JB095iB12p20075.

Barth, A.P., Tosdal, R.M., Wooden, J.L., and Howard, K.A., 1997, Triassic plutonism in southern California: Southward younging of arc initiation along a truncated continental margin: Tectonics, v. 16, no. 2, p. 290–304, http://doi.org/10.1029/96TC03596.

Becker, T.P., Thomas, W.A., and Gehrels, G.E., 2006, Linking late Paleozoic sedimentary provenance in the Appalachian basin to the history of Alleghanian deformation: American Journal of Science, v. 306, no. 10, p. 777–798, https://doi.org/10.2475/10.2006.01.

Becker, T.P., Thomas, W.A., Samson, S.D., and Gehrels, G.E., 2005, Detrital zircon evidence of Laurentian crustal dominance in the lower Pennsylvanian deposits of the Alleghanian clastic wedge in eastern North America: Sedimentary Geology, v. 182, no. 1–4, p. 59–86, https://doi.org/10.1016/j.sedgeo.2005.07.014.

Bickford, M., Mueller, P., Kamenov, G.D., and Hill, B.M., 2008, Crustal evolution of southern Laurentia during the Paleoproterozoic: Insights from zircon Hf isotopic studies of ca. 1.75 Ga rocks in central Colorado: Geology, v. 36, no. 7, p. 555–558, https://doi.org /10.1130/G24700A.1.

Bickford, M.E., Shuster, R.D., and Boardman, S.J., 1989, U-Pb geochronology of the Proterozoic volcano-plutonic terrane in the Gunnison and Salida area, Colorado, *in* Grambling, J.A., and Tewksbury, B.J., eds., Proterozoic Geology of the Southern Rocky Mountains: Geological Society of America Special Paper 235, p. 33–48, https://doi.org/10.1130/SPE235-p33.

Bickford, M., Soegaard, K., Nielsen, K.C., and McLelland, J.M., 2000, Geology and geochronology of Grenville-age rocks in the Van Horn and Franklin Mountains area, west Texas: Implications for the tectonic evolution of Laurentia during the Grenville: Geological Society of America Bulletin, v. 112, no. 7, p. 1134–1148, https://doi.org/10.1130/0016-7606 (2000)112<1134:GAGOGR>2.0.CO;2.

Bickford, M., Van Schmus, W., Karlstrom, K., Mueller, P., and Kamenov, G., 2015, Mesoproterozoic-trans-Laurentian magmatism: A synthesis of continent-wide age distributions, new SIMS U–Pb ages, zircon saturation temperatures, and Hf and Nd isotopic compositions: Precambrian Research, v. 265, p. 286–312, https://doi.org/10.1016/j.precamres.2014.11.024.

Bickford, M., Wooden, J., and Bauer, R., 2006, SHRIMP study of zircons from Early Archean rocks in the Minnesota River Valley: Implications for the tectonic history of the Superior Province: Geological Society of America Bulletin, v. 118, no. 1–2, p. 94–108, https://doi .org/10.1130/B25741.1.

Bradley, D.C., Tucker, R.D., Lux, D.R., Harris, A.G., and McGregor, D.C., 2000, Migration of the Acadian orogen and foreland basin across the northern Appalachians of Maine and adjacent areas: U.S. Geological Survey Professional Paper 1624, 49 p.

Bream, B.R., Hatcher, R.D., Miller, C.F., Fullagar, P.D., Tollo, R., McLelland, J., Corriveau, L., and Bartholomew, M., 2004, Detrital zircon ages and Nd isotopic data from the southern Appalachian crystalline core, Georgia, South Carolina, North Carolina, and Tennessee: New provenance constraints for part of the Laurentian margin, *in* Tollo, R. P., Corriveau, L., McLelland, J., and Bartholomew, M. J., eds., Proterozoic Tectonic Evolution of the Grenville Orogen in North America: Geological Society of America Memoir 197, p. 459–475, https://doi.org/10.1130/0-8137-1197-5.459.

Campbell, R.W., Beranek, L.P., Piercey, S.J., and Friedman, R., 2019, Early Paleozoic post-breakup magmatism along the Cordilleran margin of western North America: New zircon U-Pb age and whole-rock Nd-and Hf-isotope and lithogeochemical results from the

Kechika group, Yukon, Canada: Geosphere, v. 15, p. 1262–1290, https://doi.org/10.1130 /GES02044.1.

Cawood, P.A., and Nemchin, A.A., 2001, Paleogeographic development of the east Laurentian margin: Constraints from U-Pb dating of detrital zircons in the Newfoundland Appalachians: Geological Society of America Bulletin, v. 113, no. 9, p. 1234–1246, https://doi.org /10.1130/0016-7606(2001)113<1234:PDOTEL>2.0.CO;2.

Cecil, M.R., Ferrer, M.A., Riggs, N.R., Marsaglia, K.M., Kylander-Clark, A., Ducea, M.N., and Stone, P., 2018, Early arc development recorded in Permian–Triassic plutons of the northern Mojave Desert region, California, USA: Geological Society of America Bulletin, v. 131, p. 749–765, https://doi.org/10.1130/B31963.1.

Colpron, M., Logan, J.M., and Mortensen, J.K., 2002, U-Pb zircon age constraints for late Neoproterozoic rifting and initiation of the lower Paleozoic passive margin of western Laurentia: Canadian Journal of Earth Sciences, v. 39, p. 133–143, doi: 10.1139/e01-069.

Condie, K., and Knoper, M., 1986, Geology and origin of early Proterozoic rocks from the Gunnison area, central Colorado, *in* Proceedings Proterozoic geology and geochemistry: Lawrence, Kansas, University of Kansas, International Field Conference 1986, p. 3–16.

Condie, K.C., Belousova, E., Griffin, W., and Sircombe, K.N., 2009, Granitoid events in space and time: Constraints from igneous and detrital zircon age spectra: Gondwana Research, v. 15, no. 3–4, p. 228–242, https://doi.org/10.1016/j.gr.2008.06.001.

DeGraaff-Surpless, K., Graham, S.A., Wooden, J.L., and McWilliams, M.O., 2002, Detrital zircon provenance analysis of the Great Valley Group, California: Evolution of an arc-forearc system: Geological Society of America Bulletin, v. 114, p. 1564–1580, https://doi.org/10.1130/0016-7606(2002)114<1564:DZPAOT>2.0.CO;2.

Dickinson, W.R., 2008, Accretionary Mesozoic–Cenozoic expansion of the Cordilleran continental margin in California and adjacent Oregon: Geosphere, v. 4, p. 329–353, https://doi.org/10.1130/GES00105.1.

Drake, A.A.J., Sinha, A., Laird, J., and Guy, R., 1989, The Taconic orogen, *in* Hatcher, R.D.J., Thomas, W.A., and Viele, G.W., eds., The Appalachian-Ouachita Orogen in the United States: Boulder, Colorado, Geological Society of America, Geology of North America, Vol. 2, p. 101–177.

Dobbs, S.C., Riggs, N.R., Marsaglia, K.M., González-León, C.M., Cecil, M.R., and Smith, M.E., 2021, The Permian Monos Formation: Stratigraphic and detrital zircon evidence for Permian Cordilleran arc development along the southwestern margin of Laurentia (northwestern Sonora, Mexico): Geosphere, v. 17, no. 2, p. 520–537, https://doi.org/10.1130 /GES02320.1.

Ducea, M. N., G. E. Gehrels, S. Shoemaker, J. Ruiz, and V. A. Valencia (2004). Geological evolution of the Xolapa Complex, southern Mexico: Evidence from U-Pb zircon geochronology, Geol. Soc. Am. Bull. 116, no. 7, 1016–1025.

Ernst, W.G., Wu, C., Lai, M., and Zhang, X., 2017, U-Pb ages and sedimentary provenance of detrital zircons from eastern Hayfork meta-argillites, Sawyers Bar area, northwestern California: The Journal of Geology, v. 125, p. 33–44, https://doi.org/10.1086/689186.

Evans, K.V., and Zartman, R.E., 1988, Early Paleozoic alkalic plutonism in east-central Idaho: Geological Society of America Bulletin, v. 100, no. 12, p. 1981–1987, https://doi.org/10.1130 /0016-7606(1988)100<1981:EPAPIE>2.3.CO;2.

Gehrels, G., and Pecha, M., 2014, Detrital zircon U-Pb geochronology and Hf isotope geochemistry of Paleozoic and Triassic passive margin strata of western North America: Geosphere, v. 10, no. 1, p. 49–65, https://doi.org/10.1130/GES00889.1.

Gehrels, G.E., Blakey, R., Karlstrom, K.E., Timmons, J.M., Dickinson, W., and Pecha, M., 2011, Detrital zircon U-Pb geochronology of Paleozoic strata in the Grand Canyon, Arizona: Lithosphere, v. 3, no. 3, p. 183–200, https://doi.org/10.1130/L121.1.

Grove, M., Gehrels, G.E., Cotkin, S.J., Wright, J.E., and Zou, H., 2008, Non-Laurentian cratonal provenance of Late Ordovician eastern Klamath blueschists and a link to the Alexander terrane, in Wright, J.E., and Shervais, J.W., eds., Ophiolites, Arcs, and Batholiths: A Tribute to Cliff Hopson: Geological Society of America Special Paper 438, p. 223–250, https://doi .org/10.1130/2008.2438(08).

Hacker, B., and Ernst, W.G., 1993, Jurassic orogeny in the Klamath Mountains: A geochronological analysis, in Dunn, G., and McDougall, K., eds., Mesozoic Paleo-geography of the Western United States—II: Pacific Section, Society for Sedimentary Geology (SEPM), Book 71, p. 37–60.

Hacker, B.R., Donato, M.M., Barnes, C.G., McWilliams, M.O., and Ernst, W.G., 1995, Time scales of orogeny: Jurassic construction of the Klamath Mountains: Tectonics, v. 14, p. 677–703, https://doi .org/10.1029/94TC02454.

Hanson, R.E., Puckett, R.E., Jr., Keller, G.R., Brueseke, M.E., Bulen, C.L., Mertzman, S.A., Finegan, S.A., and McCleery, D.A., 2013, Intraplate magmatism related to opening of the southern Iapetus Ocean: Cambrian Wichita igneous province in the southern Oklahoma rift zone: Lithosphere, v. 174, p. 57–70, https://doi.org/10.1016/j.lithos.2012.06.003.

Harding, J.P., Gehrels, G.E., Harwood, D.S., and Girty, G.H., 2000, Detrital zircon geochronology of the Shoo Fly complex, northern Sierra terrane, northeastern California, in Soreghan, M.J., and Gehrels, G.E., eds., Paleozoic and Triassic Paleogeography and

Tectonics of Western Nevada and Northern California: Geological Society of America Special Paper 347, p. 43–55.

Hatcher, R.D., Jr., Thomas, W., Geiser, P., Snoke, A., Mosher, S., and Wiltschko, D., 1989, Alleghanian orogen, *in* The Appalachian–Ouachita Orogen in the United States, Volume F-2: Boulder, Colorado, Geological Society of America, p. 233–318.

Heumann, M.J., Bickford, M., Hill, B.M., McLelland, J.M., Selleck, B.W., and Jercinovic, M.J., 2006, Timing of anatexis in metapelites from the Adirondack lowlands and southern highlands: A manifestation of the Shawinigan orogeny and subsequent anorthosite–mangerite– charnockite–granite magmatism: Geological Society of America Bulletin, v. 118, no. 11–12, p. 1283–1298, https://doi.org/10.1130/B25927.1.

Hoffman, P.F., 1989, Precambrian geology and tectonic history of North America, *in* Bally, A., and Palmer, A., eds., The Geology of North America—An Overview: Geological Society of America, The Geology of North America, v. A, p. 447–512, https://doi.org/10.1130 /DNAG-GNA-A.447.

Irwin, W.P., 1972, Terranes of the Western Paleozoic and Triassic Belt in the Southern Klamath Mountains, California: U.S. Geological Survey Professional Pa- per 800-C, p. C103–C111, https://doi.org/10.3133/ pp800C.

Irwin, W.P., 2003, Correlation of the Klamath Mountains and Sierra Nevada: Sheet 1; Map Showing Accreted Terranes and Plutons of the Klamath Mountains and Sierra Nevada, scale 1:1,000,000, and Sheet 2; Successive Accretionary Episodes of the Klamath Mountains and Northern Part of the Sierra Nevada: U.S. Geological Survey Open-File Report 02–490, 2 sheets, https:// pubs.usgs.gov/of/2002/0490/.

Karlstrom, K.E., and Bowring, S.A., 1988, Early Proterozoic assembly of tectonostratigraphic terranes in southwestern North America: The Journal of Geology, v. 96, no. 5, p. 561–576, https://doi.org/10.1086/629252.

Karlstrom, K.E., Bowring, S.A., and Conway, C.M., 1987, Tectonic significance of an early Proterozoic two-province boundary in central Arizona: Geological Society of America Bulletin, v. 99, no. 4, p. 529–538, https://doi.org/10.1130/0016-7606(1987)99<529:TSOAEP>2.0.CO;2.

Karlstrom, K., Bowring, S.A., and Reed, J., 1993, Proterozoic orogenic history of Arizona, *in* Van Schmus, W. R., and Bickford, M. E., eds., Precambrian: Conterminous US: Transcontinental Proterozoic Provinces, Volume 2: Boulder, Colorado, Geological Society of America, p. 188–211.

Leary, R.J., Umhoefer, P., Smith, M.E., Smith, T.M., Saylor, J.E., Riggs, N., Burr, G., Lodes, E.,

Foley, D., Licht, A., Mueller, M.A., and Baird, C., 2020, Provenance of Pennsylvanian–Permian sedimentary rocks associated with the Ancestral Rocky Mountains orogeny in southwestern Laurentia: Implications for continental-scale Laurentian sediment transport systems: Lithosphere, v. 12, p. 88–121, https://doi.org/10.1130/L1115.1.

Lindsley-Griffin, N., Griffin, J.R., and Farmer, J.D., 2008, Paleogeographic significance of Ediacaran cyclomedusoids within the Antelope Mountain Quartzite, Yreka subterrane, eastern Klamath Mountains, California, in Blodgett, R.B., and Stanley, G.D., eds., The Terrane Puzzle: New Perspectives on Paleontology and Stratigraphy from the North American Cordillera: Geological Society of America Special Paper 442, p. 1–37, https://doi.org/10.1130/2008.442(01).

Lodes, E., Riggs, N.R., Smith, M.E., and Stone, P., 2020, Cordilleran Subduction Initiation: Retroarc timing and basinal response in the Inyo Mountains, Eastern California: Lithosphere, v. 2020, p. 1–20, https://doi.org/10.2113/2020/9406113.

Lund, K., Aleinikoff, J., Evans, K., DuBray, E., Dewitt, E., and Unruh, D., 2010, SHRIMP U-Pb dating of recurrent Cryogenian and Late Cambrian–Early Ordovician alkalic magmatism in central Idaho: Implications for Rodinian rift tectonics: Geological Society of America Bulletin, v. 122, no. 3–4, p. 430–453, https://doi.org/10.1130/B26565.1.

Miller, M.M., and Saleeby, J.B., 1995, U-Pb geochronology of detrital zircon from Upper Jurassic synorogenic turbidites, Galice Formation, and related rocks, western Klamath Mountains: Correlation and Klamath Mountains provenance: Journal of Geophysical Research, v. 100, no. B9, p. 18045–18058, https://doi .org/10.1029/95JB00761.

Orme, D. A., and Surpless, K. D., 2019, The birth of a forearc: The basal Great Valley Group, California, USA. Geology.

Osberg, P.H., Tull, J.F., Robinson, P., Hon, R., and Butler, J.R., 1989, The Acadian orogen, *in* Hatcher, R.D.J., Thomas, W.A., and Viele, G.W., eds., The Appalachian–Ouachita Orogen in the United States: Geology of North America, Volume 2: Boulder, Colorado, Geological Society of America, p. 179–232.

Park, H., Barbeau, D.L., Jr., Rickenbaker, A., Bachmann-Krug, D., and Gehrels, G., 2010, Application of foreland basin detrital-zircon geochronology to the reconstruction of the southern and central Appalachian orogen: The Journal of Geology, v. 118, no. 1, p. 23–44, https://doi.org/10.1086/648400.

Paterson, S.R., and Ducea, M.N., 2015, Arc magmatic tempos: Gathering the evidence: Elements, v. 11, no. 2, p. 91–98, https://doi.org/10.2113/ gselements.11.2.91.

Rivers, T., 1997, Lithotectonic elements of the Grenville Province: review and tectonic

implications: Precambrian Research, v. 86, no. 3–4, p. 117–154, https://doi.org/10.1016/S0301-9268(97)00038-7.

Riggs, N.R., Barth, A.P., Gonzalez-Leon, C.M., Walker, J.D., and Wooden, J.L., 2009, Provenance of Upper Triassic strata in southwestern North America as suggested by isotopic analysis and chemistry of zircon crystals: Geological Society of America Abstracts with Programs, v. 41, no. 7, p. 540.

Saleeby, J.B., 1990, Geochronological and tectonostratigraphic framework of Sierran-Klamath ophiolitic assemblages, in Harwood, D.S., and Miller, M.M., eds., Paleozoic and early Mesozoic paleogeographic relations; Sierra Nevada, Klamath Mountains, and related terranes: Geological Society of America Special Paper 255, p. 93–114.

Saleeby, J.B., and Dunne, G., 2015, Temporal and tectonic relations of early Mesozoic arc magmatism, southern Sierra Nevada, California, in Anderson, T.H., Didenko, A.N., Johnson, C.L., Khanchuk, A.I., and MacDonald, J.H., Jr., eds., Late Jurassic Margin of Laurasia— A Record of Faulting Accommodating Plate Rotation: Geological Society of America Special Paper 513, p. 223–268, https://doi.org/10.1130/2015.2513(05).

Saleeby, J.B., Sams, D.B., and Kistler, R.W., 1987, U/Pb zircon, strontium, and oxygen isotopic and geochronological study of the southernmost Sierra Nevada batholith, California: Journal of Geophysical Research, v. 92, no. B10, p. 10,443–10,466, https://doi.org/10.1029/JB092iB10p10443.

Scherer, H.H., and Ernst, W.G., 2008, North Fork terrane, Klamath Mountains, California: Geologic, geochemical, and geochronologic evidence for an early Mesozoic forearc, in Wright, J.E., and Shervais, J.W., eds., Ophiolites, Arcs, and Batholiths: Geological Society of America Special Paper 438, p. 289–309, https://doi .org/10.1130/2008.2438(10).

Scherer, H.H., Ernst, W.G., and Wooden, J.L., 2010, Regional detrital zircon provenance of exotic metasandstone blocks, Eastern Hayfork terrane, Western Paleozoic and Triassic belt, Klamath Mountains, California: The Journal of Geology, v. 118, p. 641–653, https://doi .org/10.1086/656352.

Schmitz, M., Bowring, S., Southwick, D., Boerboom, T., and Wirth, K., 2006, High-precision U-Pb geochronology in the Minnesota River Valley subprovince and its bearing on the Neoarchean to Paleoproterozoic evolution of the southern Superior Province: Geological Society of America Bulletin, v. 118, no. 1–2, p. 82–93, https://doi.org/10.1130/B25725.1.

Schulz, K.J., and Cannon, W.F., 2007, The Penokean orogeny in the Lake Superior region: Precambrian Research, v. 157, no. 1–4, p. 4–25, https://doi.org/10.1016/j.precamres.2007.02.022.

Schwartz, T.M., Surpless, K.D., Colgan, J.P., Johnstone, S.A., and Holm-Denoma, C.S., 2021, Detrital zircon record of magmatism and sediment dispersal across the North American Cordilleran arc system (28–48°N): Earth-Science Reviews, v. 220, 103734, https://doi.org/10.1016/j.earscirev.2021.103734.

Shervais, J. W., Murchey, B. L., Kimbrough, D. L., Renne, P. R., and Hanan, B., 2005, Radioisotopic and biostratigraphic age relations in the Coast Range Ophiolite, northern California: Implications for the tectonic evolution of the Western Cordillera: Geological Society of America Bulletin, v. 117, p. 633–653, https://doi.org/10.1130/B25443.1.

Sims, P.K., Schulz, K.J., Dewitt, E., and Brasaemle, B., 1993, Petrography and geochemistry of early Proterozoic granitoid rocks in Wisconsin Magmatic terranes of Penokean Orogen, northern Wisconsin: U.S. Geological Survey Bulletin, no. 1904-J, p. J1–J31.

Snoke, A.W., and Barnes, C.G., 2006, The development of tectonic concepts for the Klamath Mountains Province, California and Oregon, in Snoke, A.W., and Barnes, C.G., eds., Geological Studies in the Klamath Mountains Province, California and Oregon: A Volume in Honor of William P. Irwin: Geological Society of America Special Paper 410, p. 1–29, https://doi .org/10.1130/2006.2410(01).

Thomas, W.A., Tucker, R.D., Astini, R.A., and Denison, R.E., 2012, Ages of pre-rift basement and synrift rocks along the conjugate rift and transform margins of the Argentine Precordillera and Laurentia: Geosphere, v. 8, no. 6, p. 1366–1383, https://doi.org/10.1130/GES00800.1.

Torres, R., Ruiz, J., Patchett, P.J., and Grajales, J.M., 1999, A Permo-Triassic arc in eastern Mexico: Tectonic implications for reconstructions of southern North America, in Batolini, C., Wilson, J.L., and Lawton, T.F., eds., Mesozoic Sedimentary and Tectonic History of North-Central Mexico: Geological Society of America Special Paper 340, p. 191–196, https://doi.org/10.1130/0-8137-2340-X.191.

Van Schmus, W., 1976, A Discussion on global tectonics in Proterozoic times—Early and Middle Proterozoic history of the Great Lakes area, North America: Royal Society of London Philosophical Transactions, ser. A, v. 280, no. 1298, p. 605–628, https://doi.org /10.1098/rsta.1976.0015.

Walker, J.D., 1988, Permian and Triassic rocks of the Mojave Desert and their implications for timing and mechanisms of continental truncation: Tectonics, v. 7, p. 685–709, https:// doi.org/10.1029/TC007i003p00685.

Wallin, E.T., Coleman, D.S., Lindsley-Griffin, N., and Potter, A.W., 1995, Silurian plutonism in the Trinity terrane (Neoproterozoic and Ordovician), Klamath Mountains, California, United States: Tectonics, v. 14, p. 1007– 1013, https://doi.org/10.1029/95TC01447.

Wallin, E.T., Noto, R.C., and Gehrels, G.E., 2000, Provenance of the Antelope Mountain Quartzite, Yreka terrane, California: Evidence for large-scale late Paleozoic sinistral displacement along the North American Cordilleran margin and implications for the mid-Paleozoic fringing-arc model, in Soreghan, M.J., and Gehrels, G.E., eds., Paleozoic and Triassic Paleogeography and Tectonics of Western Nevada and Northern California: Geological Society of America Special Paper 347, p. 119–131, https://doi.org/10.1130/0-8137-2347- 7.119.

Weber, B., Iriondo, A., Premo, W.R., Hecht, L., and Schaaf, P., 2007, New insights into the history and origin of the southern Maya block, SE México: U-Pb-SHRIMP zircon geochronology from metamorphic rocks of the Chiapas massif: International Journal of Earth Sciences, v. 96, p. 253–269, https://doi.org /10.1007/s00531-006-0093-7.

Wright, J.E., 1982, Permo-Triassic accretionary subduction complex, southwestern Klamath Mountains, northern California: Journal of Geophysical Re- search, v. 87, p. 3805–3818, https://doi.org/10.1029/ JB087iB05p03805.

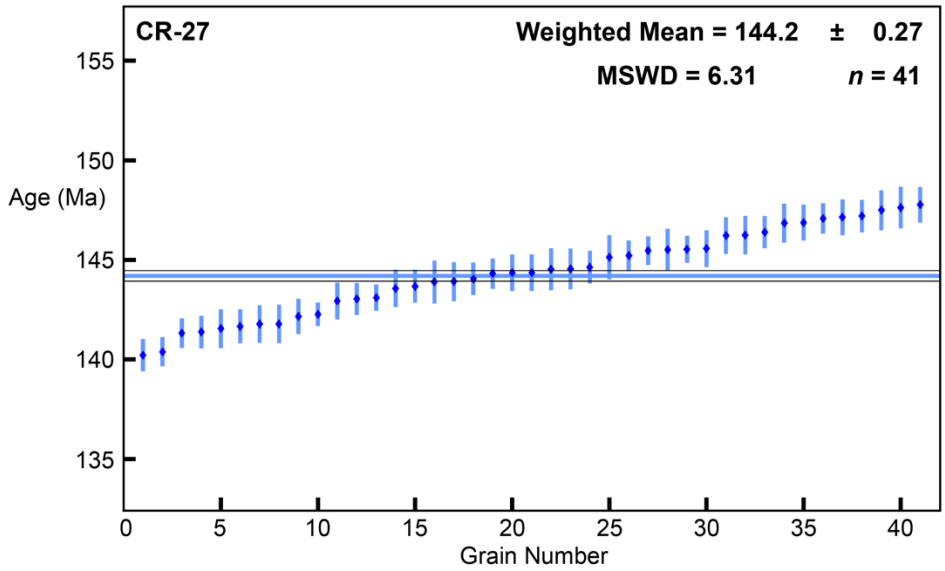
Whitmeyer, S.J., and Karlstrom, K.E., 2007, Tectonic model for the Proterozoic growth of North America: Geosphere, v. 3, no. 4, p. 220–259, https://doi.org/10.1130/GES00055.1.

APPENDIX C

U-PB DATA FROM THIS STUDY

U-Pb Geochronologic Analyses for Igneous Sample

							Isotope ratios						Apparent ages (Ma)						
Analysis	U	206Pb	U/Th	206Pb*	±	207Pb*	±	206Pb*	±	error	206Pb*	±	207Pb*	±	206Pb*	±	Best age	±	Conc
	(ppm)	204Pb		207Pb*	(%)	235U	(%)	238U	(%)	corr.	238U	(Ma)	235U	(Ma)	207Pb*	(Ma)	(Ma)	(Ma)	(%)
CR-27-Spot 21	196.67	8745.37	3.94	19.28	1.76	0.15	2.67	0.02	1.11	0.41	137.22	1.50	140.55	3.51	197.24	56.48	137.22	1.50	69.57
CR-27-Spot 29	395.67	21994.62	2.04	20.26	1.03	0.15	1.35	0.02	0.86	0.64	138.57	1.18	137.95	1.74	127.19	24.50	138.57	1.18	108.95
CR-27-Spot 27	109.16	7113.46	2.51	19.95	2.00	0.15	2.64	0.02	1.18	0.45	140.21	1.63	137.83	3.40	96.90	55.84	140.21	1.63	144.70
CR-27-Spot 13	264.90	19923.82	2.17	20.35	1.42	0.15	1.82	0.02	1.05	0.58	140.39	1.46	138.73	2.36	110.51	34.97	140.39	1.46	127.03
CR-27-Spot 23	145.83	62361.45	1.85	20.30	1.96	0.15	2.23	0.02	1.07	0.48	141.33	1.49	141.39	2.94	142.51	45.93	141.33	1.49	99.17
CR-27-Spot 44	173.46	12367.66	1.73	17.78	1.63	0.17	2.02	0.02	1.18	0.58	141.38	1.65	157.81	2.95	412.22	36.69	141.38	1.65	34.30
CR-27-Spot 36	82.35	100351.41	3.58	20.19	2.67	0.15	3.02	0.02	1.40	0.46	141.55	1.95	142.65	4.02	161.02	62.62	141.55	1.95	87.90
CR-27-Spot 32	205.95	51422.67	2.90	19.94	1.54	0.15	1.97	0.02	1.22	0.62	141.66	1.71	144.11	2.64	184.49	35.94	141.66	1.71	76.79
CR-27-Spot 20	550.94	50522.28	20.27	19.98	1.01	0.15	1.68	0.02	1.34	0.80	141.77	1.88	143.86	2.25	178.38	23.48	141.77	1.88	79.48
CR-27-Spot 6	159.99	74299.40	2.29	20.24	1.69	0.15	2.19	0.02	1.38	0.63	141.78	1.93	142.34	2.90	151.58	39.78	141.78	1.93	93.54
CR-27-Spot 42	106.12	151395.52	3.00	19.87	2.22	0.15	2.56	0.02	1.27	0.50	142.17	1.78	145.63	3.47	202.47	51.63	142.17	1.78	70.21
CR-27-Spot 28	218.88	27763.65	4.61	20.65	1.46	0.15	1.70	0.02	0.84	0.49	142.27	1.18	139.34	2.21	89.76	35.02	142.27	1.18	158.49
CR-27-Spot 17	157.79	13929.17	2.66	20.65	1.58	0.15	2.09	0.02	1.31	0.63	142.93	1.86	138.33	2.71	60.10	38.86	142.93	1.86	237.81
CR-27-Spot 10	350.66	45244.08	1.40	20.40	1.43	0.15	1.84	0.02	1.14	0.62	143.04	1.62	142.01	2.44	124.88	33.95	143.04	1.62	114.54
CR-27-Spot 4	219.73	44794.01	1.44	21.05	1.55	0.15	1.81	0.02	0.94	0.52	143.11	1.32	138.05	2.34	51.92	37.07	143.11	1.32	275.65
CR-27-Spot 35	58.92	18134.70	3.32	18.53	2.65	0.16	2.97	0.02	1.33	0.45	143.57	1.89	154.88	4.26	331.62	60.20	143.57	1.89	43.29
CR-27-Spot 26	97.00	247267.44	2.55	20.10	2.23	0.15	2.52	0.02	1.17	0.47	143.68	1.67	145.50	3.42	175.34	52.10	143.68	1.67	81.94
CR-27-Spot 45	110.65	8953.36	3.89	19.24	2.77	0.16	3.16	0.02	1.51	0.48	143.89	2.15	147.61	4.34	207.83	64.41	143.89	2.15	69.23
CR-27-Spot 43	86.46	68372.28	1.96	19.67	2.44	0.16	2.80	0.02	1.38	0.49	143.91	1.96	148.42	3.86	220.97	56.38	143.91	1.96	65.13
CR-27-Spot 31	180.78	38252.21	1.79	20.49	1.66	0.15	2.02	0.02	1.15	0.57	144.05	1.64	142.43	2.69	115.46	39.24	144.05	1.64	124.76
CR-27-Spot 49	78.05	19257.16	2.47	20.28	2.31	0.15	2.56	0.02	1.07	0.42	144.31	1.53	143.18	3.41	124.46	54.69	144.31	1.53	115.95
CR-27-Spot 22	111.71	12171.44	2.89	19.42	2.38	0.16	2.96	0.02	1.28	0.43	144.36	1.83	147.71	4.07	201.86	61.92	144.36	1.83	71.52
CR-27-Spot 5	252.34	31274.68	3.99	19.96	1.29	0.15	1.86	0.02	1.29	0.69	144.37	1.84	145.96	2.52	171.93	31.24	144.37	1.84	83.97
CR-27-Spot 8	100.19	8975.82	2.66	20.07	2.31	0.15	2.76	0.02	1.48	0.54	144.53	2.11	141.89	3.65	98.10	55.04	144.53	2.11	147.32
CR-27-Spot 16	96.70	18881.43	2.21	19.10	3.08	0.16	3.44	0.02	1.43	0.42	144.55	2.04	151.41	4.84	260.18	71.88	144.55	2.04	55.56
CR-27-Spot 11	112.54	10782.83	2.22	19.22	1.69	0.16	2.07	0.02	1.14	0.55	144.63	1.63	148.90	2.87	217.31	40.01	144.63	1.63	66.56
CR-27-Spot 9	274.56	52284.68	2.01	20.37	1.12	0.15	1.92	0.02	1.56	0.81	145.13	2.23	144.22	2.59	129.28	26.62	145.13	2.23	112.26
CR-27-Spot 37	68.09	14140.56	4.62	19.98	3.05	0.15	3.24	0.02	1.07	0.33	145.21	1.54	145.06	4.38	142.63	71.80	145.21	1.54	101.81
CR-27-Spot 47	148.93	24168.39	2.46	20.07	1.73	0.15	2.01	0.02	1.00	0.50	145.47	1.44	146.11	2.73	156.62	40.72	145.47	1.44	92.88
CR-27-Spot 30	145.51	9410.62	3.04	20.54	1.73	0.15	2.36	0.02	1.47	0.62	145.51	2.11	140.15	3.09	50.27	44.05	145.51	2.11	289.45
CR-27-Spot 24	113.67	26219.85	1.88	20.71	1.96	0.15	2.18	0.02	0.94	0.43	145.53	1.36	141.82	2.89	80.18	46.65	145.53	1.36	181.51
CR-27-Spot 15	70.19	11779.97	2.19	19.73	2.37	0.16	2.73	0.02	1.29	0.47	145.57	1.86	146.50	3.72	161.56	56.20	145.57	1.86	90.10
CR-27-Spot 33	68.71	16816.56	2.69	20.23	2.89	0.15	3.16	0.02	1.28	0.40	146.23	1.85	144.83	4.26	121.94	68.08	146.23	1.85	119.92
CR-27-Spot 50	168.26	42718.25	1.61	20.45	1.75	0.15	2.20	0.02	1.34	0.61	146.25	1.93	145.00	2.97	124.54	41.15	146.25	1.93	117.43
CR-27-Spot 48	146.59	11988.76	3.51	20.20	1.70	0.15	2.40	0.02	1.12	0.47	146.39	1.62	144.35	3.23	110.92	50.11	146.39	1.62	131.99
CR-27-Spot 12	150.22	37270.56	1.76	19.89	1.96	0.16	2.41	0.02	1.34	0.56	146.85	1.95	148.83	3.34	180.43	46.66	146.85	1.95	81.39
CR-27-Spot 38	121.99	53084.96	4.15	19.52	2.31	0.16	2.64	0.02	1.25	0.47	146.88	1.82	152.09	3.72	234.06	53.56	146.88	1.82	62.75
CR-27-Spot 18	85.10	17701.32	2.25	20.89	2.82	0.15	3.02	0.02	1.06	0.35	147.09	1.54	141.26	3.98	44.49	NA	147.09	1.54	330.62
CR-27-Spot 7	51.86	6203.86	6.88	20.33	2.79	0.15	3.28	0.02	1.24	0.38	147.15	1.81	140.48	4.31	29.23	NA	147.15	1.81	503.47
CR-27-Spot 34	87.85	6768.32	2.99	19.80	2.74	0.15	3.03	0.02	1.13	0.37	147.21	1.65	145.14	4.10	111.43	66.36	147.21	1.65	132.12
CR-27-Spot 40	144.87	42032.39	7.79	21.00	1.84	0.15	2.30	0.02	1.38	0.60	147.50	2.01	142.42	3.06	58.63	43.98	147.50	2.01	251.56
CR-27-Spot 39	100.38	7306.87	2.55	20.82	2.03	0.15	3.32	0.02	1.44	0.43	147.63	2.10	138.94	4.31	NA	NA	147.63	2.10	
CR-27-Spot 46	203.05	32677.24	2.14	21.39	1.59	0.15	2.01	0.02	1.22	0.60	147.77	1.78	140.12	2.64	12.36	NA	147.77	1.78	1195.15
CR-27-Spot 41	113.60	65301.12	2.49	16.27	2.68	0.20	2.89	0.02	1.09	0.38	151.45	1.63	185.41	4.90	643.47	57.55	151.45	1.63	23.54
CR-27-Spot 2	355.46	32137.02	1.83	20.51	1.27	0.16	1.68	0.02	1.09	0.65	152.38	1.64	149.72	2.34	107.85	30.29	152.38	1.64	141.29



U-Pb Geochronologic Analyses for Detrital Samples

Sample Name	Grain ID	206Pb_204Pb	U_ppm	U_Th	207Pb_206Pb	207Pb_206Pb_err	207Pb_235U	207Pb_235U_err	206Pb_238U	206Pb_238U_err	75Age	75Age_err	68Age	68Age_err	76Age	76Age_err	BestAge	Best Age_err
CR-2	CR-2_Spot 1	25700.36	271.71	1.64	20.48	1.07	0.10	1.60	0.01	1.18	93.77	1.43	93.40	1.09	103.36	25.66	93.40	1.09
CR-2	CR-2_Spot 2	103614.41	1151.56	1.51	20.88	1.04	0.10	1.73	0.01	1.38	93.91	1.55	94.55	1.30	77.77	24.84	94.55	1.30
CR-2	CR-2_Spot 3	70747.18	1108.26	1.26	20.49	0.79	0.10	1.64	0.02	1.43	100.65	1.57	99.85	1.42	119.59	18.80	99.85	1.42
CR-2	CR-2_Spot 4	114730.74	1216.79	1.83	21.02	0.97	0.10	1.66	0.02	1.34	95.20	1.51	96.50	1.29	62.77	23.17	96.50	1.29
CR-2	CR-2_Spot 5	13576.73	314.63	1.22	20.51	1.09	0.16	1.88	0.02	1.02	146.45	2.56	150.70	1.52	78.13	37.50	150.70	1.52
CR-2	CR-2_Spot 6	72812.47	1112.01	1.50	20.18	1.01	0.10	1.58	0.01	1.21	98.16	1.47	95.65	1.14	159.52	23.76	95.65	1.14
CR-2	CR-2_Spot 7	2228529.15	108.80	1.38	8.55	0.91	5.36	1.46	0.33	1.14	1878.97	12.48	1853.81	18.35	1906.89	16.36	1906.89	16.36
CR-2	CR-2_Spot 8	14380.96	431.05	2.42	20.59	1.13	0.10	1.95	0.01	1.59	94.54	1.76	95.46	1.51	71.42	26.79	95.46	1.51
CR-2	CR-2_Spot 9	83654.77	1735.42	2.57	20.52	0.81	0.11	1.42	0.02	1.17	107.30	1.45	106.07	1.23	134.53	19.04	106.07	1.23
CR-2	CR-2_Spot 10	8754.10	117.16	1.53	19.84	1.95	0.12	2.56	0.02	1.35	116.93	2.83	115.63	1.55	143.38	50.99	115.63	1.55
CR-2	CR-2_Spot 11	14382.46	200.14	2.63	20.21	1.25	0.16	1.67	0.02	1.10	147.54	2.30	148.52	1.62	131.70	29.62	148.52	1.62
CR-2	CR-2_Spot 12	285416.59	1049.31	1.62	20.84	0.99	0.09	1.79	0.01	1.49	89.50	1.53	88.92	1.32	105.00	23.51	88.92	1.32
CR-2	CR-2_Spot 13	865960.79	406.07	9.07	9.90	0.87	3.93	1.92	0.28	1.70	1619.06	15.50	1595.35	24.08	1650.01	16.21	1650.01	16.21
CR-2	CR-2_Spot 14	49830.20	339.59	1.49	20.24	1.47	0.11	2.04	0.02	1.41	104.60	2.03	102.17	1.43	160.33	34.45	102.17	1.43
CR-2	CR-2_Spot 15	144090192.54	356.87	1.86	20.25	1.57	0.11	2.13	0.02	1.44	103.74	2.10	100.74	1.44	173.19	36.76	100.74	1.44
CR-2	CR-2_Spot 16	61167.57	622.09	1.60	21.06	1.47	0.11	2.07	0.02	1.46	104.11	2.04	105.70	1.53	68.03	34.91	105.70	1.53
CR-2	CR-2_Spot 17	23785.78	751.46	1.74	20.90	1.27	0.09	1.83	0.01	1.32	91.59	1.60	92.49	1.21	68.10	30.17	92.49	1.21
CR-2	CR-2_Spot 18	222736.29	105.23	2.21	5.86	0.83	11.60	1.32	0.49	1.03	2572.95	12.38	2577.45	21.95	2569.39	13.86	2569.39	13.86
CR-2	CR-2_Spot 19	4298232.64	170.01	2.06	19.97	1.72	0.13	2.19	0.02	1.35	123.43	2.54	119.39	1.60	201.96	39.86	119.39	1.60
CR-2	CR-2_Spot 20	5909.49	237.20	1.45	20.54	1.45	0.12	1.95	0.02	1.30	117.05	2.16	122.31	1.58	11.43	NA	122.31	1.58
CR-2	CR-2_Spot 21	52801.18	507.78	2.04	20.53	1.13	0.12	2.00	0.02	1.64	110.73	2.10	110.11	1.79	124.15	26.86	110.11	1.79
CR-2	CR-2_Spot 22	46756.54	832.11	1.78	20.96	1.24	0.09	1.85	0.01	1.37	90.68	1.61	91.37	1.24	72.37	29.61	91.37	1.24
CR-2	CR-2_Spot 23	54138.45	635.45	1.43	20.65	1.13	0.10	1.88	0.01	1.50	92.26	1.66	91.55	1.37	110.63	26.80	91.55	1.37
CR-2	CR-2_Spot 24	59473.87	604.20	1.24	20.72	1.24	0.12	1.77	0.02	1.26	116.91	1.96	117.58	1.47	103.38	29.54	117.58	1.47
CR-2	CR-2_Spot 25	39674.32	393.03	1.65	20.31	1.29	0.16	1.81	0.02	1.26	146.54	2.46	146.61	1.83	145.52	30.30	146.61	1.83
CR-2	CR-2_Spot 26	15296.50	616.76	2.99	20.72	1.00	0.09	1.70	0.01	1.37	90.14	1.46	90.99	1.24	67.77	23.76	90.99	1.24
CR-2	CR-2_Spot 27	24786.26	392.93	1.54	16.56	4.38	0.17	4.72	0.02	1.69	158.50	6.93	130.56	2.19	599.57	95.47	130.56	2.19
CR-2	CR-2_Spot 28	31912.87	717.62	1.95	20.74	1.08	0.11	1.83	0.02	1.47	103.73	1.80	104.27	1.52	91.33	25.72	104.27	1.52
CR-2	CR-2_Spot 29	35848.57	501.58	1.99	20.63	1.32	0.10	1.88	0.01	1.34	92.61	1.67	92.15	1.23	104.60	31.19	92.15	1.23
CR-2	CR-2_Spot 30	49922.73	177.18	3.36	20.55	1.66	0.12	2.22	0.02	1.47	111.12	2.34	110.70	1.61	120.06	39.20	110.70	1.61
CR-2	CR-2_Spot 31	95747.67	1179.55	1.63	21.09	0.98	0.09	1.67	0.01	1.36	90.64	1.45	91.61	1.23	65.12	23.33	91.61	1.23
CR-2	CR-2_Spot 32	67297.70	1080.73	1.44	20.79	0.98	0.11	1.61	0.02	1.27	103.45	1.58	103.78	1.31	95.79	23.36	103.78	1.31

CR-2	CR-2_Spot 33	47192.32	573.10	2.10	20.49	0.84	0.17	1.46	0.03	1.20	160.24	2.17	162.68	1.93	124.34	19.66	162.68	1.93
CR-2	CR-2_Spot 34	22431.14	856.83	1.37	20.08	1.07	0.10	1.94	0.02	1.60	99.41	1.84	97.07	1.55	155.91	25.69	97.07	1.55
CR-2	CR-2_Spot 35	25089.87	592.01	1.96	20.54	1.18	0.10	2.01	0.01	1.62	94.32	1.81	93.92	1.51	104.64	28.21	93.92	1.51
CR-2	CR-2_Spot 36	170084.33	231.59	2.13	5.56	0.88	12.47	1.55	0.50	1.28	2640.39	14.62	2625.58	27.70	2651.74	14.54	2651.74	14.54
CR-2	CR-2_Spot 37	58480.44	413.62	3.39	19.24	1.21	0.27	1.81	0.04	1.35	238.99	3.86	235.49	3.11	273.43	27.78	235.49	3.11
CR-2	CR-2_Spot 38	50269.05	397.38	1.67	20.36	1.82	0.10	2.28	0.02	1.36	100.51	2.18	98.86	1.33	139.92	43.05	98.86	1.33
CR-2	CR-2_Spot 40	69734.16	1194.35	3.53	20.52	0.91	0.11	1.54	0.02	1.23	106.58	1.55	105.91	1.30	121.50	21.57	105.91	1.30
CR-2	CR-2_Spot 41	56453.15	643.80	0.71	20.64	1.03	0.15	1.86	0.02	1.55	145.25	2.52	147.73	2.26	104.99	24.52	147.73	2.26
CR-2	CR-2_Spot 42	14846.16	470.55	1.62	20.89	1.37	0.11	2.05	0.02	1.52	102.88	2.01	105.64	1.59	39.46	32.88	105.64	1.59
CR-2	CR-2_Spot 43	105213.80	1147.46	0.48	20.29	0.97	0.16	1.68	0.02	1.37	148.47	2.32	148.28	2.00	151.39	22.81	148.28	2.00
CR-2	CR-2_Spot 44	12716.17	306.02	2.08	21.12	1.27	0.11	1.95	0.02	1.44	103.46	1.92	107.72	1.54	6.36	NA	107.72	1.54
CR-2	CR-2_Spot 45	62305.45	420.54	1.88	20.62	1.23	0.12	1.73	0.02	1.21	111.56	1.83	111.61	1.33	110.63	29.26	111.61	1.33
CR-2	CR-2_Spot 46	66341.77	172.01	1.04	20.39	1.95	0.12	2.32	0.02	1.25	115.85	2.54	114.69	1.42	139.63	45.85	114.69	1.42
CR-2	CR-2_Spot 47	45112.51	918.85	1.93	20.02	0.89	0.18	1.61	0.03	1.35	164.61	2.45	163.74	2.18	177.14	20.67	163.74	2.18
CR-2	CR-2_Spot 48	36831.16	438.80	1.60	19.75	1.12	0.17	1.92	0.03	1.55	163.53	2.90	160.63	2.46	205.77	26.25	160.63	2.46
CR-2	CR-2_Spot 49	419259.94	558.54	1.38	21.09	1.40	0.10	2.00	0.02	1.43	96.80	1.85	97.88	1.39	70.24	33.19	97.88	1.39
CR-2	CR-2_Spot 50	66670.09	748.97	1.90	20.61	1.06	0.12	1.71	0.02	1.33	111.23	1.80	111.07	1.47	114.74	25.15	111.07	1.47
CR-2	CR-2_Spot 51	951422.32	640.50	2.29	20.44	1.04	0.11	1.83	0.02	1.50	105.89	1.84	104.16	1.55	144.97	24.35	104.16	1.55
CR-2	CR-2_Spot 52	266294.31	451.47	3.36	20.45	0.98	0.17	1.88	0.03	1.60	161.30	2.80	162.67	2.56	141.22	23.09	162.67	2.56
CR-2	CR-2_Spot 53	459373.49	354.58	2.13	11.63	0.97	2.64	1.67	0.22	1.36	1312.67	12.31	1298.46	16.00	1335.92	18.76	1335.92	18.76
CR-2	CR-2_Spot 54	30268.94	749.89	1.67	21.04	1.15	0.09	2.13	0.01	1.79	91.86	1.87	93.51	1.66	49.39	27.74	93.51	1.66
CR-2	CR-2_Spot 55	113189.29	587.42	1.65	20.29	1.20	0.15	1.79	0.02	1.33	142.84	2.39	142.23	1.88	152.98	28.04	142.23	1.88
CR-2	CR-2_Spot 56	42251.70	527.40	5.32	19.64	1.33	0.17	2.13	0.02	1.66	159.39	3.14	155.24	2.55	221.59	30.88	155.24	2.55
CR-2	CR-2_Spot 57	52437.23	621.03	2.55	20.53	1.12	0.10	1.83	0.02	1.45	97.90	1.71	96.95	1.40	121.09	26.41	96.95	1.40
CR-2	CR-2_Spot 58	63162.33	852.57	2.18	20.96	1.17	0.09	1.89	0.01	1.49	87.71	1.59	88.22	1.30	74.10	27.91	88.22	1.30
CR-2	CR-2_Spot 59	87166.23	996.32	1.44	20.49	1.03	0.15	1.84	0.02	1.52	143.99	2.47	144.97	2.18	128.03	24.20	144.97	2.18
CR-2	CR-2_Spot 60	140195.31	294.96	2.01	6.80	0.90	7.10	1.38	0.35	1.04	2124.57	12.29	1938.58	17.46	2309.69	15.53	2309.69	15.53
CR-2	CR-2_Spot 61	155739.05	327.65	1.20	20.85	0.97	0.11	1.46	0.02	1.09	109.92	1.52	110.73	1.19	92.36	22.98	110.73	1.19
CR-2	CR-2_Spot 62	4865.70	153.69	1.97	21.28	1.73	0.11	2.16	0.02	1.25	103.29	2.13	112.92	1.40	NA	NA	112.92	1.40
CR-2	CR-2_Spot 63	7348.92	156.63	1.73	20.51	1.98	0.13	3.05	0.02	1.11	124.91	3.59	129.56	1.43	37.28	NA	129.56	1.43
CR-2	CR-2_Spot 64	19430.68	478.42	1.94	20.79	1.16	0.12	1.79	0.02	1.36	118.04	1.99	120.56	1.62	67.46	27.62	120.56	1.62
CR-2	CR-2_Spot 65	34507.12	1288.98	2.08	20.84	0.88	0.09	1.81	0.01	1.58	90.07	1.56	90.54	1.42	77.78	20.93	90.54	1.42
CR-2	CR-2_Spot 66	440369.30	229.63	2.61	6.40	0.82	8.50	1.43	0.39	1.17	2285.88	13.01	2143.07	21.41	2416.13	13.92	2416.13	13.92
CR-2	CR-2_Spot 67	14403.62	775.60	2.19	21.05	1.31	0.09	2.01	0.01	1.52	88.76	1.70	91.24	1.38	22.78	NA	91.24	1.38
CR-2	CR-2_Spot 68	54057.23	1811.37	1.05	20.65	1.05	0.09	1.90	0.01	1.58	89.41	1.62	88.79	1.39	106.00	24.93	88.79	1.39
CR-2	CR-2_Spot	63477.43	633.53	1.96	20.63	1.06	0.10	1.83	0.01	1.49	94.35	1.65	93.74	1.39	109.95	25.09	93.74	1.39

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CR-2	CR-2_Spot 70	61819.91	709.74	1.90	20.78	1.12	0.10	2.03	0.01	1.69	93.34	1.81	93.37	1.57	92.66	26.66	93.37	1.57
CR-2	CR-2_Spot 71	39518.16	1100.22	1.51	20.77	1.16	0.09	1.86	0.01	1.45	87.37	1.55	87.34	1.26	88.28	27.49	87.34	1.26
CR-2	CR-2_Spot 72	50681.88	340.89	2.34	19.41	0.88	0.17	1.48	0.02	1.18	162.07	2.21	155.98	1.82	252.08	20.42	155.98	1.82
CR-2	CR-2_Spot 73	39061.29	379.12	2.26	20.54	1.17	0.10	1.50	0.02	0.95	100.66	1.44	100.06	0.94	114.89	27.54	100.06	0.94
CR-2	CR-2_Spot 74	32356.49	473.32	1.76	22.13	1.30	0.11	2.01	0.02	1.52	109.85	2.09	118.30	1.79	NA	NA	118.30	1.79
CR-2	CR-2_Spot 75	85549.61	1571.99	1.24	20.89	0.89	0.10	1.64	0.01	1.38	92.48	1.45	92.80	1.27	84.32	21.02	92.80	1.27
CR-2	CR-2_Spot 76	479398.13	864.53	1.82	20.77	1.14	0.09	1.97	0.01	1.60	90.96	1.71	90.39	1.44	106.07	26.94	90.39	1.44
CR-2	CR-2_Spot 77	21885.57	376.28	1.70	20.05	1.08	0.16	1.40	0.02	0.89	149.00	1.94	148.25	1.31	160.81	25.22	148.25	1.31
CR-2	CR-2_Spot 78	73379.33	207.87	1.44	20.40	1.43	0.16	1.99	0.02	1.38	150.10	2.78	150.54	2.06	143.23	33.59	150.54	2.06
CR-2	CR-2_Spot 79	25897.97	384.38	1.25	20.93	1.21	0.10	1.89	0.02	1.45	98.70	1.78	100.18	1.44	62.99	28.85	100.18	1.44
CR-2	CR-2_Spot 80	49365.19	210.91	1.44	19.65	1.18	0.17	1.80	0.02	1.36	163.02	2.71	158.70	2.13	226.11	27.27	158.70	2.13
CR-2	CR-2_Spot 81	10828.09	192.40	1.41	19.44	1.80	0.12	2.51	0.02	1.11	110.76	2.64	106.64	1.17	200.31	52.41	106.64	1.17
CR-2	CR-2_Spot 82	1636329.81	257.02	1.35	19.84	1.24	0.17	1.79	0.03	1.29	163.69	2.71	160.20	2.05	214.53	28.76	160.20	2.05
CR-2	CR-2_Spot 83	138327.94	495.23	1.68	20.54	1.34	0.11	2.13	0.02	1.65	104.47	2.11	103.44	1.69	127.98	31.62	103.44	1.69
CR-2	CR-2_Spot 84	62177.13	596.06	2.19	11.10	0.82	0.45	1.58	0.04	1.35	379.28	5.01	231.26	3.07	1423.83	15.77	231.26	3.07
CR-2	CR-2_Spot 85	15991.23	254.98	2.64	20.64	1.27	0.17	1.73	0.03	1.15	155.96	2.51	161.20	1.82	77.02	30.90	161.20	1.82
CR-2	CR-2_Spot 86	62366.84	1066.79	2.48	20.84	0.97	0.09	1.55	0.01	1.20	88.22	1.31	88.33	1.06	85.40	23.07	88.33	1.06
CR-2	CR-2_Spot 87	11887.60	302.03	1.39	20.12	1.41	0.16	1.88	0.02	1.25	146.72	2.57	148.30	1.83	121.26	33.25	148.30	1.83
CR-2	CR-2_Spot 88	136354.56	500.82	0.74	20.59	1.09	0.15	1.96	0.02	1.63	142.38	2.60	143.71	2.31	120.26	25.80	143.71	2.31
CR-2	CR-2_Spot 89	31842.40	671.73	2.62	20.87	0.96	0.10	2.03	0.02	1.77	98.67	1.91	99.83	1.76	70.65	23.46	99.83	1.76
CR-2	CR-2_Spot 90	14085.84	399.81	1.28	20.63	1.18	0.12	1.73	0.02	1.26	115.98	1.89	118.24	1.48	69.75	28.09	118.24	1.48
CR-2	CR-2_Spot 91	115094.76	544.82	2.06	20.47	1.12	0.10	1.84	0.01	1.45	96.76	1.70	95.28	1.38	133.55	26.41	95.28	1.38
CR-2	CR-2_Spot 92	21507.32	379.27	2.42	18.94	1.57	0.12	2.06	0.02	1.29	113.51	2.21	105.28	1.34	289.64	36.83	105.28	1.34
CR-2	CR-2_Spot 93	117351.10	913.71	1.72	20.91	1.14	0.09	2.01	0.01	1.65	87.25	1.68	87.36	1.43	84.15	27.10	87.36	1.43
CR-2	CR-2_Spot 94	4918.90	149.91	1.93	19.90	2.22	0.12	2.68	0.02	1.50	115.95	2.93	118.60	1.76	61.80	52.85	118.60	1.76
CR-2	CR-2_Spot 95	7274.89	248.71	1.98	19.60	1.70	0.11	2.09	0.02	1.20	105.12	2.08	103.28	1.23	147.03	39.95	103.28	1.23
CR-2	CR-2_Spot 96	31937.08	665.94	2.54	20.54	0.98	0.10	1.73	0.01	1.42	92.31	1.53	91.65	1.29	109.46	23.28	91.65	1.29
CR-2	CR-2_Spot 97	8914.24	419.10	2.48	20.62	1.30	0.11	2.13	0.02	1.69	103.79	2.10	106.51	1.79	41.62	31.06	106.51	1.79
CR-2	CR-2_Spot 98	31402.81	980.93	1.64	20.78	1.23	0.10	1.74	0.01	1.23	93.53	1.55	93.94	1.14	83.01	29.29	93.94	1.14
CR-2	CR-2_Spot 99	45594.47	1691.85	1.40	20.45	0.97	0.09	1.57	0.01	1.24	88.52	1.33	87.04	1.07	128.59	22.73	87.04	1.07
CR-2	CR-2_Spot 100	70398.58	929.59	1.48	20.42	0.78	0.12	1.43	0.02	1.19	118.15	1.59	117.23	1.38	136.84	18.75	117.23	1.38
CR-2	CR-2_Spot 101	8232.92	115.46	2.08	19.75	2.14	0.16	2.67	0.02	1.57	147.18	3.66	147.62	2.29	140.16	50.69	147.62	2.29
CR-2	CR-2_Spot 102	66133.17	539.13	1.86	20.27	1.49	0.10	1.90	0.02	1.17	100.78	1.82	98.58	1.14	153.23	35.04	98.58	1.14
CR-2	CR-2_Spot 103	48061.77	957.48	2.17	20.97	1.00	0.09	1.60	0.01	1.24	88.84	1.36	89.62	1.10	68.00	24.22	89.62	1.10
CR-2	CR-2_Spot 104	82139.48	452.60	1.71	19.98	1.08	0.16	1.73	0.02	1.35	150.58	2.42	148.22	1.98	187.98	25.15	148.22	1.98

CR-2	CR-2_Spot 105	38829.16	894.41	1.74	19.43	1.30	0.18	1.84	0.03	1.31	169.43	2.87	164.23	2.12	242.63	29.86	164.23	2.12
CR-2	CR-2_Spot 106	242023.32	461.16	4.00	9.36	0.81	4.64	1.40	0.32	1.14	1756.24	11.66	1766.30	17.58	1744.27	14.81	1744.27	14.81
CR-2	CR-2_Spot 107	604861.16	360.63	1.90	17.55	2.40	0.15	2.95	0.02	1.71	142.18	3.91	122.31	2.07	488.14	53.05	122.31	2.07
CR-2	CR-2_Spot 108	252546.54	65.19	1.53	5.36	0.86	11.96	1.51	0.47	1.24	2600.98	14.19	2462.05	25.46	2711.02	14.25	2711.02	14.25
CR-2	CR-2_Spot 109	228116.97	289.24	3.84	9.21	0.74	4.82	1.22	0.32	0.97	1788.23	10.22	1802.04	15.19	1772.14	13.45	1772.14	13.45
CR-2	CR-2_Spot 110	110311.17	248.40	1.62	8.83	0.77	4.28	1.60	0.27	1.40	1689.55	13.19	1564.97	19.50	1847.81	14.01	1847.81	14.01
CR-2	CR-2_Spot 111	68947.39	905.38	2.21	20.67	1.07	0.10	1.86	0.01	1.51	94.24	1.67	93.88	1.41	103.40	25.57	93.88	1.41
CR-2	CR-2_Spot 112	14425.47	394.32	2.00	20.29	1.37	0.11	1.86	0.02	1.26	105.79	1.87	105.72	1.32	107.48	32.41	105.72	1.32
CR-2	CR-2_Spot 113	2530.76	30.45	2.79	17.87	3.78	0.16	4.47	0.02	1.24	149.88	6.23	146.95	1.81	196.50	99.79	146.95	1.81
CR-2	CR-2_Spot 114	43553.91	689.20	2.85	20.80	0.96	0.10	1.76	0.02	1.46	95.52	1.60	96.08	1.39	81.30	23.23	96.08	1.39
CR-2	CR-2_Spot 115	15332.71	372.83	1.15	20.59	1.14	0.10	1.57	0.02	1.09	95.43	1.43	96.24	1.04	75.35	27.00	96.24	1.04
CR-2	CR-2_Spot 116	14253.57	252.65	1.77	20.73	1.39	0.10	1.88	0.02	1.24	98.26	1.76	100.05	1.23	55.05	33.74	100.05	1.23
CR-2	CR-2_Spot 117	36047.14	1439.16	1.66	20.94	0.91	0.09	1.65	0.01	1.37	89.00	1.41	90.08	1.23	59.94	21.82	90.08	1.23
CR-2	CR-2_Spot 118	148434.22	1735.81	1.61	20.58	0.80	0.11	1.46	0.02	1.22	110.11	1.53	109.82	1.33	116.36	18.98	109.82	1.33
CR-2	CR-2_Spot 119	127241.66	227.09	1.28	20.11	1.85	0.10	2.15	0.02	1.09	99.52	2.04	96.53	1.05	171.66	43.27	96.53	1.05
CR-2	CR-2_Spot 120	144799.35	2058.53	3.31	20.77	0.79	0.13	1.54	0.02	1.33	121.87	1.77	123.17	1.62	96.70	18.65	123.17	1.62
CR-2	CR-2_Spot 121	36387.70	689.27	1.21	20.51	1.03	0.15	1.80	0.02	1.46	145.52	2.44	147.61	2.13	111.70	24.71	147.61	2.13
CR-2	CR-2_Spot 122	56451.86	439.01	1.78	20.63	1.22	0.10	1.81	0.01	1.32	93.86	1.62	93.42	1.23	104.87	29.02	93.42	1.23
CR-2	CR-2_Spot 123	5749.84	73.74	2.12	19.91	2.22	0.16	2.68	0.02	1.45	150.62	3.75	155.31	2.22	77.27	53.46	155.31	2.22
CR-2	CR-2_Spot 124	51680.89	730.66	3.77	20.64	1.09	0.10	1.64	0.02	1.22	97.60	1.53	97.39	1.18	102.72	26.12	97.39	1.18
CR-2	CR-2_Spot 125	19073.54	384.11	1.17	20.32	1.15	0.12	2.06	0.02	1.51	118.39	2.30	118.62	1.78	113.69	33.05	118.62	1.78
CR-2	CR-2_Spot 126	8161.57	188.52	1.74	19.04	1.51	0.16	1.96	0.02	1.26	151.49	2.76	147.03	1.82	221.97	34.97	147.03	1.82
CR-2	CR-2_Spot 127	88486.89	1187.21	1.39	20.59	1.02	0.10	1.88	0.01	1.58	93.23	1.68	92.51	1.45	111.52	24.14	92.51	1.45
CR-2	CR-2_Spot 128	105705.96	320.06	2.76	20.40	1.54	0.17	2.47	0.03	1.93	160.37	3.67	162.20	3.10	133.43	36.18	162.20	3.10
CR-2	CR-2_Spot 129	294809.69	294.59	1.63	20.35	1.26	0.12	1.93	0.02	1.47	116.23	2.12	114.86	1.67	144.37	29.47	114.86	1.67
CR-2	CR-2_Spot 130	42322.49	501.24	2.49	20.66	0.98	0.09	1.76	0.01	1.46	90.44	1.52	90.33	1.31	93.27	23.13	90.33	1.31
CR-2	CR-2_Spot 131	13589.71	278.48	2.08	20.82	1.61	0.11	2.41	0.02	1.59	110.48	2.52	113.90	1.80	37.37	NA	113.90	1.80
CR-2	CR-2_Spot 132	155890.51	646.93	1.77	19.97	1.00	0.12	1.87	0.02	1.58	119.04	2.10	115.73	1.81	185.72	23.19	115.73	1.81
CR-2	CR-2_Spot 133	19937.33	549.26	2.63	20.12	1.29	0.09	2.18	0.01	1.74	90.62	1.89	88.90	1.53	136.05	30.80	88.90	1.53
CR-2	CR-2_Spot 134	124498.97	689.54	3.58	20.32	0.81	0.18	1.47	0.03	1.23	167.84	2.28	169.65	2.06	142.48	19.04	169.65	2.06
CR-2	CR-2_Spot 135	82509.03	1493.21	2.05	20.48	0.98	0.11	1.78	0.02	1.49	109.29	1.85	108.78	1.60	120.35	23.23	108.78	1.60
CR-2	CR-2_Spot 136	31529.55	341.89	2.62	20.12	1.18	0.17	1.67	0.03	1.18	159.71	2.46	160.42	1.86	149.23	27.66	160.42	1.86
CR-2	CR-2_Spot 137	76215.85	827.23	1.74	20.64	1.01	0.09	1.96	0.01	1.68	87.64	1.65	87.14	1.46	101.13	23.91	87.14	1.46
CR-2	CR-2_Spot 138	34490483.12	807.50	3.64	20.32	0.92	0.18	1.61	0.03	1.32	168.12	2.50	169.51	2.21	148.69	21.61	169.51	2.21
CR-2	CR-2_Spot 139	19967.63	524.76	3.00	20.80	0.96	0.12	1.89	0.02	1.48	113.25	2.03	115.89	1.70	58.17	28.20	115.89	1.70
CR-2	CR-2_Spot	25134.80	407.09	2.20	20.90	1.24	0.10	1.80	0.02	1.29	95.30	1.64	96.92	1.24	55.11	29.91	96.92	1.24

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CR-2	CR-2_Spot 141	133932.08	135.93	1.24	9.89	0.84	4.02	1.39	0.29	1.11	1638.85	11.31	1639.96	16.07	1637.40	15.56	1637.40	15.56
CR-2	CR-2_Spot 142	114332.40	1077.83	2.00	20.62	1.04	0.12	1.65	0.02	1.28	116.87	1.82	117.21	1.48	110.05	24.46	117.21	1.48
CR-2	CR-2_Spot 143	10494.86	240.59	2.10	19.42	1.89	0.11	2.42	0.02	1.50	105.82	2.44	102.06	1.52	191.39	44.29	102.06	1.52
CR-2	CR-2_Spot 144	18286.46	1001.91	1.44	20.33	1.01	0.10	1.74	0.01	1.42	95.32	1.59	94.67	1.34	111.58	23.73	94.67	1.34
CR-2	CR-2_Spot 145	24851.40	255.49	2.87	20.26	1.36	0.12	2.00	0.02	1.34	116.76	2.20	116.12	1.54	130.00	34.80	116.12	1.54
CR-2	CR-2_Spot 146	10291.57	1044.98	1.49	20.93	1.68	0.10	4.24	0.02	3.64	93.72	3.79	97.07	3.50	9.28	NA	97.07	3.50
CR-2	CR-2_Spot 147	34721.02	602.85	1.72	20.45	0.98	0.10	1.44	0.02	1.04	100.87	1.38	100.20	1.04	116.73	23.45	100.20	1.04
CR-2	CR-2_Spot 148	154642.24	822.05	1.97	20.83	1.02	0.12	1.82	0.02	1.51	115.63	1.99	116.94	1.75	88.72	24.20	116.94	1.75
CR-2	CR-2_Spot 149	157940.47	907.44	2.31	20.49	0.94	0.10	1.53	0.02	1.20	99.75	1.45	98.48	1.17	130.31	22.13	98.48	1.17
CR-2	CR-2_Spot 150	647192.62	734.81	2.53	20.55	1.14	0.09	2.08	0.01	1.74	91.19	1.81	89.84	1.55	126.53	26.87	89.84	1.55
CR-2	CR-2_Spot 151	7631.88	337.62	2.42	20.14	1.53	0.12	1.92	0.02	1.16	118.88	2.15	120.80	1.38	80.60	36.35	120.80	1.38
CR-2	CR-2_Spot 152	55564.75	1777.61	1.89	20.83	0.85	0.10	1.62	0.01	1.37	93.73	1.45	94.19	1.28	82.07	20.28	94.19	1.28
CR-2	CR-2_Spot 153	37168.07	345.40	1.92	20.57	1.15	0.12	1.87	0.02	1.46	116.94	2.07	117.47	1.70	106.10	27.70	117.47	1.70
CR-2	CR-2_Spot 154	40808.93	358.85	2.06	20.73	1.35	0.12	1.89	0.02	1.32	113.25	2.02	114.28	1.49	91.60	32.01	114.28	1.49
CR-2	CR-2_Spot 155	22017.79	116.21	2.05	20.56	2.26	0.15	2.55	0.02	1.16	146.17	3.47	149.23	1.71	96.83	53.65	149.23	1.71
CR-2	CR-2_Spot 156	13912.57	391.13	1.40	20.65	1.36	0.10	2.28	0.01	1.44	92.62	2.02	93.64	1.34	66.33	42.00	93.64	1.34
CR-2	CR-2_Spot 157	73787.15	1328.93	1.04	3.95	14.86	0.51	14.92	0.01	1.37	415.30	50.89	92.81	1.26	3201.93	236.37	92.81	1.26
CR-2	CR-2_Spot 158	14211.13	236.68	2.24	17.01	2.35	0.17	2.53	0.02	0.92	158.32	3.71	135.20	1.23	519.93	51.76	135.20	1.23
CR-2	CR-2_Spot 159	34394.99	722.96	2.83	20.39	1.13	0.12	2.01	0.02	1.63	117.64	2.23	117.08	1.90	129.11	27.46	117.08	1.90
CR-2	CR-2_Spot 160	31794817.87	1140.45	1.86	20.61	1.04	0.09	1.96	0.01	1.67	91.88	1.72	90.62	1.50	124.64	24.48	90.62	1.50
CR-2	CR-2_Spot 161	78603.84	480.65	1.78	20.58	0.98	0.10	1.67	0.01	1.35	94.32	1.51	93.37	1.25	118.41	23.16	93.37	1.25
CR-2	CR-2_Spot 162	23624.06	641.66	2.23	19.92	1.18	0.10	1.91	0.01	1.48	98.06	1.79	94.95	1.40	174.50	28.06	94.95	1.40
CR-2	CR-2_Spot 163	72167.09	53.19	2.66	20.50	2.44	0.15	2.82	0.02	1.42	142.76	3.76	143.64	2.01	128.21	57.48	143.64	2.01
CR-2	CR-2_Spot 164	292012.24	731.10	1.19	20.43	0.88	0.12	1.76	0.02	1.52	118.28	1.97	116.94	1.76	145.28	20.76	116.94	1.76
CR-2	CR-2_Spot 165	85195.85	1257.09	2.58	20.56	0.82	0.11	1.71	0.02	1.50	106.79	1.74	106.00	1.58	124.52	19.51	106.00	1.58
CR-2	CR-2_Spot 166	131003.39	490.94	1.12	20.33	1.29	0.13	1.98	0.02	1.51	125.82	2.34	124.31	1.86	154.47	30.12	124.31	1.86
CR-2	CR-2_Spot 167	16919.33	383.22	1.57	20.37	1.66	0.04	2.45	0.01	1.80	44.54	1.07	43.29	0.78	112.72	39.14	43.29	0.78
CR-2	CR-2_Spot 168	6667.72	175.15	2.28	20.54	2.04	0.10	2.50	0.02	1.27	95.07	2.27	97.95	1.24	23.34	NA	97.95	1.24
CR-2	CR-2_Spot 169	35205.13	691.35	3.31	20.93	1.06	0.10	1.71	0.02	1.34	97.63	1.59	98.70	1.31	71.38	25.31	98.70	1.31
CR-2	CR-2_Spot 170	29207.79	899.09	1.79	20.68	0.86	0.10	1.76	0.02	1.53	96.73	1.63	96.79	1.47	95.31	20.53	96.79	1.47
CR-2	CR-2_Spot 171	23480.49	364.17	1.97	20.11	1.17	0.16	1.78	0.02	1.34	151.96	2.51	151.72	2.01	155.59	27.34	151.72	2.01
CR-2	CR-2_Spot 172	91415.93	262.49	1.15	19.33	1.35	0.29	1.92	0.04	1.37	256.97	4.37	255.50	3.44	270.36	30.96	255.50	3.44
CR-2	CR-2_Spot 173	204801.34	889.95	1.32	19.75	1.11	0.11	1.92	0.02	1.56	106.50	1.94	101.36	1.57	223.07	25.67	101.36	1.57
CR-2	CR-2_Spot 174	68140.79	451.61	1.74	20.66	1.04	0.13	1.78	0.02	1.44	122.71	2.05	123.32	1.75	110.87	24.66	123.32	1.75
CR-2	CR-2_Spot 175	106490.22	377.51	1.48	20.26	1.08	0.16	1.61	0.02	1.19	150.59	2.25	149.94	1.76	160.85	25.35	149.94	1.76

CR-2	CR-2_Spot 176	67341.56	427.58	1.40	20.26	1.24	0.12	1.81	0.02	1.32	113.37	1.94	111.32	1.45	156.53	29.05	111.32	1.45
CR-2	CR-2_Spot 177	14850.92	134.90	1.59	19.91	1.77	0.16	2.40	0.02	1.61	151.67	3.38	151.07	2.40	160.91	41.61	151.07	2.40
CR-2	CR-2_Spot 178	19959.04	434.25	0.89	20.75	1.31	0.10	2.04	0.02	1.55	98.43	1.91	99.42	1.53	74.45	31.44	99.42	1.53
CR-2	CR-2_Spot 179	20389.60	384.44	1.17	20.47	1.00	0.15	1.34	0.02	0.88	144.09	1.81	146.56	1.27	103.53	24.08	146.56	1.27
CR-2	CR-2_Spot 180	74051.70	881.92	1.85	20.85	0.96	0.09	1.73	0.01	1.44	91.46	1.51	91.68	1.31	85.81	22.71	91.68	1.31
CR-2	CR-2_Spot 181	162969.27	737.87	1.37	20.21	0.91	0.17	1.67	0.02	1.39	158.60	2.45	158.21	2.18	164.45	21.39	158.21	2.18
CR-2	CR-2_Spot 182	77435.43	629.15	1.64	20.73	1.04	0.12	1.81	0.02	1.47	110.62	1.89	111.11	1.62	100.04	24.77	111.11	1.62
CR-2	CR-2_Spot 183	43425.83	872.50	1.76	21.15	1.06	0.09	1.78	0.01	1.43	88.19	1.51	89.80	1.28	44.69	25.40	89.80	1.28
CR-2	CR-2_Spot 184	144197.00	509.09	1.60	20.30	0.97	0.11	1.76	0.02	1.47	108.57	1.81	106.55	1.55	153.22	22.66	106.55	1.55
CR-2	CR-2_Spot 185	65379.59	1158.57	3.02	20.69	1.04	0.10	1.72	0.02	1.36	97.07	1.59	96.81	1.31	103.37	24.81	96.81	1.31
CR-2	CR-2_Spot 186	145305.05	618.10	3.41	20.61	1.24	0.10	2.01	0.02	1.58	101.09	1.93	100.31	1.58	119.44	29.16	100.31	1.58
CR-2	CR-2_Spot 187	21902.72	507.08	2.06	20.76	1.27	0.10	1.82	0.02	1.31	99.76	1.73	100.87	1.31	73.33	30.14	100.87	1.31
CR-2	CR-2_Spot 188	238486.57	2071.31	1.22	20.70	0.97	0.10	1.65	0.02	1.33	97.68	1.53	97.15	1.28	110.64	22.87	97.15	1.28
CR-2	CR-2_Spot 189	19615.67	239.89	1.59	20.60	1.73	0.10	3.63	0.02	3.19	98.87	3.42	99.36	3.14	87.03	41.40	99.36	3.14
CR-2	CR-2_Spot 190	7030.28	377.71	1.67	13.90	3.44	0.15	3.82	0.02	1.66	139.76	4.99	98.02	1.62	924.11	70.72	98.02	1.62
CR-2	CR-2_Spot 191	647222.58	155.70	0.88	11.09	0.77	2.86	1.64	0.23	1.46	1371.49	12.37	1336.00	17.56	1427.18	14.63	1427.18	14.63
CR-2	CR-2_Spot 192	93200.97	917.02	1.39	20.34	0.92	0.11	1.70	0.02	1.42	109.22	1.76	107.49	1.51	147.05	21.69	107.49	1.51
CR-2	CR-2_Spot 193	259307.04	841.10	3.02	20.38	0.88	0.11	1.57	0.02	1.30	106.52	1.59	104.69	1.35	147.67	20.55	104.69	1.35
CR-2	CR-2_Spot 194	50695.14	861.34	2.00	20.92	1.18	0.09	1.90	0.01	1.49	89.30	1.63	89.90	1.33	73.26	28.18	89.90	1.33
CR-2	CR-2_Spot 195	4412196.24	279.75	1.64	5.93	0.86	11.57	1.54	0.50	1.28	2570.32	14.44	2604.57	27.46	2543.41	14.46	2543.41	14.46
CR-2	CR-2_Spot 196	882039.77	851.29	1.35	20.72	1.43	0.09	2.18	0.01	1.64	88.37	1.84	87.59	1.43	109.38	33.82	87.59	1.43
CR-2	CR-2_Spot 197	88278.67	315.35	1.98	20.97	1.30	0.10	1.66	0.02	1.03	95.86	1.52	96.74	0.99	74.06	30.94	96.74	0.99
CR-2	CR-2_Spot 198	38738.13	496.86	1.23	20.42	1.27	0.10	2.05	0.02	1.59	101.33	1.98	100.27	1.58	126.39	30.35	100.27	1.58
CR-2	CR-2_Spot 199	12284.96	165.41	1.87	19.96	1.81	0.13	2.21	0.02	0.99	124.62	2.59	123.67	1.21	142.78	46.25	123.67	1.21
CR-2	CR-2_Spot 200	46182.10	204.75	1.08	20.36	1.11	0.16	1.72	0.02	1.31	148.06	2.37	148.82	1.93	135.92	26.20	148.82	1.93
CR-2	CR-2_Spot 201	103849.16	835.58	2.99	20.39	0.84	0.11	1.50	0.02	1.24	101.50	1.45	99.86	1.23	140.28	19.75	99.86	1.23
CR-2	CR-2_Spot 202	133512.87	587.46	1.52	20.74	1.25	0.12	1.82	0.02	1.32	117.78	2.02	118.56	1.55	102.03	29.55	118.56	1.55
CR-2	CR-2_Spot 203	85093.45	483.73	2.34	20.36	1.15	0.15	1.86	0.02	1.46	144.41	2.50	144.52	2.08	142.62	26.99	144.52	2.08
CR-2	CR-2_Spot 204	497642.05	669.80	2.57	21.10	1.13	0.09	1.85	0.01	1.46	90.72	1.60	91.72	1.33	64.50	27.00	91.72	1.33
CR-2	CR-2_Spot 205	47506.83	1132.84	1.67	20.65	1.10	0.10	1.88	0.02	1.51	100.65	1.80	100.53	1.51	103.62	26.25	100.53	1.51
CR-2	CR-2_Spot 206	77626.90	339.79	2.31	20.77	1.40	0.10	1.75	0.02	1.04	100.97	1.68	101.20	1.05	95.61	33.34	101.20	1.05
CR-2	CR-2_Spot 207	158980.53	825.61	2.59	20.79	0.97	0.10	1.64	0.01	1.31	92.65	1.45	92.43	1.21	98.22	23.06	92.43	1.21
CR-2	CR-2_Spot 208	4052.35	79.37	1.20	19.78	2.74	0.11	3.07	0.02	1.32	106.49	3.11	109.27	1.44	44.73	NA	109.27	1.44
CR-2	CR-2_Spot 209	20414.62	163.46	1.44	20.70	2.01	0.10	2.48	0.02	1.42	96.89	2.30	97.70	1.38	77.11	48.39	97.70	1.38
CR-2	CR-2_Spot 210	20897.63	624.74	1.78	20.55	1.53	0.10	2.15	0.02	1.51	99.18	2.03	99.37	1.49	94.59	36.17	99.37	1.49
CR-2	CR-2_Spot	11890.08	423.16	2.91	20.71	1.43	0.09	2.24	0.01	1.70	91.89	1.97	93.55	1.58	49.09	34.90	93.55	1.58

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CR-2	CR-2_Spot 212	30849.40	242.76	2.42	20.82	1.37	0.11	1.76	0.02	1.11	105.58	1.77	106.93	1.18	75.33	32.57	106.93	1.18
CR-2	CR-2_Spot 213	140864.96	908.57	2.16	20.88	1.07	0.10	1.58	0.01	1.17	94.16	1.43	94.43	1.10	87.18	25.33	94.43	1.10
CR-2	CR-2_Spot 214	218451.02	646.87	3.03	20.48	1.28	0.10	1.87	0.01	1.36	95.51	1.70	94.04	1.27	132.20	30.10	94.04	1.27
CR-2	CR-2_Spot 215	202055.90	228.19	1.48	11.62	0.87	2.78	1.71	0.23	1.48	1350.15	12.78	1359.62	18.09	1335.17	16.76	1335.17	16.76
CR-2	CR-2_Spot 216	8591.61	466.38	1.62	20.46	1.22	0.09	1.88	0.01	1.42	89.67	1.61	91.02	1.29	53.66	29.28	91.02	1.29
CR-2	CR-2_Spot 217	18608.87	766.91	2.50	20.66	1.18	0.10	1.98	0.02	1.59	95.96	1.81	96.76	1.52	76.23	28.22	96.76	1.52
CR-2	CR-2_Spot 218	375272.93	343.26	1.51	20.24	1.26	0.12	1.77	0.02	1.24	115.45	1.93	113.23	1.39	161.41	29.40	113.23	1.39
CR-2	CR-2_Spot 219	191186.13	924.82	2.14	20.65	1.05	0.10	1.71	0.02	1.35	96.77	1.58	96.14	1.29	112.10	24.81	96.14	1.29
CR-2	CR-2_Spot 220	37349.57	632.33	2.47	20.66	1.08	0.12	1.98	0.02	1.64	116.61	2.19	117.68	1.91	94.93	26.61	117.68	1.91
CR-2	CR-2_Spot 221	188072.60	369.86	1.37	20.32	1.13	0.13	1.96	0.02	1.60	127.80	2.35	126.63	2.01	149.63	26.44	126.63	2.01
CR-2	CR-2_Spot 222	23700.14	233.52	1.35	20.32	1.77	0.10	2.30	0.01	1.31	96.32	2.11	95.21	1.24	123.96	44.37	95.21	1.24
CR-2	CR-2_Spot 223	38880.64	503.09	2.75	20.88	1.29	0.11	2.18	0.02	1.76	104.36	2.16	105.73	1.84	73.11	30.77	105.73	1.84
CR-2	CR-2_Spot 224	59964.85	695.65	1.85	20.13	0.91	0.17	1.68	0.03	1.41	161.31	2.50	161.09	2.24	164.57	21.41	161.09	2.24
CR-2	CR-2_Spot 225	45286.41	778.75	1.83	7.88	7.83	0.26	7.98	0.01	1.58	231.62	16.54	94.12	1.48	2047.82	138.48	94.12	1.48
CR-2	CR-2_Spot 226	42318.99	692.97	2.25	20.56	1.17	0.10	1.80	0.02	1.36	96.77	1.66	96.22	1.30	110.27	27.85	96.22	1.30
CR-2	CR-2_Spot 227	5756.62	87.05	1.80	19.58	1.96	0.15	3.45	0.02	1.32	144.24	4.64	145.69	1.90	120.57	75.07	145.69	1.90
CR-2	CR-2_Spot 228	156455.88	1851.53	1.17	19.91	0.87	0.17	1.57	0.02	1.31	156.08	2.28	153.36	1.99	197.48	20.14	153.36	1.99
CR-2	CR-2_Spot 229	73378.67	755.57	2.42	20.93	1.08	0.10	1.96	0.02	1.63	97.17	1.82	98.05	1.59	75.65	25.73	98.05	1.59
CR-2	CR-2_Spot 230	225802.90	515.78	2.14	20.64	1.40	0.12	2.06	0.02	1.52	111.41	2.18	111.24	1.67	115.19	33.02	111.24	1.67
CR-2	CR-2_Spot 231	99924.98	663.76	2.20	20.88	1.16	0.09	1.80	0.01	1.38	91.96	1.58	92.30	1.27	83.25	27.47	92.30	1.27
CR-2	CR-2_Spot 232	259408.17	742.93	9.36	20.10	0.81	0.15	2.07	0.02	1.91	144.26	2.79	142.22	2.68	178.05	18.89	142.22	2.68
CR-2	CR-2_Spot 233	53560.60	838.06	3.10	20.86	0.88	0.11	1.51	0.02	1.22	103.37	1.48	104.32	1.26	81.61	21.05	104.32	1.26
CR-2	CR-2_Spot 234	513868.24	1123.68	1.39	20.52	1.05	0.12	1.76	0.02	1.41	113.78	1.90	112.84	1.58	133.54	24.71	112.84	1.58
CR-2	CR-2_Spot 235	4810.68	184.40	2.41	20.49	2.01	0.09	3.07	0.01	1.43	89.51	2.63	93.51	1.33	NA	NA	93.51	1.33
CR-2	CR-2_Spot 236	107015.18	691.85	2.50	20.28	1.01	0.18	1.87	0.03	1.57	163.93	2.82	164.44	2.54	156.53	23.67	164.44	2.54
CR-2	CR-2_Spot 237	21026.72	696.83	1.83	20.64	0.97	0.10	1.74	0.02	1.43	99.95	1.66	100.47	1.43	87.54	23.42	100.47	1.43
CR-2	CR-2_Spot 238	663065.50	889.35	2.38	20.31	1.20	0.11	1.70	0.02	1.20	109.40	1.76	107.12	1.28	159.17	28.05	107.12	1.28
CR-2	CR-2_Spot 239	72082.57	544.08	1.80	20.69	1.34	0.12	2.00	0.02	1.47	119.40	2.25	120.09	1.75	105.70	31.82	120.09	1.75
CR-2	CR-2_Spot 240	16287.59	214.58	2.30	20.08	1.37	0.17	1.79	0.03	1.15	162.74	2.70	163.97	1.87	144.98	32.19	163.97	1.87
CR-2	CR-2_Spot 241	12145.49	295.78	1.41	20.68	1.03	0.11	1.51	0.02	1.08	107.85	1.55	110.13	1.18	57.79	25.33	110.13	1.18
CR-2	CR-2_Spot 242	3303548.05	260.96	3.31	19.51	1.21	0.17	1.60	0.02	1.06	155.53	2.31	149.17	1.56	253.51	27.76	149.17	1.56
CR-2	CR-2_Spot 243	60038.09	36.22	0.77	8.80	0.96	5.12	1.70	0.33	1.40	1839.50	14.44	1824.27	22.23	1856.76	17.42	1856.76	17.42
CR-2	CR-2_Spot 244	33018.68	387.30	1.73	20.60	0.94	0.17	2.00	0.02	1.76	155.79	2.88	159.08	2.77	105.95	22.20	159.08	2.77
CR-2	CR-2_Spot 245	186950.28	637.34	2.57	20.83	1.17	0.12	1.84	0.02	1.42	116.81	2.03	117.67	1.65	99.32	27.68	117.67	1.65
CR-2	CR-2_Spot 246	83416.70	2744.91	2.03	20.19	0.88	0.18	1.76	0.03	1.52	164.19	2.66	163.93	2.46	167.79	20.50	163.93	2.46

CR-2	CR-2_Spot 247	125226.74	2683.62	1.53	20.68	0.86	0.11	1.61	0.02	1.35	107.02	1.63	106.67	1.43	114.70	20.42	106.67	1.43
CR-2	CR-2_Spot 248	36049.10	807.28	2.16	20.89	0.90	0.09	1.64	0.01	1.36	90.33	1.42	90.83	1.22	77.13	21.90	90.83	1.22
CR-2	CR-2_Spot 249	43994.40	930.47	1.97	19.98	1.53	0.11	2.11	0.02	1.42	102.98	2.07	99.43	1.40	186.01	36.34	99.43	1.40
CR-2	CR-2_Spot 250	58076.11	1102.32	2.86	20.48	0.97	0.11	1.69	0.02	1.38	103.86	1.67	102.57	1.40	133.55	22.92	102.57	1.40
CR-2	CR-2_Spot 251	403982.27	4944.55	2.47	20.46	0.76	0.16	1.66	0.02	1.48	148.96	2.30	149.14	2.18	146.13	17.73	149.14	2.18
CR-2	CR-2_Spot 252	181630.19	327.23	2.78	20.39	1.30	0.16	1.76	0.02	1.18	150.09	2.45	149.99	1.75	151.73	30.46	149.99	1.75
CR-2	CR-2_Spot 253	81235.64	987.42	1.72	20.58	0.84	0.11	1.48	0.02	1.22	104.91	1.48	104.08	1.26	123.87	19.70	104.08	1.26
CR-2	CR-2_Spot 254	19393.53	560.09	1.92	20.75	1.15	0.10	1.78	0.02	1.36	97.38	1.65	98.24	1.32	76.44	27.44	98.24	1.32
CR-2	CR-2_Spot 255	146790.13	1381.66	0.96	20.83	1.05	0.12	1.67	0.02	1.30	111.85	1.77	112.34	1.45	101.36	24.92	112.34	1.45
CR-2	CR-2_Spot 256	23434.39	211.71	2.52	20.89	1.84	0.12	2.35	0.02	1.46	118.13	2.62	120.67	1.75	67.19	43.84	120.67	1.75
CR-2	CR-2_Spot 257	35614.37	1067.10	1.81	21.11	1.17	0.09	2.01	0.01	1.60	88.34	1.70	89.64	1.42	53.46	29.03	89.64	1.42
CR-2	CR-2_Spot 258	165924.77	120.29	1.83	9.54	1.08	4.62	1.39	0.32	0.87	1752.36	11.59	1783.78	13.58	1715.06	19.88	1715.06	19.88
CR-2	CR-2_Spot 259	143427.87	915.36	1.54	18.67	0.87	0.42	1.91	0.06	1.69	355.23	5.72	355.18	5.86	355.48	19.71	355.18	5.86
CR-2	CR-2_Spot 260	51284.80	683.28	1.82	20.51	1.15	0.10	1.80	0.01	1.38	94.20	1.62	92.82	1.27	129.35	27.18	92.82	1.27
CR-2	CR-2_Spot 261	54238.43	767.89	2.07	20.61	1.20	0.11	1.92	0.02	1.49	101.57	1.85	100.81	1.49	119.48	28.38	100.81	1.49
CR-2	CR-2_Spot 262	60221.77	577.89	1.40	20.65	1.29	0.10	1.87	0.01	1.34	94.82	1.69	93.98	1.25	115.99	30.82	93.98	1.25
CR-2	CR-2_Spot 263	100365.35	860.23	1.65	20.04	0.90	0.19	1.65	0.03	1.39	176.65	2.68	175.55	2.40	191.37	20.96	175.55	2.40
CR-2	CR-2_Spot 265	58912.66	607.91	1.98	20.66	1.07	0.11	1.90	0.02	1.56	102.73	1.85	102.18	1.58	115.48	25.51	102.18	1.58
CR-2	CR-2_Spot 266	84275.84	912.60	1.40	20.67	0.86	0.09	1.54	0.01	1.28	91.30	1.35	90.29	1.15	117.70	20.31	90.29	1.15
CR-2	CR-2_Spot 267	12513.21	202.97	1.33	19.91	1.52	0.16	1.94	0.02	1.18	149.84	2.70	149.26	1.75	159.03	35.88	149.26	1.75
CR-2	CR-2_Spot 268	71562.69	1526.34	1.74	20.62	0.82	0.11	1.57	0.02	1.33	101.77	1.52	100.88	1.33	122.67	19.50	100.88	1.33
CR-2	CR-2_Spot 269	230435.17	527.29	0.67	20.44	0.91	0.16	1.65	0.02	1.38	146.91	2.25	146.67	1.99	150.74	21.25	146.67	1.99
CR-2	CR-2_Spot 270	24750.70	922.84	2.42	20.91	1.06	0.10	1.72	0.02	1.36	100.97	1.66	102.30	1.38	69.66	25.30	102.30	1.38
CR-2	CR-2_Spot 271	393483.62	472.42	1.66	21.16	1.02	0.09	1.80	0.01	1.49	91.82	1.58	92.68	1.37	69.57	24.16	92.68	1.37
CR-2	CR-2_Spot 272	4737.39	220.82	1.25	20.74	1.82	0.11	2.24	0.02	1.30	101.90	2.17	108.12	1.39	NA	NA	108.12	1.39
CR-2	CR-2_Spot 273	60947.52	1449.80	1.33	20.30	0.85	0.10	1.55	0.01	1.29	95.51	1.41	93.11	1.19	155.97	20.01	93.11	1.19
CR-2	CR-2_Spot 274	29136.83	209.76	2.04	20.12	2.05	0.11	2.35	0.02	1.12	104.15	2.33	101.50	1.13	165.25	48.43	101.50	1.13
CR-2	CR-2_Spot 275	75071.03	906.89	1.78	20.76	1.05	0.10	1.90	0.02	1.58	99.31	1.79	99.03	1.55	106.14	24.81	99.03	1.55
CR-2	CR-2_Spot 276	21346.07	133.45	2.79	16.73	3.57	0.21	3.81	0.03	1.34	195.80	6.79	165.52	2.19	578.37	77.58	165.52	2.19
CR-2	CR-2_Spot 277	15634.01	314.97	2.34	20.40	1.34	0.12	2.04	0.02	1.18	114.07	2.20	114.17	1.34	111.89	39.30	114.17	1.34
CR-2	CR-2_Spot 278	241572.92	224.08	2.17	19.87	1.18	0.17	1.57	0.03	1.04	163.53	2.37	159.97	1.64	215.43	27.40	159.97	1.64
CR-2	CR-2_Spot 279	22162.96	363.67	2.50	20.57	1.10	0.12	1.82	0.02	1.42	117.07	2.01	117.70	1.66	104.27	26.71	117.70	1.66
CR-2	CR-2_Spot 280	103196.27	915.04	2.00	19.96	2.27	0.10	2.78	0.01	1.60	99.35	2.63	95.15	1.51	201.32	52.72	95.15	1.51
CR-2	CR-2_Spot 281	42714.44	491.95	2.62	20.14	1.21	0.17	1.96	0.02	1.54	159.79	2.90	159.07	2.43	170.41	28.23	159.07	2.43
CR-2	CR-2_Spot 282	19796.51	192.46	1.63	20.20	1.40	0.15	1.75	0.02	1.05	146.07	2.38	146.14	1.52	144.90	32.83	146.14	1.52
CR-2	CR-2_Spot	39550.50	843.43	3.06	20.61	1.21	0.10	1.84	0.01	1.37	94.44	1.66	93.60	1.27	115.75	29.01	93.60	1.27

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CR-2	CR-2_Spot 284	64955.85	793.57	1.74	20.84	1.05	0.11	1.66	0.02	1.28	101.59	1.61	101.79	1.29	97.02	25.02	101.79	1.29
CR-2	CR-2_Spot 285	216998.40	2986.28	0.80	20.79	0.90	0.10	1.80	0.02	1.56	98.07	1.69	97.58	1.51	109.94	21.22	97.58	1.51
CR-2	CR-2_Spot 286	109067.11	1196.01	1.40	20.48	1.10	0.09	2.02	0.01	1.69	89.31	1.73	87.40	1.47	140.63	25.88	87.40	1.47
CR-2	CR-2_Spot 287	20092.51	54.77	2.30	19.17	2.44	0.16	2.88	0.02	1.38	154.04	4.11	146.76	2.00	267.63	57.99	146.76	2.00
CR-2	CR-2_Spot 288	9497.92	107.87	1.81	20.85	1.79	0.13	2.23	0.02	1.23	120.49	2.53	125.28	1.52	26.85	NA	125.28	1.52
CR-2	CR-2_Spot 289	76678.86	720.15	2.32	20.38	0.89	0.10	1.94	0.01	1.73	94.79	1.76	92.61	1.59	149.93	20.75	92.61	1.59
CR-2	CR-2_Spot 290	125792.12	941.62	2.54	20.44	1.04	0.11	1.72	0.02	1.37	102.32	1.67	100.40	1.36	147.35	24.45	100.40	1.36
CR-2	CR-2_Spot 291	10551.11	170.43	3.92	20.34	1.50	0.15	1.86	0.02	1.09	142.19	2.47	144.89	1.56	97.32	35.72	144.89	1.56
CR-2	CR-2_Spot 292	58281.53	464.84	1.51	20.07	1.08	0.13	1.97	0.02	1.64	119.83	2.23	116.66	1.89	183.35	25.59	116.66	1.89
CR-2	CR-2_Spot 293	32656.15	840.21	1.77	20.43	1.38	0.10	2.13	0.01	1.62	93.01	1.90	91.47	1.47	132.60	32.64	91.47	1.47
CR-2	CR-2_Spot 294	44109.26	1302.06	1.35	20.73	0.91	0.10	1.67	0.02	1.39	98.48	1.57	98.29	1.36	103.10	21.84	98.29	1.36
CR-2	CR-2_Spot 295	79924.79	624.24	1.75	20.23	1.16	0.12	1.80	0.02	1.37	117.97	2.00	115.51	1.56	167.94	27.22	115.51	1.56
CR-2	CR-2_Spot 296	302297.76	741.21	1.12	19.89	1.74	0.16	2.25	0.02	1.42	152.50	3.18	148.60	2.09	213.68	40.24	148.60	2.09
CR-2	CR-2_Spot 297	187474.63	1096.82	3.20	20.80	0.79	0.12	1.54	0.02	1.32	113.31	1.65	113.60	1.49	107.19	18.71	113.60	1.49
CR-2	CR-2_Spot 298	18061.62	399.13	2.21	20.40	1.26	0.14	2.11	0.02	1.68	132.91	2.62	133.77	2.23	117.62	29.87	133.77	2.23
CR-2	CR-2_Spot 299	75519.17	241.95	1.80	19.95	1.52	0.14	2.14	0.02	1.50	129.96	2.61	126.18	1.88	199.70	35.42	126.18	1.88
CR-2	CR-2_Spot 300	34559.36	254.21	1.66	17.11	2.49	0.15	2.85	0.02	1.39	141.30	3.76	118.75	1.63	538.92	54.42	118.75	1.63
CR-2	CR-2_Spot 301	152972.27	183.75	1.93	8.16	0.81	6.20	1.40	0.37	1.14	2003.87	12.24	2008.97	19.75	1998.59	14.34	1998.59	14.34
CR-2	CR-2_Spot 302	6581942.71	1497.21	1.63	20.31	1.10	0.16	1.76	0.02	1.37	147.63	2.41	146.43	1.99	166.89	25.61	146.43	1.99
CR-2	CR-2_Spot 303	4215.26	75.16	3.02	19.37	1.94	0.21	2.35	0.03	1.17	189.74	4.07	195.86	2.27	114.24	48.02	195.86	2.27
CR-2	CR-2_Spot 304	17418.14	660.66	1.27	20.99	1.10	0.10	1.93	0.02	1.59	99.08	1.83	101.23	1.60	47.65	26.35	101.23	1.60
CR-2	CR-2_Spot 305	37185.51	697.60	2.63	20.55	1.12	0.10	1.90	0.02	1.54	101.15	1.83	100.32	1.53	120.56	26.45	100.32	1.53
CR-2	CR-2_Spot 306	88069.89	795.75	2.36	21.12	0.96	0.09	1.80	0.01	1.51	89.68	1.54	90.53	1.36	67.10	23.01	90.53	1.36
CR-2	CR-2_Spot 307	48306.85	373.31	2.37	20.64	1.26	0.10	1.76	0.01	1.23	95.93	1.62	95.17	1.17	114.67	29.74	95.17	1.17
CR-2	CR-2_Spot 308	617104.54	1399.60	2.53	20.39	0.95	0.09	1.71	0.01	1.42	91.69	1.50	89.17	1.26	157.81	22.30	89.17	1.26
CR-2	CR-2_Spot 309	19073.58	362.42	2.06	20.73	1.40	0.10	2.18	0.01	1.54	94.54	1.97	95.04	1.45	81.86	36.80	95.04	1.45
CR-2	CR-2_Spot 310	47240.08	956.91	3.85	20.13	0.84	0.16	1.61	0.02	1.37	151.43	2.27	150.02	2.03	173.57	19.77	150.02	2.03
CR-2	CR-2_Spot 311	78308.17	682.87	2.00	20.27	1.23	0.10	1.72	0.01	1.19	95.07	1.56	92.38	1.09	163.16	28.81	92.38	1.09
CR-2	CR-2_Spot 312	498136.39	1078.47	1.93	20.88	0.89	0.10	1.72	0.01	1.47	92.32	1.52	92.00	1.34	100.75	21.13	92.00	1.34
CR-2	CR-2_Spot 313	60567.69	1036.90	2.58	20.19	0.97	0.12	1.84	0.02	1.55	110.62	1.93	107.93	1.66	168.91	22.93	107.93	1.66
CR-2	CR-2_Spot 314	62448.11	693.20	1.60	20.06	1.15	0.16	2.01	0.02	1.64	151.19	2.82	149.05	2.42	184.74	26.96	149.05	2.42
CR-2	CR-2_Spot 315	4539845.95	666.07	2.43	20.66	1.05	0.10	1.83	0.01	1.50	96.99	1.69	95.73	1.42	128.14	24.69	95.73	1.42
CR-3	CR-3_Spot 1	59348.35	362.35	4.32	20.36	1.05	0.11	1.58	0.02	1.18	103.35	1.56	101.94	1.19	136.06	24.90	101.94	1.19
CR-3	CR-3_Spot 2	76059.60	349.35	3.27	20.40	0.95	0.11	1.59	0.02	1.27	103.84	1.57	102.56	1.30	133.27	22.25	102.56	1.30
CR-3	CR-3_Spot 3	89238.14	255.55	1.37	20.21	0.90	0.12	1.38	0.02	1.04	117.20	1.53	115.22	1.19	157.51	21.19	115.22	1.19

CR-3	CR-3_Spot 4	62503.76	359.20	4.24	20.07	1.01	0.11	1.81	0.02	1.50	102.61	1.77	99.70	1.49	170.66	23.57	99.70	1.49
CR-3	CR-3_Spot 5	134722.14	600.34	1.87	20.72	0.97	0.09	1.83	0.01	1.55	90.53	1.59	90.13	1.39	101.12	22.98	90.13	1.39
CR-3	CR-3_Spot 6	422326.19	218.33	2.71	20.35	1.03	0.11	1.52	0.02	1.12	108.58	1.57	106.82	1.19	147.40	24.20	106.82	1.19
CR-3	CR-3_Spot 7	34644.64	290.56	2.15	20.14	0.96	0.11	1.56	0.02	1.22	109.56	1.62	107.55	1.31	153.39	22.61	107.55	1.31
CR-3	CR-3_Spot 8	43556.68	192.49	2.66	20.13	1.25	0.11	1.58	0.02	0.93	110.20	1.65	107.98	1.00	158.66	29.86	107.98	1.00
CR-3	CR-3_Spot 9	848475.29	931.26	1.97	20.62	0.83	0.10	1.47	0.01	1.21	94.03	1.32	92.71	1.11	127.76	19.53	92.71	1.11
CR-3	CR-3_Spot 10	23300.42	281.91	0.90	19.43	1.08	0.16	1.80	0.02	1.30	149.54	2.50	144.08	1.85	237.07	28.64	144.08	1.85
CR-3	CR-3_Spot 11	803425.90	149.18	5.11	20.25	1.20	0.16	1.45	0.02	0.81	149.59	2.02	148.39	1.20	168.71	28.01	148.39	1.20
CR-3	CR-3_Spot 12	392176.43	1207.34	2.43	20.63	0.68	0.11	1.22	0.02	1.01	104.17	1.21	103.29	1.04	124.38	16.13	103.29	1.04
CR-3	CR-3_Spot 13	57019.41	640.68	2.07	19.12	1.36	0.10	1.83	0.01	1.22	98.34	1.72	90.60	1.09	290.27	31.25	90.60	1.09
CR-3	CR-3_Spot 14	85527.86	365.65	2.16	19.72	1.01	0.10	1.49	0.01	1.10	98.45	1.40	93.44	1.02	221.69	23.37	93.44	1.02
CR-3	CR-3_Spot 15	25550.49	233.59	1.64	18.01	1.57	0.12	2.06	0.02	1.23	113.99	2.22	100.25	1.22	411.32	36.96	100.25	1.22
CR-3	CR-3_Spot 16	33159.47	211.32	2.56	17.76	1.37	0.12	1.92	0.02	1.35	117.04	2.13	101.41	1.36	447.81	30.50	101.41	1.36
CR-3	CR-3_Spot 17	34400.70	58.61	1.61	15.79	2.56	0.16	2.72	0.02	0.92	150.32	3.81	117.45	1.07	706.17	54.52	117.45	1.07
CR-3	CR-3_Spot 18	20244.04	444.42	3.29	20.71	0.96	0.11	1.50	0.02	1.15	109.96	1.57	111.40	1.27	78.89	22.90	111.40	1.27
CR-3	CR-3_Spot 19	7808.00	124.93	2.25	20.39	1.35	0.10	1.70	0.02	0.97	96.76	1.57	98.34	0.95	57.74	33.33	98.34	0.95
CR-3	CR-3_Spot 20	146689.50	445.60	2.68	20.76	0.88	0.09	1.68	0.01	1.43	90.14	1.45	89.63	1.28	103.65	20.79	89.63	1.28
CR-3	CR-3_Spot 21	5728.47	38.83	1.31	11.23	2.32	0.24	2.68	0.02	1.23	217.14	5.23	127.42	1.55	1352.17	45.92	127.42	1.55
CR-3	CR-3_Spot 22	645339.52	185.26	0.72	18.18	1.95	0.18	2.31	0.02	1.22	164.97	3.51	148.28	1.79	411.68	43.72	148.28	1.79
CR-3	CR-3_Spot 23	49624.61	218.73	2.06	19.93	1.20	0.11	1.84	0.02	1.40	103.92	1.82	100.22	1.39	189.74	27.95	100.22	1.39
CR-3	CR-3_Spot 24	17782.73	188.33	1.77	20.39	0.95	0.12	1.25	0.02	0.80	110.59	1.31	110.61	0.87	110.28	22.76	110.61	0.87
CR-3	CR-3_Spot 25	34730.76	684.64	3.61	20.55	0.91	0.10	1.42	0.02	1.09	99.79	1.35	99.27	1.07	112.26	21.49	99.27	1.07
CR-3	CR-3_Spot 26	79594.76	254.29	2.46	17.31	2.08	0.13	2.32	0.02	1.02	125.09	2.73	105.51	1.07	515.40	45.72	105.51	1.07
CR-3	CR-3_Spot 27	27602.31	342.88	4.86	20.60	1.01	0.12	1.65	0.02	1.29	111.21	1.73	111.70	1.42	100.64	24.33	111.70	1.42
CR-3	CR-3_Spot 28	78309.43	162.49	2.39	17.73	1.91	0.13	2.04	0.02	0.70	124.44	2.38	107.49	0.75	461.82	42.37	107.49	0.75
CR-3	CR-3_Spot 29	43223.85	196.38	2.66	20.01	0.89	0.17	1.22	0.02	0.84	155.12	1.76	153.47	1.27	180.39	20.80	153.47	1.27
CR-3	CR-3_Spot 30	86995.55	272.26	2.26	19.79	1.09	0.16	1.89	0.02	1.55	151.05	2.65	147.12	2.25	213.24	25.15	147.12	2.25
CR-3	CR-3_Spot 31	58334.98	160.32	2.29	18.88	1.26	0.13	1.62	0.02	1.02	125.40	1.91	115.44	1.17	318.57	28.63	115.44	1.17
CR-3	CR-3_Spot 32	58166.95	801.06	1.48	19.34	0.81	0.13	1.41	0.02	1.15	122.28	1.63	115.16	1.32	263.08	18.68	115.16	1.32
CR-3	CR-3_Spot 33	23218.44	760.72	3.35	16.40	1.71	0.19	2.02	0.02	1.07	177.36	3.28	146.17	1.54	616.37	36.99	146.17	1.54
CR-3	CR-3_Spot 34	95602.77	545.20	2.44	18.70	1.28	0.11	1.68	0.01	1.09	104.39	1.67	94.24	1.02	342.54	28.95	94.24	1.02
CR-3	CR-3_Spot 35	42736.21	188.94	1.69	18.75	1.35	0.11	1.53	0.02	0.69	109.90	1.59	99.94	0.68	331.42	30.94	99.94	0.68
CR-3	CR-3_Spot 36	15414.74	214.77	3.31	20.93	1.38	0.09	1.86	0.01	1.22	88.48	1.58	90.18	1.09	42.76	33.66	90.18	1.09
CR-3	CR-3_Spot 37	321032.99	367.09	3.87	20.67	1.03	0.10	1.67	0.02	1.31	97.59	1.55	96.74	1.26	118.36	24.41	96.74	1.26
CR-3	CR-3_Spot 38	47518.69	426.67	4.04	19.96	0.66	0.14	2.94	0.02	2.86	136.40	3.75	133.49	3.77	187.36	16.17	133.49	3.77
CR-3	CR-3_Spot 39	90251.44	93.49	1.80	19.43	1.69	0.14	1.88	0.02	0.81	129.18	2.28	122.30	0.98	257.55	38.94	122.30	0.98

CR-3	CR-3_Spot 40	34551.29	960.70	2.10	18.36	1.17	0.16	1.65	0.02	1.16	147.92	2.28	134.19	1.54	374.07	26.45	134.19	1.54
CR-3	CR-3_Spot 41	17905.50	48.23	2.98	19.28	1.62	0.17	2.00	0.02	1.17	157.30	2.92	151.56	1.76	244.57	37.42	151.56	1.76
CR-3	CR-3_Spot 42	9573.25	73.12	3.39	14.22	3.35	0.26	3.56	0.03	1.16	234.23	7.45	173.81	2.00	894.42	69.47	173.81	2.00
CR-3	CR-3_Spot 43	66679.55	503.89	2.18	20.97	0.72	0.09	1.46	0.01	1.27	91.60	1.28	92.28	1.17	73.76	17.20	92.28	1.17
CR-3	CR-3_Spot 44	8684.57	813.29	5.33	13.01	2.07	0.31	2.34	0.03	1.10	275.47	5.65	190.78	2.07	1075.33	41.52	190.78	2.07
CR-3	CR-3_Spot 45	20005.38	70.82	3.26	19.22	1.66	0.17	1.94	0.02	1.00	157.86	2.84	151.40	1.50	255.82	38.30	151.40	1.50
CR-3	CR-3_Spot 46	1424182.82	924.77	1.67	20.27	0.99	0.11	1.68	0.02	1.35	105.46	1.68	102.82	1.38	165.62	23.06	102.82	1.38
CR-3	CR-3_Spot 47	72942.15	258.07	2.61	19.83	0.90	0.17	1.30	0.02	0.94	157.72	1.90	154.37	1.44	208.30	20.84	154.37	1.44
CR-3	CR-3_Spot 48	685858.35	135.99	1.95	5.39	0.94	13.24	1.94	0.52	1.70	2697.10	18.34	2685.56	37.34	2705.75	15.51	2705.75	15.51
CR-3	CR-3_Spot 49	842902.45	192.82	1.26	19.69	1.12	0.17	1.65	0.02	1.21	156.17	2.39	151.09	1.81	233.95	25.93	151.09	1.81
CR-3	CR-3_Spot 50	213153.54	1466.98	2.79	20.71	0.71	0.11	1.32	0.02	1.11	103.00	1.29	102.56	1.13	113.09	16.84	102.56	1.13
CR-3	CR-3_Spot 51	44211.64	533.05	1.51	20.02	1.30	0.12	1.83	0.02	1.29	115.72	2.00	112.58	1.44	180.67	30.30	112.58	1.44
CR-3	CR-3_Spot 52	56089.12	461.32	2.62	20.21	1.49	0.10	1.85	0.01	1.08	95.52	1.69	92.87	1.00	162.07	35.09	92.87	1.00
CR-3	CR-3_Spot 53	40465.66	283.57	1.68	20.51	1.23	0.12	1.80	0.02	1.29	116.68	1.98	116.37	1.49	122.96	29.62	116.37	1.49
CR-3	CR-3_Spot 54	65978.64	77.82	3.69	19.41	1.92	0.17	2.10	0.02	0.86	157.77	3.07	151.14	1.28	258.57	44.12	151.14	1.28
CR-3	CR-3_Spot 55	224191.90	267.03	21.28	20.28	0.63	0.16	1.42	0.02	1.27	147.61	1.94	146.60	1.84	163.91	14.71	146.60	1.84
CR-3	CR-3_Spot 56	3082731.94	189.58	2.74	20.71	1.36	0.10	1.86	0.01	1.26	96.08	1.70	95.21	1.19	117.51	32.07	95.21	1.19
CR-3	CR-3_Spot 57	149824.39	266.76	3.04	20.63	0.79	0.10	1.55	0.01	1.33	94.06	1.39	92.98	1.23	121.57	18.71	92.98	1.23
CR-3	CR-3_Spot 58	29762.91	227.20	1.96	19.92	1.19	0.16	1.81	0.02	1.37	150.86	2.54	148.69	2.01	185.06	27.64	148.69	2.01
CR-3	CR-3_Spot 59	155695.89	149.27	1.74	9.30	0.63	4.27	1.16	0.29	0.97	1687.52	9.55	1630.22	14.03	1759.47	11.54	1759.47	11.54
CR-3	CR-3_Spot 60	66709.11	107.08	1.12	20.57	1.45	0.10	1.87	0.02	1.18	100.63	1.79	99.76	1.17	121.43	34.06	99.76	1.17
CR-3	CR-3_Spot 61	32930.47	382.35	5.05	20.01	1.06	0.11	1.69	0.02	1.31	106.64	1.71	103.37	1.34	180.23	24.74	103.37	1.34
CR-3	CR-3_Spot 62	580063.61	51.15	1.32	8.53	0.73	5.85	1.30	0.36	1.08	1953.21	11.30	1984.62	18.47	1920.07	13.05	1920.07	13.05
CR-3	CR-3_Spot 63	9430.08	330.73	1.86	14.15	4.04	0.15	4.43	0.02	1.44	140.32	5.80	99.23	1.41	907.31	86.28	99.23	1.41
CR-3	CR-3_Spot 64	151968.44	322.91	2.49	20.66	0.78	0.11	1.62	0.02	1.42	110.11	1.69	109.71	1.55	118.89	18.37	109.71	1.55
CR-3	CR-3_Spot 65	186058.57	794.96	2.89	19.96	0.90	0.16	1.49	0.02	1.19	149.09	2.07	145.98	1.71	198.93	20.99	145.98	1.71
CR-3	CR-3_Spot 66	129326.51	663.12	3.33	20.96	0.90	0.09	1.54	0.01	1.25	86.11	1.27	86.24	1.07	82.46	21.33	86.24	1.07
CR-3	CR-3_Spot 67	26077.62	305.59	1.69	19.84	1.23	0.12	1.88	0.02	1.42	117.03	2.08	113.48	1.60	189.85	28.71	113.48	1.60
CR-3	CR-3_Spot 68	6093.03	273.60	3.91	11.72	5.38	0.18	5.60	0.02	1.19	172.25	8.87	103.07	1.21	1273.69	106.73	103.07	1.21
CR-3	CR-3_Spot 69	3118.03	248.89	5.85	7.93	6.14	0.29	6.41	0.02	1.80	260.94	14.76	111.34	1.99	1985.43	109.64	111.34	1.99
CR-3	CR-3_Spot 70	10537.68	439.59	2.04	13.54	2.81	0.15	2.99	0.01	1.01	141.40	3.94	95.46	0.95	1003.94	57.08	95.46	0.95
CR-3	CR-3_Spot 71	10471.04	233.12	2.14	19.64	1.23	0.12	1.85	0.02	1.37	113.23	1.98	110.12	1.50	179.07	28.69	110.12	1.50
CR-3	CR-3_Spot 72	88062.30	283.52	2.35	19.95	0.95	0.18	1.61	0.03	1.30	167.81	2.49	165.41	2.12	201.92	22.03	165.41	2.12
CR-3	CR-3_Spot 73	13331.26	165.42	1.70	19.41	1.27	0.13	1.85	0.02	1.00	123.64	2.16	118.56	1.17	222.63	36.11	118.56	1.17
CR-3	CR-3_Spot 74	9230.61	75.55	2.58	18.84	1.72	0.12	2.38	0.02	1.14	118.56	2.67	111.07	1.25	271.59	47.98	111.07	1.25
CR-3	CR-3_Spot	23064.22	209.95	3.54	18.78	1.68	0.14	2.23	0.02	1.46	129.78	2.71	119.60	1.72	320.35	38.24	119.60	1.72

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CR-3	CR-3_Spot 76	15828.73	254.58	3.53	15.28	5.69	0.13	5.89	0.01	1.52	123.13	6.83	92.43	1.39	766.11	119.95	92.43	1.39
CR-3	CR-3_Spot 77	10835.31	116.11	1.59	20.44	1.36	0.11	2.13	0.02	0.91	108.76	2.20	109.76	0.99	87.03	45.65	109.76	0.99
CR-3	CR-3_Spot 79	13765.86	201.73	1.96	17.20	2.64	0.18	2.82	0.02	1.00	171.81	4.46	148.69	1.47	503.21	58.16	148.69	1.47
CR-3	CR-3_Spot 80	21618.30	580.34	3.86	17.43	1.09	0.18	1.62	0.02	1.20	165.22	2.47	143.53	1.70	488.54	24.08	143.53	1.70
CR-3	CR-3_Spot 81	22264.19	189.62	3.04	15.48	1.50	0.14	2.03	0.02	1.36	131.24	2.50	99.79	1.35	746.59	31.75	99.79	1.35
CR-3	CR-3_Spot 82	22122.14	342.43	3.01	20.46	0.76	0.10	1.32	0.01	1.07	95.66	1.21	94.83	1.01	116.46	18.40	94.83	1.01
CR-3	CR-3_Spot 83	14821.44	75.82	5.86	19.32	1.38	0.15	1.84	0.02	1.16	137.99	2.38	132.22	1.51	238.36	33.04	132.22	1.51
CR-3	CR-3_Spot 84	46256.00	139.22	2.64	20.90	1.42	0.11	1.77	0.02	1.05	103.01	1.73	103.87	1.09	83.27	33.62	103.87	1.09
CR-3	CR-3_Spot 85	20515.48	523.46	1.73	17.66	1.77	0.11	2.09	0.01	1.10	109.63	2.17	94.34	1.03	456.01	39.39	94.34	1.03
CR-3	CR-3_Spot 86	61566.50	187.16	1.50	20.02	1.37	0.11	2.04	0.02	1.51	102.44	1.99	98.81	1.48	187.86	31.79	98.81	1.48
CR-3	CR-3_Spot 88	157132.54	535.18	3.60	20.39	0.94	0.10	1.61	0.02	1.31	100.15	1.54	98.03	1.28	151.02	21.96	98.03	1.28
CR-3	CR-3_Spot 89	34736.81	369.71	2.45	18.54	0.89	0.10	1.51	0.01	1.21	99.77	1.44	89.33	1.08	357.00	20.30	89.33	1.08
CR-3	CR-3_Spot 90	4328.14	253.45	2.51	11.99	3.93	0.27	4.13	0.02	1.26	240.63	8.84	153.74	1.91	1205.85	77.47	153.74	1.91
CR-3	CR-3_Spot 91	102909.44	289.96	2.42	19.41	1.22	0.10	1.89	0.01	1.44	98.82	1.78	92.11	1.32	263.82	28.01	92.11	1.32
CR-3	CR-3_Spot 92	5771.23	321.95	2.48	11.50	3.94	0.17	4.11	0.01	1.14	157.54	5.99	91.94	1.04	1309.56	76.58	91.94	1.04
CR-3	CR-3_Spot 93	13465.03	356.15	2.64	16.18	1.79	0.19	2.17	0.02	1.21	174.53	3.48	142.63	1.71	632.25	38.73	142.63	1.71
CR-3	CR-3_Spot 94	17742.05	411.96	2.45	17.77	1.20	0.11	1.75	0.01	1.28	101.97	1.70	88.35	1.12	433.27	26.77	88.35	1.12
CR-3	CR-3_Spot 95	11084.84	277.95	2.54	14.82	2.44	0.16	2.82	0.02	1.32	155.07	4.06	115.36	1.51	815.00	52.16	115.36	1.51
CR-3	CR-3_Spot 96	298479.50	157.21	3.05	18.39	2.24	0.13	2.50	0.02	1.10	120.15	2.83	107.12	1.17	386.44	50.39	107.12	1.17
CR-3	CR-3_Spot 97	4776.04	66.85	3.25	18.83	1.71	0.11	1.99	0.02	1.02	107.60	2.03	103.45	1.04	200.46	39.80	103.45	1.04
CR-3	CR-3_Spot 98	18846.87	424.84	3.51	16.47	1.42	0.19	1.90	0.02	1.26	179.87	3.14	149.22	1.86	604.39	30.82	149.22	1.86
CR-3	CR-3_Spot 99	5354.40	212.94	3.06	12.98	3.94	0.15	4.26	0.01	1.14	145.40	5.77	95.93	1.09	1054.39	82.71	95.93	1.09
CR-3	CR-3_Spot 100	8683.30	387.31	2.86	13.26	3.71	0.16	3.91	0.02	1.22	152.88	5.54	101.98	1.23	1038.98	74.94	101.98	1.23
CR-3	CR-3_Spot 101	52257.84	343.23	2.39	19.42	0.86	0.13	1.50	0.02	1.23	119.95	1.70	113.38	1.38	252.31	19.77	113.38	1.38
CR-3	CR-3_Spot 102	46655.95	465.76	4.21	19.44	0.81	0.11	1.38	0.02	1.12	107.91	1.41	101.70	1.13	247.28	18.68	101.70	1.13
CR-3	CR-3_Spot 103	3754.41	270.36	2.57	11.03	3.39	0.18	3.60	0.02	1.20	168.57	5.59	96.38	1.15	1359.35	65.38	96.38	1.15
CR-3	CR-3_Spot 104	62741.20	182.87	3.81	10.77	0.79	3.14	1.15	0.25	0.84	1442.04	8.88	1415.87	10.62	1480.83	15.08	1480.83	15.08
CR-3	CR-3_Spot 105	135632.25	407.01	2.22	20.78	0.86	0.09	1.54	0.01	1.28	92.05	1.36	91.75	1.17	99.87	20.27	91.75	1.17
CR-3	CR-3_Spot 106	9966.09	296.36	1.97	11.98	4.24	0.19	4.43	0.02	1.26	174.60	7.10	106.03	1.33	1246.81	83.16	106.03	1.33
CR-3	CR-3_Spot 107	8992.57	318.66	2.35	12.91	2.86	0.20	3.01	0.02	0.89	184.28	5.06	121.46	1.07	1091.91	57.51	121.46	1.07
CR-3	CR-3_Spot 108	25992.55	125.99	3.11	20.63	1.19	0.11	1.74	0.02	1.14	105.51	1.74	106.02	1.20	94.03	31.09	106.02	1.20
CR-3	CR-3_Spot 110	3618.56	47.46	1.63	11.42	5.05	0.29	5.23	0.03	1.37	258.78	11.95	160.35	2.16	1283.02	98.37	160.35	2.16
CR-3	CR-3_Spot 111	525993.98	361.91	2.71	19.60	0.81	0.25	1.37	0.03	1.10	222.54	2.73	220.97	2.40	239.17	18.66	220.97	2.40
CR-3	CR-3_Spot 112	86746.14	241.19	1.48	17.53	1.08	0.15	1.71	0.02	1.32	141.85	2.26	122.15	1.60	485.44	23.93	122.15	1.60
CR-3	CR-3_Spot 113	39514.87	248.01	3.61	20.67	1.08	0.09	1.78	0.01	1.41	91.51	1.56	91.27	1.28	97.83	25.76	91.27	1.28

CR-3	CR-3_Spot 114	86844.64	372.86	1.92	20.27	0.94	0.12	1.51	0.02	1.18	116.50	1.66	114.77	1.35	151.90	21.99	114.77	1.35
CR-3	CR-3_Spot 115	20154.30	119.87	1.67	20.63	1.59	0.12	1.98	0.02	1.15	115.08	2.16	116.60	1.32	83.57	38.43	116.60	1.32
CR-3	CR-3_Spot 116	35944.49	309.90	3.02	20.26	1.10	0.10	1.57	0.01	1.12	96.69	1.44	94.85	1.05	142.40	25.74	94.85	1.05
CR-3	CR-3_Spot 117	68505.39	526.90	2.52	19.96	0.87	0.10	1.47	0.02	1.19	99.59	1.40	96.13	1.13	183.20	20.37	96.13	1.13
CR-3	CR-3_Spot 118	127874.52	504.62	2.66	19.07	1.12	0.16	1.63	0.02	1.19	153.77	2.33	144.86	1.70	293.40	25.58	144.86	1.70
CR-3	CR-3_Spot 119	13252.46	210.24	3.86	18.09	1.07	0.10	1.69	0.01	1.30	100.23	1.61	89.25	1.15	370.07	24.29	89.25	1.15
CR-3	CR-3_Spot 120	76851.07	392.72	3.70	18.36	1.76	0.12	2.18	0.02	1.29	110.71	2.28	98.80	1.26	375.14	39.52	98.80	1.26
CR-3	CR-3_Spot 121	783114.85	2759.89	32.48	20.37	0.58	0.10	1.05	0.01	0.88	93.11	0.94	91.15	0.80	143.55	13.58	91.15	0.80
CR-3	CR-3_Spot 122	10686.39	294.42	2.73	15.62	2.22	0.16	2.65	0.02	1.46	153.00	3.77	120.62	1.75	689.51	47.27	120.62	1.75
CR-3	CR-3_Spot 123	5441.95	68.00	2.20	18.68	1.91	0.13	2.75	0.02	1.10	123.82	3.21	118.59	1.29	225.45	58.39	118.59	1.29
CR-3	CR-3_Spot 124	15826.91	791.87	1.48	16.95	1.52	0.12	1.71	0.02	0.79	118.06	1.91	98.82	0.77	525.73	33.33	98.82	0.77
CR-3	CR-3_Spot 125	20056.80	263.54	3.16	18.56	1.48	0.11	2.04	0.02	1.24	110.29	2.14	100.45	1.23	328.25	36.94	100.45	1.23
CR-3	CR-3_Spot 126	34832.89	178.32	2.29	9.10	5.95	0.28	6.04	0.02	1.00	250.31	13.40	118.64	1.17	1785.33	108.65	118.64	1.17
CR-3	CR-3_Spot 127	9469.84	101.22	5.47	20.50	1.88	0.11	2.37	0.02	0.87	105.23	2.37	107.60	0.93	51.78	52.63	107.60	0.93
CR-3	CR-3_Spot 128	60930.35	430.88	1.20	18.89	1.73	0.17	2.14	0.02	1.25	159.84	3.16	150.17	1.86	305.65	39.48	150.17	1.86
CR-3	CR-3_Spot 129	145054.48	539.19	3.25	20.01	0.92	0.13	1.28	0.02	0.89	121.73	1.47	118.84	1.05	178.41	21.37	118.84	1.05
CR-3	CR-3_Spot 131	215927.13	142.70	3.15	9.99	1.36	1.30	1.79	0.09	1.17	847.25	10.29	584.55	6.52	1616.57	25.30	1616.57	25.30
CR-3	CR-3_Spot 133	10273.95	153.11	1.74	19.03	1.12	0.13	1.55	0.02	0.89	123.45	1.80	117.75	1.04	234.70	29.25	117.75	1.04
CR-3	CR-3_Spot 134	235632.25	288.38	3.08	19.42	1.45	0.10	1.93	0.01	1.27	97.91	1.80	91.75	1.15	250.41	33.45	91.75	1.15
CR-3	CR-3_Spot 135	16620.42	125.18	2.71	18.63	1.92	0.14	2.22	0.02	1.10	128.99	2.69	119.34	1.30	310.57	43.94	119.34	1.30
CR-3	CR-3_Spot 136	20898.61	140.48	3.70	19.55	1.83	0.11	2.05	0.02	0.79	109.27	2.12	104.89	0.82	205.79	43.78	104.89	0.82
CR-3	CR-3_Spot 137	20218.14	162.05	2.11	18.72	1.37	0.11	1.68	0.02	0.97	108.86	1.74	100.07	0.97	305.54	31.31	100.07	0.97
CR-3	CR-3_Spot 138	255307.60	241.78	3.31	19.98	1.01	0.16	1.78	0.02	1.47	153.44	2.54	151.50	2.20	183.48	23.53	151.50	2.20
CR-3	CR-3_Spot 139	174581.36	80.27	2.33	18.17	2.18	0.13	2.44	0.02	1.11	121.24	2.79	107.48	1.18	400.24	48.74	107.48	1.18
CR-3	CR-3_Spot 140	85129.71	1075.00	7.04	20.67	0.72	0.11	1.25	0.02	1.02	105.95	1.26	106.29	1.08	98.41	17.03	106.29	1.08
CR-3	CR-3_Spot 141	48921.89	474.55	6.42	18.84	1.09	0.16	1.57	0.02	1.12	155.05	2.25	145.17	1.60	308.94	25.07	145.17	1.60
CR-3	CR-3_Spot 142	6249.51	124.09	2.39	9.99	4.93	0.29	5.11	0.02	0.91	257.29	11.62	136.89	1.23	1575.97	94.24	136.89	1.23
CR-3	CR-3_Spot 143	40834.24	628.13	2.10	20.50	0.88	0.10	1.42	0.01	1.11	92.21	1.26	91.56	1.01	109.06	21.07	91.56	1.01
CR-3	CR-3_Spot 144	1049396.50	659.40	2.07	20.56	0.84	0.11	1.27	0.02	0.96	105.37	1.28	104.72	1.00	120.06	19.70	104.72	1.00
CR-3	CR-3_Spot 145	31952.83	412.82	2.66	20.66	0.89	0.09	1.24	0.01	0.87	88.84	1.06	88.91	0.77	86.95	21.12	88.91	0.77
CR-3	CR-3_Spot 146	1795216.46	246.61	4.21	9.51	0.73	4.38	1.53	0.30	1.35	1708.34	12.66	1707.78	20.24	1709.01	13.35	1709.01	13.35
CR-3	CR-3_Spot 147	22430.94	380.70	2.60	20.18	0.98	0.10	1.63	0.02	1.28	100.84	1.56	99.46	1.26	133.54	23.51	99.46	1.26
CR-3	CR-3_Spot 148	37515.15	319.45	2.73	20.09	0.95	0.16	1.58	0.02	1.26	147.87	2.17	147.29	1.84	157.22	22.28	147.29	1.84
CR-3	CR-3_Spot 149	93174.59	576.32	2.82	19.25	1.39	0.10	1.91	0.01	1.31	101.37	1.85	94.51	1.23	265.73	31.91	94.51	1.23
CR-3	CR-3_Spot 150	61838.01	643.10	2.09	19.92	1.07	0.10	1.66	0.01	1.27	94.77	1.50	91.32	1.15	182.55	24.84	91.32	1.15
CR-3	CR-3_Spot	7471.92	240.20	3.73	14.35	2.29	0.15	2.59	0.02	1.19	144.66	3.49	105.26	1.24	851.94	47.72	105.26	1.24

	151																	
CR-3	CR-3_Spot 152	4267.16	73.75	2.30	13.14	1.64	0.18	2.35	0.02	1.07	168.58	3.65	115.53	1.22	998.06	42.57	115.53	1.22
CR-3	CR-3_Spot 153	8151.03	85.06	1.51	19.73	1.51	0.12	1.85	0.02	0.89	112.31	1.97	111.42	0.98	131.21	38.16	111.42	0.98
CR-3	CR-3_Spot 154	68973.06	300.07	2.99	19.62	0.85	0.24	1.44	0.03	1.16	214.46	2.78	213.92	2.44	220.40	19.75	213.92	2.44
CR-3	CR-3_Spot 155	1027602.71	486.15	2.69	19.91	0.75	0.17	1.42	0.02	1.20	158.44	2.08	155.98	1.86	195.48	17.52	155.98	1.86
CR-3	CR-3_Spot 156	50000.16	567.28	2.27	20.15	0.75	0.10	1.31	0.01	1.08	93.48	1.17	91.14	0.97	153.76	17.68	91.14	0.97
CR-3	CR-3_Spot 157	63339.61	130.84	3.04	19.79	1.26	0.13	1.51	0.02	0.83	125.80	1.78	121.92	1.00	199.73	29.22	121.92	1.00
CR-3	CR-3_Spot 158	20198.12	150.61	2.38	20.49	1.44	0.12	1.69	0.02	0.87	112.12	1.79	113.04	0.98	92.47	34.23	113.04	0.98
CR-3	CR-3_Spot 159	18326.13	104.33	1.45	20.17	1.15	0.16	1.42	0.02	0.82	148.56	1.96	149.95	1.21	126.57	27.31	149.95	1.21
CR-3	CR-3_Spot 160	124847.79	513.16	1.94	20.23	0.62	0.12	1.28	0.02	1.12	114.97	1.39	113.14	1.25	152.88	14.52	113.14	1.25
CR-3	CR-3_Spot 161	61871.87	483.92	1.80	19.86	0.91	0.10	1.63	0.01	1.34	98.04	1.52	94.27	1.26	190.85	21.27	94.27	1.26
CR-3	CR-3_Spot 162	13123.90	118.07	2.10	16.64	1.57	0.16	1.85	0.02	0.96	151.57	2.60	126.92	1.20	556.86	34.41	126.92	1.20
CR-3	CR-3_Spot 163	19462.10	81.42	2.17	17.00	1.87	0.13	2.29	0.02	1.30	119.79	2.59	100.38	1.29	524.73	41.47	100.38	1.29
CR-3	CR-3_Spot 164	155687.16	978.69	1.72	20.88	0.71	0.09	1.40	0.01	1.20	88.15	1.18	88.39	1.06	81.54	16.95	88.39	1.06
CR-3	CR-3_Spot 165	21166.30	375.87	4.18	19.90	0.91	0.10	1.37	0.02	1.02	100.71	1.31	97.93	0.99	166.95	21.18	97.93	0.99
CR-3	CR-3_Spot 166	7234.85	102.66	1.41	15.09	2.84	0.22	3.07	0.03	1.14	204.03	5.67	160.39	1.81	743.85	60.13	160.39	1.81
CR-3	CR-3_Spot 167	1430206.78	127.90	1.49	19.05	1.44	0.11	2.18	0.02	1.64	107.39	2.22	98.94	1.61	299.02	32.79	98.94	1.61
CR-3	CR-3_Spot 168	21145.35	333.16	3.61	15.86	0.95	0.22	1.61	0.03	1.30	197.98	2.90	159.78	2.05	681.62	20.41	159.78	2.05
CR-3	CR-3_Spot 169	35297.66	178.71	1.17	20.35	1.08	0.15	1.51	0.02	0.99	146.31	2.06	147.24	1.44	131.27	26.90	147.24	1.44
CR-3	CR-3_Spot 170	1388961.42	294.11	2.91	20.69	1.18	0.10	1.77	0.01	1.32	92.83	1.57	92.13	1.21	110.78	27.83	92.13	1.21
CR-3	CR-3_Spot 171	63167.62	326.14	2.42	20.65	0.74	0.10	1.34	0.01	1.12	96.13	1.23	95.80	1.06	104.41	17.48	95.80	1.06
CR-3	CR-3_Spot 172	222095.28	625.10	1.46	20.58	0.98	0.10	1.53	0.01	1.17	94.25	1.38	93.19	1.09	120.99	23.05	93.19	1.09
CR-3	CR-3_Spot 173	4728.76	311.12	3.63	9.74	2.62	0.21	2.86	0.02	1.14	196.05	5.09	99.13	1.12	1618.10	48.80	99.13	1.12
CR-3	CR-3_Spot 174	83965.91	704.33	1.98	20.26	1.23	0.10	1.60	0.01	1.01	92.78	1.42	90.37	0.91	155.34	28.88	90.37	0.91
CR-3	CR-3_Spot 175	37088.24	396.58	3.19	20.11	1.00	0.10	1.65	0.02	1.31	99.86	1.57	97.25	1.26	162.54	23.44	97.25	1.26
CR-3	CR-3_Spot 176	265540.92	440.44	4.51	19.43	1.29	0.11	1.88	0.02	1.38	105.35	1.89	98.71	1.35	258.40	29.58	98.71	1.35
CR-3	CR-3_Spot 177	8322.66	55.74	2.58	14.76	2.44	0.23	2.90	0.02	1.43	207.13	5.44	158.35	2.23	806.11	52.87	158.35	2.23
CR-3	CR-3_Spot 178	25681.39	267.47	2.24	19.75	1.17	0.14	1.79	0.02	1.35	129.00	2.17	125.37	1.68	196.52	27.38	125.37	1.68
CR-3	CR-3_Spot 179	143295.33	802.66	3.16	19.53	1.06	0.11	1.59	0.02	1.18	106.72	1.61	100.57	1.18	246.21	24.48	100.57	1.18
CR-3	CR-3_Spot 180	21119.78	243.36	2.49	19.57	1.44	0.12	1.94	0.02	1.30	119.07	2.18	114.35	1.47	214.39	33.48	114.35	1.47
CR-3	CR-3_Spot 181	75093.45	288.63	2.43	20.46	0.90	0.10	1.43	0.01	1.11	94.68	1.29	93.15	1.03	133.45	21.14	93.15	1.03
CR-3	CR-3_Spot 183	138540.06	237.66	13.58	21.13	1.19	0.10	1.61	0.02	1.08	98.16	1.51	99.71	1.07	60.72	28.40	99.71	1.07
CR-3	CR-3_Spot 185	74242.64	592.22	1.73	20.54	0.87	0.12	1.26	0.02	0.91	113.29	1.35	112.61	1.02	127.73	20.49	112.61	1.02
CR-3	CR-3_Spot 186	48384.53	263.64	1.94	20.14	0.93	0.16	1.59	0.02	1.29	150.49	2.22	149.34	1.90	168.62	21.73	149.34	1.90
CR-3	CR-3_Spot 187	12713.74	236.89	4.37	20.21	1.15	0.11	1.65	0.02	1.18	104.64	1.64	103.99	1.22	119.50	27.07	103.99	1.22
CR-3	CR-3_Spot 188	12240.16	370.20	3.48	15.12	1.46	0.21	1.91	0.02	1.22	195.89	3.39	151.04	1.82	777.51	30.78	151.04	1.82

CR-3	CR-3_Spot 189	100871.11	446.08	2.85	20.53	1.36	0.10	1.77	0.02	1.14	99.92	1.69	98.68	1.12	129.53	31.88	98.68	1.12
CR-3	CR-3_Spot 190	21351.15	330.21	2.68	20.61	0.84	0.09	1.61	0.01	1.37	89.96	1.39	89.76	1.22	95.22	20.08	89.76	1.22
CR-3	CR-3_Spot 191	145899.67	289.17	2.38	19.98	1.45	0.11	1.87	0.02	1.19	102.71	1.83	98.68	1.16	197.07	33.62	98.68	1.16
CR-3	CR-3_Spot 192	34999.30	297.49	3.24	20.46	0.98	0.10	1.56	0.02	1.15	99.84	1.49	98.76	1.13	125.60	24.89	98.76	1.13
CR-3	CR-3_Spot 193	22450.97	147.83	1.51	19.65	1.24	0.16	1.68	0.02	1.11	150.04	2.34	146.27	1.61	210.14	29.27	146.27	1.61
CR-3	CR-3_Spot 194	19354.12	1460.10	3.77	17.23	2.52	0.11	2.81	0.01	1.25	107.46	2.87	90.37	1.12	504.94	55.53	90.37	1.12
CR-3	CR-3_Spot 195	101621.60	54.91	3.87	11.64	0.83	2.72	1.36	0.23	1.07	1334.65	10.06	1333.77	12.92	1336.03	16.02	1336.03	16.02
CR-3	CR-3_Spot 196	68736.15	488.86	2.39	20.67	0.92	0.09	1.52	0.01	1.21	91.09	1.33	90.35	1.08	110.66	21.80	90.35	1.08
CR-3	CR-3_Spot 197	21625.37	228.34	2.39	20.22	0.82	0.16	1.40	0.02	1.14	147.20	1.92	147.62	1.67	140.47	19.18	147.62	1.67
CR-3	CR-3_Spot 198	418628.31	113.00	3.53	8.89	0.63	5.15	1.05	0.33	0.84	1844.12	8.97	1846.52	13.52	1841.40	11.49	1841.40	11.49
CR-3	CR-3_Spot 199	39924.58	337.83	1.80	17.75	1.73	0.12	2.07	0.02	1.15	114.57	2.25	98.82	1.13	455.76	38.31	98.82	1.13
CR-3	CR-3_Spot 200	4513.94	30.58	3.49	18.57	2.37	0.16	4.14	0.02	1.07	155.06	5.96	150.41	1.60	226.81	92.47	150.41	1.60
CR-3	CR-3_Spot 201	44570.85	348.73	2.66	19.18	1.15	0.13	1.75	0.02	1.31	122.49	2.02	114.47	1.48	281.10	26.58	114.47	1.48
CR-3	CR-3_Spot 202	114175.12	430.41	2.83	20.85	0.90	0.09	1.54	0.01	1.25	89.83	1.32	89.63	1.11	95.26	21.43	89.63	1.11
CR-3	CR-3_Spot 203	120887.18	383.15	2.49	19.89	1.26	0.10	1.69	0.01	1.12	92.36	1.49	88.01	0.98	206.39	29.15	88.01	0.98
CR-3	CR-3_Spot 204	139025.62	155.36	6.13	8.74	0.71	5.32	1.08	0.34	0.82	1871.42	9.25	1871.91	13.34	1870.86	12.72	1870.86	12.72
CR-3	CR-3_Spot 205	27821.99	392.98	3.08	19.23	1.00	0.10	1.82	0.01	1.52	98.76	1.71	92.07	1.39	263.43	22.90	92.07	1.39
CR-3	CR-3_Spot 206	11347.88	293.16	2.24	15.56	1.51	0.14	1.88	0.02	1.10	129.28	2.28	99.92	1.09	709.86	32.40	99.92	1.09
CR-3	CR-3_Spot 207	147520.87	407.90	6.32	18.53	0.69	0.42	1.36	0.06	1.17	357.45	4.09	355.88	4.05	367.67	15.52	355.88	4.05
CR-3	CR-3_Spot 208	74193.08	453.16	2.90	20.81	0.97	0.10	1.58	0.02	1.25	96.77	1.46	96.88	1.20	94.10	22.98	96.88	1.20
CR-3	CR-3_Spot 209	14268.71	110.17	2.76	16.10	1.71	0.20	1.97	0.02	0.96	185.41	3.33	151.37	1.43	644.67	36.91	151.37	1.43
CR-3	CR-3_Spot 210	17532.37	118.45	4.07	15.38	3.00	0.26	3.13	0.03	0.89	232.35	6.51	184.38	1.62	750.61	63.46	184.38	1.62
CR-3	CR-3_Spot 211	28396.27	453.22	2.06	16.47	1.86	0.13	2.28	0.02	1.29	123.90	2.65	99.92	1.28	612.85	40.46	99.92	1.28
CR-3	CR-3_Spot 212	4666.57	31.40	1.87	18.19	2.94	0.14	3.25	0.02	1.27	134.30	4.09	126.13	1.58	281.27	68.44	126.13	1.58
CR-3	CR-3_Spot 213	18242.84	638.85	2.38	16.92	1.13	0.12	1.54	0.02	1.05	119.29	1.74	99.04	1.03	544.64	24.74	99.04	1.03
CR-3	CR-3_Spot 214	50831.44	242.09	2.34	20.69	0.86	0.12	1.55	0.02	1.29	115.90	1.70	116.41	1.49	105.48	20.49	116.41	1.49
CR-3	CR-3_Spot 215	25208.23	262.72	1.39	16.45	2.38	0.19	2.84	0.02	1.54	173.07	4.52	142.50	2.17	614.35	51.55	142.50	2.17
CR-3	CR-3_Spot 216	432489.52	841.86	1.70	20.73	1.02	0.10	1.56	0.02	1.18	99.34	1.48	98.77	1.16	112.97	24.11	98.77	1.16
CR-3	CR-3_Spot 217	30480.77	580.11	3.38	21.00	0.92	0.09	1.55	0.01	1.25	91.52	1.36	92.75	1.15	59.56	22.00	92.75	1.15
CR-3	CR-3_Spot 218	131435.83	58.08	3.68	11.82	0.69	2.69	1.18	0.23	0.96	1325.74	8.76	1338.24	11.58	1305.58	13.49	1305.58	13.49
CR-3	CR-3_Spot 219	20514.16	134.61	1.77	15.24	3.62	0.21	3.75	0.02	0.98	194.60	6.65	150.09	1.45	775.63	76.23	150.09	1.45
CR-3	CR-3_Spot 220	20836.47	863.37	1.38	17.67	1.18	0.14	1.63	0.02	1.12	135.63	2.07	118.24	1.31	451.96	26.30	118.24	1.31
CR-3	CR-3_Spot 221	37592.53	292.51	2.76	20.47	1.13	0.10	1.88	0.02	1.50	100.07	1.79	98.98	1.47	126.06	26.68	98.98	1.47
CR-3	CR-3_Spot 223	44968.85	202.67	3.39	17.25	1.47	0.15	1.97	0.02	1.30	141.23	2.59	119.71	1.54	520.05	32.34	119.71	1.54
CR-3	CR-3_Spot 224	12491.30	200.00	3.16	15.98	2.82	0.14	3.10	0.02	1.29	137.04	3.98	108.91	1.40	656.97	60.48	108.91	1.40
CR-3	CR-3_Spot	11873.69	230.40	4.37	13.05	4.60	0.16	4.80	0.02	1.33	150.77	6.72	98.37	1.30	1082.07	92.52	98.37	1.30

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CR-3	CR-3_Spot 226	51284.16	178.06	2.99	20.87	1.13	0.11	1.94	0.02	1.57	103.78	1.91	104.67	1.63	83.38	26.88	104.67	1.63
CR-3	CR-3_Spot 227	53122.57	483.08	3.13	20.42	0.80	0.11	1.35	0.02	1.09	102.96	1.32	101.55	1.10	135.80	18.83	101.55	1.10
CR-3	CR-3_Spot 228	46018.76	40.39	4.66	19.71	2.48	0.13	2.87	0.02	1.44	119.98	3.24	115.07	1.64	218.49	57.34	115.07	1.64
CR-3	CR-3_Spot 229	36160.87	267.03	2.87	17.19	1.30	0.13	1.69	0.02	1.06	121.57	1.93	102.06	1.08	522.37	28.65	102.06	1.08
CR-3	CR-3_Spot 230	123932.33	382.60	2.55	18.82	1.65	0.11	1.99	0.01	1.11	101.92	1.93	92.42	1.02	330.21	37.33	92.42	1.02
CR-3	CR-3_Spot 231	81142.44	97.97	3.14	5.80	0.53	11.46	1.04	0.48	0.89	2561.00	9.69	2535.98	18.68	2580.86	8.87	2580.86	8.87
CR-3	CR-3_Spot 232	30707.25	210.50	1.63	18.90	0.99	0.17	1.64	0.02	1.25	161.31	2.45	151.64	1.88	305.75	24.21	151.64	1.88
CR-3	CR-3_Spot 233	336682.44	105.89	1.50	20.47	1.33	0.16	1.67	0.02	1.02	147.58	2.30	148.03	1.49	140.26	31.17	148.03	1.49
CR-3	CR-3_Spot 235	13527.33	67.12	1.48	16.29	3.05	0.19	3.22	0.02	1.01	175.19	5.19	144.26	1.45	616.19	66.10	144.26	1.45
CR-3	CR-3_Spot 236	159329.86	174.36	3.93	19.94	1.24	0.13	1.52	0.02	0.88	122.16	1.75	118.25	1.03	198.89	28.71	118.25	1.03
CR-3	CR-3_Spot 237	19325.05	87.30	3.11	19.33	1.74	0.21	2.49	0.03	1.62	192.81	4.38	188.94	3.02	240.47	43.62	188.94	3.02
CR-3	CR-3_Spot 238	27429.99	172.51	2.04	20.07	1.12	0.16	1.52	0.02	0.94	149.42	2.11	148.46	1.38	164.80	27.76	148.46	1.38
CR-3	CR-3_Spot 239	6227.83	117.99	3.16	9.94	4.13	0.34	4.19	0.03	0.71	299.00	10.86	160.42	1.13	1596.99	77.18	160.42	1.13
CR-3	CR-3_Spot 240	74559.78	304.98	2.75	19.59	1.09	0.13	1.43	0.02	0.93	126.09	1.69	120.26	1.10	237.40	25.05	120.26	1.10
CR-3	CR-3_Spot 241	4666.52	185.20	3.80	11.66	3.79	0.19	3.93	0.02	1.02	175.31	6.33	105.42	1.06	1266.71	74.13	105.42	1.06
CR-3	CR-3_Spot 242	2934.72	166.41	2.43	7.53	3.62	0.47	3.80	0.03	1.16	392.51	12.36	169.41	1.94	2078.04	63.68	169.41	1.94
CR-3	CR-3_Spot 243	43444.59	298.60	3.98	20.17	0.84	0.12	1.59	0.02	1.34	117.95	1.77	115.81	1.54	161.41	19.71	115.81	1.54
CR-3	CR-3_Spot 244	134081.50	88.05	3.98	18.33	1.24	0.30	1.50	0.04	0.84	269.07	3.54	255.19	2.10	391.69	27.80	255.19	2.10
CR-3	CR-3_Spot 245	66918.51	352.14	1.95	17.15	1.41	0.14	1.73	0.02	0.99	131.22	2.13	110.07	1.08	533.46	31.02	110.07	1.08
CR-3	CR-3_Spot 246	354372.39	174.30	2.97	20.28	1.06	0.12	1.37	0.02	0.87	118.72	1.54	116.62	1.01	161.05	24.74	116.62	1.01
CR-3	CR-3_Spot 247	238610.60	138.32	3.48	19.28	1.18	0.12	1.36	0.02	0.68	116.15	1.49	108.45	0.73	276.96	26.99	108.45	0.73
CR-3	CR-3_Spot 248	6270.54	169.86	2.42	11.71	1.71	0.20	1.94	0.02	0.91	188.45	3.33	113.70	1.02	1272.11	33.39	113.70	1.02
CR-3	CR-3_Spot 249	4099.42	32.64	1.85	18.13	2.17	0.17	2.52	0.02	1.25	159.10	3.71	151.93	1.88	267.10	50.12	151.93	1.88
CR-3	CR-3_Spot 250	22521.43	353.29	4.13	20.29	1.09	0.13	2.11	0.02	1.80	122.12	2.43	121.61	2.17	132.20	26.05	121.61	2.17
CR-3	CR-3_Spot 251	315277.16	1293.40	2.65	20.69	0.95	0.10	1.61	0.02	1.31	97.49	1.50	96.79	1.26	114.83	22.37	96.79	1.26
CR-3	CR-3_Spot 252	17531.65	310.39	3.00	16.90	1.16	0.12	1.58	0.02	1.02	117.70	1.76	97.65	0.99	544.67	26.34	97.65	0.99
CR-3	CR-3_Spot 253	36936.45	221.62	2.90	14.46	3.71	0.16	3.89	0.02	1.14	149.84	5.42	107.17	1.21	892.70	76.82	107.17	1.21
CR-3	CR-3_Spot 254	3563.50	139.94	1.65	9.76	6.84	0.34	7.07	0.02	1.77	293.83	18.04	157.17	2.75	1598.24	127.86	157.17	2.75
CR-3	CR-3_Spot 255	7153.78	353.36	3.17	13.03	3.34	0.27	3.52	0.03	1.11	240.21	7.52	164.70	1.81	1063.12	67.14	164.70	1.81
CR-3	CR-3_Spot 256	27584.88	312.21	4.09	20.29	1.00	0.11	1.50	0.02	1.04	102.55	1.46	101.02	1.04	138.14	25.37	101.02	1.04
CR-3	CR-3_Spot 257	5307.10	91.37	2.05	17.63	2.96	0.15	4.00	0.02	1.13	140.82	5.26	127.50	1.42	371.53	86.41	127.50	1.42
CR-3	CR-3_Spot 258	201561.66	214.29	5.24	20.29	1.03	0.11	1.68	0.02	1.32	106.82	1.70	104.36	1.37	161.95	24.02	104.36	1.37
CR-3	CR-3_Spot 259	169418.82	162.74	1.86	18.62	1.70	0.11	2.01	0.02	1.06	110.23	2.10	99.05	1.05	359.08	38.45	99.05	1.05
CR-3	CR-3_Spot 260	93092.14	458.37	2.85	19.75	0.89	0.11	1.45	0.02	1.14	104.79	1.44	99.80	1.13	220.01	20.57	99.80	1.13
CR-3	CR-3_Spot 261	35638.48	446.66	3.13	19.65	0.93	0.11	1.58	0.02	1.28	104.97	1.58	100.00	1.27	219.38	21.54	100.00	1.27

CR-3	CR-3_Spot 262	53702.31	154.87	2.85	16.50	2.17	0.15	2.45	0.02	1.14	142.84	3.27	115.86	1.31	618.11	46.92	115.86	1.31
CR-3	CR-3_Spot 263	17063.53	184.08	2.33	15.07	2.68	0.14	3.01	0.02	1.35	136.68	3.84	101.97	1.36	791.71	56.41	101.97	1.36
CR-3	CR-3_Spot 264	2867.14	27.11	3.60	19.28	3.16	0.15	3.60	0.02	1.20	142.27	4.77	148.68	1.76	36.55	NA	148.68	1.76
CR-3	CR-3_Spot 265	197072.78	795.09	1.45	20.54	0.79	0.09	1.37	0.01	1.11	91.73	1.20	90.15	1.00	132.92	18.64	90.15	1.00
CR-3	CR-3_Spot 266	3711.28	56.24	1.32	13.28	3.22	0.24	3.38	0.02	0.95	220.30	6.70	156.39	1.47	973.51	66.23	156.39	1.47
CR-3	CR-3_Spot 267	15600.43	88.73	1.35	12.61	1.98	0.20	2.31	0.02	1.18	183.50	3.88	116.89	1.37	1159.74	39.36	116.89	1.37
CR-3	CR-3_Spot 268	841721.59	397.63	3.02	20.42	0.92	0.11	1.37	0.02	1.02	109.87	1.43	108.26	1.09	144.77	21.63	108.26	1.09
CR-3	CR-3_Spot 269	16772.32	324.35	2.12	19.03	1.38	0.10	1.90	0.01	1.24	97.04	1.76	90.18	1.11	269.16	33.09	90.18	1.11
CR-3	CR-3_Spot 270	51422.91	502.59	4.37	20.66	0.89	0.10	1.26	0.02	0.90	97.25	1.17	97.00	0.86	103.36	21.00	97.00	0.86
CR-3	CR-3_Spot 271	117550.38	227.93	2.53	20.43	0.83	0.16	1.57	0.02	1.34	148.58	2.18	149.26	1.98	137.75	19.43	149.26	1.98
CR-3	CR-3_Spot 272	151223.82	317.70	2.66	19.82	1.11	0.16	1.60	0.02	1.16	152.29	2.27	148.56	1.71	210.74	25.67	148.56	1.71
CR-3	CR-3_Spot 273	280631.41	1048.83	4.55	20.24	0.80	0.18	1.48	0.03	1.25	164.73	2.25	164.78	2.03	164.01	18.77	164.78	2.03
CR-3	CR-3_Spot 274	9995.44	156.52	2.55	20.67	1.53	0.10	1.76	0.02	0.86	96.01	1.61	98.14	0.84	43.40	36.70	98.14	0.84
CR-3	CR-3_Spot 275	15012.91	13.15	1.18	18.73	3.92	0.18	4.21	0.03	1.51	168.50	6.53	159.27	2.38	300.22	89.54	159.27	2.38
CR-3	CR-3_Spot 276	6276.57	58.58	2.27	12.88	4.91	0.28	5.01	0.03	0.91	254.25	11.27	174.30	1.57	1076.47	98.96	174.30	1.57
CR-3	CR-3_Spot 277	45255.12	521.26	2.21	19.73	1.38	0.10	1.83	0.01	1.20	95.75	1.67	91.26	1.09	209.01	31.98	91.26	1.09
CR-3	CR-3_Spot 278	83367.85	190.06	2.79	16.35	1.53	0.13	1.85	0.01	1.03	120.02	2.09	95.57	0.97	636.84	33.03	95.57	0.97
CR-3	CR-3_Spot 279	124323.98	68.93	2.34	19.58	2.12	0.13	2.45	0.02	1.22	123.13	2.84	117.33	1.42	236.68	48.92	117.33	1.42
CR-3	CR-3_Spot 280	73988.66	196.26	2.92	20.25	1.12	0.16	1.66	0.02	1.23	147.43	2.28	146.95	1.78	155.21	26.25	146.95	1.78
CR-3	CR-3_Spot 281	33866.54	550.80	2.39	20.63	0.93	0.09	1.45	0.01	1.09	88.44	1.22	88.03	0.95	99.50	22.56	88.03	0.95
CR-3	CR-3_Spot 282	44162.20	363.91	2.34	18.13	1.81	0.12	2.23	0.02	1.30	110.68	2.34	97.53	1.26	403.70	40.54	97.53	1.26
CR-3	CR-3_Spot 283	4179.57	274.56	2.45	8.53	9.02	0.37	9.13	0.02	1.42	321.26	25.16	150.89	2.12	1863.66	163.22	150.89	2.12
CR-3	CR-3_Spot 284	21645.38	212.09	2.81	19.58	1.16	0.13	1.80	0.02	1.35	121.99	2.07	117.36	1.57	213.26	27.46	117.36	1.57
CR-3	CR-3_Spot 285	65390.29	403.78	2.59	20.63	0.88	0.09	1.39	0.01	1.08	91.82	1.22	91.08	0.98	111.03	20.77	91.08	0.98
CR-3	CR-3_Spot 286	50722.34	420.55	2.83	20.54	0.82	0.11	1.51	0.02	1.26	105.74	1.52	105.23	1.32	117.29	19.42	105.23	1.32
CR-3	CR-3_Spot 287	363814.94	277.83	1.78	20.00	0.78	0.15	1.37	0.02	1.12	144.66	1.85	141.75	1.58	192.63	18.26	141.75	1.58
CR-3	CR-3_Spot 288	152625.28	59.64	1.77	6.17	0.61	10.12	1.37	0.45	1.22	2446.20	12.63	2411.06	24.56	2475.54	10.36	2475.54	10.36
CR-3	CR-3_Spot 289	38082.26	380.23	2.16	19.04	0.80	0.17	1.27	0.02	0.95	157.65	1.85	148.92	1.40	290.84	19.30	148.92	1.40
CR-3	CR-3_Spot 290	69734.50	226.31	2.49	19.86	0.79	0.18	1.30	0.03	1.02	166.16	1.99	163.82	1.66	199.56	18.56	163.82	1.66
CR-3	CR-3_Spot 291	67925.21	764.59	3.36	20.54	0.78	0.11	1.15	0.02	0.84	109.74	1.20	109.30	0.91	119.31	18.61	109.30	0.91
CR-3	CR-3_Spot 292	64280.63	617.65	1.88	19.56	1.91	0.10	2.25	0.01	1.18	94.84	2.04	89.42	1.05	233.52	44.34	89.42	1.05
CR-3	CR-3_Spot 293	6501.89	98.15	3.02	15.81	3.34	0.13	3.54	0.02	1.16	128.55	4.27	102.70	1.19	637.70	71.93	102.70	1.19
CR-3	CR-3_Spot 294	115833.17	670.98	2.48	20.16	0.97	0.10	1.47	0.02	1.10	99.91	1.40	97.07	1.06	168.18	22.80	97.07	1.06
CR-3	CR-3_Spot 295	142010.54	573.00	2.67	19.68	1.02	0.17	1.61	0.02	1.24	156.43	2.33	151.97	1.86	224.48	23.62	151.97	1.86
CR-3	CR-3_Spot 296	6131.22	126.17	1.77	11.72	7.10	0.24	7.40	0.02	1.62	214.44	14.30	131.30	2.10	1266.44	141.09	131.30	2.10
CR-3	CR-3_Spot	309054.18	969.03	3.11	20.21	0.76	0.16	1.36	0.02	1.13	148.95	1.89	147.93	1.65	165.34	17.82	147.93	1.65

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CR-3	CR-3_Spot 298	21300.87	392.79	2.36	20.58	0.84	0.09	1.44	0.01	1.17	87.18	1.21	87.05	1.01	90.77	20.01	87.05	1.01
CR-3	CR-3_Spot 299	128545.94	326.25	2.28	20.17	1.02	0.17	1.71	0.03	1.37	160.22	2.53	159.77	2.16	166.87	23.86	159.77	2.16
CR-3	CR-3_Spot 300	69415.34	381.62	3.81	19.69	0.74	0.18	1.40	0.03	1.18	166.90	2.15	163.45	1.91	216.03	17.28	163.45	1.91
CR-3	CR-3_Spot 301	55882.16	569.63	2.11	19.34	1.19	0.10	1.61	0.01	1.07	99.25	1.52	92.87	0.99	255.42	27.51	92.87	0.99
CR-3	CR-3_Spot 302	14251.32	461.45	1.43	17.20	2.26	0.12	2.55	0.02	1.18	114.78	2.77	97.44	1.15	491.23	49.92	97.44	1.15
CR-3	CR-3_Spot 303	55859.71	141.48	2.39	18.97	1.25	0.18	1.53	0.02	0.89	168.05	2.37	158.82	1.40	300.10	28.48	158.82	1.40
CR-3	CR-3_Spot 304	63545.38	761.10	2.33	18.87	0.94	0.16	1.36	0.02	0.98	149.34	1.89	139.24	1.35	312.89	21.49	139.24	1.35
CR-3	CR-3_Spot 305	110675.39	441.11	3.02	19.98	0.72	0.17	1.27	0.02	1.04	157.70	1.85	155.52	1.60	190.56	16.67	155.52	1.60
CR-3	CR-3_Spot 306	149603.51	83.93	2.79	20.03	1.37	0.16	1.66	0.02	0.94	151.24	2.33	149.00	1.39	186.36	31.78	149.00	1.39
CR-3	CR-3_Spot 307	17118.28	114.18	2.21	19.87	0.93	0.16	1.62	0.02	1.05	148.33	2.24	147.06	1.53	168.73	28.88	147.06	1.53
CR-3	CR-3_Spot 308	14085.49	19.64	2.19	16.87	3.93	0.19	4.10	0.02	1.14	178.60	6.71	152.62	1.72	537.95	86.13	152.62	1.72
CR-3	CR-3_Spot 309	92427.09	374.43	1.84	20.63	1.04	0.10	1.56	0.01	1.15	93.87	1.40	93.10	1.07	113.44	24.65	93.10	1.07
CR-3	CR-3_Spot 310	400656.88	548.02	2.29	20.55	0.76	0.12	1.17	0.02	0.90	113.05	1.26	112.33	1.00	128.31	17.85	112.33	1.00
CR-3	CR-3_Spot 311	61434.43	290.11	3.97	20.68	1.21	0.13	1.83	0.02	1.37	120.04	2.07	120.84	1.64	104.15	28.80	120.84	1.64
CR-3	CR-3_Spot 312	32387.64	190.61	3.97	19.90	1.05	0.17	1.31	0.02	0.72	159.64	1.94	157.96	1.13	184.55	25.59	157.96	1.13
CR-3	CR-3_Spot 313	29850.20	260.33	5.77	19.80	0.92	0.19	1.60	0.03	1.29	176.77	2.59	175.48	2.24	194.06	21.87	175.48	2.24
CR-3	CR-3_Spot 314	5967.39	130.23	4.40	19.81	1.16	0.13	2.98	0.02	0.96	128.51	3.60	130.17	1.23	98.07	66.86	130.17	1.23
CR-3	CR-3_Spot 315	4240.74	99.51	3.13	8.87	9.80	0.26	10.32	0.02	2.91	238.23	21.93	111.95	3.23	1790.71	180.86	111.95	3.23
CR-7	CR-7_Spot 1	5113.79	133.08	0.77	20.08	1.55	0.15	2.20	0.02	1.45	142.27	2.92	147.79	2.11	51.23	39.48	147.79	2.11
CR-7	CR-7_Spot 2	254035.13	5067.92	2.76	20.68	0.79	0.11	1.56	0.02	1.35	105.35	1.56	104.71	1.40	119.84	18.52	104.71	1.40
CR-7	CR-7_Spot 3	78635.89	832.67	1.90	19.93	1.28	0.11	1.97	0.02	1.50	101.54	1.90	97.40	1.45	199.71	29.65	97.40	1.45
CR-7	CR-7_Spot 4	4270.77	452.21	1.91	12.42	6.71	0.28	6.91	0.03	1.61	250.84	15.36	167.11	2.66	1131.22	133.94	167.11	2.66
CR-7	CR-7_Spot 5	43241.29	199.92	1.13	20.59	1.41	0.16	1.93	0.02	1.31	154.13	2.76	156.50	2.03	117.78	33.36	156.50	2.03
CR-7	CR-7_Spot 6	13264.21	639.14	2.49	20.93	1.02	0.11	1.57	0.02	1.18	107.41	1.60	110.52	1.29	38.93	24.88	110.52	1.29
CR-7	CR-7_Spot 7	96604.71	853.19	2.46	20.10	1.76	0.11	2.36	0.02	1.57	104.55	2.34	101.14	1.58	182.95	40.95	101.14	1.58
CR-7	CR-7_Spot 8	6148.89	270.57	1.86	11.55	7.16	0.20	7.34	0.02	1.59	184.10	12.36	108.96	1.72	1306.01	139.30	108.96	1.72
CR-7	CR-7_Spot 9	114217.61	651.92	2.76	20.47	1.02	0.10	1.71	0.02	1.37	100.78	1.64	99.19	1.35	138.52	24.06	99.19	1.35
CR-7	CR-7_Spot 10	102596.87	356.13	1.39	20.06	1.35	0.12	1.85	0.02	1.27	114.64	2.01	111.13	1.40	187.99	31.44	111.13	1.40
CR-7	CR-7_Spot 11	220535.18	309.72	1.54	8.88	0.83	5.22	1.34	0.34	1.05	1856.10	11.42	1864.53	17.03	1846.64	15.02	1846.64	15.02
CR-7	CR-7_Spot 12	101872.64	1038.22	1.08	20.37	0.86	0.17	1.85	0.03	1.64	159.77	2.73	160.29	2.59	152.05	20.04	160.29	2.59
CR-7	CR-7_Spot 13	3422.57	92.76	1.44	20.41	2.03	0.14	2.61	0.02	1.30	131.67	3.22	142.93	1.84	NA	NA	142.93	1.84
CR-7	CR-7_Spot 14	11302.80	641.78	2.11	20.38	1.10	0.10	1.77	0.02	1.39	96.82	1.63	96.84	1.33	96.44	26.02	96.84	1.33
CR-7	CR-7_Spot 15	5038.94	325.65	2.12	20.67	1.70	0.09	2.10	0.01	1.24	89.83	1.81	94.14	1.16	NA	NA	94.14	1.16
CR-7	CR-7_Spot 16	33656.55	302.17	1.31	20.45	1.23	0.16	1.52	0.02	0.88	148.61	2.11	149.78	1.30	130.02	29.33	149.78	1.30
CR-7	CR-7_Spot 17	102735.11	299.23	1.29	13.45	0.99	1.79	1.34	0.17	0.91	1042.08	8.76	1035.99	8.75	1054.87	19.88	1054.87	19.88

CR-7	CR-7_Spot 18	23606.50	1259.47	1.87	20.48	0.82	0.09	1.36	0.01	1.08	91.98	1.20	90.98	0.98	117.98	19.46	90.98	0.98
CR-7	CR-7_Spot 19	101527.18	214.56	1.94	20.43	1.45	0.11	1.86	0.02	1.17	108.13	1.91	106.40	1.23	146.43	34.08	106.40	1.23
CR-7	CR-7_Spot 20	53544.99	514.60	1.54	20.73	1.34	0.10	2.05	0.01	1.55	95.54	1.87	95.11	1.46	106.05	31.78	95.11	1.46
CR-7	CR-7_Spot 21	303456.24	630.78	3.06	20.16	0.70	0.18	1.69	0.03	1.54	165.00	2.58	163.76	2.49	182.77	16.39	163.76	2.49
CR-7	CR-7_Spot 22	117384.23	88.20	0.83	8.44	1.00	5.55	1.39	0.34	0.97	1908.53	11.99	1880.78	15.88	1938.80	17.84	1938.80	17.84
CR-7	CR-7_Spot 23	184515.37	585.72	2.05	9.37	0.82	4.61	1.54	0.31	1.30	1750.33	12.82	1750.71	19.95	1749.85	14.94	1749.85	14.94
CR-7	CR-7_Spot 24	93402.73	190.55	1.74	20.51	1.23	0.14	1.68	0.02	1.15	136.89	2.16	136.88	1.55	137.00	28.91	136.88	1.55
CR-7	CR-7_Spot 25	66553.65	1121.38	1.84	20.16	1.14	0.17	1.89	0.02	1.50	156.52	2.74	155.32	2.30	174.84	26.81	155.32	2.30
CR-7	CR-7_Spot 26	278148.31	617.10	1.88	20.49	1.32	0.11	1.95	0.02	1.44	102.18	1.90	100.34	1.43	145.23	31.01	100.34	1.43
CR-7	CR-7_Spot 27	216709.50	389.87	1.37	5.85	0.71	11.58	1.24	0.49	1.01	2570.82	11.57	2567.24	21.47	2573.63	11.87	2573.63	11.87
CR-7	CR-7_Spot 28	304072.89	1186.99	1.47	20.96	0.79	0.11	1.84	0.02	1.66	107.28	1.87	107.98	1.78	91.78	18.70	107.98	1.78
CR-7	CR-7_Spot 29	52780.66	1279.30	1.35	20.69	1.04	0.11	1.64	0.02	1.26	105.36	1.64	105.17	1.32	109.62	24.63	105.17	1.32
CR-7	CR-7_Spot 30	51954.29	815.78	2.39	20.29	1.06	0.10	1.72	0.01	1.36	96.91	1.59	94.53	1.27	156.00	24.82	94.53	1.27
CR-7	CR-7_Spot 31	57059.83	1680.41	2.11	20.57	0.95	0.11	1.80	0.02	1.53	110.12	1.88	109.45	1.66	124.72	22.36	109.45	1.66
CR-7	CR-7_Spot 32	19018.20	304.84	1.86	20.57	1.59	0.16	2.43	0.02	1.84	147.36	3.34	150.36	2.73	99.47	37.71	150.36	2.73
CR-7	CR-7_Spot 33	43793.59	304.88	0.87	19.93	1.17	0.17	1.56	0.02	1.03	156.15	2.26	153.51	1.56	196.46	27.30	153.51	1.56
CR-7	CR-7_Spot 34	137957.81	923.00	1.98	20.26	1.02	0.13	1.72	0.02	1.39	122.21	1.99	119.79	1.65	169.45	23.92	119.79	1.65
CR-7	CR-7_Spot 35	5335.74	236.88	1.75	20.00	1.61	0.10	2.08	0.02	1.26	97.78	1.94	98.88	1.24	71.03	39.26	98.88	1.24
CR-7	CR-7_Spot 36	163327.35	788.24	2.10	20.79	1.04	0.10	1.91	0.01	1.60	94.45	1.72	93.88	1.49	108.98	24.65	93.88	1.49
CR-7	CR-7_Spot 37	912490.31	1461.99	1.82	20.90	0.76	0.10	1.48	0.01	1.26	94.11	1.33	93.85	1.18	100.67	18.07	93.85	1.18
CR-7	CR-7_Spot 38	32392.34	284.87	3.64	20.45	1.38	0.16	1.75	0.02	1.08	146.58	2.39	147.55	1.57	130.92	32.52	147.55	1.57
CR-7	CR-7_Spot 39	106815.10	1561.07	2.26	20.96	0.98	0.09	1.52	0.01	1.16	89.37	1.30	89.49	1.03	86.08	23.34	89.49	1.03
CR-7	CR-7_Spot 40	2721124.01	375.25	2.16	20.35	1.24	0.15	1.67	0.02	1.12	142.80	2.23	141.51	1.57	164.37	28.98	141.51	1.57
CR-7	CR-7_Spot 41	63935.69	742.80	1.95	20.11	0.82	0.12	1.42	0.02	1.16	113.51	1.52	110.30	1.26	181.32	19.08	110.30	1.26
CR-7	CR-7_Spot 42	38235.52	1128.53	2.07	20.48	0.93	0.11	1.65	0.02	1.36	110.05	1.72	109.07	1.47	131.43	22.02	109.07	1.47
CR-7	CR-7_Spot 43	32194.29	217.84	1.69	20.33	1.42	0.14	1.76	0.02	1.02	129.31	2.14	128.46	1.30	144.85	33.72	128.46	1.30
CR-7	CR-7_Spot 44	35752.69	957.57	2.13	20.68	1.08	0.10	1.58	0.01	1.16	92.20	1.39	91.56	1.05	108.84	25.42	91.56	1.05
CR-7	CR-7_Spot 45	8189.59	290.21	2.34	20.58	1.31	0.12	1.73	0.02	1.11	111.98	1.84	114.90	1.27	50.45	31.67	114.90	1.27
CR-7	CR-7_Spot 46	32570.23	370.39	1.70	20.05	1.44	0.17	1.96	0.03	1.32	162.27	2.94	161.23	2.10	177.51	33.86	161.23	2.10
CR-7	CR-7_Spot 47	15659.13	580.32	2.40	20.13	1.06	0.17	1.78	0.03	1.43	161.93	2.67	163.10	2.30	144.88	25.18	163.10	2.30
CR-7	CR-7_Spot 48	50116.85	770.05	1.73	20.57	0.96	0.12	1.59	0.02	1.25	111.83	1.68	111.18	1.37	125.70	23.13	111.18	1.37
CR-7	CR-7_Spot 49	38890.75	464.71	2.55	20.56	1.08	0.11	1.55	0.02	1.09	108.14	1.59	107.42	1.16	123.99	25.98	107.42	1.16
CR-7	CR-7_Spot 50	184627.76	1206.05	0.81	20.49	0.95	0.13	1.68	0.02	1.38	122.27	1.93	121.01	1.66	146.89	22.30	121.01	1.66
CR-7	CR-7_Spot 51	2435.37	57.51	1.65	20.49	3.34	0.13	3.96	0.02	1.39	128.54	4.78	145.33	2.00	NA	NA	145.33	2.00
CR-7	CR-7_Spot 52	193358.91	4355.43	2.49	20.64	0.70	0.14	1.48	0.02	1.30	136.67	1.89	137.06	1.77	129.82	16.45	137.06	1.77
CR-7	CR-7_Spot	239915.90	528.03	1.98	20.86	1.56	0.10	2.13	0.01	1.45	93.92	1.91	93.50	1.35	104.77	36.92	93.50	1.35

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CR-7	CR-7_Spot 55	17964.62	287.18	1.75	20.58	1.38	0.12	1.83	0.02	1.18	113.67	1.97	114.31	1.34	100.24	32.97	114.31	1.34
CR-7	CR-7_Spot 56	59553.13	1072.11	2.71	20.74	1.00	0.10	1.67	0.02	1.33	98.91	1.57	98.45	1.30	109.93	23.63	98.45	1.30
CR-7	CR-7_Spot 57	137842.52	573.75	2.86	13.67	0.65	1.74	1.33	0.17	1.16	1025.25	8.59	1024.77	10.97	1026.25	13.25	1026.25	13.25
CR-7	CR-7_Spot 58	24672.99	680.28	2.16	19.85	1.13	0.19	1.93	0.03	1.56	179.63	3.17	178.33	2.74	196.74	26.48	178.33	2.74
CR-7	CR-7_Spot 59	5670.60	363.70	1.21	19.62	1.89	0.10	2.53	0.01	1.17	95.13	2.30	93.85	1.09	127.41	52.75	93.85	1.09
CR-7	CR-7_Spot 60	115384.36	575.97	3.32	20.11	1.03	0.18	1.72	0.03	1.38	164.45	2.61	162.99	2.22	185.44	24.09	162.99	2.22
CR-7	CR-7_Spot 61	45077.33	1269.83	6.16	20.79	1.13	0.11	1.81	0.02	1.41	103.67	1.78	103.84	1.45	99.59	26.77	103.84	1.45
CR-7	CR-7_Spot 62	18681.32	591.63	2.65	20.19	0.95	0.11	1.61	0.02	1.28	103.06	1.57	101.14	1.28	147.69	22.84	101.14	1.28
CR-7	CR-7_Spot 63	164347.65	896.53	1.91	20.49	1.05	0.12	1.92	0.02	1.61	119.17	2.16	117.69	1.87	148.74	24.59	117.69	1.87
CR-7	CR-7_Spot 64	173913.43	2628.30	1.17	20.26	1.02	0.12	1.65	0.02	1.30	117.20	1.83	114.36	1.48	175.37	23.74	114.36	1.48
CR-7	CR-7_Spot 65	114296.94	1489.89	2.66	20.58	1.07	0.10	1.72	0.01	1.34	93.33	1.53	91.58	1.22	138.20	25.23	91.58	1.22
CR-7	CR-7_Spot 66	125279.39	1242.87	1.97	20.60	0.77	0.18	1.57	0.03	1.37	164.17	2.38	166.09	2.25	136.62	18.09	166.09	2.25
CR-7	CR-7_Spot 67	90766.17	497.43	1.63	19.82	1.11	0.13	1.88	0.02	1.52	125.03	2.21	119.87	1.80	224.28	25.72	119.87	1.80
CR-7	CR-7_Spot 68	5760.75	171.06	1.76	20.09	1.53	0.12	3.31	0.02	1.10	113.93	3.57	115.76	1.27	75.71	74.17	115.76	1.27
CR-7	CR-7_Spot 69	15759.88	215.62	1.79	20.73	1.46	0.11	1.86	0.02	1.15	105.71	1.87	106.86	1.22	80.00	34.67	106.86	1.22
CR-7	CR-7_Spot 70	487239.22	693.10	1.38	20.18	1.11	0.12	1.80	0.02	1.41	113.23	1.92	109.69	1.53	188.23	25.97	109.69	1.53
CR-7	CR-7_Spot 71	54435.12	1909.21	1.66	21.12	0.58	0.09	1.28	0.01	1.14	91.53	1.12	92.48	1.05	66.88	13.82	92.48	1.05
CR-7	CR-7_Spot 72	63520.75	917.12	1.91	20.85	0.83	0.11	1.57	0.02	1.33	103.61	1.54	103.83	1.37	98.63	19.56	103.83	1.37
CR-7	CR-7_Spot 73	30030.42	317.86	1.84	20.52	1.12	0.16	1.67	0.02	1.24	146.53	2.29	147.94	1.82	123.60	26.48	147.94	1.82
CR-7	CR-7_Spot 74	1272347.09	1206.11	1.65	20.72	0.93	0.10	1.42	0.01	1.07	92.77	1.26	91.56	0.97	123.74	21.83	91.56	0.97
CR-7	CR-7_Spot 75	751334.54	1048.95	2.90	20.09	1.02	0.16	1.59	0.02	1.22	150.40	2.22	147.54	1.77	195.83	23.67	147.54	1.77
CR-7	CR-7_Spot 76	54955.82	645.71	1.15	19.64	1.18	0.13	2.05	0.02	1.67	122.03	2.35	116.19	1.93	237.42	27.22	116.19	1.93
CR-7	CR-7_Spot 77	24185.30	322.81	1.11	19.58	1.12	0.16	1.41	0.02	0.84	153.11	2.01	148.19	1.23	229.92	26.22	148.19	1.23
CR-7	CR-7_Spot 79	66827.83	1795.51	0.61	20.12	0.91	0.13	1.50	0.02	1.19	121.94	1.73	118.81	1.41	183.52	21.32	118.81	1.41
CR-7	CR-7_Spot 80	42808.34	250.09	1.35	19.45	2.10	0.17	2.42	0.02	1.22	158.29	3.55	151.73	1.83	257.72	48.17	151.73	1.83
CR-7	CR-7_Spot 81	75241.99	219.52	1.40	10.93	0.63	3.26	1.14	0.26	0.95	1471.07	8.89	1474.92	12.57	1465.51	12.00	1465.51	12.00
CR-7	CR-7_Spot 82	23366.37	792.46	1.22	18.47	1.09	0.19	1.52	0.03	1.06	179.48	2.51	165.72	1.74	364.66	24.55	165.72	1.74
CR-7	CR-7_Spot 83	90251.66	620.04	2.40	20.64	1.27	0.10	1.99	0.01	1.53	97.10	1.84	95.82	1.46	128.71	29.95	95.82	1.46
CR-7	CR-7_Spot 84	17881.36	681.43	1.32	20.59	1.41	0.10	2.13	0.02	1.48	98.36	2.00	98.23	1.45	101.30	36.27	98.23	1.45
CR-7	CR-7_Spot 85	582979.32	832.51	1.91	20.26	1.24	0.11	1.97	0.02	1.53	104.26	1.95	101.06	1.53	178.04	28.87	101.06	1.53
CR-7	CR-7_Spot 86	6394.99	110.62	2.58	20.01	1.77	0.12	2.23	0.02	1.24	116.54	2.45	117.52	1.45	96.61	43.78	117.52	1.45
CR-7	CR-7_Spot 87	51094.62	658.01	1.91	18.98	1.53	0.13	2.11	0.02	1.45	121.38	2.42	111.62	1.60	317.12	34.91	111.62	1.60
CR-7	CR-7_Spot 88	67205.92	754.80	2.30	20.81	0.91	0.10	1.54	0.02	1.23	97.53	1.43	97.19	1.19	105.85	21.62	97.19	1.19
CR-7	CR-7_Spot 89	51989.48	1097.66	2.34	20.80	0.90	0.10	1.62	0.02	1.33	96.88	1.50	96.59	1.28	104.09	21.62	96.59	1.28
CR-7	CR-7_Spot 90	54671.12	636.65	2.81	7.52	1.22	6.55	1.91	0.36	1.47	2052.20	16.84	1960.15	24.87	2145.98	21.32	2145.98	21.32

CR-7	CR-7_Spot 91	13304.56	232.60	2.34	19.79	1.80	0.10	2.55	0.02	1.42	100.01	2.43	96.62	1.36	181.54	49.38	96.62	1.36
CR-7	CR-7_Spot 92	68922.44	997.69	1.40	20.62	1.24	0.10	1.99	0.01	1.56	94.08	1.79	92.77	1.44	127.43	29.11	92.77	1.44
CR-7	CR-7_Spot 93	96420.13	1887.01	0.76	20.12	1.11	0.13	1.67	0.02	1.25	121.03	1.91	117.64	1.46	188.26	25.78	117.64	1.46
CR-7	CR-7_Spot 94	113180.93	167.10	1.65	20.22	1.80	0.13	2.10	0.02	1.08	122.75	2.42	119.92	1.28	177.94	41.95	119.92	1.28
CR-7	CR-7_Spot 95	53512.17	585.49	1.74	20.93	0.89	0.12	1.51	0.02	1.22	112.80	1.62	113.93	1.38	89.00	21.05	113.93	1.38
CR-7	CR-7_Spot 96	19679.33	407.18	1.89	20.81	1.62	0.11	1.96	0.02	1.10	103.76	1.94	104.86	1.15	78.41	38.57	104.86	1.15
CR-7	CR-7_Spot 98	24198.08	1801.08	1.46	20.49	0.96	0.09	1.76	0.01	1.48	91.76	1.55	90.64	1.33	121.00	22.66	90.64	1.33
CR-7	CR-7_Spot 99	42326.19	296.29	2.25	20.55	1.86	0.10	2.10	0.02	0.97	99.47	1.99	98.33	0.95	126.81	43.77	98.33	0.95
CR-7	CR-7_Spot 100	5228.63	971.10	2.75	9.00	10.92	0.25	11.09	0.02	1.70	225.60	22.43	105.75	1.78	1784.35	200.30	105.75	1.78
CR-7	CR-7_Spot 101	37915.35	748.56	2.13	20.61	1.11	0.11	1.78	0.02	1.39	104.82	1.77	104.34	1.44	115.90	26.27	104.34	1.44
CR-7	CR-7_Spot 102	34709.32	1178.84	1.96	21.06	1.06	0.10	2.09	0.02	1.78	97.08	1.94	98.41	1.74	64.75	26.18	98.41	1.74
CR-7	CR-7_Spot 103	1801286.49	291.31	0.86	7.40	0.69	7.46	1.24	0.40	1.03	2167.66	11.11	2160.93	18.91	2174.02	12.04	2174.02	12.04
CR-7	CR-7_Spot 104	34679.50	448.41	2.51	19.62	1.22	0.17	1.97	0.02	1.55	158.77	2.90	153.91	2.35	231.96	28.33	153.91	2.35
CR-7	CR-7_Spot 105	17019.42	262.67	1.90	20.14	1.65	0.14	2.15	0.02	1.37	131.64	2.66	130.60	1.78	150.35	38.79	130.60	1.78
CR-7	CR-7_Spot 106	14042.25	335.55	2.12	19.61	1.50	0.14	1.89	0.02	1.12	129.87	2.30	125.78	1.39	205.50	35.30	125.78	1.39
CR-7	CR-7_Spot 107	26946.32	261.54	1.13	20.56	1.47	0.14	1.79	0.02	1.02	130.14	2.19	130.91	1.32	116.08	34.69	130.91	1.32
CR-7	CR-7_Spot 108	12520.88	848.38	2.15	20.79	1.10	0.10	1.73	0.01	1.31	93.01	1.53	94.36	1.23	58.61	26.80	94.36	1.23
CR-7	CR-7_Spot 109	88513.20	1820.63	2.23	20.70	0.92	0.10	1.45	0.02	1.12	98.83	1.37	98.01	1.09	118.67	21.81	98.01	1.09
CR-7	CR-7_Spot 110	2822.80	198.21	1.63	9.24	11.54	0.24	11.66	0.02	1.22	221.76	23.23	108.92	1.31	1694.80	214.45	108.92	1.31
CR-7	CR-7_Spot 111	191792.77	976.15	1.90	20.69	1.03	0.10	1.55	0.01	1.15	92.58	1.37	91.44	1.05	122.12	24.25	91.44	1.05
CR-7	CR-7_Spot 112	6478.44	206.77	1.60	20.36	1.27	0.12	1.70	0.02	0.89	111.32	1.79	114.12	1.00	52.02	34.53	114.12	1.00
CR-7	CR-7_Spot 113	9686.42	379.13	1.30	20.74	1.21	0.11	2.18	0.02	1.08	103.02	2.13	105.57	1.13	44.40	45.17	105.57	1.13
CR-7	CR-7_Spot 114	23630.46	1165.30	1.86	20.70	1.13	0.09	1.88	0.01	1.41	88.70	1.60	88.51	1.24	93.64	29.66	88.51	1.24
CR-7	CR-7_Spot 115	97868.18	1004.75	1.38	18.60	1.09	0.11	1.76	0.02	1.38	109.85	1.83	98.46	1.35	364.43	24.50	98.46	1.35
CR-7	CR-7_Spot 116	16291.71	1127.13	1.95	20.38	0.92	0.10	1.57	0.02	1.26	100.33	1.50	99.64	1.25	116.75	22.06	99.64	1.25
CR-7	CR-7_Spot 117	98260.36	414.46	1.21	20.16	1.26	0.16	1.72	0.02	1.17	150.95	2.41	149.25	1.72	177.58	29.27	149.25	1.72
CR-7	CR-7_Spot 118	1386362.86	1457.53	3.09	20.46	0.82	0.12	1.47	0.02	1.22	115.36	1.60	113.75	1.37	148.75	19.23	113.75	1.37
CR-7	CR-7_Spot 119	1505937.11	613.11	2.07	8.85	0.75	4.09	1.66	0.26	1.48	1651.91	13.55	1498.22	19.81	1853.31	13.55	1853.31	13.55
CR-7	CR-7_Spot 120	106741.27	831.35	2.74	20.69	1.09	0.11	1.72	0.02	1.33	102.11	1.67	101.50	1.34	116.48	25.70	101.50	1.34
CR-7	CR-7_Spot 121	105974.90	1681.58	1.35	20.12	0.91	0.13	1.50	0.02	1.19	120.31	1.70	117.21	1.39	181.94	21.29	117.21	1.39
CR-7	CR-7_Spot 122	973297.84	316.51	1.22	8.17	0.65	6.13	1.26	0.36	1.07	1993.99	10.96	1990.98	18.39	1997.09	11.56	1997.09	11.56
CR-7	CR-7_Spot 123	61652.05	403.05	1.81	20.95	1.42	0.10	1.90	0.02	1.27	99.77	1.81	100.57	1.26	80.72	33.74	100.57	1.26
CR-7	CR-7_Spot 124	48176.64	1346.91	1.05	20.59	1.07	0.11	1.76	0.02	1.39	109.32	1.82	108.91	1.50	118.10	25.27	108.91	1.50
CR-7	CR-7_Spot 125	140743.41	473.18	4.32	20.21	0.88	0.17	1.79	0.03	1.56	161.57	2.67	160.84	2.47	172.22	20.57	160.84	2.47
CR-7	CR-7_Spot 126	5149.46	159.52	2.09	18.16	2.70	0.14	3.78	0.02	1.29	130.34	4.63	121.20	1.55	300.41	81.05	121.20	1.55
CR-7	CR-7_Spot	25105.57	1254.49	1.59	20.49	1.19	0.10	2.05	0.01	1.67	92.16	1.81	91.20	1.51	117.28	28.06	91.20	1.51

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CR-7	CR-7_Spot 128	22800.97	289.39	2.03	20.63	1.51	0.13	1.86	0.02	1.08	124.95	2.18	126.37	1.35	97.95	35.77	126.37	1.35
CR-7	CR-7_Spot 129	111850.17	1171.12	1.85	20.82	0.72	0.13	1.54	0.02	1.36	119.87	1.74	120.83	1.63	100.84	17.03	120.83	1.63
CR-7	CR-7_Spot 130	5700.48	139.39	1.65	20.48	2.04	0.12	2.49	0.02	1.20	111.18	2.62	115.62	1.38	17.14	NA	115.62	1.38
CR-7	CR-7_Spot 131	59976.43	954.35	1.40	20.25	1.15	0.16	1.85	0.02	1.45	147.85	2.55	147.03	2.10	161.06	27.03	147.03	2.10
CR-7	CR-7_Spot 132	10745.14	433.47	1.49	20.39	1.21	0.16	1.83	0.02	1.03	146.68	2.50	150.18	1.53	90.50	35.81	150.18	1.53
CR-7	CR-7_Spot 133	52511.69	1857.07	2.79	20.91	1.10	0.11	1.87	0.02	1.51	103.35	1.84	104.24	1.56	82.84	26.19	104.24	1.56
CR-7	CR-7_Spot 134	28456.33	1255.03	1.80	20.79	1.11	0.09	1.90	0.01	1.48	90.02	1.64	90.17	1.33	86.18	28.24	90.17	1.33
CR-7	CR-7_Spot 135	129400.17	2355.40	1.31	20.69	0.78	0.09	1.28	0.01	1.01	89.48	1.09	88.41	0.89	117.98	18.30	88.41	0.89
CR-7	CR-7_Spot 136	20391.98	822.15	2.01	19.95	1.07	0.17	1.71	0.03	1.31	162.61	2.56	161.81	2.10	174.19	25.42	161.81	2.10
CR-7	CR-7_Spot 137	9343.48	838.93	1.92	20.59	1.10	0.09	1.70	0.01	1.29	90.56	1.47	91.86	1.18	56.38	26.30	91.86	1.18
CR-7	CR-7_Spot 138	812832.77	576.50	1.58	8.74	0.72	5.20	1.41	0.33	1.22	1851.94	12.03	1832.31	19.39	1874.05	12.97	1874.05	12.97
CR-7	CR-7_Spot 139	13590.05	822.41	1.15	20.26	1.14	0.10	1.78	0.02	1.37	100.78	1.71	100.11	1.36	116.62	26.89	100.11	1.36
CR-7	CR-7_Spot 140	88869.79	559.60	1.88	20.16	0.83	0.17	1.61	0.02	1.37	157.53	2.34	156.50	2.12	172.92	19.42	156.50	2.12
CR-7	CR-7_Spot 141	117931.28	5012.98	8.17	20.40	0.71	0.15	1.46	0.02	1.28	146.05	1.99	145.97	1.84	147.35	16.66	145.97	1.84
CR-7	CR-7_Spot 142	29029.04	526.09	2.82	20.30	1.16	0.13	1.78	0.02	1.34	122.06	2.05	121.12	1.61	140.33	27.51	121.12	1.61
CR-7	CR-7_Spot 143	69182.47	62.55	1.04	8.79	0.86	5.14	1.39	0.33	1.09	1841.94	11.84	1826.24	17.37	1859.70	15.62	1859.70	15.62
CR-7	CR-7_Spot 144	423746.86	354.20	1.07	20.12	0.97	0.18	1.37	0.03	0.98	164.34	2.08	163.08	1.57	182.47	22.49	163.08	1.57
CR-7	CR-7_Spot 145	74310.85	1885.06	1.20	20.34	0.70	0.17	1.47	0.02	1.29	157.06	2.14	157.54	2.01	149.94	16.41	157.54	2.01
CR-7	CR-7_Spot 146	45813.51	1044.69	2.53	20.22	1.19	0.12	1.90	0.02	1.48	113.83	2.04	111.75	1.64	157.67	27.78	111.75	1.64
CR-7	CR-7_Spot 147	14123.44	301.74	2.70	20.46	1.35	0.15	2.18	0.02	1.33	141.91	2.89	144.80	1.90	93.93	41.07	144.80	1.90
CR-7	CR-7_Spot 148	54207.56	944.74	2.14	20.68	0.91	0.10	1.58	0.02	1.29	100.46	1.51	100.21	1.28	106.57	21.59	100.21	1.28
CR-7	CR-7_Spot 149	150341.58	948.86	1.86	20.39	0.81	0.10	1.62	0.01	1.40	93.52	1.45	91.43	1.27	147.22	18.97	91.43	1.27
CR-7	CR-7_Spot 150	286832.64	909.86	2.00	9.89	0.73	3.98	1.61	0.29	1.44	1630.45	13.09	1619.18	20.60	1645.01	13.50	1645.01	13.50
CR-7	CR-7_Spot 151	4655.58	119.95	1.03	19.54	2.17	0.16	2.47	0.02	1.17	146.84	3.38	149.68	1.73	101.17	51.51	149.68	1.73
CR-7	CR-7_Spot 152	17395.65	284.48	1.95	21.25	1.58	0.09	2.11	0.01	1.33	90.56	1.83	93.63	1.23	10.37	NA	93.63	1.23
CR-7	CR-7_Spot 153	132014.81	485.01	2.34	13.37	0.86	1.87	1.69	0.18	1.45	1071.29	11.17	1075.89	14.40	1061.96	17.25	1061.96	17.25
CR-7	CR-7_Spot 154	13051.70	417.83	2.73	20.81	1.21	0.12	1.78	0.02	1.29	115.90	1.95	119.21	1.53	48.33	29.29	119.21	1.53
CR-7	CR-7_Spot 155	8534.66	263.51	1.27	20.48	1.62	0.10	2.64	0.02	1.34	97.17	2.44	98.83	1.31	56.68	54.26	98.83	1.31
CR-7	CR-7_Spot 156	236380.89	1153.07	2.08	20.84	0.99	0.10	1.60	0.02	1.26	98.25	1.50	98.25	1.23	98.41	23.40	98.25	1.23
CR-7	CR-7_Spot 157	60308.56	1023.71	2.27	20.72	0.80	0.10	1.47	0.02	1.23	99.25	1.39	99.11	1.21	102.65	18.88	99.11	1.21
CR-7	CR-7_Spot 158	350952.07	337.34	1.91	20.88	1.53	0.10	1.79	0.02	0.93	99.88	1.70	100.13	0.92	94.05	36.27	100.13	0.92
CR-7	CR-7_Spot 159	18080294.41	1581.15	1.94	20.68	0.85	0.12	1.50	0.02	1.23	118.12	1.67	118.09	1.44	118.77	20.02	118.09	1.44
CR-7	CR-7_Spot 160	232539.66	2336.64	0.98	20.42	0.97	0.13	1.71	0.02	1.41	122.37	1.98	121.16	1.69	145.91	22.84	121.16	1.69
CR-7	CR-7_Spot 161	157664.47	217.05	1.47	19.45	1.77	0.12	2.23	0.02	1.36	119.52	2.51	112.72	1.51	256.91	40.56	112.72	1.51
CR-7	CR-7_Spot 162	3827.00	203.77	1.55	19.32	2.06	0.12	2.42	0.02	1.13	116.15	2.65	117.13	1.31	96.10	50.60	117.13	1.31

CR-7	CR-7_Spot 163	38145.31	1082.24	1.97	20.93	1.09	0.10	1.84	0.02	1.47	100.28	1.75	101.54	1.48	70.34	26.09	101.54	1.48
CR-7	CR-7_Spot 164	7298.89	131.14	3.14	21.11	2.03	0.13	3.22	0.02	1.09	124.15	3.76	132.75	1.43	NA	NA	132.75	1.43
CR-7	CR-7_Spot 165	97955.59	1814.55	1.27	20.97	0.62	0.10	1.30	0.02	1.14	96.39	1.19	97.21	1.10	76.21	14.82	97.21	1.10
CR-7	CR-7_Spot 166	12560.57	142.08	1.46	20.13	1.78	0.12	2.50	0.02	1.63	119.57	2.82	119.33	1.93	124.29	44.60	119.33	1.93
CR-7	CR-7_Spot 167	12876.30	879.21	2.41	19.43	1.30	0.11	1.84	0.02	1.30	102.92	1.80	98.35	1.27	209.99	30.18	98.35	1.27
CR-7	CR-7_Spot 168	8260.04	227.04	1.85	19.88	1.79	0.12	2.36	0.02	1.26	117.76	2.63	117.35	1.46	126.15	47.16	117.35	1.46
CR-7	CR-7_Spot 169	27516.69	161.34	2.76	20.25	2.05	0.16	2.37	0.02	1.18	147.41	3.26	147.72	1.72	142.52	48.32	147.72	1.72
CR-7	CR-7_Spot 170	28957.78	1241.20	1.81	20.07	0.93	0.11	1.77	0.02	1.50	103.44	1.74	100.77	1.50	165.29	21.75	100.77	1.50
CR-7	CR-7_Spot 171	101051.26	414.73	2.16	8.26	0.70	5.64	1.19	0.34	0.97	1922.06	10.28	1877.18	15.76	1970.80	12.40	1970.80	12.40
CR-7	CR-7_Spot 172	33748.45	768.71	2.80	20.27	1.14	0.10	2.04	0.01	1.68	96.22	1.87	94.26	1.57	145.06	27.22	94.26	1.57
CR-7	CR-7_Spot 173	9794.60	301.30	0.70	19.99	1.36	0.12	1.67	0.02	0.96	111.78	1.77	110.95	1.05	129.57	32.27	110.95	1.05
CR-7	CR-7_Spot 174	263725.63	2390.94	1.85	20.14	0.91	0.17	1.67	0.03	1.40	163.27	2.52	162.06	2.24	180.77	21.32	162.06	2.24
CR-7	CR-7_Spot 175	39713.43	993.84	1.31	19.34	1.00	0.12	1.69	0.02	1.35	117.25	1.88	110.28	1.48	261.05	23.45	110.28	1.48
CR-7	CR-7_Spot 176	27917.15	598.50	0.53	20.47	0.78	0.15	1.83	0.02	1.62	145.74	2.48	147.29	2.37	120.68	19.63	147.29	2.37
CR-7	CR-7_Spot 177	15116.26	484.09	1.59	15.19	5.99	0.14	6.22	0.02	1.52	133.15	7.77	99.96	1.50	775.17	127.08	99.96	1.50
CR-7	CR-7_Spot 178	30585.22	1116.41	2.05	20.99	1.22	0.11	1.90	0.02	1.46	103.51	1.87	105.30	1.52	62.55	29.05	105.30	1.52
CR-7	CR-7_Spot 179	20417.99	622.85	1.19	20.38	1.06	0.16	1.73	0.02	1.37	154.33	2.48	156.39	2.12	122.66	24.94	156.39	2.12
CR-7	CR-7_Spot 180	71222.48	216.86	1.05	19.89	1.17	0.16	1.51	0.02	0.97	151.04	2.13	147.68	1.41	204.16	27.08	147.68	1.41
CR-7	CR-7_Spot 181	39580.75	560.65	2.68	19.89	1.40	0.11	1.93	0.02	1.32	108.69	1.99	104.72	1.37	196.48	32.69	104.72	1.37
CR-7	CR-7_Spot 182	66715.12	305.81	1.08	20.16	1.19	0.18	1.80	0.03	1.34	166.50	2.76	166.14	2.20	171.60	27.92	166.14	2.20
CR-7	CR-7_Spot 183	1351155.85	1686.72	1.70	19.91	1.00	0.11	1.60	0.02	1.24	105.92	1.60	101.30	1.25	211.07	23.31	101.30	1.25
CR-7	CR-7_Spot 184	83577.11	1311.93	1.44	20.79	0.98	0.10	1.63	0.01	1.30	93.22	1.45	92.88	1.20	101.89	23.22	92.88	1.20
CR-7	CR-7_Spot 185	9448.64	204.34	1.12	15.21	4.64	0.16	4.92	0.02	1.47	150.53	6.88	114.96	1.68	755.35	99.09	114.96	1.68
CR-7	CR-7_Spot 186	10559.31	336.55	2.46	20.84	1.56	0.10	1.89	0.02	1.03	94.36	1.70	96.74	0.99	34.59	NA	96.74	0.99
CR-7	CR-7_Spot 187	10622.55	161.22	0.94	14.31	4.10	0.15	4.32	0.02	1.23	139.97	5.64	99.80	1.22	889.97	85.49	99.80	1.22
CR-7	CR-7_Spot 188	30760.24	1435.29	1.71	20.03	0.95	0.10	1.71	0.01	1.42	94.95	1.55	91.78	1.29	175.41	22.33	91.78	1.29
CR-7	CR-7_Spot 189	8653.68	559.26	1.57	12.66	6.93	0.18	7.25	0.02	1.87	167.03	11.17	106.87	1.98	1135.95	139.60	106.87	1.98
CR-7	CR-7_Spot 190	15815.94	404.67	3.10	20.27	1.52	0.10	1.98	0.01	1.21	92.73	1.75	91.46	1.10	125.57	36.81	91.46	1.10
CR-7	CR-7_Spot 191	93564.75	2078.88	2.19	20.50	0.86	0.12	1.75	0.02	1.53	110.94	1.84	109.75	1.66	136.50	20.19	109.75	1.66
CR-7	CR-7_Spot 192	68614.65	998.49	3.74	20.65	0.90	0.12	1.38	0.02	1.04	114.16	1.49	114.04	1.17	116.72	21.33	114.04	1.17
CR-7	CR-7_Spot 193	35633.76	816.11	9.29	20.16	0.88	0.15	1.67	0.02	1.39	145.97	2.27	144.91	1.99	163.20	21.61	144.91	1.99
CR-7	CR-7_Spot 194	31539.66	1221.15	1.88	20.71	1.10	0.09	1.67	0.01	1.25	90.35	1.44	90.12	1.12	96.58	26.09	90.12	1.12
CR-7	CR-7_Spot 195	9433.90	407.95	1.75	14.30	3.97	0.17	4.11	0.02	1.04	162.62	6.17	117.41	1.21	884.83	82.16	117.41	1.21
CR-7	CR-7_Spot 196	61062.67	224.75	1.83	20.64	1.96	0.12	2.26	0.02	1.13	114.93	2.46	114.94	1.28	114.72	46.22	114.94	1.28
CR-7	CR-7_Spot 197	35361.88	770.08	2.99	19.61	0.81	0.16	1.52	0.02	1.28	149.84	2.11	145.05	1.84	226.36	18.80	145.05	1.84
CR-7	CR-7_Spot	72665.36	1205.84	1.69	20.46	1.03	0.09	1.56	0.01	1.17	91.03	1.36	89.29	1.03	136.89	24.33	89.29	1.03

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CR-7	CR-7_Spot 199	112306.06	1214.06	12.71	18.90	1.53	0.13	2.10	0.02	1.43	127.05	2.51	116.75	1.66	324.20	34.79	116.75	1.66
CR-7	CR-7_Spot 200	36434.24	1934.08	1.26	19.56	0.85	0.10	1.65	0.01	1.40	100.89	1.58	95.35	1.32	233.80	19.99	95.35	1.32
CR-7	CR-7_Spot 201	61840.92	821.68	2.35	20.49	1.25	0.10	1.97	0.01	1.52	95.32	1.79	93.82	1.41	133.20	29.42	93.82	1.41
CR-7	CR-7_Spot 202	28211.20	894.91	2.09	20.81	1.05	0.11	1.88	0.02	1.51	103.94	1.86	104.92	1.57	81.68	26.52	104.92	1.57
CR-7	CR-7_Spot 203	293322.45	1211.77	1.42	20.24	0.85	0.18	1.69	0.03	1.46	169.01	2.63	168.94	2.43	170.01	19.84	168.94	2.43
CR-7	CR-7_Spot 204	56097.49	1222.98	3.86	20.64	0.91	0.11	1.63	0.02	1.35	104.76	1.63	104.35	1.39	114.21	21.75	104.35	1.39
CR-7	CR-7_Spot 205	13905.95	687.63	2.10	15.14	4.77	0.17	5.12	0.02	1.85	155.88	7.40	117.89	2.16	780.93	100.40	117.89	2.16
CR-7	CR-7_Spot 206	33773.18	1009.01	1.35	19.78	1.42	0.10	2.07	0.01	1.50	96.55	1.90	92.12	1.37	207.35	33.04	92.12	1.37
CR-7	CR-7_Spot 207	8593.85	1028.70	1.44	15.26	4.45	0.15	4.62	0.02	1.14	141.41	6.09	108.22	1.23	742.12	94.64	108.22	1.23
CR-7	CR-7_Spot 208	113162.57	561.37	0.73	20.43	1.18	0.11	1.91	0.02	1.51	105.58	1.92	103.67	1.55	149.00	27.56	103.67	1.55
CR-7	CR-7_Spot 209	104320.74	1230.97	1.62	20.82	1.24	0.09	1.92	0.01	1.47	91.54	1.68	91.02	1.33	104.95	29.32	91.02	1.33
CR-7	CR-7_Spot 210	128134.55	867.24	2.07	19.78	1.32	0.11	1.97	0.02	1.46	105.32	1.97	100.04	1.45	226.58	30.46	100.04	1.45
CR-7	CR-7_Spot 211	43979.06	1302.20	1.32	20.62	1.10	0.11	2.03	0.02	1.70	108.73	2.10	108.32	1.83	117.62	26.25	108.32	1.83
CR-7	CR-7_Spot 212	93192.18	995.03	2.17	20.93	1.18	0.09	1.74	0.01	1.29	91.98	1.53	92.02	1.18	90.94	27.88	92.02	1.18
CR-7	CR-7_Spot 213	76407.74	587.52	1.43	20.47	1.17	0.16	1.72	0.02	1.26	148.93	2.38	149.43	1.86	140.89	27.51	149.43	1.86
CR-7	CR-7_Spot 214	76899.41	994.73	1.95	20.57	1.22	0.10	1.77	0.01	1.28	93.66	1.58	92.29	1.17	128.68	28.66	92.29	1.17
CR-7	CR-7_Spot 215	2475.17	91.71	2.37	20.58	2.65	0.09	3.14	0.02	1.40	91.53	2.75	102.34	1.42	NA	NA	102.34	1.42
CR-7	CR-7_Spot 216	29013.38	920.50	2.14	20.90	0.89	0.10	1.66	0.01	1.39	93.68	1.49	94.41	1.30	75.27	21.79	94.41	1.30
CR-7	CR-7_Spot 217	24852.40	326.20	2.83	20.37	1.16	0.17	1.58	0.03	1.04	163.63	2.39	165.81	1.70	132.11	27.96	165.81	1.70
CR-7	CR-7_Spot 218	26069.03	463.90	3.54	20.59	0.95	0.14	1.28	0.02	0.85	135.82	1.62	137.37	1.16	108.72	22.43	137.37	1.16
CR-7	CR-7_Spot 219	142284.94	1282.60	1.33	19.41	0.77	0.17	1.47	0.02	1.25	158.17	2.15	150.74	1.86	270.94	17.76	150.74	1.86
CR-7	CR-7_Spot 220	9443.15	628.27	2.84	20.48	1.19	0.11	1.85	0.02	1.41	103.39	1.82	104.67	1.46	73.99	28.50	104.67	1.46
CR-7	CR-7_Spot 221	405717.36	2573.95	2.95	20.45	0.67	0.18	1.36	0.03	1.18	167.96	2.10	169.08	1.97	152.32	15.76	169.08	1.97
CR-7	CR-7_Spot 222	81964.87	2759.26	1.99	20.50	0.99	0.11	1.61	0.02	1.27	104.08	1.59	102.51	1.29	140.13	23.23	102.51	1.29
CR-7	CR-7_Spot 223	40484.17	1426.46	1.84	20.77	1.03	0.10	1.86	0.01	1.54	93.53	1.66	93.30	1.43	99.29	24.78	93.30	1.43
CR-7	CR-7_Spot 224	8186.13	458.91	2.03	19.91	1.56	0.12	1.93	0.02	1.12	118.57	2.15	117.89	1.31	132.21	36.78	117.89	1.31
CR-7	CR-7_Spot 225	803814.03	1733.41	1.07	20.78	1.00	0.10	2.01	0.01	1.74	94.17	1.81	93.30	1.61	116.37	23.56	93.30	1.61
CR-7	CR-7_Spot 226	20075.46	465.99	1.80	20.46	1.32	0.11	1.50	0.02	0.69	104.22	1.48	103.64	0.71	117.53	31.31	103.64	0.71
CR-7	CR-7_Spot 227	32280.09	1113.21	1.88	20.89	0.88	0.10	1.51	0.01	1.20	92.58	1.33	92.99	1.11	82.00	21.47	92.99	1.11
CR-7	CR-7_Spot 228	99884.42	1407.88	1.20	20.71	1.11	0.12	1.83	0.02	1.45	118.75	2.05	118.86	1.71	116.57	26.24	118.86	1.71
CR-7	CR-7_Spot 229	3853.41	546.78	1.58	12.72	2.37	0.19	2.88	0.02	1.63	180.88	4.76	120.04	1.93	1074.99	47.64	120.04	1.93
CR-7	CR-7_Spot 230	86189.32	3067.98	0.72	19.76	0.81	0.16	1.54	0.02	1.32	154.27	2.21	149.75	1.95	224.36	18.70	149.75	1.95
CR-7	CR-7_Spot 231	193101.22	1543.42	1.05	20.41	0.95	0.18	1.84	0.03	1.57	165.67	2.81	166.56	2.59	153.01	22.35	166.56	2.59
CR-7	CR-7_Spot 232	24093.44	1241.24	2.48	20.46	1.03	0.11	1.76	0.02	1.40	102.22	1.71	101.37	1.41	122.09	25.26	101.37	1.41
CR-7	CR-7_Spot 233	10180.24	273.75	2.07	20.24	1.47	0.12	1.93	0.02	1.19	115.93	2.11	116.45	1.38	105.24	35.73	116.45	1.38

CR-7	CR-7_Spot 234	7448.64	96.33	1.38	20.76	2.36	0.16	3.05	0.03	1.49	154.37	4.37	163.74	2.41	12.87	NA	163.74	2.41
CR-7	CR-7_Spot 235	35572.86	1207.85	1.64	18.96	1.15	0.10	1.68	0.01	1.20	97.23	1.55	88.98	1.06	304.54	26.58	88.98	1.06
CR-7	CR-7_Spot 236	106428.97	580.30	3.70	20.24	0.83	0.18	1.63	0.03	1.40	168.31	2.53	168.47	2.33	166.04	19.46	168.47	2.33
CR-7	CR-7_Spot 237	13099.55	355.06	1.41	20.21	1.11	0.17	1.87	0.03	1.44	160.06	2.77	162.68	2.32	121.48	28.07	162.68	2.32
CR-7	CR-7_Spot 238	126764.93	1770.32	1.43	20.94	0.87	0.09	1.65	0.01	1.41	91.09	1.44	91.23	1.28	87.36	20.57	91.23	1.28
CR-7	CR-7_Spot 239	52131.03	1130.30	1.69	20.74	0.88	0.09	1.68	0.01	1.43	91.39	1.47	91.00	1.29	101.63	20.87	91.00	1.29
CR-7	CR-7_Spot 240	14934.06	464.72	2.06	20.06	1.26	0.18	2.01	0.03	1.56	164.16	3.05	165.40	2.54	146.25	29.95	165.40	2.54
CR-7	CR-7_Spot 241	2106797.29	451.72	2.37	7.85	0.73	5.64	1.08	0.32	0.79	1922.09	9.32	1792.54	12.43	2064.84	12.90	2064.84	12.90
CR-7	CR-7_Spot 242	33736.03	750.83	2.26	20.14	1.04	0.16	1.61	0.02	1.23	149.10	2.24	148.22	1.80	162.99	24.47	148.22	1.80
CR-7	CR-7_Spot 243	174705.40	1263.67	1.86	20.48	1.04	0.11	1.81	0.02	1.48	108.05	1.85	106.49	1.56	142.48	24.35	106.49	1.56
CR-7	CR-7_Spot 244	47656.77	852.96	2.51	20.08	1.05	0.13	1.59	0.02	1.19	121.46	1.82	118.61	1.40	177.74	24.52	118.61	1.40
CR-7	CR-7_Spot 245	149696.75	939.85	2.50	20.20	0.74	0.16	1.36	0.02	1.14	148.99	1.88	147.43	1.66	173.75	17.28	147.43	1.66
CR-7	CR-7_Spot 246	136885.31	291.20	2.68	20.84	1.41	0.12	1.81	0.02	1.13	111.58	1.91	112.18	1.26	98.87	33.41	112.18	1.26
CR-7	CR-7_Spot 247	22811.86	332.82	1.70	20.20	1.34	0.10	1.73	0.02	1.08	99.37	1.63	97.40	1.04	146.77	31.54	97.40	1.04
CR-7	CR-7_Spot 248	12853.53	430.15	1.52	20.10	1.07	0.17	1.84	0.03	1.26	162.34	2.76	164.27	2.04	134.36	31.69	164.27	2.04
CR-7	CR-7_Spot 249	23501.49	475.43	1.57	20.52	1.18	0.16	1.58	0.02	1.06	149.78	2.20	152.31	1.59	109.81	27.86	152.31	1.59
CR-7	CR-7_Spot 250	5880.92	110.42	3.07	19.24	2.16	0.16	2.44	0.02	0.93	147.95	3.36	146.22	1.34	175.72	52.67	146.22	1.34
CR-7	CR-7_Spot 251	4999.94	168.34	1.58	19.74	1.33	0.14	2.05	0.02	1.33	137.30	2.64	140.05	1.84	89.99	37.13	140.05	1.84
CR-7	CR-7_Spot 252	93855.05	2651.27	1.77	20.60	0.64	0.11	1.32	0.02	1.16	105.75	1.33	104.93	1.20	124.19	15.12	104.93	1.20
CR-7	CR-7_Spot 253	58361.99	805.58	2.80	19.69	1.27	0.11	1.82	0.02	1.30	104.73	1.82	99.44	1.29	226.80	29.45	99.44	1.29
CR-7	CR-7_Spot 254	10318.74	133.48	2.36	19.87	2.14	0.14	2.45	0.02	1.19	135.08	3.10	134.27	1.58	149.26	50.27	134.27	1.58
CR-7	CR-7_Spot 255	18606.39	380.88	1.61	20.36	1.91	0.11	2.23	0.02	1.12	105.87	2.24	105.14	1.17	122.38	45.36	105.14	1.17
CR-7	CR-7_Spot 256	103901.47	920.06	2.33	20.60	1.25	0.09	1.72	0.01	1.18	91.42	1.50	90.09	1.06	126.40	29.49	90.09	1.06
CR-7	CR-7_Spot 257	17851.98	1560.85	0.64	20.48	1.17	0.10	1.86	0.01	1.35	94.92	1.69	94.46	1.27	106.68	30.25	94.46	1.27
CR-7	CR-7_Spot 258	119951.67	1530.45	2.69	21.12	0.88	0.09	1.56	0.01	1.29	90.10	1.35	90.94	1.17	67.78	21.05	90.94	1.17
CR-7	CR-7_Spot 259	130105.44	1663.44	1.77	19.53	1.40	0.17	1.96	0.02	1.38	156.42	2.84	150.18	2.04	251.91	32.16	150.18	2.04
CR-7	CR-7_Spot 260	42928.70	667.46	1.85	20.45	1.02	0.13	1.99	0.02	1.70	123.47	2.31	122.98	2.07	132.85	24.05	122.98	2.07
CR-7	CR-7_Spot 261	33825.85	766.57	2.26	20.78	0.92	0.10	1.67	0.02	1.35	96.41	1.53	96.63	1.29	91.00	23.27	96.63	1.29
CR-7	CR-7_Spot 262	10870.88	276.72	1.09	20.76	1.66	0.10	1.89	0.02	0.86	98.23	1.77	100.36	0.86	46.77	40.07	100.36	0.86
CR-7	CR-7_Spot 263	20726.54	277.68	1.77	20.84	1.32	0.14	1.84	0.02	1.25	130.14	2.25	133.40	1.65	71.17	32.18	133.40	1.65
CR-7	CR-7_Spot 264	100909.03	1484.27	1.78	20.79	1.03	0.10	1.97	0.01	1.68	92.94	1.75	92.48	1.54	104.83	24.46	92.48	1.54
CR-7	CR-7_Spot 265	24290.29	1112.97	1.66	20.62	1.21	0.10	1.85	0.01	1.38	93.11	1.65	92.74	1.27	102.63	29.25	92.74	1.27
CR-7	CR-7_Spot 266	10905.28	98.71	2.14	20.24	2.02	0.16	2.40	0.02	1.16	152.96	3.41	155.65	1.78	111.44	49.76	155.65	1.78
CR-7	CR-7_Spot 267	9537.41	94.28	3.26	19.60	1.51	0.17	1.80	0.02	0.89	158.23	2.64	156.85	1.39	178.81	36.45	156.85	1.39
CR-7	CR-7_Spot 268	16502.03	727.97	1.13	19.83	1.26	0.16	1.92	0.02	1.44	149.00	2.66	146.87	2.09	182.94	29.57	146.87	2.09
CR-7	CR-7_Spot	5038.36	134.08	0.98	20.06	2.34	0.11	4.03	0.02	0.96	102.02	3.91	104.04	0.99	55.14	NA	104.04	0.99

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CR-7	CR-7_Spot 270	29902.68	1496.93	1.46	20.14	0.96	0.10	1.67	0.01	1.35	95.86	1.53	93.16	1.25	163.48	22.85	93.16	1.25
CR-7	CR-7_Spot 271	38031.20	1018.26	1.48	20.77	1.11	0.11	1.80	0.02	1.41	101.81	1.74	102.08	1.43	95.45	26.31	102.08	1.43
CR-7	CR-7_Spot 272	16905.30	1013.35	2.56	20.55	1.14	0.10	1.77	0.02	1.35	100.17	1.69	100.31	1.35	96.73	26.92	100.31	1.35
CR-7	CR-7_Spot 273	9311.98	424.20	1.50	20.56	1.42	0.11	1.96	0.02	1.15	109.97	2.04	112.29	1.28	59.97	37.92	112.29	1.28
CR-7	CR-7_Spot 274	19489.36	914.17	1.32	20.55	0.84	0.15	1.47	0.02	1.20	140.37	1.92	142.63	1.69	102.32	20.03	142.63	1.69
CR-7	CR-7_Spot 275	22014.95	791.44	1.77	20.93	1.36	0.10	2.13	0.01	1.61	93.87	1.91	95.04	1.52	64.18	33.36	95.04	1.52
CR-7	CR-7_Spot 276	26113.77	890.18	2.59	4.52	12.98	0.47	13.05	0.02	1.36	394.14	42.66	99.23	1.34	2993.39	209.77	99.23	1.34
CR-7	CR-7_Spot 277	133392.82	215.73	3.14	5.75	0.93	12.27	1.67	0.51	1.38	2625.33	15.66	2658.19	30.11	2600.08	15.55	2600.08	15.55
CR-7	CR-7_Spot 278	23885.81	494.90	1.70	19.57	1.19	0.11	1.72	0.02	1.20	108.09	1.76	102.88	1.22	224.49	28.36	102.88	1.22
CR-7	CR-7_Spot 279	85358.06	1922.78	1.48	20.54	0.97	0.12	1.62	0.02	1.30	117.62	1.80	116.93	1.50	131.59	22.95	116.93	1.50
CR-7	CR-7_Spot 280	128477.92	564.94	3.81	12.60	0.86	2.14	1.79	0.20	1.57	1161.79	12.41	1149.75	16.54	1184.32	17.07	1184.32	17.07
CR-7	CR-7_Spot 281	11963.34	741.46	1.15	20.66	0.86	0.12	1.59	0.02	1.33	114.19	1.72	116.58	1.53	64.64	20.93	116.58	1.53
CR-7	CR-7_Spot 282	71981.50	3108.40	1.00	20.68	0.76	0.10	1.64	0.02	1.45	98.04	1.53	97.43	1.40	112.75	17.95	97.43	1.40
CR-7	CR-7_Spot 283	3151.02	453.64	1.24	15.04	6.10	0.06	6.33	0.01	1.47	56.87	3.50	43.23	0.63	677.19	131.61	43.23	0.63
CR-7	CR-7_Spot 284	28640.12	866.19	1.79	20.77	1.28	0.10	1.74	0.01	1.18	92.33	1.54	92.46	1.08	88.95	30.43	92.46	1.08
CR-7	CR-7_Spot 285	57404.10	285.58	3.24	20.29	1.41	0.17	1.75	0.03	1.04	162.53	2.63	162.76	1.68	159.16	32.95	162.76	1.68
CR-7	CR-7_Spot 286	31912.56	499.79	1.54	20.51	1.17	0.13	1.88	0.02	1.44	127.95	2.25	128.22	1.83	122.83	28.28	128.22	1.83
CR-7	CR-7_Spot 287	28590.55	338.93	3.86	20.29	1.26	0.11	1.83	0.02	1.27	103.09	1.79	101.26	1.27	145.67	30.95	101.26	1.27
CR-7	CR-7_Spot 288	862048.52	668.76	1.98	20.33	0.85	0.16	1.61	0.02	1.37	150.53	2.25	149.59	2.02	165.27	19.80	149.59	2.02
CR-7	CR-7_Spot 289	179969.81	784.01	1.75	20.85	1.45	0.10	2.20	0.01	1.65	92.46	1.94	92.05	1.50	103.09	34.38	92.05	1.50
CR-7	CR-7_Spot 290	135704.20	683.85	0.74	19.14	1.03	0.16	1.59	0.02	1.21	152.71	2.26	143.29	1.72	301.55	23.55	143.29	1.72
CR-7	CR-7_Spot 291	98773.55	830.10	1.24	20.70	0.97	0.11	1.47	0.02	1.10	103.02	1.44	102.37	1.12	118.22	22.85	102.37	1.12
CR-7	CR-7_Spot 292	94319.91	1326.53	2.03	19.42	1.01	0.16	1.67	0.02	1.33	153.56	2.39	146.34	1.93	266.50	23.20	146.34	1.93
CR-7	CR-7_Spot 293	14219.44	647.21	2.38	20.92	1.20	0.10	2.23	0.02	1.51	95.45	2.03	97.34	1.46	48.29	39.14	97.34	1.46
CR-7	CR-7_Spot 294	20916.15	146.62	1.44	20.23	1.86	0.15	2.37	0.02	1.47	145.83	3.22	145.85	2.12	145.59	43.69	145.85	2.12
CR-7	CR-7_Spot 295	166254.70	907.88	2.33	20.40	0.78	0.13	1.53	0.02	1.32	121.45	1.75	119.68	1.57	156.26	18.13	119.68	1.57
CR-7	CR-7_Spot 296	108192.29	1058.14	1.86	20.56	0.83	0.10	1.59	0.01	1.36	92.15	1.40	90.46	1.22	136.29	19.63	90.46	1.22
CR-7	CR-7_Spot 297	106988.06	959.21	1.80	20.40	1.01	0.09	1.65	0.01	1.30	92.07	1.45	89.69	1.16	154.10	23.72	89.69	1.16
CR-7	CR-7_Spot 298	68859.65	408.90	1.95	20.48	1.24	0.18	1.71	0.03	1.18	164.38	2.60	165.98	1.93	141.39	29.09	165.98	1.93
CR-7	CR-7_Spot 299	12625.36	461.28	1.41	21.10	1.29	0.09	1.86	0.01	1.33	91.04	1.62	93.73	1.24	21.23	NA	93.73	1.24
CR-7	CR-7_Spot 300	43796.70	1305.18	1.57	20.64	0.98	0.09	1.63	0.01	1.30	89.06	1.39	88.03	1.14	116.50	23.33	88.03	1.14
CR-7	CR-7_Spot 301	131349.75	1686.60	2.24	19.59	0.88	0.26	1.70	0.04	1.46	238.50	3.62	237.36	3.40	249.63	20.29	237.36	3.40
CR-7	CR-7_Spot 302	63939.58	1729.58	1.32	20.32	0.79	0.13	1.79	0.02	1.60	120.50	2.03	118.55	1.89	159.17	18.52	118.55	1.89
CR-7	CR-7_Spot 303	66271.67	952.49	1.21	20.65	1.05	0.10	1.60	0.01	1.21	95.48	1.46	94.43	1.13	121.64	24.73	94.43	1.13
CR-7	CR-7_Spot 304	59203.12	1316.63	1.80	20.59	0.84	0.10	1.58	0.02	1.33	99.09	1.49	97.96	1.30	126.48	20.01	97.96	1.30

CR-7	CR-7_Spot 305	468786.14	1152.08	5.67	9.73	1.11	1.47	2.10	0.10	1.78	918.57	12.67	634.30	10.75	1682.15	20.43	1682.15	20.43
CR-7	CR-7_Spot 306	63946.12	323.07	2.03	20.43	1.61	0.12	1.89	0.02	0.99	118.33	2.11	117.04	1.14	144.30	37.86	117.04	1.14
CR-7	CR-7_Spot 307	81465.54	377.61	2.51	13.48	0.85	1.80	1.21	0.18	0.86	1045.49	7.89	1043.28	8.27	1050.13	17.19	1050.13	17.19
CR-7	CR-7_Spot 308	7664.43	333.00	2.12	21.15	1.23	0.09	1.80	0.01	1.27	89.04	1.53	93.38	1.18	NA	NA	93.38	1.18
CR-7	CR-7_Spot 309	147257.96	801.11	2.74	20.26	1.04	0.13	1.56	0.02	1.15	121.13	1.78	118.61	1.36	170.86	24.36	118.61	1.36
CR-7	CR-7_Spot 310	15998.51	971.04	2.45	17.20	2.99	0.13	3.42	0.02	1.61	120.98	3.90	102.04	1.63	511.36	66.45	102.04	1.63
CR-7	CR-7_Spot 311	66925.92	1038.10	1.61	20.54	1.09	0.13	1.71	0.02	1.32	122.14	1.97	121.55	1.59	133.80	25.54	121.55	1.59
CR-7	CR-7_Spot 312	12457.61	307.41	1.51	20.38	1.51	0.15	1.98	0.02	1.13	146.07	2.69	148.61	1.67	105.03	38.29	148.61	1.67
CR-7	CR-7_Spot 313	3218.82	62.77	1.08	20.03	2.01	0.15	3.13	0.02	1.39	138.16	4.04	147.90	2.03	NA	NA	147.90	2.03
CR-7	CR-7_Spot 314	15934.99	597.15	1.84	19.13	1.50	0.11	1.92	0.02	1.19	107.99	1.97	100.85	1.19	268.53	34.60	100.85	1.19
CR-7	CR-7_Spot 315	58026.51	588.63	1.59	20.80	1.15	0.12	1.91	0.02	1.53	116.08	2.10	116.81	1.77	101.13	27.29	116.81	1.77
CR-8	CR-8_Spot 1	169433.70	1834.21	1.55	20.58	0.94	0.10	1.55	0.01	1.24	95.23	1.41	94.10	1.16	123.60	22.07	94.10	1.16
CR-8	CR-8_Spot 2	78748.70	1481.86	1.71	20.67	0.95	0.09	1.57	0.01	1.25	90.97	1.37	90.32	1.12	108.15	22.55	90.32	1.12
CR-8	CR-8_Spot 3	61820.48	390.20	2.16	20.20	1.17	0.14	1.61	0.02	1.10	129.76	1.96	128.13	1.39	159.67	27.44	128.13	1.39
CR-8	CR-8_Spot 4	50337.27	251.85	2.49	20.10	1.43	0.16	1.74	0.02	1.00	151.65	2.46	150.56	1.49	168.77	33.31	150.56	1.49
CR-8	CR-8_Spot 5	18154.43	543.86	2.24	20.74	1.24	0.12	1.93	0.02	1.49	116.82	2.13	119.30	1.76	66.63	29.48	119.30	1.76
CR-8	CR-8_Spot 6	92326.00	593.07	3.13	17.90	1.08	0.54	1.91	0.07	1.57	441.50	6.83	442.20	6.72	437.84	24.12	442.20	6.72
CR-8	CR-8_Spot 7	15362.82	1145.68	1.81	19.64	1.11	0.10	1.86	0.01	1.47	95.48	1.69	91.77	1.34	189.17	26.46	91.77	1.34
CR-8	CR-8_Spot 8	219536.77	986.28	2.89	13.56	0.91	0.92	1.94	0.09	1.71	664.45	9.45	561.87	9.22	1029.97	18.32	561.87	9.22
CR-8	CR-8_Spot 9	58065.24	1137.34	1.04	20.56	1.14	0.10	1.74	0.01	1.31	96.03	1.59	95.18	1.24	117.07	26.83	95.18	1.24
CR-8	CR-8_Spot 10	397642.66	668.46	2.77	20.84	1.17	0.12	1.86	0.02	1.44	114.98	2.02	115.76	1.65	98.75	27.81	115.76	1.65
CR-8	CR-8_Spot 11	70086.35	1051.34	1.58	20.85	0.88	0.11	1.63	0.02	1.37	107.58	1.66	108.45	1.47	88.39	20.85	108.45	1.47
CR-8	CR-8_Spot 12	48628.08	672.62	1.69	20.59	1.04	0.12	1.77	0.02	1.43	115.64	1.94	115.76	1.64	113.32	24.76	115.76	1.64
CR-8	CR-8_Spot 13	20113.16	1888.81	2.01	18.14	1.82	0.11	2.34	0.01	1.46	102.13	2.27	90.23	1.31	389.45	40.91	90.23	1.31
CR-8	CR-8_Spot 14	16191.60	293.59	1.75	20.87	1.45	0.10	2.08	0.01	1.40	93.93	1.86	95.55	1.33	53.04	36.59	95.55	1.33
CR-8	CR-8_Spot 15	20113.90	268.21	3.48	20.43	1.30	0.17	1.89	0.03	1.33	161.19	2.82	164.47	2.16	113.19	31.76	164.47	2.16
CR-8	CR-8_Spot 16	997082.65	754.27	2.80	20.78	1.10	0.12	1.56	0.02	1.11	117.99	1.74	118.51	1.31	107.64	25.91	118.51	1.31
CR-8	CR-8_Spot 17	73492.69	1263.11	3.21	20.58	1.07	0.11	1.80	0.02	1.45	105.62	1.81	104.93	1.51	121.15	25.26	104.93	1.51
CR-8	CR-8_Spot 18	43004.71	1293.41	1.64	20.72	1.20	0.10	1.81	0.01	1.34	94.15	1.63	93.97	1.25	98.96	28.69	93.97	1.25
CR-8	CR-8_Spot 19	49503.01	1700.56	2.10	20.59	0.85	0.11	1.54	0.02	1.28	110.38	1.61	110.18	1.40	114.77	20.37	110.18	1.40
CR-8	CR-8_Spot 20	12591.35	389.36	2.90	20.22	1.26	0.10	1.68	0.01	1.06	95.17	1.52	94.39	0.99	114.75	30.71	94.39	0.99
CR-8	CR-8_Spot 21	18949.39	2060.96	5.06	20.65	0.81	0.14	1.51	0.02	1.09	132.21	1.87	134.90	1.45	84.11	24.79	134.90	1.45
CR-8	CR-8_Spot 22	36242.73	716.59	3.04	20.99	1.40	0.10	2.07	0.02	1.49	94.78	1.87	96.03	1.42	63.23	34.20	96.03	1.42
CR-8	CR-8_Spot 23	113044.76	1161.15	1.71	20.73	0.86	0.12	1.61	0.02	1.36	117.04	1.78	117.59	1.59	105.92	20.29	117.59	1.59
CR-8	CR-8_Spot 24	23191.41	608.14	1.05	20.41	1.25	0.15	1.97	0.02	1.52	146.00	2.69	147.69	2.22	118.56	29.62	147.69	2.22
CR-8	CR-8_Spot 25	64799.18	627.44	1.22	19.90	1.10	0.16	1.75	0.02	1.37	154.15	2.51	151.30	2.04	198.27	25.54	151.30	2.04

CR-8	CR-8_Spot 26	50705.04	652.70	1.58	19.53	1.45	0.12	1.86	0.02	1.17	118.08	2.08	112.14	1.30	239.44	33.48	112.14	1.30
CR-8	CR-8_Spot 27	444863.16	575.52	1.81	17.66	3.41	0.12	3.75	0.02	1.56	115.50	4.09	98.67	1.53	477.74	75.40	98.67	1.53
CR-8	CR-8_Spot 28	26274.58	382.22	3.07	20.16	1.25	0.18	1.49	0.03	0.80	167.85	2.31	169.01	1.34	151.59	29.48	169.01	1.34
CR-8	CR-8_Spot 29	169542.93	1306.85	1.41	20.73	0.82	0.10	1.64	0.01	1.42	96.00	1.50	95.44	1.34	109.82	19.33	95.44	1.34
CR-8	CR-8_Spot 30	10249.25	1730.96	1.22	15.94	3.82	0.13	4.04	0.02	1.29	127.38	4.83	100.95	1.29	653.76	82.10	100.95	1.29
CR-8	CR-8_Spot 31	26779.85	371.38	1.54	20.13	1.07	0.17	1.61	0.03	1.15	160.12	2.39	160.35	1.81	156.66	26.54	160.35	1.81
CR-8	CR-8_Spot 32	17169.25	354.59	1.11	19.99	1.21	0.15	1.76	0.02	1.28	145.62	2.39	144.79	1.83	159.17	28.50	144.79	1.83
CR-8	CR-8_Spot 33	36721.19	978.65	1.72	20.99	0.94	0.09	1.67	0.01	1.38	89.55	1.43	90.55	1.24	62.77	22.45	90.55	1.24
CR-8	CR-8_Spot 34	219748.05	2659.39	0.84	20.53	0.98	0.12	1.48	0.02	1.11	112.48	1.58	111.52	1.23	133.05	23.04	111.52	1.23
CR-8	CR-8_Spot 35	8282.64	115.62	1.21	19.13	2.53	0.16	2.85	0.02	1.29	148.35	3.93	143.79	1.84	221.95	58.81	143.79	1.84
CR-8	CR-8_Spot 36	710984.34	538.18	2.55	20.25	1.11	0.13	1.77	0.02	1.38	120.44	2.01	118.02	1.62	168.51	25.83	118.02	1.62
CR-8	CR-8_Spot 37	98408.14	795.46	2.47	20.45	1.11	0.10	1.65	0.02	1.23	100.43	1.58	98.81	1.20	139.04	25.95	98.81	1.20
CR-8	CR-8_Spot 38	52586.83	351.67	1.17	20.80	1.55	0.10	1.96	0.02	1.20	100.48	1.87	100.80	1.20	92.86	36.77	100.80	1.20
CR-8	CR-8_Spot 39	114606.44	2460.77	2.08	20.84	0.90	0.09	1.78	0.01	1.53	92.10	1.56	91.87	1.40	98.22	21.27	91.87	1.40
CR-8	CR-8_Spot 40	43743.24	719.97	1.42	20.17	1.33	0.16	2.00	0.02	1.50	149.69	2.79	148.81	2.20	163.64	31.20	148.81	2.20
CR-8	CR-8_Spot 41	52929.52	1138.71	2.13	20.86	1.03	0.10	1.69	0.01	1.34	93.39	1.51	93.68	1.24	85.96	24.49	93.68	1.24
CR-8	CR-8_Spot 42	820960.82	1120.37	1.85	20.47	1.17	0.10	1.92	0.01	1.53	93.83	1.72	91.88	1.40	143.74	27.36	91.88	1.40
CR-8	CR-8_Spot 43	103201.39	1666.02	2.51	20.58	1.02	0.12	1.77	0.02	1.45	115.39	1.93	114.96	1.65	124.40	23.99	114.96	1.65
CR-8	CR-8_Spot 44	62979.68	708.11	1.83	20.49	0.88	0.11	1.61	0.02	1.35	106.53	1.63	105.45	1.41	130.72	20.61	105.45	1.41
CR-8	CR-8_Spot 45	24460.18	450.19	2.63	20.61	1.33	0.12	2.63	0.02	2.26	118.83	2.95	119.79	2.69	99.71	31.50	119.79	2.69
CR-8	CR-8_Spot 46	76171.94	513.79	3.28	20.51	1.12	0.11	2.08	0.02	1.75	101.78	2.02	100.54	1.75	130.88	26.46	100.54	1.75
CR-8	CR-8_Spot 47	20652.00	274.65	2.94	20.41	1.50	0.12	2.05	0.02	1.38	110.76	2.15	110.50	1.52	116.36	35.54	110.50	1.52
CR-8	CR-8_Spot 48	13195.69	934.03	1.66	20.13	0.94	0.10	1.61	0.01	1.31	96.54	1.48	95.19	1.23	130.01	22.02	95.19	1.23
CR-8	CR-8_Spot 49	27771.92	506.67	1.95	20.31	1.07	0.11	2.06	0.02	1.71	107.56	2.10	106.23	1.80	137.20	26.84	106.23	1.80
CR-8	CR-8_Spot 50	90415.92	383.00	2.78	19.97	0.87	0.16	1.75	0.02	1.51	154.77	2.51	152.21	2.27	194.04	20.38	152.21	2.27
CR-8	CR-8_Spot 51	53093.83	604.99	2.48	20.71	1.05	0.12	2.13	0.02	1.85	111.93	2.26	112.38	2.06	102.49	24.97	112.38	2.06
CR-8	CR-8_Spot 52	44241.66	1073.37	1.73	20.05	1.63	0.10	2.02	0.02	1.20	99.57	1.92	96.37	1.15	176.79	37.94	96.37	1.15
CR-8	CR-8_Spot 53	18939.38	695.57	2.13	18.00	2.29	0.18	2.78	0.02	1.43	165.44	4.24	149.00	2.11	407.59	53.30	149.00	2.11
CR-8	CR-8_Spot 54	20406.50	797.51	2.51	20.44	1.27	0.10	1.87	0.01	1.36	95.30	1.70	94.55	1.28	114.08	30.27	94.55	1.28
CR-8	CR-8_Spot 55	43666.87	227.93	2.46	20.52	2.02	0.11	2.36	0.02	1.22	107.32	2.40	106.57	1.28	124.08	47.65	106.57	1.28
CR-8	CR-8_Spot 56	68615.89	385.03	2.07	7.06	0.93	1.44	1.73	0.07	1.46	907.09	10.40	459.22	6.49	2248.96	16.05	2248.96	16.05
CR-8	CR-8_Spot 57	36636.34	1377.96	1.86	20.81	0.92	0.09	1.89	0.01	1.63	87.10	1.58	87.10	1.41	87.27	22.79	87.10	1.41
CR-8	CR-8_Spot 58	435676.28	206.55	1.49	8.95	0.80	4.99	1.39	0.32	1.13	1817.91	11.73	1806.55	17.82	1830.94	14.54	1830.94	14.54
CR-8	CR-8_Spot 59	47225.87	421.64	1.60	20.09	1.43	0.11	1.78	0.02	1.05	110.26	1.86	107.23	1.11	176.26	33.46	107.23	1.11
CR-8	CR-8_Spot 60	163949.51	1570.37	1.53	20.65	0.84	0.09	1.42	0.01	1.14	90.91	1.23	89.73	1.01	122.20	19.89	89.73	1.01
CR-8	CR-8_Spot	101382.32	2500.67	1.95	20.42	0.64	0.15	1.47	0.02	1.33	137.92	1.90	137.34	1.80	147.94	14.99	137.34	1.80

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CR-8	CR-8_Spot 62	279460.15	376.74	1.96	20.76	1.43	0.10	1.89	0.02	1.23	97.94	1.76	97.29	1.18	113.69	33.83	97.29	1.18
CR-8	CR-8_Spot 63	40791.67	735.99	2.19	20.23	0.81	0.16	1.57	0.02	1.33	149.55	2.19	148.87	1.96	160.31	19.55	148.87	1.96
CR-8	CR-8_Spot 64	14206.24	452.09	2.35	20.31	1.38	0.17	2.03	0.03	1.44	156.76	2.94	159.34	2.26	117.84	33.69	159.34	2.26
CR-8	CR-8_Spot 65	9987.45	770.23	1.62	21.18	1.33	0.10	2.15	0.02	1.69	94.52	1.94	98.68	1.65	NA	NA	98.68	1.65
CR-8	CR-8_Spot 66	214659.97	314.96	1.89	9.16	0.87	4.30	1.64	0.28	1.39	1692.58	13.51	1614.77	19.84	1790.33	15.89	1790.33	15.89
CR-8	CR-8_Spot 67	25675.04	742.54	0.72	18.88	1.24	0.13	2.05	0.02	1.63	122.67	2.37	113.24	1.83	309.60	28.24	113.24	1.83
CR-8	CR-8_Spot 68	118624.03	874.66	2.28	20.71	1.15	0.10	1.96	0.02	1.59	100.96	1.89	100.43	1.59	113.58	27.04	100.43	1.59
CR-8	CR-8_Spot 69	24846.71	860.10	2.53	20.84	1.17	0.10	1.98	0.01	1.52	92.31	1.75	92.99	1.40	74.89	30.42	92.99	1.40
CR-8	CR-8_Spot 70	3165.40	208.91	0.96	12.22	2.13	0.19	2.28	0.02	0.82	180.52	3.77	116.30	0.94	1134.43	42.37	116.30	0.94
CR-8	CR-8_Spot 71	349135.91	1327.85	2.18	20.55	1.16	0.09	1.88	0.01	1.48	91.73	1.65	90.16	1.33	132.73	27.27	90.16	1.33
CR-8	CR-8_Spot 72	60342.52	816.11	2.49	20.96	1.31	0.10	2.02	0.01	1.53	93.66	1.81	94.41	1.44	74.57	31.30	94.41	1.44
CR-8	CR-8_Spot 73	1735250.59	1594.65	1.46	20.57	1.09	0.10	1.81	0.01	1.44	92.70	1.60	91.25	1.30	130.28	25.71	91.25	1.30
CR-8	CR-8_Spot 74	12646.61	223.73	0.92	20.15	1.58	0.16	1.95	0.02	1.06	152.63	2.77	154.47	1.61	124.13	38.62	154.47	1.61
CR-8	CR-8_Spot 75	24594.29	855.34	1.42	19.86	0.97	0.11	1.73	0.02	1.42	102.72	1.69	99.19	1.40	185.39	22.95	99.19	1.40
CR-8	CR-8_Spot 76	109854.58	3862.20	4.47	20.75	0.76	0.10	1.49	0.01	1.27	95.55	1.35	95.22	1.20	103.79	18.07	95.22	1.20
CR-8	CR-8_Spot 77	24594.63	1915.79	1.19	20.77	1.02	0.09	1.83	0.01	1.52	90.06	1.58	90.43	1.36	80.06	24.27	90.43	1.36
CR-8	CR-8_Spot 78	17131.33	636.39	3.67	20.84	0.94	0.12	1.82	0.02	1.54	115.71	1.99	118.49	1.81	58.96	22.79	118.49	1.81
CR-8	CR-8_Spot 79	48437.89	777.75	3.90	20.17	0.87	0.18	1.84	0.03	1.62	165.41	2.81	165.52	2.65	163.78	20.43	165.52	2.65
CR-8	CR-8_Spot 80	46295.03	1024.54	2.90	19.80	1.24	0.10	1.72	0.01	1.17	96.80	1.59	92.40	1.08	206.74	29.17	92.40	1.08
CR-8	CR-8_Spot 81	29473.39	1039.75	0.97	20.36	0.97	0.12	1.71	0.02	1.36	119.29	1.92	118.59	1.59	133.28	24.44	118.59	1.59
CR-8	CR-8_Spot 82	2957.75	1189.89	1.14	9.08	4.31	0.19	4.99	0.01	2.45	179.92	8.24	85.19	2.08	1726.48	79.91	85.19	2.08
CR-8	CR-8_Spot 83	107715.54	1913.18	2.24	20.52	1.08	0.10	1.60	0.01	1.18	92.91	1.42	91.35	1.07	132.93	25.34	91.35	1.07
CR-8	CR-8_Spot 84	36372.84	2647.66	1.10	19.92	1.06	0.07	2.47	0.01	2.22	72.53	1.73	69.01	1.52	190.07	25.44	69.01	1.52
CR-8	CR-8_Spot 85	56479.88	132.69	1.30	19.66	1.93	0.13	2.22	0.02	1.10	124.13	2.59	118.82	1.29	227.06	44.50	118.82	1.29
CR-8	CR-8_Spot 86	67452.09	676.18	1.76	20.39	1.13	0.16	1.66	0.02	1.22	147.40	2.28	147.56	1.78	144.86	26.40	147.56	1.78
CR-8	CR-8_Spot 87	3867.91	155.74	1.29	18.80	2.11	0.11	4.64	0.02	1.48	103.50	4.57	100.62	1.47	170.38	102.83	100.62	1.47
CR-8	CR-8_Spot 88	56746.81	658.19	1.71	20.67	1.02	0.10	1.66	0.01	1.31	94.75	1.51	94.17	1.23	109.47	24.11	94.17	1.23
CR-8	CR-8_Spot 89	11083.78	989.38	1.07	20.62	0.94	0.10	1.80	0.02	1.53	99.61	1.71	101.19	1.54	61.89	22.42	101.19	1.54
CR-8	CR-8_Spot 90	61922.26	545.93	1.56	20.44	0.99	0.16	1.86	0.02	1.57	150.26	2.59	151.10	2.35	137.11	23.27	151.10	2.35
CR-8	CR-8_Spot 91	114244.60	1244.65	2.08	20.76	1.05	0.10	1.60	0.01	1.20	92.17	1.41	91.56	1.09	107.98	24.79	91.56	1.09
CR-8	CR-8_Spot 92	5788.70	2485.09	0.67	13.02	2.81	0.19	3.42	0.02	1.95	174.74	5.49	116.73	2.26	1056.06	56.58	116.73	2.26
CR-8	CR-8_Spot 93	29065.60	750.86	1.59	18.56	0.87	0.14	1.67	0.02	1.41	133.06	2.08	121.26	1.70	349.26	19.94	121.26	1.70
CR-8	CR-8_Spot 94	66294.56	627.61	2.16	20.59	1.29	0.10	2.11	0.01	1.67	94.75	1.91	93.70	1.55	121.32	30.48	93.70	1.55
CR-8	CR-8_Spot 95	11991.06	470.10	1.99	20.78	1.04	0.10	1.85	0.02	1.52	96.24	1.70	98.17	1.48	48.72	25.13	98.17	1.48
CR-8	CR-8_Spot 96	103836.37	1041.45	5.30	20.49	1.05	0.17	1.86	0.03	1.54	160.89	2.77	162.66	2.47	134.98	24.71	162.66	2.47

CR-8	CR-8_Spot 97	69404.52	2220.28	1.52	20.47	0.86	0.13	1.71	0.02	1.48	120.39	1.95	119.64	1.76	135.17	20.29	119.64	1.76
CR-8	CR-8_Spot 98	13061.41	377.49	1.67	20.11	1.34	0.10	1.85	0.02	1.23	97.51	1.72	96.04	1.17	133.49	32.45	96.04	1.17
CR-8	CR-8_Spot 99	241479502.53	1423.51	1.78	20.98	0.84	0.09	1.67	0.01	1.44	89.14	1.42	89.19	1.28	87.77	19.85	89.19	1.28
CR-8	CR-8_Spot 100	26920.68	662.23	3.17	20.65	1.13	0.10	1.87	0.01	1.48	93.52	1.67	93.33	1.37	98.30	26.78	93.33	1.37
CR-8	CR-8_Spot 101	11670.13	553.37	2.93	19.06	1.37	0.10	2.06	0.01	1.46	97.15	1.90	90.87	1.32	254.26	33.19	90.87	1.32
CR-8	CR-8_Spot 102	115199.42	1009.82	3.20	19.64	1.81	0.18	2.18	0.03	1.22	168.62	3.39	163.91	1.97	235.30	41.83	163.91	1.97
CR-8	CR-8_Spot 103	6564.40	214.46	1.68	20.41	1.75	0.10	2.16	0.01	1.12	93.28	1.92	95.36	1.06	40.51	NA	95.36	1.06
CR-8	CR-8_Spot 104	76217.67	666.20	1.49	19.51	1.16	0.16	1.83	0.02	1.41	152.35	2.59	146.28	2.04	247.89	26.77	146.28	2.04
CR-8	CR-8_Spot 105	116253.85	772.31	0.87	20.21	1.14	0.16	2.10	0.02	1.76	151.82	2.95	150.77	2.62	168.31	26.76	150.77	2.62
CR-8	CR-8_Spot 106	71051.12	1368.22	4.11	20.95	0.94	0.11	1.63	0.02	1.33	103.06	1.60	104.07	1.37	79.86	22.45	104.07	1.37
CR-8	CR-8_Spot 107	46878.54	1978.68	3.60	20.77	1.13	0.10	1.91	0.01	1.53	93.32	1.70	93.26	1.42	94.87	26.80	93.26	1.42
CR-8	CR-8_Spot 108	75663.37	1033.97	2.40	20.17	1.05	0.10	1.62	0.01	1.24	94.86	1.47	91.89	1.13	170.33	24.62	91.89	1.13
CR-8	CR-8_Spot 109	36949.92	774.48	3.28	20.24	1.19	0.16	1.97	0.02	1.54	146.81	2.69	146.50	2.23	151.93	28.68	146.50	2.23
CR-8	CR-8_Spot 110	49891.87	206.59	2.49	18.66	1.42	0.15	1.77	0.02	1.06	142.33	2.35	130.44	1.37	345.48	32.08	130.44	1.37
CR-8	CR-8_Spot 111	71355.81	715.93	2.22	21.09	1.13	0.10	2.10	0.02	1.78	96.03	1.93	97.34	1.72	63.54	26.85	97.34	1.72
CR-8	CR-8_Spot 112	92522.06	1173.08	2.05	20.64	1.09	0.11	1.75	0.02	1.37	102.73	1.71	102.14	1.39	116.33	25.80	102.14	1.39
CR-8	CR-8_Spot 113	129420.53	960.52	2.31	20.44	1.01	0.13	1.56	0.02	1.18	121.75	1.79	120.73	1.42	141.71	23.76	120.73	1.42
CR-8	CR-8_Spot 114	93683.22	1467.69	3.20	21.13	1.04	0.10	1.73	0.02	1.39	95.23	1.58	96.59	1.33	61.23	24.88	96.59	1.33
CR-8	CR-8_Spot 115	44534.07	333.15	2.12	20.54	2.03	0.10	2.59	0.01	1.61	93.71	2.32	92.66	1.48	120.42	47.79	92.66	1.48
CR-8	CR-8_Spot 116	29147.94	753.14	3.09	20.67	0.97	0.11	2.01	0.02	1.72	102.40	1.96	102.65	1.75	96.71	24.96	102.65	1.75
CR-8	CR-8_Spot 117	58476.14	1094.08	2.18	19.61	1.10	0.10	1.87	0.01	1.51	98.49	1.76	93.12	1.40	230.40	25.45	93.12	1.40
CR-8	CR-8_Spot 118	6241.12	268.56	2.45	19.83	1.52	0.10	3.06	0.02	0.98	98.18	2.86	97.94	0.95	104.01	68.45	97.94	0.95
CR-8	CR-8_Spot 120	43349.13	1370.77	1.63	20.09	0.88	0.15	1.56	0.02	1.28	146.22	2.12	144.64	1.83	171.89	20.64	144.64	1.83
CR-8	CR-8_Spot 121	22204.71	663.39	2.45	20.16	0.91	0.11	1.63	0.02	1.35	101.58	1.58	99.61	1.34	147.98	21.55	99.61	1.34
CR-8	CR-8_Spot 122	55134.55	715.55	1.67	20.31	1.01	0.16	1.61	0.02	1.26	148.13	2.22	148.01	1.84	150.08	23.64	148.01	1.84
CR-8	CR-8_Spot 123	107334.84	654.93	2.94	20.40	1.03	0.11	1.89	0.02	1.59	108.56	1.95	106.84	1.68	146.48	24.12	106.84	1.68
CR-8	CR-8_Spot 124	1560257.18	1894.50	2.18	20.91	0.84	0.10	1.46	0.02	1.19	99.37	1.38	99.56	1.18	94.77	19.88	99.56	1.18
CR-8	CR-8_Spot 125	224465.70	1189.10	3.15	20.46	1.01	0.10	1.78	0.02	1.46	99.73	1.69	97.96	1.42	142.22	23.78	97.96	1.42
CR-8	CR-8_Spot 126	1435980.43	945.72	1.87	20.20	0.91	0.18	1.45	0.03	1.14	164.55	2.21	163.86	1.84	174.48	21.20	163.86	1.84
CR-8	CR-8_Spot 127	6218.28	189.25	1.50	19.35	1.58	0.13	2.98	0.02	1.43	124.85	3.50	122.65	1.74	166.91	61.11	122.65	1.74
CR-8	CR-8_Spot 128	16756.94	280.85	0.89	19.97	1.31	0.15	1.88	0.02	1.08	145.95	2.56	144.93	1.55	162.57	36.05	144.93	1.55
CR-8	CR-8_Spot 129	25580.54	1603.75	2.38	20.85	0.99	0.10	1.80	0.01	1.50	93.90	1.61	94.73	1.41	72.90	23.44	94.73	1.41
CR-8	CR-8_Spot 130	420314.97	222.72	1.60	7.81	0.67	6.84	1.26	0.39	1.07	2090.46	11.17	2108.07	19.26	2073.15	11.74	2073.15	11.74
CR-8	CR-8_Spot 131	115618.98	359.85	1.29	19.30	1.22	0.14	1.66	0.02	1.13	130.33	2.03	122.51	1.37	275.36	27.86	122.51	1.37
CR-8	CR-8_Spot 132	13778.04	868.26	0.85	15.04	4.89	0.21	5.25	0.02	1.92	192.47	9.21	147.11	2.79	792.82	102.71	147.11	2.79
CR-8	CR-8_Spot	57830.08	842.01	1.46	19.81	0.83	0.11	1.51	0.02	1.26	105.07	1.51	100.51	1.25	209.69	19.37	100.51	1.25

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CR-8	CR-8_Spot 134	7855.01	352.64	1.98	13.15	4.92	0.17	5.05	0.02	1.15	155.49	7.28	103.21	1.18	1051.38	99.17	103.21	1.18
CR-8	CR-8_Spot 135	437442.38	2696.21	1.98	20.13	0.73	0.16	1.50	0.02	1.31	147.75	2.07	145.61	1.89	182.20	17.13	145.61	1.89
CR-8	CR-8_Spot 136	103228.99	795.67	2.20	20.68	1.11	0.13	1.89	0.02	1.53	128.34	2.28	129.11	1.96	114.02	26.14	129.11	1.96
CR-8	CR-8_Spot 137	20940.06	529.53	2.08	20.14	1.10	0.16	1.93	0.02	1.55	150.40	2.70	150.49	2.30	148.99	27.22	150.49	2.30
CR-8	CR-8_Spot 138	49879.97	1262.89	2.58	20.51	1.03	0.10	1.59	0.01	1.21	92.40	1.40	91.15	1.09	124.88	24.23	91.15	1.09
CR-8	CR-8_Spot 139	192559.30	899.40	0.78	19.93	0.95	0.15	1.88	0.02	1.62	141.58	2.48	138.11	2.21	200.16	22.11	138.11	2.21
CR-8	CR-8_Spot 140	12865.05	295.97	0.89	20.32	1.35	0.16	1.88	0.02	1.16	150.76	2.63	153.81	1.76	103.09	34.88	153.81	1.76
CR-8	CR-8_Spot 141	115687.90	426.96	1.63	20.14	1.62	0.17	2.12	0.02	1.37	160.08	3.14	159.16	2.16	173.74	37.80	159.16	2.16
CR-8	CR-8_Spot 142	171174.01	2456.08	6.98	20.71	0.85	0.11	1.65	0.02	1.41	105.76	1.65	105.60	1.48	109.55	20.14	105.60	1.48
CR-8	CR-8_Spot 143	13740.15	438.84	1.55	20.74	1.15	0.15	1.90	0.02	1.50	144.21	2.55	149.53	2.22	57.63	27.73	149.53	2.22
CR-8	CR-8_Spot 144	26203.09	2056.34	1.22	20.56	0.90	0.09	1.75	0.01	1.51	90.87	1.52	90.43	1.35	102.35	21.21	90.43	1.35
CR-8	CR-8_Spot 145	116100.55	1482.12	3.97	20.11	1.37	0.12	1.92	0.02	1.34	116.22	2.10	113.37	1.51	175.02	31.92	113.37	1.51
CR-8	CR-8_Spot 146	40196.13	59.49	2.09	19.82	2.51	0.17	5.57	0.02	4.97	155.86	8.04	153.09	7.52	198.26	58.27	153.09	7.52
CR-8	CR-8_Spot 147	72959.67	732.50	2.68	20.89	0.88	0.10	1.68	0.02	1.43	100.72	1.61	101.54	1.44	81.22	20.92	101.54	1.44
CR-8	CR-8_Spot 148	147584.31	1427.98	1.39	20.79	0.91	0.10	1.49	0.01	1.17	92.48	1.31	92.26	1.07	98.25	21.59	92.26	1.07
CR-8	CR-8_Spot 149	13270.15	965.22	1.79	20.24	0.95	0.12	1.63	0.02	1.33	116.55	1.80	116.83	1.54	110.89	22.33	116.83	1.54
CR-8	CR-8_Spot 150	8401.66	198.68	1.66	17.95	3.30	0.18	3.53	0.02	1.25	164.37	5.36	150.68	1.86	366.35	74.51	150.68	1.86
CR-8	CR-8_Spot 151	37689.48	547.93	1.14	20.16	1.36	0.15	2.10	0.02	1.60	145.07	2.84	144.47	2.28	154.92	32.03	144.47	2.28
CR-8	CR-8_Spot 152	95273.26	753.75	4.69	20.27	1.17	0.10	2.19	0.02	1.85	100.73	2.10	98.50	1.81	153.77	27.29	98.50	1.81
CR-8	CR-8_Spot 153	104727.65	1340.67	1.60	20.15	0.95	0.11	1.56	0.02	1.24	105.27	1.56	102.52	1.26	167.89	22.26	102.52	1.26
CR-8	CR-8_Spot 154	31824.63	691.87	1.42	20.86	1.21	0.10	1.80	0.01	1.33	94.78	1.63	95.74	1.27	70.64	28.88	95.74	1.27
CR-8	CR-8_Spot 155	25761.88	847.99	2.53	20.23	1.24	0.10	1.93	0.01	1.43	93.91	1.73	92.15	1.31	138.73	30.51	92.15	1.31
CR-8	CR-8_Spot 157	16027.67	392.37	2.78	19.78	1.28	0.12	1.78	0.02	1.22	112.30	1.90	109.36	1.32	175.01	30.35	109.36	1.32
CR-8	CR-8_Spot 158	2751966.62	387.83	1.19	5.36	0.79	11.07	2.18	0.43	2.03	2529.33	20.29	2310.99	39.46	2709.46	12.97	2709.46	12.97
CR-8	CR-8_Spot 159	498264.98	3750.12	2.52	20.80	1.24	0.11	1.83	0.02	1.34	102.32	1.78	102.55	1.37	96.90	29.32	102.55	1.37
CR-8	CR-8_Spot 160	81824.45	932.93	1.44	19.81	1.55	0.10	1.99	0.01	1.25	96.31	1.83	91.98	1.14	204.95	35.92	91.98	1.14
CR-8	CR-8_Spot 162	289226.38	1412.36	3.63	20.07	1.31	0.13	1.83	0.02	1.28	120.98	2.09	117.96	1.49	180.82	30.59	117.96	1.49
CR-8	CR-8_Spot 163	9882.26	328.00	1.67	20.33	1.20	0.13	1.83	0.02	1.32	125.65	2.16	128.05	1.68	80.56	29.93	128.05	1.68
CR-8	CR-8_Spot 164	44604.52	1561.18	0.90	20.26	0.86	0.16	1.69	0.02	1.45	148.42	2.33	148.63	2.13	145.06	20.35	148.63	2.13
CR-8	CR-8_Spot 165	61177.03	811.78	1.95	20.33	0.97	0.11	1.74	0.02	1.44	106.21	1.75	104.65	1.50	141.47	22.89	104.65	1.50
CR-8	CR-8_Spot 166	593563.99	1621.41	3.72	20.14	0.80	0.15	1.40	0.02	1.15	138.12	1.81	136.02	1.55	174.28	18.58	136.02	1.55
CR-8	CR-8_Spot 167	11862.59	219.47	1.92	17.02	3.07	0.14	3.46	0.02	1.29	132.80	4.30	112.75	1.44	508.23	70.58	112.75	1.44
CR-8	CR-8_Spot 168	17784.48	608.15	1.08	20.01	1.48	0.11	2.09	0.02	1.40	105.56	2.09	103.51	1.44	151.97	36.26	103.51	1.44
CR-8	CR-8_Spot 169	25439.67	1039.93	1.39	20.75	0.90	0.10	1.64	0.01	1.38	92.73	1.46	93.39	1.28	75.97	21.38	93.39	1.28
CR-8	CR-8_Spot 170	19071.04	442.87	1.49	17.05	1.51	0.19	1.95	0.02	1.04	174.89	3.13	150.25	1.55	522.55	36.14	150.25	1.55

CR-8	CR-8_Spot 171	79010.56	326.57	2.35	19.54	1.14	0.18	1.49	0.03	0.96	168.81	2.32	163.97	1.56	237.25	26.40	163.97	1.56
CR-8	CR-8_Spot 172	21826.28	264.60	1.37	20.25	1.53	0.17	1.90	0.03	1.05	157.60	2.78	159.45	1.66	129.87	37.21	159.45	1.66
CR-8	CR-8_Spot 173	104162.61	1691.72	1.41	19.92	0.92	0.10	1.64	0.01	1.36	98.52	1.54	94.64	1.28	193.47	21.51	94.64	1.28
CR-8	CR-8_Spot 174	33686.81	678.88	1.99	20.75	0.99	0.10	1.63	0.01	1.26	94.81	1.48	95.33	1.19	81.96	24.64	95.33	1.19
CR-8	CR-8_Spot 175	50289.49	897.35	3.13	19.74	1.02	0.16	1.82	0.02	1.50	146.40	2.48	142.68	2.11	207.07	23.92	142.68	2.11
CR-8	CR-8_Spot 176	32826.07	215.50	1.65	20.04	1.32	0.16	1.75	0.02	1.15	153.51	2.49	152.79	1.74	164.65	30.85	152.79	1.74
CR-8	CR-8_Spot 177	19173.61	850.22	1.96	20.85	0.98	0.11	1.81	0.02	1.31	109.74	1.88	112.35	1.46	53.51	29.86	112.35	1.46
CR-8	CR-8_Spot 178	74332.31	1292.66	1.75	20.44	1.42	0.11	2.08	0.02	1.53	101.72	2.02	100.52	1.52	130.00	33.37	100.52	1.52
CR-8	CR-8_Spot 179	96772.94	1451.20	2.35	20.74	1.02	0.09	1.81	0.01	1.49	89.90	1.55	89.73	1.33	94.29	24.09	89.73	1.33
CR-8	CR-8_Spot 180	38256.69	652.05	1.38	20.54	0.77	0.11	1.55	0.02	1.34	107.82	1.59	107.89	1.44	106.19	18.40	107.89	1.44
CR-8	CR-8_Spot 181	103901.89	383.71	3.44	20.26	0.95	0.17	1.40	0.02	1.03	158.10	2.04	158.59	1.61	150.74	22.15	158.59	1.61
CR-8	CR-8_Spot 182	15787.69	296.14	1.28	19.23	1.74	0.16	2.19	0.02	1.13	153.52	3.12	148.22	1.66	236.15	43.25	148.22	1.66
CR-8	CR-8_Spot 183	3693.69	261.93	2.31	9.76	10.86	0.23	11.10	0.02	1.31	208.76	20.95	107.60	1.40	1593.19	206.52	107.60	1.40
CR-8	CR-8_Spot 184	10324.76	465.75	2.59	20.36	1.22	0.09	2.09	0.01	1.49	91.76	1.83	92.33	1.36	77.05	34.83	92.33	1.36
CR-8	CR-8_Spot 185	112692.50	3530.72	1.03	20.55	0.86	0.10	1.72	0.01	1.49	95.49	1.57	94.57	1.40	118.34	20.34	94.57	1.40
CR-8	CR-8_Spot 186	23073.25	474.58	1.80	18.45	1.51	0.13	1.86	0.02	1.07	120.94	2.12	109.77	1.16	346.52	34.47	109.77	1.16
CR-8	CR-8_Spot 187	12558.89	328.74	1.89	20.39	1.49	0.10	1.87	0.02	1.11	96.14	1.71	96.54	1.06	86.30	35.64	96.54	1.06
CR-8	CR-8_Spot 188	459289.53	1323.98	1.38	20.12	0.96	0.10	1.60	0.01	1.28	94.18	1.44	91.09	1.16	173.19	22.33	91.09	1.16
CR-8	CR-8_Spot 189	27801.10	898.37	2.17	20.33	0.99	0.10	1.71	0.01	1.40	94.23	1.54	93.03	1.29	124.53	23.30	93.03	1.29
CR-8	CR-8_Spot 190	286737.96	591.28	2.48	20.40	1.41	0.12	1.97	0.02	1.37	116.22	2.16	114.99	1.56	141.49	33.09	114.99	1.56
CR-8	CR-8_Spot 191	97217.70	2123.12	0.46	20.11	0.88	0.16	1.58	0.02	1.31	147.57	2.17	146.22	1.90	169.42	20.49	146.22	1.90
CR-8	CR-8_Spot 192	49524.75	327.14	2.28	20.52	1.42	0.11	1.93	0.02	1.30	106.71	1.96	106.33	1.38	115.28	33.73	106.33	1.38
CR-8	CR-8_Spot 193	90908.57	1695.41	2.91	20.51	1.07	0.11	1.76	0.02	1.39	104.62	1.75	103.79	1.43	123.52	25.23	103.79	1.43
CR-8	CR-8_Spot 194	18205.81	1592.33	2.17	20.63	1.05	0.10	1.90	0.01	1.58	92.39	1.67	92.94	1.46	78.23	24.89	92.94	1.46
CR-8	CR-8_Spot 195	26286.31	488.84	2.15	20.43	0.86	0.13	1.67	0.02	1.39	119.68	1.88	119.99	1.65	113.36	21.65	119.99	1.65
CR-8	CR-8_Spot 196	55493.61	1301.69	2.13	20.33	0.94	0.12	1.94	0.02	1.69	114.21	2.09	113.02	1.89	139.17	22.39	113.02	1.89
CR-8	CR-8_Spot 197	105734.03	1148.64	1.24	20.10	0.97	0.16	1.80	0.02	1.52	150.03	2.52	148.60	2.24	172.71	22.62	148.60	2.24
CR-8	CR-8_Spot 198	121907.04	618.64	2.34	19.40	1.14	0.18	1.89	0.03	1.51	165.92	2.89	159.74	2.38	255.04	26.24	159.74	2.38
CR-8	CR-8_Spot 199	114724.94	2807.24	2.90	20.51	0.97	0.11	1.72	0.02	1.42	105.20	1.72	104.26	1.47	126.71	22.86	104.26	1.47
CR-8	CR-8_Spot 200	264172.96	1646.61	1.79	20.49	1.21	0.10	1.84	0.01	1.39	95.88	1.69	94.35	1.30	134.02	28.48	94.35	1.30
CR-8	CR-8_Spot 201	10360.03	188.77	3.52	20.16	1.60	0.16	2.27	0.02	1.27	148.40	3.13	151.05	1.90	106.20	44.41	151.05	1.90
CR-8	CR-8_Spot 202	28814.36	183.18	2.03	20.06	1.53	0.14	1.94	0.02	1.19	132.15	2.40	130.48	1.54	162.31	35.79	130.48	1.54
CR-8	CR-8_Spot 203	75597.51	671.64	1.29	20.04	1.17	0.16	1.91	0.02	1.51	152.94	2.71	151.26	2.25	179.03	27.33	151.26	2.25
CR-8	CR-8_Spot 204	91698.06	5272.28	4.45	20.40	0.74	0.12	1.55	0.02	1.36	111.89	1.64	110.59	1.49	139.64	17.27	110.59	1.49
CR-8	CR-8_Spot 205	135622.92	151.22	1.74	20.26	2.22	0.13	2.50	0.02	1.15	121.72	2.87	119.82	1.36	158.99	52.00	119.82	1.36
CR-8	CR-8_Spot	23297.55	796.79	0.87	20.02	0.86	0.12	1.56	0.02	1.30	113.53	1.68	111.22	1.43	162.34	20.32	111.22	1.43

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CR-8	CR-8_Spot 207	93139.48	743.89	1.70	21.00	0.92	0.10	1.66	0.02	1.39	98.51	1.56	99.62	1.37	71.70	21.94	99.62	1.37
CR-8	CR-8_Spot 208	14841.34	836.28	2.41	20.62	1.18	0.10	1.86	0.01	1.43	94.66	1.68	95.45	1.35	74.83	28.19	95.45	1.35
CR-8	CR-8_Spot 209	18433.01	714.92	1.89	20.25	1.33	0.11	2.01	0.02	1.48	106.82	2.04	105.87	1.56	128.13	32.10	105.87	1.56
CR-8	CR-8_Spot 210	30240.21	1445.30	1.92	20.67	0.92	0.10	1.69	0.01	1.42	93.68	1.51	93.66	1.32	94.40	21.71	93.66	1.32
CR-8	CR-8_Spot 211	134356.29	1652.18	1.90	20.66	0.92	0.09	1.41	0.01	1.06	90.09	1.21	89.19	0.94	114.00	21.83	89.19	0.94
CR-8	CR-8_Spot 212	13981.42	645.23	1.63	17.71	2.11	0.13	2.69	0.02	1.64	126.67	3.20	111.10	1.81	429.53	47.36	111.10	1.81
CR-8	CR-8_Spot 213	21603.04	667.07	1.90	20.47	1.25	0.10	1.89	0.02	1.42	98.19	1.77	97.86	1.38	106.17	29.64	97.86	1.38
CR-8	CR-8_Spot 214	6643.49	202.19	1.79	20.71	1.86	0.12	2.47	0.02	1.12	113.12	2.65	118.57	1.32	-0.18	NA	118.57	1.32
CR-8	CR-8_Spot 215	15101.83	497.03	1.26	20.57	1.33	0.11	2.27	0.02	1.71	107.66	2.32	108.90	1.85	80.30	35.46	108.90	1.85
CR-8	CR-8_Spot 216	14412.48	546.69	2.22	16.95	2.33	0.12	2.71	0.01	1.38	110.87	2.85	92.41	1.26	527.92	51.26	92.41	1.26
CR-8	CR-8_Spot 217	1228515.78	506.75	2.35	20.24	1.15	0.14	1.79	0.02	1.37	128.62	2.17	126.62	1.72	165.70	26.98	126.62	1.72
CR-8	CR-8_Spot 218	29142.00	748.01	1.18	20.35	1.13	0.10	1.92	0.01	1.54	94.34	1.73	92.97	1.42	129.15	26.75	92.97	1.42
CR-8	CR-8_Spot 219	424618.76	607.68	2.42	20.67	1.09	0.11	1.85	0.02	1.50	110.30	1.94	109.97	1.63	117.48	25.69	109.97	1.63
CR-8	CR-8_Spot 221	96410.29	2340.64	2.24	20.52	0.76	0.11	1.71	0.02	1.54	104.23	1.70	103.16	1.57	128.85	17.92	103.16	1.57
CR-8	CR-8_Spot 222	9851.98	230.12	1.66	17.05	2.25	0.15	2.56	0.02	1.21	139.64	3.34	119.39	1.43	499.24	49.84	119.39	1.43
CR-8	CR-8_Spot 223	45267.65	299.54	1.45	20.09	1.79	0.13	2.20	0.02	1.28	121.95	2.53	119.56	1.52	168.71	41.78	119.56	1.52
CR-8	CR-8_Spot 224	111850.00	2736.84	6.12	20.56	0.71	0.16	1.43	0.02	1.24	147.82	1.96	149.43	1.83	121.93	16.66	149.43	1.83
CR-8	CR-8_Spot 225	269004.69	2197.75	1.78	19.43	1.53	0.09	2.12	0.01	1.47	90.28	1.83	84.05	1.23	258.26	35.21	84.05	1.23
CR-8	CR-8_Spot 226	97295.84	1475.04	1.38	20.82	1.20	0.10	1.99	0.02	1.59	96.29	1.83	96.47	1.52	91.94	28.47	96.47	1.52
CR-8	CR-8_Spot 227	10728.35	358.16	2.29	21.13	1.53	0.10	2.44	0.02	1.16	98.80	2.29	103.21	1.19	NA	NA	103.21	1.19
CR-8	CR-8_Spot 228	72831.53	1661.43	2.27	20.19	1.12	0.12	1.56	0.02	1.09	114.88	1.70	112.59	1.22	162.52	26.21	112.59	1.22
CR-8	CR-8_Spot 229	43679.42	1571.16	2.11	21.19	0.92	0.09	1.71	0.01	1.44	89.32	1.46	91.17	1.30	39.99	22.15	91.17	1.30
CR-8	CR-8_Spot 230	38559.79	685.04	2.07	20.53	1.81	0.10	2.40	0.01	1.57	94.71	2.17	93.97	1.46	113.25	42.83	93.97	1.46
CR-8	CR-8_Spot 231	80847.56	3662.90	2.38	20.62	0.89	0.12	1.67	0.02	1.41	114.97	1.81	115.10	1.60	112.28	21.14	115.10	1.60
CR-8	CR-8_Spot 232	21311.18	604.44	2.22	20.42	1.11	0.12	1.87	0.02	1.37	111.02	1.97	111.05	1.50	110.45	30.16	111.05	1.50
CR-8	CR-8_Spot 233	3611.16	273.47	1.61	11.51	2.19	0.19	2.44	0.02	1.09	179.86	4.03	108.49	1.17	1264.74	42.74	108.49	1.17
CR-8	CR-8_Spot 234	39638.89	1034.32	1.15	18.83	1.50	0.13	1.89	0.02	1.13	128.02	2.27	118.25	1.32	313.33	34.38	118.25	1.32
CR-8	CR-8_Spot 235	99325.64	1289.68	3.39	20.81	0.97	0.12	1.67	0.02	1.35	110.74	1.75	111.69	1.50	90.20	23.11	111.69	1.50
CR-8	CR-8_Spot 236	106990.80	1232.43	1.65	20.24	0.84	0.16	1.51	0.02	1.25	154.93	2.17	154.84	1.92	156.36	19.67	154.84	1.92
CR-8	CR-8_Spot 237	21363.34	470.18	1.64	20.57	1.24	0.11	1.98	0.02	1.53	107.69	2.02	108.41	1.65	91.78	29.73	108.41	1.65
CR-8	CR-8_Spot 238	22931.49	263.64	1.25	19.80	1.27	0.14	1.73	0.02	1.16	135.21	2.19	132.41	1.52	184.79	29.78	132.41	1.52
CR-8	CR-8_Spot 239	49930.92	2081.35	1.93	20.75	1.03	0.09	1.68	0.01	1.31	90.25	1.45	90.25	1.18	90.19	24.65	90.25	1.18
CR-8	CR-8_Spot 240	62968.71	1268.12	3.65	20.65	1.00	0.12	1.94	0.02	1.65	115.15	2.11	115.56	1.89	106.71	23.84	115.56	1.89
CR-8	CR-8_Spot 241	39449.59	709.97	1.39	20.75	1.09	0.10	1.80	0.02	1.43	97.35	1.67	97.76	1.39	87.56	25.83	97.76	1.39
CR-8	CR-8_Spot 242	43022.03	528.60	2.72	19.59	2.25	0.13	2.77	0.02	1.61	119.76	3.13	114.50	1.83	225.57	52.17	114.50	1.83

CR-8	CR-8_Spot 243	8450.13	535.59	1.43	17.80	2.00	0.13	2.53	0.02	1.54	119.61	2.85	106.53	1.63	388.22	45.00	106.53	1.63
CR-8	CR-8_Spot 244	23207.28	1356.05	1.59	19.67	1.05	0.10	1.86	0.01	1.54	94.41	1.68	90.17	1.38	202.82	24.39	90.17	1.38
CR-8	CR-8_Spot 245	47124.23	907.21	3.23	20.64	0.90	0.09	1.70	0.01	1.44	89.25	1.46	88.67	1.27	104.75	21.41	88.67	1.27
CR-8	CR-8_Spot 246	77970.81	769.83	2.86	20.24	0.92	0.16	1.71	0.02	1.43	147.30	2.34	146.73	2.08	156.49	21.62	146.73	2.08
CR-8	CR-8_Spot 247	17265.50	1022.57	0.49	16.45	2.51	0.18	4.21	0.02	3.31	165.86	6.44	137.01	4.49	600.27	56.39	137.01	4.49
CR-8	CR-8_Spot 248	685030.69	778.47	2.99	20.65	1.10	0.10	1.62	0.01	1.18	96.48	1.49	95.55	1.12	119.35	26.02	95.55	1.12
CR-8	CR-8_Spot 249	27439.75	970.94	2.87	19.59	1.01	0.11	2.02	0.02	1.70	104.99	2.01	100.03	1.69	219.21	25.13	100.03	1.69
CR-8	CR-8_Spot 250	9408.08	245.29	1.12	18.71	2.37	0.13	2.95	0.02	0.90	124.78	3.46	116.73	1.04	280.94	64.26	116.73	1.04
CR-8	CR-8_Spot 251	3719.68	269.47	1.37	9.54	6.00	0.28	8.23	0.02	5.63	247.12	18.05	126.09	7.03	1645.83	111.50	126.09	7.03
CR-8	CR-8_Spot 252	7361.95	388.20	2.26	20.42	1.95	0.11	2.27	0.02	1.15	107.27	2.31	109.97	1.26	47.71	46.59	109.97	1.26
CR-8	CR-8_Spot 253	24907.75	973.22	14.54	20.92	0.93	0.09	1.84	0.01	1.50	86.14	1.52	87.10	1.30	59.57	25.11	87.10	1.30
CR-8	CR-8_Spot 254	31238.96	663.12	1.07	20.97	1.24	0.09	2.11	0.01	1.67	89.99	1.82	91.12	1.51	60.12	30.88	91.12	1.51
CR-8	CR-8_Spot 255	44472.30	1973.53	2.20	20.73	0.94	0.11	1.59	0.02	1.27	107.99	1.63	108.64	1.36	93.51	22.77	108.64	1.36
CR-8	CR-8_Spot 256	64884.36	1082.81	2.18	20.71	1.06	0.12	1.71	0.02	1.34	116.86	1.89	117.62	1.56	101.54	25.19	117.62	1.56
CR-8	CR-8_Spot 257	25209.21	609.51	2.47	20.75	1.01	0.12	1.90	0.02	1.60	114.76	2.06	116.49	1.84	79.02	24.50	116.49	1.84
CR-8	CR-8_Spot 258	5817.71	110.06	1.65	19.95	2.10	0.11	2.62	0.02	1.27	107.62	2.68	108.94	1.37	78.65	54.52	108.94	1.37
CR-8	CR-8_Spot 259	21385.99	1048.26	2.39	18.38	1.39	0.12	2.04	0.02	1.49	116.26	2.24	104.73	1.54	359.19	31.55	104.73	1.54
CR-8	CR-8_Spot 260	78816.60	1633.39	1.80	20.00	0.92	0.16	1.85	0.02	1.60	146.78	2.52	144.46	2.29	184.34	21.35	144.46	2.29
CR-8	CR-8_Spot 261	207216.86	582.08	1.44	20.14	0.99	0.17	1.87	0.03	1.58	162.22	2.80	161.41	2.52	174.08	23.15	161.41	2.52
CR-8	CR-8_Spot 262	57237.66	1368.86	1.67	20.75	1.07	0.09	1.99	0.01	1.68	89.84	1.71	89.66	1.49	94.46	25.48	89.66	1.49
CR-8	CR-8_Spot 263	72783.45	144.01	2.11	8.79	0.78	5.20	1.34	0.33	1.09	1853.41	11.45	1853.34	17.62	1853.48	14.11	1853.48	14.11
CR-8	CR-8_Spot 264	10340.20	1482.68	1.83	17.63	1.24	0.11	1.93	0.01	1.47	103.70	1.90	90.42	1.32	420.61	27.74	90.42	1.32
CR-8	CR-8_Spot 265	12558.54	271.98	3.58	18.70	1.74	0.13	2.05	0.02	1.05	126.52	2.44	117.76	1.22	294.32	40.34	117.76	1.22
CR-8	CR-8_Spot 266	59015.85	1066.38	2.73	20.13	0.92	0.10	1.75	0.02	1.49	99.43	1.66	96.79	1.43	163.30	21.56	96.79	1.43
CR-8	CR-8_Spot 267	18475.64	716.02	1.90	20.35	0.93	0.10	1.65	0.02	1.37	99.53	1.57	99.06	1.34	110.85	21.94	99.06	1.34
CR-8	CR-8_Spot 268	23845.69	786.06	3.05	21.11	1.09	0.10	1.78	0.02	1.40	95.86	1.63	98.52	1.36	30.30	26.37	98.52	1.36
CR-8	CR-8_Spot 269	8623.22	481.80	2.82	20.61	1.23	0.10	2.13	0.01	1.65	92.63	1.89	94.94	1.55	33.59	32.46	94.94	1.55
CR-8	CR-8_Spot 270	154208.25	1617.39	0.79	20.24	1.07	0.12	2.00	0.02	1.69	113.54	2.15	111.58	1.87	154.92	25.17	111.58	1.87
CR-8	CR-8_Spot 271	57766.71	1096.93	1.89	20.94	0.96	0.09	1.68	0.01	1.38	90.90	1.46	91.84	1.26	66.17	23.00	91.84	1.26
CR-8	CR-8_Spot 272	18267.38	551.84	1.52	20.66	1.20	0.10	2.25	0.01	1.87	92.82	2.00	93.66	1.74	71.21	29.62	93.66	1.74
CR-8	CR-8_Spot 273	90447.75	1629.34	3.07	20.34	1.64	0.11	2.15	0.02	1.38	109.47	2.23	108.07	1.48	139.90	38.62	108.07	1.48
CR-8	CR-8_Spot 274	20434.02	752.47	2.07	19.75	1.09	0.10	1.72	0.01	1.11	96.48	1.58	93.03	1.02	182.63	30.50	93.03	1.02
CR-8	CR-8_Spot 275	13683.40	471.57	1.63	19.76	1.64	0.13	2.14	0.02	1.35	122.56	2.47	120.26	1.61	167.47	38.69	120.26	1.61
CR-8	CR-8_Spot 276	108131.81	743.37	1.78	20.05	0.96	0.16	1.57	0.02	1.25	147.99	2.17	146.18	1.80	177.05	22.33	146.18	1.80
CR-8	CR-8_Spot 277	78357.16	511.33	2.27	20.11	1.10	0.16	1.92	0.02	1.58	148.51	2.66	147.35	2.30	166.95	25.60	147.35	2.30
CR-8	CR-8_Spot	82317.09	1522.39	1.38	20.47	1.11	0.11	1.92	0.02	1.57	104.70	1.91	103.79	1.62	125.42	26.20	103.79	1.62

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CR-8	CR-8_Spot 279	159705.84	1936.36	1.35	20.50	0.74	0.11	1.48	0.02	1.28	102.30	1.44	101.27	1.28	126.43	17.39	101.27	1.28
CR-8	CR-8_Spot 280	29220.97	715.79	1.60	20.56	0.85	0.11	1.35	0.02	1.04	106.60	1.36	106.93	1.10	99.23	20.31	106.93	1.10
CR-8	CR-8_Spot 281	164390.05	232.82	3.46	12.91	0.86	1.78	1.41	0.17	1.12	1039.82	9.19	999.88	10.36	1124.74	17.18	1124.74	17.18
CR-8	CR-8_Spot 282	11663.40	523.21	2.26	19.72	1.87	0.13	2.41	0.02	1.44	121.91	2.77	119.84	1.71	162.58	45.34	119.84	1.71
CR-8	CR-8_Spot 283	12560.43	235.66	1.91	20.79	1.61	0.10	2.03	0.02	1.16	95.42	1.85	97.68	1.13	39.36	39.93	97.68	1.13
CR-8	CR-8_Spot 284	567589.08	830.66	1.69	18.99	1.44	0.18	2.07	0.03	1.48	171.41	3.27	161.63	2.37	308.76	32.86	161.63	2.37
CR-8	CR-8_Spot 285	10226.02	665.07	2.25	20.66	0.88	0.10	1.67	0.01	1.39	92.52	1.47	94.36	1.30	45.41	21.96	94.36	1.30
CR-8	CR-8_Spot 286	137589.14	2379.65	1.15	20.76	0.97	0.11	1.89	0.02	1.63	108.62	1.95	108.97	1.76	100.98	22.85	108.97	1.76
CR-8	CR-8_Spot 287	4300.41	148.48	1.38	18.86	1.84	0.16	2.60	0.02	1.74	150.71	3.64	149.14	2.57	175.49	44.92	149.14	2.57
CR-8	CR-8_Spot 288	115269.53	1419.84	2.22	20.57	0.74	0.11	1.69	0.02	1.52	102.33	1.65	101.51	1.53	121.48	17.38	101.51	1.53
CR-8	CR-8_Spot 289	281675.85	1131.53	4.29	20.47	0.73	0.17	1.69	0.03	1.53	161.59	2.53	163.31	2.47	136.42	17.07	163.31	2.47
CR-8	CR-8_Spot 290	111255.58	1214.34	1.43	20.62	0.82	0.10	1.43	0.02	1.17	97.94	1.33	97.23	1.13	115.19	19.45	97.23	1.13
CR-8	CR-8_Spot 291	82168.95	608.38	2.50	19.86	1.22	0.13	1.88	0.02	1.42	123.70	2.19	119.69	1.69	201.44	28.35	119.69	1.69
CR-8	CR-8_Spot 292	194144.28	318.31	1.32	20.96	1.87	0.10	2.14	0.01	1.05	94.41	1.93	94.99	0.99	79.56	44.35	94.99	0.99
CR-8	CR-8_Spot 293	11277.62	197.07	2.54	14.42	4.23	0.16	4.40	0.02	1.18	152.93	6.25	110.77	1.29	869.21	87.99	110.77	1.29
CR-8	CR-8_Spot 294	99310.46	1285.17	1.92	19.97	1.43	0.16	1.98	0.02	1.37	151.39	2.78	148.92	2.02	190.33	33.22	148.92	2.02
CR-8	CR-8_Spot 295	16230.27	215.11	1.64	19.72	1.39	0.17	1.85	0.02	1.20	156.82	2.69	154.88	1.84	186.26	32.74	154.88	1.84
CR-8	CR-8_Spot 296	6896.84	933.08	1.11	20.14	1.31	0.10	1.88	0.02	1.35	96.59	1.73	97.47	1.30	74.89	31.17	97.47	1.30
CR-8	CR-8_Spot 297	178209.71	426.50	1.86	20.25	1.27	0.13	1.82	0.02	1.31	120.10	2.06	117.96	1.53	162.70	29.68	117.96	1.53
CR-8	CR-8_Spot 298	6451.59	554.08	1.32	12.87	3.36	0.21	3.66	0.02	1.46	190.33	6.35	126.46	1.82	1081.24	67.36	126.46	1.82
CR-8	CR-8_Spot 299	82003.41	1185.39	1.95	20.71	0.93	0.11	1.58	0.02	1.28	105.71	1.58	105.74	1.34	105.07	21.95	105.74	1.34
CR-8	CR-8_Spot 300	133550.99	730.55	1.08	20.00	1.12	0.16	1.71	0.02	1.29	150.79	2.39	148.28	1.90	190.44	25.97	148.28	1.90
CR-8	CR-8_Spot 301	119073.97	1250.71	1.81	20.84	0.88	0.10	1.69	0.01	1.44	95.43	1.54	95.53	1.37	92.91	20.84	95.53	1.37
CR-8	CR-8_Spot 302	95804.84	847.48	2.13	20.63	1.03	0.10	1.93	0.02	1.63	98.22	1.81	97.54	1.58	114.61	24.36	97.54	1.58
CR-8	CR-8_Spot 303	26791.28	859.56	3.33	20.57	0.85	0.10	1.53	0.02	1.24	98.05	1.43	97.88	1.20	102.10	21.16	97.88	1.20
CR-8	CR-8_Spot 304	101403.62	995.04	1.27	20.66	0.98	0.14	1.57	0.02	1.23	131.11	1.94	132.17	1.61	111.92	23.23	132.17	1.61
CR-8	CR-8_Spot 305	28439.40	1663.74	3.32	20.65	0.82	0.11	1.58	0.02	1.34	102.74	1.54	103.10	1.37	94.44	19.51	103.10	1.37
CR-8	CR-8_Spot 306	60439.41	832.74	3.07	20.66	1.11	0.10	1.88	0.02	1.52	99.56	1.79	99.29	1.50	105.95	26.26	99.29	1.50
CR-8	CR-8_Spot 307	78801.80	2366.81	1.19	20.98	1.10	0.09	1.74	0.01	1.35	89.69	1.49	90.34	1.21	72.46	26.24	90.34	1.21
CR-8	CR-8_Spot 308	13809.84	424.98	3.53	19.84	1.04	0.17	1.64	0.02	1.26	157.52	2.39	157.16	1.95	163.06	24.67	157.16	1.95
CR-8	CR-8_Spot 309	20906.16	1099.65	2.17	19.33	1.08	0.11	1.86	0.02	1.50	106.69	1.88	100.75	1.49	241.41	25.35	100.75	1.49
CR-8	CR-8_Spot 310	59169.52	223.28	1.82	8.74	0.82	5.13	1.44	0.33	1.19	1841.59	12.24	1821.17	18.83	1864.73	14.74	1864.73	14.74
CR-8	CR-8_Spot 311	71783.33	1413.35	1.38	20.49	0.84	0.10	1.70	0.02	1.48	97.43	1.58	96.28	1.41	125.55	19.72	96.28	1.41
CR-8	CR-8_Spot 312	20944.06	937.24	1.58	20.56	1.07	0.10	1.94	0.02	1.60	100.65	1.86	100.96	1.61	93.24	25.77	100.96	1.61
CR-8	CR-8_Spot 313	59485.29	798.71	2.69	20.54	1.00	0.11	1.78	0.02	1.47	102.30	1.73	101.62	1.48	118.20	23.54	101.62	1.48

CR-8	CR-8_Spot 314	109753.71	964.37	1.93	20.93	1.05	0.09	1.72	0.01	1.37	90.69	1.49	91.12	1.24	79.22	24.87	91.12	1.24
CR-8	CR-8_Spot 315	199559.97	560.65	1.43	20.34	1.05	0.16	1.69	0.02	1.33	151.25	2.38	151.25	1.99	151.20	24.51	151.25	1.99
CR-9	CR-9_Spot 1	21835.28	518.99	2.85	14.59	1.60	0.14	1.94	0.02	1.09	137.07	2.48	98.74	1.07	865.96	33.19	98.74	1.07
CR-9	CR-9_Spot 2	210258.88	427.96	0.97	19.69	1.32	0.16	1.83	0.02	1.27	154.79	2.63	149.98	1.88	229.07	30.58	149.98	1.88
CR-9	CR-9_Spot 3	189555.05	195.01	4.51	18.75	1.86	0.18	2.17	0.02	1.10	167.06	3.34	155.06	1.69	340.72	42.21	155.06	1.69
CR-9	CR-9_Spot 4	847693.74	871.94	1.54	20.53	0.95	0.10	1.64	0.01	1.33	93.32	1.46	91.77	1.21	133.27	22.42	91.77	1.21
CR-9	CR-9_Spot 5	47389.36	432.66	2.51	20.72	1.12	0.12	1.96	0.02	1.61	112.66	2.09	113.31	1.81	98.99	26.46	113.31	1.81
CR-9	CR-9_Spot 6	173148.11	108.04	2.62	9.16	0.77	4.86	1.40	0.32	1.17	1794.56	11.78	1801.24	18.37	1786.79	14.00	1786.79	14.00
CR-9	CR-9_Spot 7	98957.26	303.72	1.08	19.38	1.31	0.13	1.87	0.02	1.34	125.72	2.21	118.54	1.57	263.73	29.95	118.54	1.57
CR-9	CR-9_Spot 8	21294.23	265.41	1.47	20.60	1.35	0.16	1.70	0.02	1.02	147.76	2.33	151.10	1.52	94.42	32.17	151.10	1.52
CR-9	CR-9_Spot 9	46677.78	1487.61	1.77	20.70	0.90	0.10	1.63	0.01	1.36	95.69	1.49	95.58	1.29	98.48	21.40	95.58	1.29
CR-9	CR-9_Spot 10	94329.57	1314.14	1.07	20.29	1.09	0.10	1.69	0.01	1.29	93.91	1.52	91.64	1.18	152.13	25.58	91.64	1.18
CR-9	CR-9_Spot 11	51716.58	443.53	3.30	18.76	1.23	0.18	1.78	0.02	1.28	165.32	2.72	154.17	1.95	328.02	28.05	154.17	1.95
CR-9	CR-9_Spot 12	197889.02	427.71	2.20	8.86	0.81	4.63	1.52	0.30	1.29	1754.45	12.67	1680.89	19.02	1843.20	14.60	1843.20	14.60
CR-9	CR-9_Spot 13	130818.21	854.61	1.80	20.54	0.84	0.13	1.55	0.02	1.31	124.20	1.82	124.13	1.61	125.63	19.79	124.13	1.61
CR-9	CR-9_Spot 14	16585.29	307.30	1.56	15.70	1.84	0.16	2.14	0.02	1.00	147.99	2.95	115.76	1.14	701.59	40.33	115.76	1.14
CR-9	CR-9_Spot 15	49251.10	220.91	2.18	19.66	1.51	0.10	1.81	0.02	0.98	101.29	1.74	96.25	0.94	221.51	35.19	96.25	0.94
CR-9	CR-9_Spot 16	85340.34	219.78	2.68	17.03	0.94	0.76	1.62	0.09	1.32	573.85	7.10	579.64	7.31	550.93	20.53	579.64	7.31
CR-9	CR-9_Spot 17	50689.85	620.64	2.36	20.72	0.91	0.09	1.54	0.01	1.24	91.33	1.35	91.07	1.12	98.12	21.50	91.07	1.12
CR-9	CR-9_Spot 18	151288.12	141.97	1.60	9.24	0.62	4.79	1.12	0.32	0.93	1783.02	9.41	1795.72	14.59	1768.17	11.37	1768.17	11.37
CR-9	CR-9_Spot 19	15466.58	196.41	2.41	20.42	1.19	0.17	1.55	0.03	0.96	161.90	2.32	166.23	1.57	99.00	28.88	166.23	1.57
CR-9	CR-9_Spot 20	62807.64	555.37	1.52	20.12	1.08	0.13	1.70	0.02	1.31	127.83	2.04	125.61	1.63	169.36	25.43	125.61	1.63
CR-9	CR-9_Spot 22	68920.92	569.81	1.88	16.97	1.75	0.12	2.26	0.01	1.42	114.45	2.44	94.33	1.33	556.20	38.26	94.33	1.33
CR-9	CR-9_Spot 23	8913.88	123.90	2.58	20.11	1.26	0.17	1.74	0.03	1.18	156.30	2.52	159.92	1.86	101.75	30.34	159.92	1.86
CR-9	CR-9_Spot 24	15674.40	107.70	1.60	19.91	1.93	0.18	2.28	0.03	1.16	164.74	3.47	165.01	1.89	160.94	46.00	165.01	1.89
CR-9	CR-9_Spot 25	139086.27	1429.99	2.63	20.77	0.96	0.11	1.58	0.02	1.26	105.84	1.59	106.09	1.33	100.09	22.63	106.09	1.33
CR-9	CR-9_Spot 26	17105.71	525.33	2.02	15.79	2.51	0.16	2.81	0.02	1.26	149.77	3.91	117.88	1.47	690.02	53.49	117.88	1.47
CR-9	CR-9_Spot 27	194474.24	120.14	1.96	17.95	1.51	0.19	1.92	0.03	1.18	179.77	3.16	160.86	1.87	436.12	33.70	160.86	1.87
CR-9	CR-9_Spot 28	564748.46	265.68	2.24	13.34	0.86	1.89	1.50	0.18	1.24	1077.85	9.98	1083.77	12.32	1065.90	17.23	1065.90	17.23
CR-9	CR-9_Spot 29	20851.52	346.82	1.30	14.48	2.76	0.58	3.10	0.06	1.35	467.59	11.63	388.60	5.11	876.73	57.81	388.60	5.11
CR-9	CR-9_Spot 30	146795.72	659.06	2.07	20.93	0.85	0.10	1.56	0.01	1.31	95.32	1.42	95.91	1.25	80.53	20.15	95.91	1.25
CR-9	CR-9_Spot 31	9798.93	681.33	1.59	14.16	2.35	0.14	2.72	0.01	1.36	130.47	3.32	92.16	1.24	900.59	48.47	92.16	1.24
CR-9	CR-9_Spot 32	61853.11	377.94	1.86	20.67	1.33	0.12	1.93	0.02	1.39	115.12	2.10	115.71	1.60	102.82	31.48	115.71	1.60
CR-9	CR-9_Spot 33	24052.57	176.73	1.91	19.61	1.52	0.11	1.93	0.02	1.03	108.66	1.99	104.08	1.06	210.25	37.86	104.08	1.06
CR-9	CR-9_Spot 34	778454.91	95.68	2.79	12.96	0.82	2.06	1.33	0.19	1.04	1136.58	9.08	1144.11	10.92	1122.23	16.43	1122.23	16.43
CR-9	CR-9_Spot 35	117847.49	1036.59	3.62	20.75	1.03	0.11	1.74	0.02	1.39	105.40	1.74	105.53	1.46	102.39	24.46	105.53	1.46

CR-9	CR-9_Spot 36	4188.54	598.65	1.05	8.96	8.95	0.24	9.04	0.02	1.30	219.79	17.88	103.44	1.33	1771.95	163.74	103.44	1.33
CR-9	CR-9_Spot 37	67151.75	287.68	1.41	20.02	1.07	0.16	1.45	0.02	0.98	148.41	2.01	146.28	1.42	182.42	25.06	146.28	1.42
CR-9	CR-9_Spot 38	724407.83	639.75	2.67	20.85	1.09	0.10	1.95	0.02	1.62	96.84	1.80	96.83	1.56	97.09	25.67	96.83	1.56
CR-9	CR-9_Spot 40	87339.85	594.73	1.48	19.30	1.22	0.10	1.73	0.01	1.23	99.72	1.64	92.78	1.13	268.93	28.00	92.78	1.13
CR-9	CR-9_Spot 41	8489.77	539.83	2.58	12.08	2.05	0.18	2.63	0.02	1.65	167.07	4.05	102.32	1.68	1223.27	40.21	102.32	1.68
CR-9	CR-9_Spot 42	118359.01	150.73	1.67	9.92	0.80	4.01	1.26	0.29	0.98	1636.06	10.26	1636.41	14.10	1635.61	14.86	1635.61	14.86
CR-9	CR-9_Spot 43	23100.31	632.01	1.89	20.10	0.98	0.10	1.54	0.01	1.18	92.50	1.36	90.23	1.06	151.49	23.07	90.23	1.06
CR-9	CR-9_Spot 44	111581.68	885.62	0.71	19.87	0.97	0.12	1.60	0.02	1.27	111.58	1.69	107.33	1.35	203.22	22.66	107.33	1.35
CR-9	CR-9_Spot 45	66814.38	792.65	1.52	20.50	1.08	0.09	2.06	0.01	1.75	92.00	1.82	90.70	1.58	126.02	25.72	90.70	1.58
CR-9	CR-9_Spot 46	109911.86	272.22	1.63	19.78	1.07	0.13	1.49	0.02	1.03	120.28	1.69	115.54	1.18	215.05	24.76	115.54	1.18
CR-9	CR-9_Spot 47	64204.02	496.55	1.54	16.20	1.68	0.14	2.27	0.02	1.52	132.29	2.81	104.89	1.58	657.57	36.06	104.89	1.58
CR-9	CR-9_Spot 48	22726.30	779.12	11.07	17.44	1.17	0.19	1.86	0.02	1.44	176.46	3.01	154.62	2.20	480.06	25.86	154.62	2.20
CR-9	CR-9_Spot 49	431380.54	772.04	2.31	20.75	1.03	0.09	1.70	0.01	1.36	89.07	1.45	88.36	1.19	108.13	24.22	88.36	1.19
CR-9	CR-9_Spot 50	119601.30	689.93	0.75	20.33	0.78	0.16	1.34	0.02	1.10	148.83	1.86	148.63	1.61	151.94	18.18	148.63	1.61
CR-9	CR-9_Spot 51	23340.77	741.35	2.71	20.72	1.13	0.10	1.80	0.02	1.39	98.24	1.68	98.89	1.37	82.44	26.90	98.89	1.37
CR-9	CR-9_Spot 52	1218613.12	416.18	2.88	19.41	1.52	0.10	2.07	0.01	1.40	101.35	2.00	94.52	1.31	264.98	35.00	94.52	1.31
CR-9	CR-9_Spot 53	111183.90	485.65	1.96	19.64	1.07	0.18	1.67	0.03	1.28	170.78	2.62	166.56	2.10	229.66	24.82	166.56	2.10
CR-9	CR-9_Spot 54	84312.73	564.30	1.71	20.28	0.67	0.16	1.36	0.02	1.18	149.96	1.89	149.79	1.74	152.57	15.83	149.79	1.74
CR-9	CR-9_Spot 55	42187.48	31.45	0.50	5.06	0.90	14.98	1.38	0.55	1.04	2814.24	13.09	2827.76	23.82	2804.55	14.70	2804.55	14.70
CR-9	CR-9_Spot 57	190198.99	321.39	3.76	20.55	1.10	0.15	1.58	0.02	1.13	145.59	2.14	146.82	1.65	125.51	25.87	146.82	1.65
CR-9	CR-9_Spot 58	29136.34	239.75	3.44	19.65	1.16	0.17	1.73	0.02	1.24	156.16	2.50	152.61	1.87	210.32	27.95	152.61	1.87
CR-9	CR-9_Spot 59	25459.88	246.10	3.65	20.47	1.73	0.11	2.09	0.02	1.00	103.79	2.06	103.49	1.02	110.51	43.22	103.49	1.02
CR-9	CR-9_Spot 60	3413.35	121.71	0.91	7.30	5.24	1.34	5.43	0.07	1.34	864.91	31.62	455.80	5.91	2138.40	92.05	2138.40	92.05
CR-9	CR-9_Spot 61	8096.94	646.75	2.18	13.34	3.61	0.17	3.85	0.02	1.35	158.43	5.65	107.27	1.44	1013.62	73.14	107.27	1.44
CR-9	CR-9_Spot 63	9850.17	178.36	2.77	19.81	1.34	0.18	1.72	0.03	1.08	168.84	2.67	170.87	1.82	140.57	31.38	170.87	1.82
CR-9	CR-9_Spot 64	226416.81	1205.75	3.63	20.76	1.03	0.11	1.77	0.02	1.43	105.97	1.78	106.34	1.51	97.62	24.44	106.34	1.51
CR-9	CR-9_Spot 65	9743.36	160.59	2.60	20.28	1.55	0.17	2.05	0.03	1.34	158.34	3.00	163.42	2.16	83.01	36.84	163.42	2.16
CR-9	CR-9_Spot 66	12301.33	907.03	2.50	11.85	3.87	0.19	4.19	0.02	1.62	174.57	6.72	104.76	1.68	1270.17	75.48	104.76	1.68
CR-9	CR-9_Spot 67	130910.04	165.08	5.05	12.98	0.70	1.95	1.31	0.18	1.10	1098.15	8.76	1089.90	11.07	1114.54	13.93	1114.54	13.93
CR-9	CR-9_Spot 68	82779.71	406.60	2.51	20.79	1.45	0.10	2.10	0.02	1.53	99.98	2.00	100.36	1.52	90.82	34.29	100.36	1.52
CR-9	CR-9_Spot 69	17960.83	227.06	1.95	20.04	1.19	0.17	1.81	0.02	1.36	157.51	2.64	158.22	2.13	146.86	27.91	158.22	2.13
CR-9	CR-9_Spot 70	70720.46	203.74	1.91	19.93	1.13	0.20	1.42	0.03	0.84	187.69	2.43	187.55	1.56	189.44	26.47	187.55	1.56
CR-9	CR-9_Spot 71	3773.43	484.77	2.83	8.52	2.35	0.29	2.74	0.02	1.41	258.84	6.26	118.32	1.66	1859.14	42.44	118.32	1.66
CR-9	CR-9_Spot 72	11207.19	181.02	1.33	20.49	1.39	0.11	1.70	0.02	0.97	103.58	1.67	105.06	1.01	69.59	33.22	105.06	1.01
CR-9	CR-9_Spot 73	220624.72	391.87	2.50	17.27	1.00	0.40	1.73	0.05	1.41	344.44	5.05	318.99	4.40	519.83	21.94	318.99	4.40
CR-9	CR-9_Spot	10350.99	217.34	2.56	20.39	1.15	0.09	2.21	0.01	1.19	89.14	1.88	89.60	1.06	76.77	44.23	89.60	1.06

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CR-9	CR-9_Spot 75	31784.47	32.06	1.83	8.67	1.43	4.59	1.92	0.29	1.27	1747.90	16.01	1643.92	18.38	1874.61	26.02	1874.61	26.02
CR-9	CR-9_Spot 76	58925.81	415.10	1.73	20.41	1.08	0.17	1.70	0.03	1.31	160.64	2.53	162.60	2.10	131.86	25.60	162.60	2.10
CR-9	CR-9_Spot 77	9283.94	129.36	2.79	19.53	2.13	0.12	2.53	0.02	1.35	119.57	2.85	116.90	1.56	172.99	49.99	116.90	1.56
CR-9	CR-9_Spot 79	105812.91	1048.59	0.75	19.46	0.99	0.13	1.88	0.02	1.59	125.00	2.21	118.59	1.87	248.67	22.75	118.59	1.87
CR-9	CR-9_Spot 80	120955.55	1377.69	1.70	20.67	1.09	0.12	2.07	0.02	1.76	115.77	2.27	116.17	2.03	107.71	25.80	116.17	2.03
CR-9	CR-9_Spot 81	145383.61	4112.34	2.26	19.69	0.74	0.10	2.95	0.01	2.85	93.73	2.64	88.62	2.51	225.79	17.21	88.62	2.51
CR-9	CR-9_Spot 82	13864.32	225.77	3.23	19.96	1.23	0.12	1.95	0.02	1.06	116.61	2.15	115.04	1.21	148.77	38.41	115.04	1.21
CR-9	CR-9_Spot 83	8711.78	187.06	2.20	19.84	2.48	0.10	2.74	0.01	1.14	93.12	2.44	91.54	1.03	133.92	58.57	91.54	1.03
CR-9	CR-9_Spot 84	64732.91	268.53	2.91	20.24	1.36	0.12	1.94	0.02	1.38	110.94	2.04	108.82	1.49	156.63	31.94	108.82	1.49
CR-9	CR-9_Spot 85	1057333.55	250.62	3.70	5.50	0.79	12.68	1.03	0.51	0.67	2656.51	9.74	2640.72	14.57	2668.55	13.03	2668.55	13.03
CR-9	CR-9_Spot 86	204237.10	365.99	1.96	13.37	0.59	1.72	1.61	0.17	1.50	1015.38	10.34	993.37	13.78	1063.16	11.97	1063.16	11.97
CR-9	CR-9_Spot 87	45656.75	652.21	2.37	19.10	1.46	0.11	2.10	0.01	1.51	101.63	2.03	93.66	1.40	292.65	33.30	93.66	1.40
CR-9	CR-9_Spot 88	7338.58	736.15	1.73	10.79	3.68	0.24	3.98	0.02	1.52	222.38	7.95	124.58	1.88	1446.55	70.10	124.58	1.88
CR-9	CR-9_Spot 89	71296.71	123.00	0.96	17.91	1.91	0.19	2.19	0.02	1.07	172.71	3.48	153.59	1.62	443.33	42.53	153.59	1.62
CR-9	CR-9_Spot 90	3357151.87	699.61	2.51	20.69	1.02	0.11	1.72	0.02	1.38	101.96	1.67	101.12	1.39	121.75	24.11	101.12	1.39
CR-9	CR-9_Spot 91	6841.06	81.88	1.41	20.22	1.69	0.16	2.21	0.02	1.34	148.41	3.05	153.41	2.03	69.26	41.85	153.41	2.03
CR-9	CR-9_Spot 92	8910.26	609.74	1.86	15.32	2.29	0.13	2.74	0.01	1.49	124.64	3.21	95.02	1.41	734.63	48.57	95.02	1.41
CR-9	CR-9_Spot 93	58400.87	421.29	2.90	20.57	1.12	0.13	2.01	0.02	1.67	120.88	2.29	120.92	2.00	120.24	26.55	120.92	2.00
CR-9	CR-9_Spot 94	194203.17	120.92	3.42	9.58	0.83	4.27	1.54	0.30	1.30	1687.95	12.64	1674.27	19.10	1704.98	15.21	1704.98	15.21
CR-9	CR-9_Spot 95	107703.88	382.23	2.91	19.50	1.22	0.24	2.00	0.03	1.59	219.56	3.96	216.67	3.40	250.71	27.99	216.67	3.40
CR-9	CR-9_Spot 96	4294.21	76.15	3.83	12.04	7.60	0.38	7.79	0.03	1.70	328.03	21.83	219.54	3.66	1192.97	150.16	219.54	3.66
CR-9	CR-9_Spot 97	582408.86	554.39	2.54	20.23	1.29	0.10	1.87	0.01	1.35	94.80	1.69	91.82	1.23	170.51	30.15	91.82	1.23
CR-9	CR-9_Spot 98	31619.48	694.44	1.91	17.24	1.93	0.14	2.50	0.02	1.57	130.98	3.07	110.74	1.73	515.80	42.76	110.74	1.73
CR-9	CR-9_Spot 99	16106.42	553.78	1.46	17.81	1.34	0.11	2.13	0.01	1.66	104.96	2.13	91.42	1.51	424.38	29.85	91.42	1.51
CR-9	CR-9_Spot 100	124850.10	451.80	1.63	20.03	1.32	0.16	2.05	0.02	1.57	152.35	2.90	150.03	2.33	188.65	30.78	150.03	2.33
CR-9	CR-9_Spot 101	159528.47	553.21	2.91	20.77	0.95	0.12	1.51	0.02	1.17	112.92	1.61	113.31	1.32	104.79	22.50	113.31	1.32
CR-9	CR-9_Spot 102	24410.72	603.29	2.22	14.87	3.81	0.13	4.14	0.01	1.55	125.51	4.89	91.56	1.41	828.71	80.05	91.56	1.41
CR-9	CR-9_Spot 103	83814.14	412.45	1.46	9.74	0.92	3.89	1.81	0.27	1.55	1610.71	14.59	1563.89	21.59	1672.44	17.02	1672.44	17.02
CR-9	CR-9_Spot 104	14525.10	142.67	1.79	18.12	2.03	0.11	2.47	0.02	1.29	110.06	2.58	97.96	1.26	380.54	47.40	97.96	1.26
CR-9	CR-9_Spot 105	11722.87	430.24	3.05	20.17	1.19	0.10	1.88	0.02	1.46	100.66	1.80	100.06	1.45	114.89	28.12	100.06	1.45
CR-9	CR-9_Spot 106	177006.24	825.22	2.16	20.54	1.00	0.09	1.66	0.01	1.33	91.28	1.45	89.86	1.18	128.53	23.57	89.86	1.18
CR-9	CR-9_Spot 107	172898.97	1045.08	1.72	20.43	0.96	0.12	1.53	0.02	1.19	116.67	1.69	115.49	1.37	140.74	22.53	115.49	1.37
CR-9	CR-9_Spot 108	63672.77	479.00	3.32	20.75	0.89	0.10	1.68	0.01	1.43	95.69	1.54	95.64	1.35	97.02	21.16	95.64	1.35
CR-9	CR-9_Spot 109	300064.85	725.08	19.67	21.03	1.13	0.09	1.91	0.01	1.54	85.63	1.57	86.01	1.32	75.06	26.88	86.01	1.32
CR-9	CR-9_Spot 110	102274.41	285.18	0.87	17.71	1.55	0.15	1.91	0.02	1.13	140.92	2.52	122.40	1.37	465.40	34.29	122.40	1.37

CR-9	CR-9_Spot 111	145662.10	603.92	1.93	20.19	0.83	0.10	1.66	0.01	1.44	95.67	1.52	92.77	1.33	168.50	19.36	92.77	1.33
CR-9	CR-9_Spot 112	33266.64	535.00	1.51	20.44	1.12	0.11	1.88	0.02	1.51	105.10	1.88	104.29	1.56	123.47	26.51	104.29	1.56
CR-9	CR-9_Spot 113	24480.43	370.25	1.49	20.69	1.20	0.09	1.86	0.01	1.37	90.67	1.61	90.83	1.23	86.25	29.78	90.83	1.23
CR-9	CR-9_Spot 114	251638.21	1115.42	4.77	19.83	0.98	0.18	1.70	0.03	1.39	171.46	2.68	168.43	2.31	213.46	22.69	168.43	2.31
CR-9	CR-9_Spot 115	65619.15	422.35	3.44	19.96	1.14	0.17	1.84	0.03	1.44	162.80	2.77	160.92	2.29	190.34	26.59	160.92	2.29
CR-9	CR-9_Spot 116	45543.48	333.63	1.15	19.46	1.09	0.27	1.75	0.04	1.34	244.37	3.81	244.32	3.21	244.87	26.02	244.32	3.21
CR-9	CR-9_Spot 117	12991.19	159.91	2.46	21.15	1.66	0.10	2.16	0.02	1.29	96.79	1.99	100.41	1.28	8.44	NA	100.41	1.28
CR-9	CR-9_Spot 118	11667.13	509.85	2.47	16.02	1.31	0.12	2.01	0.01	1.52	114.07	2.17	90.11	1.36	648.46	28.19	90.11	1.36
CR-9	CR-9_Spot 119	68182.36	861.26	1.18	20.72	1.24	0.10	2.09	0.02	1.68	97.33	1.94	96.95	1.62	106.64	29.35	96.95	1.62
CR-9	CR-9_Spot 120	3771.28	558.71	1.41	7.98	2.75	0.48	3.24	0.03	1.72	401.45	10.74	183.24	3.10	1985.36	48.89	183.24	3.10
CR-9	CR-9_Spot 121	18449.67	540.43	1.30	20.71	1.08	0.10	1.75	0.02	1.34	96.56	1.61	97.29	1.29	78.57	26.57	97.29	1.29
CR-9	CR-9_Spot 123	87884.29	170.00	1.87	8.68	0.82	5.38	1.35	0.34	1.07	1882.14	11.60	1879.33	17.52	1885.23	14.85	1885.23	14.85
CR-9	CR-9_Spot 124	375526.61	244.01	2.05	7.81	0.79	6.51	1.50	0.37	1.28	2047.37	13.20	2020.89	22.14	2074.14	13.86	2074.14	13.86
CR-9	CR-9_Spot 125	104416.73	91.66	1.54	9.97	0.82	3.99	1.33	0.29	1.04	1632.93	10.77	1634.20	15.07	1631.28	15.19	1631.28	15.19
CR-9	CR-9_Spot 126	85302.88	184.63	3.56	6.70	0.76	8.88	1.39	0.43	1.16	2326.06	12.64	2311.96	22.51	2338.44	13.00	2338.44	13.00
CR-9	CR-9_Spot 127	223968.62	840.13	2.89	20.23	0.77	0.17	1.61	0.03	1.41	163.47	2.43	163.07	2.27	169.25	18.02	163.07	2.27
CR-9	CR-9_Spot 128	77637.11	600.04	2.33	17.22	2.58	0.13	2.95	0.02	1.43	126.87	3.52	106.42	1.51	529.48	56.61	106.42	1.51
CR-9	CR-9_Spot 129	254516.29	179.60	1.78	16.30	1.53	0.58	1.71	0.07	0.76	463.56	6.37	426.42	3.14	651.98	32.96	426.42	3.14
CR-9	CR-9_Spot 130	10398.60	771.05	1.84	14.09	2.78	0.14	3.04	0.01	1.11	131.75	3.75	92.28	1.02	919.41	58.07	92.28	1.02
CR-9	CR-9_Spot 131	576986.32	773.43	2.20	18.78	1.74	0.19	2.43	0.03	1.70	174.17	3.90	162.11	2.72	341.24	39.46	162.11	2.72
CR-9	CR-9_Spot 132	193522.62	487.88	1.31	20.32	1.29	0.10	1.94	0.02	1.44	100.18	1.85	97.81	1.40	156.93	30.24	97.81	1.40
CR-9	CR-9_Spot 133	173776.56	372.29	2.08	18.87	1.38	0.10	1.85	0.01	1.22	98.41	1.73	89.17	1.08	328.53	31.42	89.17	1.08
CR-9	CR-9_Spot 134	21425.20	309.88	1.44	19.25	1.18	0.23	1.85	0.03	1.43	213.25	3.56	209.38	2.94	256.21	27.12	209.38	2.94
CR-9	CR-9_Spot 135	778483.52	618.66	7.57	9.25	0.97	4.60	1.82	0.31	1.54	1749.47	15.15	1731.38	23.36	1771.14	17.63	1771.14	17.63
CR-9	CR-9_Spot 136	191281.35	360.55	1.48	19.98	1.13	0.12	1.94	0.02	1.57	116.79	2.14	112.86	1.76	197.52	26.19	112.86	1.76
CR-9	CR-9_Spot 137	488423.45	1112.11	1.20	19.72	1.13	0.16	1.84	0.02	1.45	152.20	2.60	147.21	2.11	230.55	26.09	147.21	2.11
CR-9	CR-9_Spot 138	87377.02	574.90	2.85	21.03	1.06	0.10	1.77	0.02	1.42	98.58	1.67	99.66	1.40	72.72	25.32	99.66	1.40
CR-9	CR-9_Spot 139	46510.14	618.90	2.00	18.74	1.43	0.12	1.91	0.02	1.28	116.54	2.11	106.26	1.35	331.84	32.31	106.26	1.35
CR-9	CR-9_Spot 140	6406.03	240.90	2.44	10.91	5.14	0.34	5.25	0.03	1.06	299.67	13.63	176.87	1.85	1415.10	98.45	176.87	1.85
CR-9	CR-9_Spot 141	341370.86	423.92	3.14	11.13	0.73	3.07	1.67	0.25	1.50	1424.19	12.75	1425.03	19.12	1422.92	13.98	1422.92	13.98
CR-9	CR-9_Spot 142	16356.16	313.95	1.41	20.45	1.42	0.10	1.99	0.01	1.39	94.57	1.80	94.30	1.30	101.34	33.60	94.30	1.30
CR-9	CR-9_Spot 143	29506.47	1440.61	1.71	17.47	1.93	0.11	2.34	0.01	1.31	104.40	2.32	88.52	1.15	483.91	42.83	88.52	1.15
CR-9	CR-9_Spot 144	239406.07	870.43	3.01	19.75	0.92	0.16	1.56	0.02	1.25	150.13	2.17	145.57	1.80	222.75	21.30	145.57	1.80
CR-9	CR-9_Spot 145	233891.01	1348.28	2.37	19.61	1.76	0.17	3.24	0.02	2.72	158.85	4.77	153.52	4.13	239.14	40.53	153.52	4.13
CR-9	CR-9_Spot 146	34947.77	793.71	1.71	20.39	1.09	0.10	1.79	0.01	1.42	94.91	1.62	93.48	1.32	131.10	25.67	93.48	1.32
CR-9	CR-9_Spot	69888.78	438.91	3.31	20.28	1.16	0.11	1.63	0.02	1.14	105.68	1.64	103.57	1.18	153.67	27.18	103.57	1.18

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CR-9	CR-9_Spot 148	4435.37	317.32	2.27	7.92	13.55	0.49	13.60	0.03	1.15	402.26	45.20	181.81	2.07	2003.83	241.78	181.81	2.07
CR-9	CR-9_Spot 150	45648.53	1310.89	3.86	18.68	1.53	0.12	1.94	0.02	1.18	112.03	2.06	101.62	1.19	339.34	34.76	101.62	1.19
CR-9	CR-9_Spot 151	58295.68	215.05	1.20	18.89	1.01	0.39	1.54	0.05	1.16	332.15	4.36	334.38	3.77	316.49	23.04	334.38	3.77
CR-9	CR-9_Spot 152	90467.00	989.60	2.27	19.92	1.05	0.17	1.65	0.02	1.28	156.78	2.40	154.10	1.95	197.50	24.43	154.10	1.95
CR-9	CR-9_Spot 153	12668.77	207.98	1.96	19.83	1.34	0.15	1.98	0.02	1.30	145.14	2.67	144.14	1.85	161.59	34.75	144.14	1.85
CR-9	CR-9_Spot 154	3450.89	901.75	2.07	8.22	12.02	0.26	12.19	0.02	2.00	232.58	25.34	101.42	2.01	1922.15	216.34	101.42	2.01
CR-9	CR-9_Spot 155	69981.10	289.94	1.11	16.42	1.59	0.17	2.02	0.02	1.24	158.78	2.96	129.04	1.58	629.34	34.28	129.04	1.58
CR-9	CR-9_Spot 156	16894.57	432.78	2.06	20.02	1.26	0.10	1.95	0.02	1.48	98.74	1.83	96.53	1.42	152.30	29.63	96.53	1.42
CR-9	CR-9_Spot 157	121400.21	2024.07	3.84	19.90	0.96	0.13	1.73	0.02	1.44	123.58	2.01	119.55	1.71	201.78	22.27	119.55	1.71
CR-9	CR-9_Spot 158	1947666.06	749.59	1.69	20.60	1.10	0.09	1.80	0.01	1.43	91.52	1.57	90.15	1.28	127.47	25.79	90.15	1.28
CR-9	CR-9_Spot 159	129768.43	214.96	2.48	11.45	0.63	2.73	1.40	0.23	1.25	1337.20	10.39	1318.46	14.89	1367.30	12.09	1367.30	12.09
CR-9	CR-9_Spot 160	13306.33	262.59	1.32	20.97	1.59	0.10	2.15	0.02	1.40	97.97	2.01	100.76	1.40	30.59	NA	100.76	1.40
CR-9	CR-9_Spot 161	233813.70	469.10	2.55	12.98	0.83	2.02	1.75	0.19	1.54	1123.33	11.92	1123.41	15.93	1123.20	16.56	1123.20	16.56
CR-9	CR-9_Spot 162	3266.88	292.32	1.78	7.29	8.40	0.36	8.48	0.02	1.18	309.60	22.64	123.79	1.45	2142.61	147.10	123.79	1.45
CR-9	CR-9_Spot 163	164189.96	236.51	2.85	13.31	0.72	1.82	1.31	0.18	1.10	1051.71	8.60	1041.73	10.54	1072.51	14.51	1072.51	14.51
CR-9	CR-9_Spot 164	12796.18	329.37	2.06	19.23	2.43	0.10	2.76	0.01	1.31	98.66	2.60	92.93	1.21	239.47	55.97	92.93	1.21
CR-9	CR-9_Spot 165	42244.66	429.14	0.99	15.86	2.55	0.14	2.94	0.02	1.46	136.03	3.74	105.78	1.53	703.01	54.24	105.78	1.53
CR-9	CR-9_Spot 166	9246.05	169.85	2.40	17.46	3.19	0.12	3.40	0.02	1.10	114.01	3.66	98.78	1.08	444.89	71.45	98.78	1.08
CR-9	CR-9_Spot 167	31320.80	190.94	1.50	17.21	4.27	0.15	4.58	0.02	1.66	139.76	5.98	118.33	1.95	521.13	93.68	118.33	1.95
CR-9	CR-9_Spot 168	125805.28	261.96	1.35	17.19	0.97	0.69	1.64	0.09	1.32	529.98	6.79	528.54	6.72	536.20	21.29	528.54	6.72
CR-9	CR-9_Spot 169	45384.04	262.11	3.44	21.01	1.32	0.11	1.64	0.02	0.98	107.05	1.67	108.81	1.06	68.14	31.38	108.81	1.06
CR-9	CR-9_Spot 170	8504.54	241.17	3.15	17.23	1.38	0.12	2.16	0.02	1.59	117.66	2.40	100.97	1.59	470.00	32.41	100.97	1.59
CR-9	CR-9_Spot 171	18959.37	430.71	4.01	14.72	6.36	0.15	6.57	0.02	1.56	142.08	8.72	103.48	1.60	847.46	132.96	103.48	1.60
CR-9	CR-9_Spot 172	171515.48	591.71	3.82	20.39	1.00	0.15	1.77	0.02	1.45	138.04	2.28	137.25	1.97	151.65	23.46	137.25	1.97
CR-9	CR-9_Spot 173	9786.59	161.59	1.52	16.09	1.39	0.22	1.73	0.03	1.02	198.21	3.11	163.59	1.65	633.25	29.94	163.59	1.65
CR-9	CR-9_Spot 174	10734.69	605.23	2.86	11.85	3.52	0.22	3.83	0.02	1.53	199.89	6.96	121.07	1.83	1274.79	68.58	121.07	1.83
CR-9	CR-9_Spot 175	180183.12	168.51	2.62	9.42	0.62	4.42	1.35	0.30	1.19	1716.27	11.15	1698.89	17.82	1737.54	11.43	1737.54	11.43
CR-9	CR-9_Spot 176	17408.90	114.30	1.64	15.60	2.04	0.12	2.43	0.01	1.30	119.40	2.74	91.35	1.18	722.03	43.70	91.35	1.18
CR-9	CR-9_Spot 177	142221.13	199.86	2.47	12.36	0.73	2.35	1.46	0.21	1.27	1227.31	10.41	1230.93	14.20	1220.94	14.28	1220.94	14.28
CR-9	CR-9_Spot 178	8732.72	23.42	2.57	18.26	2.64	0.30	3.94	0.04	2.45	267.46	9.25	259.48	6.24	337.86	69.71	259.48	6.24
CR-9	CR-9_Spot 179	18658.74	146.56	1.55	20.26	1.76	0.10	2.32	0.02	1.51	99.32	2.20	98.03	1.47	130.27	41.57	98.03	1.47
CR-9	CR-9_Spot 180	23240.06	93.69	1.41	16.94	2.27	0.20	2.79	0.02	1.54	184.88	4.72	157.66	2.40	548.63	50.85	157.66	2.40
CR-9	CR-9_Spot 181	70670.60	1836.35	1.43	19.96	1.40	0.11	1.91	0.02	1.29	105.73	1.91	101.89	1.31	193.25	32.61	101.89	1.31
CR-9	CR-9_Spot 182	12652.32	59.46	1.78	19.88	2.31	0.17	2.98	0.03	1.47	161.36	4.45	161.62	2.35	157.67	60.75	161.62	2.35
CR-9	CR-9_Spot 183	6654.48	107.23	2.41	20.30	1.45	0.16	1.76	0.03	0.97	154.14	2.51	160.66	1.53	54.99	34.99	160.66	1.53

CR-9	CR-9_Spot 184	587428.00	128.06	2.18	9.70	0.86	4.29	1.53	0.30	1.26	1691.12	12.57	1699.31	18.82	1680.97	15.93	1680.97	15.93
CR-9	CR-9_Spot 185	27800.85	643.42	1.69	19.50	1.45	0.12	1.97	0.02	1.24	115.41	2.15	109.88	1.35	231.01	35.52	109.88	1.35
CR-9	CR-9_Spot 186	3637.63	317.78	1.99	8.26	4.52	0.55	4.69	0.03	1.24	445.74	16.92	215.77	2.64	1917.53	81.13	215.77	2.64
CR-9	CR-9_Spot 187	57342.33	480.50	2.05	20.52	1.41	0.12	2.10	0.02	1.55	114.64	2.28	114.19	1.75	124.00	33.54	114.19	1.75
CR-9	CR-9_Spot 188	31528.09	444.22	2.23	18.63	1.64	0.19	2.21	0.03	1.42	180.01	3.64	168.12	2.35	339.12	38.26	168.12	2.35
CR-9	CR-9_Spot 189	28711.10	579.06	2.05	20.24	1.40	0.11	1.99	0.02	1.41	110.34	2.08	108.74	1.52	144.87	32.96	108.74	1.52
CR-9	CR-9_Spot 190	8810.44	332.79	2.72	17.06	1.56	0.14	1.97	0.02	1.20	136.07	2.51	116.47	1.39	493.46	34.44	116.47	1.39
CR-9	CR-9_Spot 191	434753.89	215.98	1.21	17.43	0.87	0.39	1.40	0.05	1.10	333.63	3.99	309.14	3.32	508.13	19.16	309.14	3.32
CR-9	CR-9_Spot 192	122750.92	495.13	1.74	12.30	0.70	2.20	1.58	0.20	1.41	1180.78	11.00	1154.79	14.95	1228.73	13.65	1228.73	13.65
CR-9	CR-9_Spot 193	65510.92	1992.84	3.34	18.09	1.25	0.14	1.78	0.02	1.27	130.05	2.18	114.85	1.44	417.54	28.03	114.85	1.44
CR-9	CR-9_Spot 194	35347.22	215.06	2.83	20.31	1.36	0.15	1.85	0.02	1.24	138.39	2.39	138.13	1.70	142.84	32.13	138.13	1.70
CR-9	CR-9_Spot 195	737927.93	290.76	1.70	10.98	0.81	3.06	1.40	0.24	1.14	1423.70	10.74	1405.10	14.43	1451.61	15.50	1451.61	15.50
CR-9	CR-9_Spot 196	134672.96	949.11	2.81	20.52	0.80	0.10	1.47	0.02	1.23	99.25	1.39	97.81	1.19	133.96	18.88	97.81	1.19
CR-9	CR-9_Spot 197	14132.75	461.68	1.34	16.41	2.36	0.13	2.77	0.02	1.45	123.22	3.21	99.75	1.44	603.87	50.98	99.75	1.44
CR-9	CR-9_Spot 198	96288.05	1528.36	2.11	20.95	0.75	0.09	1.42	0.01	1.21	89.30	1.22	89.58	1.08	81.85	17.80	89.58	1.08
CR-9	CR-9_Spot 199	27774.53	344.82	1.70	20.46	1.00	0.12	1.73	0.02	1.38	116.77	1.91	116.62	1.60	119.80	24.54	116.62	1.60
CR-9	CR-9_Spot 200	28339.40	183.78	2.62	20.06	1.51	0.17	1.94	0.02	1.11	157.56	2.83	156.90	1.72	167.42	37.26	156.90	1.72
CR-9	CR-9_Spot 201	7471.39	92.24	2.51	20.08	2.25	0.12	2.61	0.02	1.30	112.44	2.78	113.33	1.47	93.67	53.60	113.33	1.47
CR-9	CR-9_Spot 202	9072.60	533.65	1.07	12.26	1.33	0.20	1.76	0.02	1.15	182.35	2.94	113.74	1.30	1200.85	26.21	113.74	1.30
CR-9	CR-9_Spot 203	11109.60	205.92	1.65	20.29	1.50	0.11	2.29	0.02	1.24	103.37	2.25	103.47	1.27	101.14	45.61	103.47	1.27
CR-9	CR-9_Spot 204	3556796.26	862.76	2.44	19.50	0.97	0.25	1.64	0.04	1.33	225.75	3.33	222.67	2.90	257.97	22.40	222.67	2.90
CR-9	CR-9_Spot 205	149064.52	364.94	1.17	20.09	1.21	0.16	2.15	0.02	1.78	150.32	3.00	148.25	2.60	183.10	28.05	148.25	2.60
CR-9	CR-9_Spot 206	7767.85	86.42	2.02	21.22	2.08	0.12	2.29	0.02	0.91	111.81	2.43	119.08	1.08	NA	NA	119.08	1.08
CR-9	CR-9_Spot 207	1819348.91	428.70	1.39	19.93	0.99	0.18	1.83	0.03	1.53	164.64	2.78	161.76	2.45	206.32	23.01	161.76	2.45
CR-9	CR-9_Spot 208	5687.91	468.28	2.06	9.63	5.80	0.22	6.08	0.02	1.80	198.94	10.98	98.86	1.77	1653.06	107.61	98.86	1.77
CR-9	CR-9_Spot 209	443773.94	373.63	1.97	20.51	1.18	0.11	1.72	0.02	1.25	109.97	1.79	108.62	1.35	139.41	27.59	108.62	1.35
CR-9	CR-9_Spot 210	19308.65	160.36	2.49	20.27	1.97	0.10	2.41	0.01	1.30	94.83	2.18	93.40	1.20	130.96	47.76	93.40	1.20
CR-9	CR-9_Spot 211	578204.79	1059.81	2.55	20.62	0.96	0.12	1.63	0.02	1.32	116.20	1.79	115.70	1.51	126.31	22.55	115.70	1.51
CR-9	CR-9_Spot 212	14522.09	75.58	1.35	16.33	1.15	0.85	1.68	0.10	1.22	622.52	7.81	624.34	7.26	615.90	24.86	624.34	7.26
CR-9	CR-9_Spot 213	588782.50	224.30	2.91	9.34	0.87	4.37	1.47	0.30	1.18	1706.26	12.11	1667.14	17.30	1754.63	15.95	1754.63	15.95
CR-9	CR-9_Spot 214	113509.89	120.39	3.35	19.50	2.90	0.13	3.11	0.02	1.13	122.18	3.58	115.53	1.30	253.62	66.63	115.53	1.30
CR-9	CR-9_Spot 215	46695.58	102.24	3.37	19.93	2.24	0.16	2.53	0.02	1.18	148.25	3.49	145.35	1.70	194.88	52.07	145.35	1.70
CR-9	CR-9_Spot 216	40440.32	882.82	1.76	20.40	1.07	0.10	1.63	0.01	1.23	94.22	1.47	92.53	1.13	137.29	25.17	92.53	1.13
CR-9	CR-9_Spot 217	73180.09	944.61	1.98	18.90	1.57	0.12	2.04	0.02	1.31	111.89	2.17	102.25	1.33	322.27	35.68	102.25	1.33
CR-9	CR-9_Spot 218	442959.64	310.55	3.17	9.22	0.66	4.71	1.18	0.31	0.98	1769.41	9.91	1761.06	15.15	1779.27	12.03	1779.27	12.03
CR-9	CR-9_Spot	2243440.15	486.73	4.74	13.57	0.77	1.76	1.74	0.17	1.56	1032.18	11.29	1029.33	14.87	1038.20	15.55	1038.20	15.55

	219																	
CR-9	CR-9_Spot 220	3557.61	195.06	1.34	7.58	8.16	0.34	8.28	0.02	1.36	298.95	21.44	123.26	1.66	2079.22	144.00	123.26	1.66
CR-9	CR-9_Spot 221	136146.24	98.90	2.67	13.68	0.90	1.66	1.53	0.16	1.23	993.71	9.70	982.29	11.25	1018.99	18.30	1018.99	18.30
CR-9	CR-9_Spot 222	4938.43	158.30	1.77	17.84	2.25	0.11	2.84	0.02	1.39	107.86	2.91	97.68	1.35	338.91	56.17	97.68	1.35
CR-9	CR-9_Spot 223	98609.23	422.15	3.69	11.63	1.13	0.61	2.23	0.05	1.93	485.62	8.63	325.01	6.11	1338.52	21.82	325.01	6.11
CR-9	CR-9_Spot 225	190325.35	686.60	1.44	20.50	0.96	0.12	1.77	0.02	1.48	114.96	1.92	113.83	1.67	138.39	22.64	113.83	1.67
CR-9	CR-9_Spot 226	434695.17	181.59	1.20	11.73	0.62	2.69	1.23	0.23	1.07	1324.56	9.11	1324.98	12.77	1323.87	11.96	1323.87	11.96
CR-9	CR-9_Spot 228	238475.20	383.20	26.43	13.21	0.77	1.86	1.92	0.18	1.76	1066.73	12.70	1055.11	17.13	1090.54	15.52	1090.54	15.52
CR-9	CR-9_Spot 229	50633.28	817.20	9.98	20.84	0.95	0.10	1.63	0.02	1.33	99.48	1.55	99.84	1.32	90.81	22.40	99.84	1.32
CR-9	CR-9_Spot 232	293545.61	651.41	6.96	11.18	0.68	1.40	1.60	0.11	1.45	889.80	9.47	692.83	9.50	1417.41	12.97	1417.41	12.97
CR-9	CR-9_Spot 233	82990.67	186.67	5.55	13.82	0.76	1.69	1.26	0.17	1.01	1004.04	8.06	1007.62	9.39	996.23	15.49	996.23	15.49
CR-9	CR-9_Spot 234	80239.29	171.94	2.21	20.36	1.52	0.13	2.00	0.02	1.31	120.99	2.29	119.53	1.55	149.94	35.64	119.53	1.55
CR-9	CR-9_Spot 235	31487.18	519.43	1.96	16.72	2.95	0.13	3.22	0.02	1.29	127.62	3.87	104.41	1.34	585.00	64.10	104.41	1.34
CR-9	CR-9_Spot 236	31399.21	703.07	3.63	19.53	1.44	0.16	1.78	0.02	1.04	150.77	2.50	145.54	1.50	233.81	33.31	145.54	1.50
CR-9	CR-9_Spot 237	104315.33	90.16	1.93	20.11	2.32	0.12	2.65	0.02	1.29	116.41	2.92	113.27	1.45	180.96	54.10	113.27	1.45
CR-9	CR-9_Spot 238	33966.19	688.33	3.41	18.03	1.19	0.14	1.94	0.02	1.49	130.71	2.38	115.35	1.71	419.82	27.64	115.35	1.71
CR-9	CR-9_Spot 239	81276.48	377.98	1.45	20.18	1.33	0.10	1.92	0.01	1.38	96.66	1.77	93.64	1.28	171.84	31.20	93.64	1.28
CR-9	CR-9_Spot 240	155069.79	201.44	3.18	12.93	1.05	1.96	1.68	0.18	1.32	1101.32	11.31	1085.40	13.15	1132.89	20.84	1132.89	20.84
CR-9	CR-9_Spot 241	25039.95	146.46	2.30	20.11	1.58	0.12	2.30	0.02	1.56	112.37	2.44	110.10	1.70	160.87	39.49	110.10	1.70
CR-9	CR-9_Spot 242	112814.78	144.82	3.08	18.65	1.97	0.19	2.43	0.03	1.42	174.11	3.89	161.05	2.26	355.43	44.51	161.05	2.26
CR-9	CR-9_Spot 243	53188.53	508.28	2.37	20.59	1.02	0.11	1.56	0.02	1.17	107.85	1.60	107.32	1.25	119.51	24.37	107.32	1.25
CR-9	CR-9_Spot 244	94723.76	671.52	1.84	20.02	0.83	0.18	1.58	0.03	1.34	169.45	2.46	167.94	2.22	190.71	19.40	167.94	2.22
CR-9	CR-9_Spot 245	15506.50	159.00	1.94	20.55	1.69	0.10	1.97	0.02	1.01	97.64	1.84	97.87	0.98	91.97	40.13	97.87	0.98
CR-9	CR-9_Spot 246	11344.23	144.49	1.97	20.28	1.80	0.12	2.21	0.02	1.16	113.59	2.37	113.92	1.31	106.79	44.46	113.92	1.31
CR-9	CR-9_Spot 247	24519.65	394.32	1.62	16.59	1.82	0.22	2.47	0.03	1.59	199.50	4.47	167.34	2.62	599.06	40.93	167.34	2.62
CR-9	CR-9_Spot 249	11787.53	264.04	3.04	20.06	1.39	0.12	1.71	0.02	1.00	117.41	1.90	116.54	1.16	135.04	32.60	116.54	1.16
CR-9	CR-9_Spot 250	35288.48	232.64	3.46	20.24	1.20	0.21	1.75	0.03	1.27	191.28	3.05	194.41	2.43	152.72	28.20	194.41	2.43
CR-9	CR-9_Spot 251	266910.25	477.05	3.07	8.94	0.70	4.96	1.63	0.32	1.47	1813.04	13.80	1794.55	23.07	1834.34	12.77	1834.34	12.77
CR-9	CR-9_Spot 252	7039.31	471.16	1.75	12.06	6.39	0.17	6.55	0.02	1.42	160.42	9.72	97.92	1.38	1223.75	125.73	97.92	1.38
CR-9	CR-9_Spot 253	16917.99	76.75	1.30	15.85	1.38	0.84	1.68	0.10	0.96	618.47	7.76	600.13	5.48	686.19	29.35	600.13	5.48
CR-9	CR-9_Spot 254	74833.54	297.14	2.36	21.16	1.30	0.10	1.97	0.02	1.49	96.53	1.82	98.13	1.45	57.15	30.98	98.13	1.45
CR-9	CR-9_Spot 255	15118.48	755.89	1.90	15.73	1.23	0.12	2.10	0.01	1.70	115.17	2.29	88.93	1.50	698.41	26.24	88.93	1.50
CR-9	CR-9_Spot 256	1077883.43	817.41	24.08	19.19	0.88	0.36	1.77	0.05	1.54	310.34	4.73	312.58	4.69	293.60	20.06	312.58	4.69
CR-9	CR-9_Spot 257	88471.21	363.97	1.95	20.12	1.15	0.18	1.84	0.03	1.44	164.87	2.81	163.98	2.34	177.59	26.79	163.98	2.34
CR-9	CR-9_Spot 258	110640.20	448.53	2.24	20.81	1.24	0.09	1.65	0.01	1.09	90.33	1.42	89.93	0.97	100.86	29.21	89.93	0.97
CR-9	CR-9_Spot 259	47708.25	71.35	1.32	13.41	0.78	1.74	1.32	0.17	1.07	1024.95	8.52	1011.33	10.00	1054.15	15.65	1054.15	15.65

CR-9	CR-9_Spot 260	610161.45	362.09	2.15	13.10	1.03	1.86	1.94	0.18	1.64	1066.42	12.79	1045.80	15.84	1108.83	20.59	1108.83	20.59
CR-9	CR-9_Spot 261	12541.49	78.47	2.03	17.82	2.16	0.22	2.56	0.03	1.36	202.90	4.71	184.96	2.49	416.76	48.37	184.96	2.49
CR-9	CR-9_Spot 262	980337.36	842.31	2.15	20.86	0.87	0.12	1.49	0.02	1.21	112.35	1.58	112.84	1.35	101.89	20.50	112.84	1.35
CR-9	CR-9_Spot 263	155743.72	367.79	0.91	16.35	0.93	0.86	1.90	0.10	1.65	628.89	8.89	624.57	9.83	644.48	20.02	624.57	9.83
CR-9	CR-9_Spot 264	363289.23	528.34	4.33	9.26	0.76	4.64	1.70	0.31	1.52	1755.91	14.21	1745.29	23.28	1768.55	13.83	1768.55	13.83
CR-9	CR-9_Spot 265	2910461.32	392.33	6.36	5.10	0.86	14.18	1.69	0.52	1.46	2761.84	16.05	2716.43	32.34	2795.18	14.01	2795.18	14.01
CR-9	CR-9_Spot 266	252447.51	905.04	1.53	20.71	1.09	0.12	1.84	0.02	1.48	115.50	2.00	115.61	1.69	113.17	25.69	115.61	1.69
CR-9	CR-9_Spot 267	148102.32	1167.74	12.69	13.45	0.91	1.63	1.59	0.16	1.30	983.68	10.01	953.77	11.53	1051.06	18.41	1051.06	18.41
CR-9	CR-9_Spot 268	82564.41	364.95	3.31	19.61	1.25	0.11	1.96	0.02	1.51	106.09	1.97	100.40	1.50	235.82	28.81	100.40	1.50
CR-9	CR-9_Spot 269	64238.66	66.31	2.61	13.58	0.82	1.73	1.40	0.17	1.13	1020.21	9.01	1016.47	10.66	1028.21	16.60	1028.21	16.60
CR-9	CR-9_Spot 270	324485.23	123.19	2.08	11.00	0.84	3.04	1.45	0.24	1.19	1418.38	11.10	1399.40	14.91	1446.96	15.98	1446.96	15.98
CR-9	CR-9_Spot 271	163208.51	233.97	2.60	19.75	1.33	0.22	1.79	0.03	1.20	202.84	3.29	201.00	2.38	224.27	30.70	201.00	2.38
CR-9	CR-9_Spot 272	1641893.34	692.75	2.84	19.92	0.78	0.18	1.42	0.03	1.19	164.71	2.16	161.69	1.90	208.34	18.07	161.69	1.90
CR-9	CR-9_Spot 273	42452.31	242.93	7.23	8.50	0.88	5.16	1.29	0.32	0.94	1846.62	10.98	1783.99	14.69	1917.93	15.82	1917.93	15.82
CR-9	CR-9_Spot 274	42738.12	62.66	2.10	13.11	0.79	1.87	1.36	0.18	1.11	1070.45	9.02	1057.72	10.85	1096.46	15.79	1096.46	15.79
CR-9	CR-9_Spot 275	173295.81	59.88	1.24	15.14	2.17	0.94	2.64	0.10	1.51	672.35	12.97	632.98	9.09	806.58	45.33	632.98	9.09
CR-9	CR-9_Spot 276	173798.33	2905.06	1.05	20.63	0.78	0.13	1.63	0.02	1.43	124.03	1.90	124.26	1.76	119.69	18.42	124.26	1.76
CR-9	CR-9_Spot 277	74719.07	75.26	1.95	3.84	0.82	24.05	1.45	0.67	1.19	3270.26	14.14	3304.74	30.89	3249.18	12.95	3249.18	12.95
CR-9	CR-9_Spot 278	259987.52	1472.47	1.59	20.58	1.05	0.09	1.76	0.01	1.42	91.51	1.54	90.15	1.27	127.21	24.65	90.15	1.27
CR-9	CR-9_Spot 280	11333.87	316.13	1.96	13.06	3.09	0.19	3.33	0.02	1.26	176.61	5.41	116.85	1.46	1077.28	61.98	116.85	1.46
CR-9	CR-9_Spot 281	30439.97	1619.43	5.80	16.95	1.66	0.13	2.24	0.02	1.51	124.05	2.62	102.97	1.54	549.79	36.26	102.97	1.54
CR-9	CR-9_Spot 282	14224.18	1115.84	2.83	10.83	3.09	1.01	3.72	0.08	2.05	707.04	18.93	495.32	9.80	1454.71	58.90	1454.71	58.90
CR-9	CR-9_Spot 283	16696.72	72.46	3.17	19.23	1.54	0.28	2.14	0.04	1.25	248.33	4.72	248.59	3.05	245.89	40.13	248.59	3.05
CR-9	CR-9_Spot 284	106473.23	490.44	1.46	19.94	1.01	0.16	1.72	0.02	1.39	147.22	2.36	144.16	1.99	196.85	23.40	144.16	1.99
CR-9	CR-9_Spot 285	281799.29	972.15	2.04	20.69	1.15	0.09	1.73	0.01	1.30	91.56	1.52	90.65	1.17	115.37	27.05	90.65	1.17
CR-9	CR-9_Spot 286	22575.53	802.24	6.08	16.48	2.47	0.15	2.89	0.02	1.49	142.50	3.84	116.14	1.72	607.46	53.51	116.14	1.72
CR-9	CR-9_Spot 287	64379.09	290.56	2.47	19.70	1.16	0.17	1.75	0.02	1.30	158.02	2.56	153.80	1.98	221.82	27.07	153.80	1.98
CR-9	CR-9_Spot 288	20107.93	674.70	1.94	20.65	1.04	0.09	1.86	0.01	1.54	92.05	1.64	92.25	1.41	86.98	24.86	92.25	1.41
CR-9	CR-9_Spot 290	21387.51	106.64	1.62	16.85	2.81	0.19	3.09	0.02	1.27	178.18	5.05	151.03	1.90	555.57	61.39	151.03	1.90
CR-9	CR-9_Spot 291	22000.15	254.26	2.15	20.77	1.23	0.10	1.65	0.02	1.06	97.40	1.54	98.36	1.04	74.06	30.10	98.36	1.04
CR-9	CR-9_Spot 292	154318.03	508.00	1.98	18.92	1.12	0.10	1.75	0.01	1.34	97.00	1.62	88.20	1.18	319.17	25.58	88.20	1.18
CR-9	CR-9_Spot 293	33757.95	364.39	1.80	20.53	1.56	0.16	2.11	0.02	1.37	149.68	2.93	151.97	2.05	113.58	37.90	151.97	2.05
CR-9	CR-9_Spot 294	129759.30	917.93	2.34	20.16	1.00	0.19	1.84	0.03	1.54	172.54	2.92	172.58	2.62	171.98	23.43	172.58	2.62
CR-9	CR-9_Spot 295	353181.48	162.74	4.05	13.60	0.82	1.74	1.46	0.17	1.21	1023.94	9.44	1022.15	11.48	1027.76	16.55	1027.76	16.55
CR-9	CR-9_Spot 296	8636547.50	1070.42	9.32	11.25	0.74	2.81	1.49	0.23	1.29	1358.49	11.13	1331.03	15.53	1401.95	14.09	1401.95	14.09
CR-9	CR-9_Spot	801428.39	252.47	4.54	15.20	0.94	0.90	1.36	0.10	0.99	649.37	6.55	606.93	5.74	799.80	19.68	606.93	5.74

	297																	
CR-9	CR-9_Spot 298	76783.17	80.63	1.74	19.79	1.84	0.16	2.18	0.02	1.17	153.16	3.09	149.38	1.73	212.08	42.55	149.38	1.73
CR-9	CR-9_Spot 300	74634.70	19.44	0.61	5.78	0.74	11.73	1.23	0.49	0.98	2583.43	11.55	2582.33	20.94	2584.28	12.44	2584.28	12.44
CR-9	CR-9_Spot 301	26093.05	90.65	1.68	20.11	2.18	0.12	2.67	0.02	1.53	118.95	2.99	117.10	1.77	156.12	51.24	117.10	1.77
CR-9	CR-9_Spot 302	25821.46	312.91	2.68	18.89	1.19	0.18	1.62	0.03	1.06	171.30	2.55	162.01	1.70	301.59	27.78	162.01	1.70
CR-9	CR-9_Spot 303	34014.99	838.38	1.90	16.16	1.90	0.13	2.43	0.02	1.50	127.19	2.90	100.76	1.50	654.57	41.01	100.76	1.50
CR-9	CR-9_Spot 304	22620.58	589.76	1.93	16.70	1.37	0.12	1.94	0.02	1.38	118.26	2.17	96.73	1.32	576.45	29.80	96.73	1.32
CR-9	CR-9_Spot 305	265436.46	1977.78	2.67	20.47	0.95	0.11	1.69	0.02	1.40	103.34	1.66	101.80	1.41	138.93	22.21	101.80	1.41
CR-9	CR-9_Spot 306	75307.51	479.03	1.70	19.14	1.05	0.12	1.87	0.02	1.54	114.59	2.02	106.41	1.63	288.09	24.07	106.41	1.63
CR-9	CR-9_Spot 307	14110.50	924.72	1.94	17.09	1.57	0.11	2.16	0.01	1.49	110.17	2.26	92.51	1.37	511.03	34.52	92.51	1.37
CR-9	CR-9_Spot 308	35730.22	530.42	1.70	21.03	1.19	0.09	1.77	0.01	1.29	90.38	1.53	91.65	1.18	57.03	28.71	91.65	1.18
CR-9	CR-9_Spot 309	11988.41	157.60	1.40	20.54	1.49	0.12	1.96	0.02	1.23	112.51	2.09	114.37	1.40	73.23	36.21	114.37	1.40
CR-9	CR-9_Spot 310	100944.08	807.02	2.85	19.95	1.00	0.13	1.72	0.02	1.40	120.22	1.95	116.48	1.62	194.77	23.24	116.48	1.62
CR-9	CR-9_Spot 311	221256.72	119.51	2.20	13.06	0.83	1.95	1.51	0.18	1.26	1098.48	10.14	1093.45	12.68	1108.45	16.62	1108.45	16.62
CR-9	CR-9_Spot 312	48626.42	709.02	2.19	18.71	1.30	0.19	1.69	0.03	1.08	172.41	2.67	160.71	1.71	336.08	29.37	160.71	1.71
CR-9	CR-9_Spot 313	14991.38	669.21	1.92	15.87	3.29	0.13	3.64	0.02	1.55	124.83	4.28	97.80	1.51	676.33	70.51	97.80	1.51
CR-9	CR-9_Spot 314	34476.83	293.39	1.59	20.06	1.32	0.10	1.94	0.01	1.41	98.28	1.81	95.41	1.33	168.55	31.02	95.41	1.33
CR-9	CR-9_Spot 315	28298.86	357.70	1.70	21.04	1.36	0.10	1.93	0.02	1.36	95.45	1.76	97.11	1.31	54.12	32.50	97.11	1.31
CR-12	CR-12_Spot 1	12460.09	33.16	3.37	19.93	2.36	0.15	3.00	0.02	1.49	145.54	4.07	146.19	2.15	134.98	61.33	146.19	2.15
CR-12	CR-12_Spot 2	15158.84	78.31	1.81	21.37	1.90	0.14	2.19	0.02	1.07	133.32	2.73	142.38	1.51	NA	NA	142.38	1.51
CR-12	CR-12_Spot 3	16224.71	65.62	2.32	19.75	2.28	0.16	2.66	0.02	1.34	146.32	3.63	144.89	1.92	169.59	53.77	144.89	1.92
CR-12	CR-12_Spot 4	16374.92	81.07	2.04	19.72	1.65	0.16	2.09	0.02	1.26	149.40	2.90	147.91	1.85	173.07	38.83	147.91	1.85
CR-12	CR-12_Spot 5	8426.49	50.73	3.12	20.52	2.53	0.15	2.87	0.02	1.28	138.44	3.71	144.54	1.82	34.97	NA	144.54	1.82
CR-12	CR-12_Spot 6	16330.28	55.88	2.69	20.36	2.52	0.15	2.82	0.02	1.11	140.57	3.70	143.18	1.57	96.71	61.32	143.18	1.57
CR-12	CR-12_Spot 7	104642.94	77.07	2.86	19.96	1.99	0.15	2.46	0.02	1.45	144.26	3.31	142.06	2.03	180.70	46.40	142.06	2.03
CR-12	CR-12_Spot 8	119119.27	54.87	2.18	19.89	2.48	0.15	2.68	0.02	1.00	146.14	3.64	143.53	1.41	188.64	57.79	143.53	1.41
CR-12	CR-12_Spot 9	9381.83	52.25	3.60	19.47	2.03	0.16	2.69	0.02	1.22	146.83	3.67	145.14	1.75	174.06	55.90	145.14	1.75
CR-12	CR-12_Spot 10	29108.90	58.62	2.44	20.22	2.07	0.15	2.47	0.02	1.33	145.48	3.34	145.94	1.92	138.03	48.73	145.94	1.92
CR-12	CR-12_Spot 11	105790.40	52.00	3.04	20.39	2.24	0.15	2.53	0.02	1.17	145.61	3.43	146.20	1.69	135.94	52.64	146.20	1.69
CR-12	CR-12_Spot 12	4517.88	39.86	2.78	19.19	3.33	0.15	3.76	0.02	1.74	141.67	4.97	142.19	2.44	132.94	78.31	142.19	2.44
CR-12	CR-12_Spot 13	50759.62	42.90	2.67	20.03	2.15	0.15	2.57	0.02	1.40	146.07	3.49	144.61	2.00	169.81	50.24	144.61	2.00
CR-12	CR-12_Spot 14	6465.38	41.27	2.79	19.02	2.35	0.16	2.91	0.02	1.29	147.17	3.98	143.85	1.84	201.06	60.46	143.85	1.84
CR-12	CR-12_Spot 15	37569.26	111.00	2.26	19.79	1.82	0.15	2.17	0.02	1.15	146.31	2.95	143.42	1.63	193.39	42.66	143.42	1.63
CR-12	CR-12_Spot 16	8108.77	26.11	4.71	20.80	2.88	0.15	3.27	0.02	1.52	138.55	4.24	146.60	2.21	2.71	NA	146.60	2.21
CR-12	CR-12_Spot 17	59225.39	66.82	3.36	20.49	2.04	0.15	2.39	0.02	1.25	143.23	3.19	144.71	1.79	118.82	48.00	144.71	1.79
CR-12	CR-12_Spot 18	27469.75	148.98	2.53	20.43	1.41	0.15	1.74	0.02	1.02	143.40	2.33	145.37	1.46	110.94	33.35	145.37	1.46

CR-12	CR-12_Spot 20	1971376.07	101.02	2.62	20.24	1.59	0.16	1.98	0.02	1.18	147.64	2.72	146.93	1.72	159.10	37.16	146.93	1.72
CR-12	CR-12_Spot 21	23875.45	102.13	2.57	20.77	1.71	0.15	2.22	0.02	1.38	138.42	2.87	142.55	1.95	68.32	41.28	142.55	1.95
CR-12	CR-12_Spot 22	24996.67	58.68	2.83	19.98	2.25	0.15	2.62	0.02	1.20	145.48	3.55	144.48	1.71	161.72	54.46	144.48	1.71
CR-12	CR-12_Spot 23	23784.11	39.06	2.45	18.79	2.86	0.16	3.13	0.02	1.23	154.43	4.49	144.84	1.76	304.15	65.63	144.84	1.76
CR-12	CR-12_Spot 24	88253.75	274.09	1.45	20.82	1.06	0.15	1.46	0.02	1.00	139.78	1.91	143.00	1.42	85.44	25.29	143.00	1.42
CR-12	CR-12_Spot 25	20442.65	29.37	2.14	18.46	2.99	0.19	3.34	0.03	1.49	178.92	5.48	166.58	2.45	345.11	67.65	166.58	2.45
CR-12	CR-12_Spot 26	51024.81	94.84	2.07	19.99	1.56	0.16	2.00	0.02	1.25	149.45	2.78	147.60	1.83	178.94	36.45	147.60	1.83
CR-12	CR-12_Spot 27	220534.52	284.06	3.97	20.22	1.01	0.16	1.51	0.02	1.12	148.23	2.08	147.32	1.63	162.85	23.57	147.32	1.63
CR-12	CR-12_Spot 28	11077.49	66.52	5.49	19.07	1.80	0.16	2.22	0.02	1.29	150.68	3.11	144.95	1.86	241.95	41.59	144.95	1.86
CR-12	CR-12_Spot 29	15690.29	45.91	3.53	19.40	2.48	0.16	2.77	0.02	1.23	147.64	3.81	143.30	1.74	218.03	57.47	143.30	1.74
CR-12	CR-12_Spot 30	363589.03	44.66	4.23	20.02	2.21	0.15	2.63	0.02	1.42	144.21	3.54	141.70	2.00	185.53	51.57	141.70	2.00
CR-12	CR-12_Spot 31	4211.97	54.10	2.65	20.28	3.03	0.14	3.39	0.02	1.51	136.15	4.32	145.17	2.17	NA	NA	145.17	2.17
CR-12	CR-12_Spot 32	84910.38	36.46	2.43	19.59	2.91	0.16	3.15	0.02	1.20	151.12	4.42	146.15	1.73	229.81	67.25	146.15	1.73
CR-12	CR-12_Spot 33	27555.58	46.93	2.49	19.29	2.47	0.16	2.82	0.02	1.35	148.71	3.90	142.28	1.90	252.57	56.85	142.28	1.90
CR-12	CR-12_Spot 34	211787.95	37.19	3.22	18.11	2.05	0.17	2.55	0.02	1.52	163.27	3.85	146.35	2.20	416.26	45.76	146.35	2.20
CR-12	CR-12_Spot 35	12763.19	92.86	2.38	19.85	1.73	0.15	2.10	0.02	1.17	143.48	2.80	142.56	1.64	158.86	40.77	142.56	1.64
CR-12	CR-12_Spot 36	133910.55	57.11	2.95	19.89	1.82	0.15	2.17	0.02	1.20	145.47	2.95	141.98	1.68	202.80	42.14	141.98	1.68
CR-12	CR-12_Spot 37	111082.41	150.40	3.27	20.21	1.73	0.16	1.98	0.02	0.98	150.86	2.78	149.99	1.45	164.50	40.40	149.99	1.45
CR-12	CR-12_Spot 38	5040.48	48.11	2.67	19.82	2.77	0.15	3.06	0.02	1.10	140.58	4.01	144.45	1.57	75.68	67.78	144.45	1.57
CR-12	CR-12_Spot 39	18755.34	96.45	1.55	19.68	1.79	0.15	2.32	0.02	1.46	143.50	3.11	140.15	2.03	199.31	41.94	140.15	2.03
CR-12	CR-12_Spot 40	42079.43	171.73	3.72	20.21	1.42	0.15	1.93	0.02	1.31	144.43	2.60	143.77	1.86	155.36	33.25	143.77	1.86
CR-12	CR-12_Spot 41	250959.12	89.98	2.42	14.29	1.10	1.52	1.52	0.16	1.05	938.76	9.34	943.79	9.26	926.98	22.60	926.98	22.60
CR-12	CR-12_Spot 42	6223.53	50.53	3.25	20.40	2.19	0.14	3.09	0.02	1.51	136.04	3.94	142.03	2.12	32.62	NA	142.03	2.12
CR-12	CR-12_Spot 43	166821.82	186.02	1.98	20.34	1.55	0.15	2.07	0.02	1.37	144.30	2.78	143.82	1.95	152.09	36.35	143.82	1.95
CR-12	CR-12_Spot 44	7260.89	68.24	2.84	20.84	1.57	0.14	1.87	0.02	0.94	133.66	2.34	141.59	1.31	NA	NA	141.59	1.31
CR-12	CR-12_Spot 45	17586.46	69.59	2.20	20.45	2.21	0.15	2.76	0.02	1.58	142.81	3.67	145.23	2.27	102.73	53.37	145.23	2.27
CR-12	CR-12_Spot 46	10524.06	67.37	1.85	17.15	4.03	0.18	4.31	0.02	1.52	169.76	6.74	147.88	2.22	486.67	89.10	147.88	2.22
CR-12	CR-12_Spot 47	24948.64	50.37	2.46	19.49	2.23	0.16	2.66	0.02	1.44	153.03	3.78	148.29	2.12	227.06	51.66	148.29	2.12
CR-12	CR-12_Spot 48	18719.23	50.93	2.16	19.57	2.12	0.16	2.66	0.02	1.58	147.26	3.64	143.51	2.24	208.03	49.53	143.51	2.24
CR-12	CR-12_Spot 49	897879.57	1172.21	5.60	20.29	0.93	0.16	1.47	0.02	1.15	148.14	2.03	147.41	1.67	159.77	21.64	147.41	1.67
CR-12	CR-12_Spot 50	16971.31	89.98	1.94	20.18	1.97	0.15	2.33	0.02	1.14	143.18	3.11	143.82	1.62	132.58	47.67	143.82	1.62
CR-12	CR-12_Spot 53	7175.93	39.39	3.52	20.21	2.38	0.15	2.83	0.02	1.15	141.74	3.75	146.01	1.66	70.78	61.58	146.01	1.66
CR-12	CR-12_Spot 54	19223.88	37.26	2.87	20.33	3.68	0.15	3.97	0.02	1.50	143.30	5.31	144.66	2.15	120.86	86.68	144.66	2.15
CR-12	CR-12_Spot 55	14427.75	41.13	2.54	19.88	2.31	0.15	2.72	0.02	1.41	143.63	3.65	142.53	1.99	161.76	54.45	142.53	1.99
CR-12	CR-12_Spot 56	11909.64	45.15	4.22	20.80	2.22	0.15	2.62	0.02	1.35	140.51	3.44	146.41	1.96	42.13	NA	146.41	1.96
CR-12	CR-12_Spot	8708.34	98.05	2.32	20.60	1.74	0.14	2.19	0.02	1.32	136.08	2.78	141.54	1.85	41.96	41.69	141.54	1.85

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CR-12	CR-12_Spot 58	70405.37	102.98	1.86	20.32	1.56	0.15	1.89	0.02	1.07	145.35	2.56	145.11	1.53	149.37	36.63	145.11	1.53
CR-12	CR-12_Spot 59	12092.92	43.86	2.52	10.80	9.85	0.31	10.06	0.02	2.05	276.59	24.37	158.12	3.21	1455.98	187.84	158.12	3.21
CR-12	CR-12_Spot 60	6936.82	37.95	2.71	21.81	2.59	0.14	3.06	0.02	1.16	128.84	3.71	143.03	1.64	NA	NA	143.03	1.64
CR-12	CR-12_Spot 61	6784.45	30.91	2.68	16.46	4.11	0.19	4.37	0.02	1.43	175.44	7.04	148.72	2.11	552.71	90.05	148.72	2.11
CR-12	CR-12_Spot 62	51350.69	330.12	1.03	20.74	1.04	0.15	1.87	0.02	1.55	142.73	2.49	145.53	2.23	96.45	24.60	145.53	2.23
CR-12	CR-12_Spot 63	29590.73	89.58	1.97	20.69	2.16	0.15	2.78	0.02	1.68	143.28	3.72	146.35	2.43	92.65	52.54	146.35	2.43
CR-12	CR-12_Spot 64	141735.88	94.10	2.78	19.43	1.93	0.16	2.32	0.02	1.29	152.39	3.28	145.64	1.85	258.70	44.28	145.64	1.85
CR-12	CR-12_Spot 65	12132.22	51.56	2.06	19.64	2.45	0.15	2.85	0.02	1.44	145.75	3.87	143.44	2.04	183.48	57.28	143.44	2.04
CR-12	CR-12_Spot 66	13256.46	58.88	3.67	19.23	2.13	0.16	2.43	0.02	1.17	150.32	3.39	144.78	1.67	238.57	49.14	144.78	1.67
CR-12	CR-12_Spot 67	138019.18	281.94	3.44	20.39	0.89	0.16	1.42	0.02	1.11	146.33	1.94	146.29	1.61	147.05	20.79	146.29	1.61
CR-12	CR-12_Spot 68	35537.20	176.02	5.79	20.60	1.31	0.15	1.73	0.02	1.13	141.38	2.28	143.51	1.60	105.73	30.98	143.51	1.60
CR-12	CR-12_Spot 69	38492.87	65.95	2.15	20.31	2.34	0.15	2.62	0.02	1.19	144.76	3.53	144.98	1.70	141.16	54.83	144.98	1.70
CR-12	CR-12_Spot 70	6459.43	64.00	1.78	19.72	2.03	0.15	2.58	0.02	1.57	140.93	3.40	142.15	2.21	120.42	48.22	142.15	2.21
CR-12	CR-12_Spot 71	121596.67	430.92	2.68	20.32	0.96	0.15	1.67	0.02	1.37	142.82	2.23	142.34	1.93	150.74	22.53	142.34	1.93
CR-12	CR-12_Spot 72	10186.00	46.52	2.23	20.17	3.12	0.15	3.44	0.02	1.43	140.16	4.50	142.24	2.01	104.90	73.89	142.24	2.01
CR-12	CR-12_Spot 73	6138393.58	3034.57	0.76	20.19	0.73	0.18	1.69	0.03	1.53	170.37	2.65	170.24	2.56	172.07	17.08	170.24	2.56
CR-12	CR-12_Spot 74	14260.54	42.95	3.48	20.73	2.49	0.15	3.00	0.02	1.42	140.81	3.94	145.71	2.04	59.04	NA	145.71	2.04
CR-12	CR-12_Spot 75	11547.31	90.06	3.14	20.81	1.85	0.15	2.53	0.02	1.07	140.48	3.33	146.73	1.55	36.04	NA	146.73	1.55
CR-12	CR-12_Spot 76	7730.26	34.76	2.91	19.37	2.24	0.15	2.59	0.02	1.28	146.26	3.53	143.98	1.83	183.37	52.52	143.98	1.83
CR-12	CR-12_Spot 77	8613.47	52.18	2.79	19.96	2.17	0.15	2.60	0.02	1.38	143.53	3.48	144.96	1.97	119.85	52.05	144.96	1.97
CR-12	CR-12_Spot 78	6064.32	80.97	2.09	20.13	2.35	0.15	2.59	0.02	1.02	141.39	3.42	146.13	1.48	62.47	56.71	146.13	1.48
CR-12	CR-12_Spot 79	4484045.71	522.60	2.46	19.67	1.18	0.22	1.60	0.03	1.08	198.92	2.88	195.89	2.08	235.02	27.17	195.89	2.08
CR-12	CR-12_Spot 80	5407.60	42.08	3.01	19.21	2.80	0.16	3.22	0.02	1.22	147.94	4.43	146.84	1.78	165.60	69.50	146.84	1.78
CR-12	CR-12_Spot 81	11771.18	81.73	2.20	19.89	1.85	0.15	2.39	0.02	1.42	138.36	3.09	137.75	1.94	148.93	45.08	137.75	1.94
CR-12	CR-12_Spot 82	15259.70	38.42	2.95	20.56	2.78	0.15	3.16	0.02	1.50	139.57	4.13	142.98	2.12	81.98	66.21	142.98	2.12
CR-12	CR-12_Spot 83	209969.26	39.58	3.56	19.99	2.12	0.16	2.50	0.02	1.33	150.54	3.50	147.99	1.94	190.92	49.41	147.99	1.94
CR-12	CR-12_Spot 84	5972.60	37.54	3.62	20.24	2.86	0.15	3.33	0.02	0.99	139.09	4.32	144.76	1.42	43.42	NA	144.76	1.42
CR-12	CR-12_Spot 85	5782.24	54.78	2.93	19.28	2.15	0.15	2.42	0.02	1.09	143.52	3.24	142.44	1.54	161.42	50.54	142.44	1.54
CR-12	CR-12_Spot 86	21468.63	62.82	2.24	20.22	2.33	0.15	2.75	0.02	1.44	145.12	3.71	145.86	2.08	133.10	54.92	145.86	2.08
CR-12	CR-12_Spot 87	67989.44	142.37	1.28	18.28	2.66	0.17	2.86	0.02	1.05	162.12	4.29	147.06	1.53	388.07	59.76	147.06	1.53
CR-12	CR-12_Spot 88	25806.62	108.16	2.01	19.22	1.35	0.16	1.84	0.02	1.25	150.73	2.58	143.97	1.78	258.46	31.17	143.97	1.78
CR-12	CR-12_Spot 89	15469.16	101.14	2.16	20.52	1.56	0.15	2.02	0.02	1.27	141.71	2.67	145.09	1.83	85.54	37.18	145.09	1.83
CR-12	CR-12_Spot 90	104053.55	36.45	3.16	20.75	2.60	0.15	3.09	0.02	1.67	142.85	4.12	145.49	2.40	99.31	61.62	145.49	2.40
CR-12	CR-12_Spot 91	71240.69	678.30	3.04	20.15	0.96	0.15	1.51	0.02	1.15	145.10	2.04	143.94	1.64	164.17	22.65	143.94	1.64
CR-12	CR-12_Spot 92	6846.88	46.05	3.54	19.58	3.51	0.15	3.75	0.02	1.21	144.43	5.05	144.67	1.73	140.42	83.45	144.67	1.73

CR-12	CR-12_Spot93	258626.61	88.93	2.02	19.96	1.50	0.15	1.86	0.02	1.09	144.18	2.50	141.32	1.53	191.38	34.93	141.32	1.53
CR-12	CR-12_Spot94	6468.07	62.55	2.53	19.85	2.59	0.15	3.11	0.02	1.40	141.15	4.09	143.77	1.99	97.38	65.62	143.77	1.99
CR-12	CR-12_Spot95	42590.74	83.40	1.06	15.98	2.03	0.73	2.50	0.09	1.43	557.67	10.72	528.82	7.28	677.22	43.71	528.82	7.28
CR-12	CR-12_Spot96	7444.85	147.88	1.56	19.78	1.47	0.15	1.99	0.02	1.34	142.38	2.65	143.64	1.91	121.32	34.65	143.64	1.91
CR-12	CR-12_Spot97	34199.57	57.70	1.92	20.38	2.42	0.15	2.75	0.02	1.24	144.01	3.69	145.24	1.78	123.83	57.71	145.24	1.78
CR-12	CR-12_Spot98	17983.78	66.04	2.62	19.41	2.42	0.16	2.87	0.02	1.43	149.65	3.99	145.20	2.06	220.78	57.43	145.20	2.06
CR-12	CR-12_Spot99	15451.91	58.77	1.97	20.58	3.03	0.15	3.33	0.02	1.37	141.87	4.41	145.87	1.98	75.48	72.19	145.87	1.98
CR-12	CR-12_Spot101	197597.79	87.16	2.25	20.42	1.67	0.15	1.83	0.02	0.77	143.49	2.45	143.79	1.09	138.61	39.14	143.79	1.09
CR-12	CR-12_Spot102	193636.35	55.51	4.25	19.21	2.44	0.16	2.72	0.02	1.21	152.94	3.86	144.79	1.73	281.24	55.80	144.79	1.73
CR-12	CR-12_Spot105	12381.77	34.87	2.31	18.47	2.74	0.16	3.20	0.02	1.20	153.51	4.56	142.74	1.70	323.13	67.28	142.74	1.70
CR-12	CR-12_Spot106	17611.77	107.16	2.53	20.98	1.65	0.15	2.06	0.02	1.17	140.64	2.70	146.92	1.71	35.84	NA	146.92	1.71
CR-12	CR-12_Spot107	10745.97	39.27	3.13	20.02	2.39	0.15	3.04	0.02	1.24	144.80	4.10	146.14	1.79	122.82	65.31	146.14	1.79
CR-12	CR-12_Spot108	28233.75	65.53	2.97	16.86	1.58	0.18	1.85	0.02	0.96	172.34	2.94	145.77	1.39	554.59	34.56	145.77	1.39
CR-12	CR-12_Spot109	7519.12	36.90	3.06	19.95	2.83	0.15	3.12	0.02	1.27	144.35	4.20	146.93	1.85	102.08	67.35	146.93	1.85
CR-12	CR-12_Spot110	21019.71	163.24	1.64	20.24	1.20	0.16	1.71	0.02	1.22	149.35	2.38	150.77	1.81	126.93	28.35	150.77	1.81
CR-12	CR-12_Spot111	7203.96	92.56	1.76	20.03	1.74	0.15	2.21	0.02	1.36	139.68	2.89	142.85	1.93	86.24	41.38	142.85	1.93
CR-12	CR-12_Spot113	58860.21	45.16	3.70	20.08	2.29	0.15	2.62	0.02	1.27	144.80	3.54	143.49	1.81	166.32	53.59	143.49	1.81
CR-12	CR-12_Spot114	7489.00	71.40	2.08	21.03	1.75	0.14	2.32	0.02	1.52	134.85	2.93	144.64	2.17	NA	NA	144.64	2.17
CR-12	CR-12_Spot115	11093.78	63.35	1.77	20.60	2.43	0.14	2.93	0.02	1.49	135.08	3.71	139.94	2.06	50.35	NA	139.94	2.06
CR-12	CR-12_Spot116	7300.08	45.11	3.02	20.41	2.83	0.15	3.36	0.02	1.23	139.35	4.38	145.34	1.77	38.47	NA	145.34	1.77
CR-12	CR-12_Spot117	19367.40	126.71	1.73	20.13	1.63	0.15	1.97	0.02	1.09	142.63	2.62	143.17	1.54	133.67	38.50	143.17	1.54
CR-12	CR-12_Spot118	26620.42	48.54	3.70	19.54	2.49	0.16	2.91	0.02	1.40	147.26	3.99	143.15	1.99	214.10	59.08	143.15	1.99
CR-12	CR-12_Spot119	2614357.12	98.51	1.93	20.53	1.92	0.15	2.20	0.02	1.06	143.62	2.94	144.84	1.52	123.37	45.30	144.84	1.52
CR-12	CR-12_Spot120	9208.64	41.26	3.31	20.57	2.42	0.15	2.95	0.02	1.32	138.47	3.82	144.30	1.88	39.69	NA	144.30	1.88
CR-12	CR-12_Spot121	11426.91	55.94	2.84	19.73	2.61	0.15	2.99	0.02	1.36	143.36	3.99	142.59	1.92	156.19	62.21	142.59	1.92
CR-12	CR-12_Spot122	5201.56	46.39	3.07	19.61	2.28	0.15	2.78	0.02	1.13	141.88	3.68	144.67	1.62	95.46	60.13	144.67	1.62
CR-12	CR-12_Spot123	5338.01	56.17	2.84	19.62	2.62	0.15	3.47	0.02	2.19	142.33	4.60	144.99	3.15	98.26	63.52	144.99	3.15
CR-12	CR-12_Spot124	26386.31	81.03	2.46	20.56	1.74	0.15	2.09	0.02	1.16	141.44	2.76	144.45	1.66	91.17	41.29	144.45	1.66
CR-12	CR-12_Spot126	20098.02	100.54	3.04	20.77	2.13	0.15	2.40	0.02	1.09	140.69	3.15	145.67	1.56	57.38	51.00	145.67	1.56
CR-12	CR-12_Spot127	16425.23	33.88	4.73	18.25	2.91	0.17	3.14	0.02	1.12	161.74	4.70	148.86	1.65	354.76	66.26	148.86	1.65
CR-12	CR-12_Spot128	10008.40	56.67	2.80	19.86	2.01	0.15	2.46	0.02	1.29	141.59	3.25	142.33	1.82	129.22	49.14	142.33	1.82
CR-12	CR-12_Spot129	6412.30	41.74	2.11	19.58	2.60	0.15	3.71	0.02	1.22	140.85	4.88	141.76	1.71	125.57	82.59	141.76	1.71
CR-12	CR-12_Spot130	14617.62	68.77	1.94	19.60	2.04	0.15	2.37	0.02	1.19	146.01	3.23	143.66	1.69	184.30	47.85	143.66	1.69
CR-12	CR-12_Spot131	9529.20	31.13	2.74	20.49	3.21	0.15	3.68	0.02	1.77	139.01	4.78	144.29	2.53	49.85	NA	144.29	2.53
CR-12	CR-12_Spot132	9564.34	41.25	2.61	20.33	2.48	0.15	3.04	0.02	1.41	139.37	3.96	143.46	2.00	70.23	64.10	143.46	2.00
CR-12	CR-12_Spot	6572.44	70.72	2.19	20.40	2.24	0.14	2.52	0.02	1.15	137.46	3.24	144.19	1.65	22.83	NA	144.19	1.65

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CR-12	CR-12_Spot 134	6450.39	42.64	3.16	19.96	3.02	0.15	3.43	0.02	1.18	138.84	4.45	142.53	1.67	76.22	76.48	142.53	1.67
CR-12	CR-12_Spot 135	27851.26	34.89	2.34	19.12	3.14	0.16	3.46	0.02	1.46	152.03	4.88	145.10	2.10	261.44	72.02	145.10	2.10
CR-12	CR-12_Spot 136	18585.74	222.04	1.65	20.14	1.32	0.15	1.78	0.02	1.19	143.64	2.38	144.60	1.70	127.83	31.18	144.60	1.70
CR-12	CR-12_Spot 137	58162.62	133.61	3.89	20.20	1.64	0.16	1.90	0.02	0.93	146.66	2.59	146.68	1.35	146.36	38.73	146.68	1.35
CR-12	CR-12_Spot 138	291952.45	74.42	1.90	20.21	1.84	0.15	2.12	0.02	1.05	144.86	2.86	144.13	1.50	156.71	43.05	144.13	1.50
CR-12	CR-12_Spot 139	26156.72	67.05	2.20	19.64	2.22	0.16	2.62	0.02	1.37	148.71	3.62	145.52	1.98	199.93	51.73	145.52	1.98
CR-12	CR-12_Spot 140	8488.84	35.63	2.58	20.52	2.60	0.14	2.99	0.02	1.43	137.25	3.84	143.12	2.02	36.76	NA	143.12	2.02
CR-12	CR-12_Spot 141	108412.61	77.32	1.36	19.92	1.68	0.18	2.02	0.03	1.12	165.55	3.08	164.08	1.82	186.61	39.02	164.08	1.82
CR-12	CR-12_Spot 142	33038.15	53.23	3.27	20.45	1.87	0.15	2.21	0.02	1.18	141.69	2.92	143.63	1.67	109.46	44.11	143.63	1.67
CR-12	CR-12_Spot 143	4842.28	36.02	2.90	19.90	2.78	0.15	3.06	0.02	1.01	139.07	3.97	144.51	1.45	47.19	NA	144.51	1.45
CR-12	CR-12_Spot 144	5180.29	34.19	2.90	21.17	2.71	0.14	3.54	0.02	1.25	132.77	4.41	145.95	1.81	NA	NA	145.95	1.81
CR-12	CR-12_Spot 145	12207.95	49.99	2.50	19.81	2.20	0.15	2.70	0.02	1.40	145.76	3.67	145.29	2.01	153.49	54.15	145.29	2.01
CR-12	CR-12_Spot 146	283163.01	310.22	1.20	11.08	0.75	3.12	1.67	0.25	1.49	1436.42	12.84	1445.38	19.30	1423.14	14.38	1423.14	14.38
CR-12	CR-12_Spot 147	11589.63	62.04	2.52	19.47	2.31	0.15	2.73	0.02	1.24	143.75	3.66	140.81	1.73	192.47	56.63	140.81	1.73
CR-12	CR-12_Spot 148	13714.35	90.40	1.97	19.81	1.96	0.15	2.30	0.02	1.17	143.59	3.07	142.65	1.65	159.19	46.21	142.65	1.65
CR-12	CR-12_Spot 150	17392.80	149.30	1.97	20.26	1.39	0.16	1.76	0.02	1.07	151.37	2.47	153.37	1.63	120.31	32.80	153.37	1.63
CR-12	CR-12_Spot 151	9723.06	32.25	3.40	19.42	3.38	0.15	3.60	0.02	1.16	143.83	4.82	141.06	1.62	189.73	79.20	141.06	1.62
CR-12	CR-12_Spot 152	13801.83	107.21	3.99	19.25	1.69	0.16	2.18	0.02	1.37	147.08	2.99	141.91	1.92	231.16	39.25	141.91	1.92
CR-12	CR-12_Spot 153	7333.73	83.99	2.14	20.10	1.84	0.15	2.35	0.02	1.47	139.00	3.06	142.34	2.07	82.38	43.62	142.34	2.07
CR-12	CR-12_Spot 154	27312.58	46.83	2.80	20.36	2.00	0.15	2.40	0.02	1.20	142.77	3.19	143.94	1.70	123.47	48.87	143.94	1.70
CR-12	CR-12_Spot 155	239892.67	256.02	1.06	20.43	1.03	0.15	1.84	0.02	1.52	142.25	2.44	142.49	2.14	138.22	24.23	142.49	2.14
CR-12	CR-12_Spot 156	114692.52	84.49	2.50	19.74	2.37	0.16	2.55	0.02	0.95	149.05	3.54	144.88	1.37	215.93	54.81	144.88	1.37
CR-12	CR-12_Spot 157	15202.88	70.13	2.05	19.08	2.06	0.17	2.51	0.02	1.33	156.32	3.63	149.72	1.97	257.45	48.94	149.72	1.97
CR-12	CR-12_Spot 158	5436.00	27.85	2.82	21.50	3.15	0.14	4.06	0.02	1.48	130.87	4.99	145.41	2.12	NA	NA	145.41	2.12
CR-12	CR-12_Spot 159	47002.08	371.90	0.95	19.95	0.86	0.17	1.84	0.03	1.60	163.27	2.77	162.10	2.57	180.32	20.85	162.10	2.57
CR-12	CR-12_Spot 160	15358.22	30.47	2.98	19.51	2.89	0.16	3.21	0.02	1.41	151.19	4.51	147.88	2.06	203.37	66.96	147.88	2.06
CR-12	CR-12_Spot 161	19337.53	67.12	2.15	20.33	2.41	0.15	2.72	0.02	1.26	142.45	3.62	144.09	1.80	115.13	56.87	144.09	1.80
CR-12	CR-12_Spot 162	15340.20	96.77	2.16	19.41	1.76	0.16	2.26	0.02	1.08	146.81	3.09	142.56	1.52	216.06	46.02	142.56	1.52
CR-12	CR-12_Spot 163	192420.55	42.48	3.95	19.43	2.64	0.16	2.95	0.02	1.33	153.93	4.22	147.38	1.93	255.98	60.58	147.38	1.93
CR-12	CR-12_Spot 164	4438.42	33.85	3.20	20.84	2.78	0.14	3.73	0.02	1.38	129.07	4.52	140.47	1.91	NA	NA	140.47	1.91
CR-12	CR-12_Spot 165	14984.03	80.38	2.17	19.89	1.62	0.15	1.88	0.02	0.94	141.28	2.48	140.18	1.31	159.92	38.11	140.18	1.31
CR-12	CR-12_Spot 166	12261.15	40.57	3.06	18.83	2.25	0.16	2.67	0.02	1.24	151.70	3.77	143.64	1.76	279.58	54.30	143.64	1.76
CR-12	CR-12_Spot 167	15411.64	47.96	2.81	19.62	1.96	0.15	2.42	0.02	1.41	145.08	3.27	142.13	1.98	193.64	45.62	142.13	1.98
CR-12	CR-12_Spot 168	18692.68	27.96	2.86	19.06	2.97	0.16	3.24	0.02	1.30	154.11	4.64	146.59	1.88	271.45	68.12	146.59	1.88
CR-12	CR-12_Spot 169	122671.60	26.87	2.93	19.79	3.55	0.16	3.85	0.02	1.48	150.14	5.37	145.99	2.14	216.28	82.20	145.99	2.14

CR-12	CR-12_Spot 170	6258.62	44.46	2.36	17.97	2.77	0.17	2.94	0.02	0.95	157.03	4.28	144.92	1.36	343.84	63.01	144.92	1.36
CR-12	CR-12_Spot 171	23988.52	40.85	3.07	18.86	3.24	0.16	3.49	0.02	1.15	153.25	4.96	143.59	1.64	305.38	75.01	143.59	1.64
CR-12	CR-12_Spot 172	7901.65	83.75	2.37	20.09	1.80	0.15	2.22	0.02	1.11	138.80	2.88	141.23	1.55	97.56	45.60	141.23	1.55
CR-12	CR-12_Spot 173	8201.14	39.63	4.81	19.89	2.36	0.15	2.77	0.02	1.42	143.37	3.70	144.39	2.03	126.47	55.86	144.39	2.03
CR-12	CR-12_Spot 174	23460.82	183.06	1.40	20.76	1.26	0.15	1.81	0.02	1.30	140.05	2.37	143.47	1.84	82.37	29.99	143.47	1.84
CR-12	CR-12_Spot 175	4318.09	58.82	3.31	19.72	2.20	0.15	2.58	0.02	1.29	141.76	3.41	146.09	1.87	69.86	53.00	146.09	1.87
CR-12	CR-12_Spot 176	22606.91	73.33	1.88	19.63	2.40	0.16	2.87	0.02	1.57	149.64	3.99	145.58	2.27	214.39	55.57	145.58	2.27
CR-12	CR-12_Spot 177	32998.42	93.41	2.41	20.43	1.81	0.15	2.35	0.02	1.48	141.07	3.09	141.75	2.07	129.52	42.88	141.75	2.07
CR-12	CR-12_Spot 178	38776.64	111.38	2.05	20.92	1.51	0.15	2.06	0.02	1.38	140.33	2.70	144.10	1.97	77.09	36.24	144.10	1.97
CR-12	CR-12_Spot 179	9722.07	129.32	1.94	12.69	4.96	0.22	5.12	0.02	1.20	202.31	9.38	131.44	1.56	1137.29	99.00	131.44	1.56
CR-12	CR-12_Spot 181	12032.67	48.51	3.17	20.21	2.48	0.15	2.88	0.02	1.34	141.67	3.81	142.99	1.89	119.70	60.19	142.99	1.89
CR-12	CR-12_Spot 182	4265.44	34.12	3.01	19.96	2.83	0.15	3.43	0.02	1.12	137.72	4.42	143.54	1.59	38.48	NA	143.54	1.59
CR-12	CR-12_Spot 183	808112.48	61.81	2.48	20.79	2.33	0.16	2.70	0.02	1.36	150.67	3.78	153.17	2.06	111.56	54.96	153.17	2.06
CR-12	CR-12_Spot 184	66941.37	245.62	1.61	20.39	1.17	0.15	1.78	0.02	1.33	141.02	2.34	140.70	1.85	146.43	27.71	140.70	1.85
CR-12	CR-12_Spot 185	17274.94	63.77	2.79	20.16	2.11	0.15	2.70	0.02	1.44	145.28	3.65	145.34	2.07	144.20	53.54	145.34	2.07
CR-12	CR-12_Spot 186	73333.27	113.87	1.64	20.38	1.88	0.15	2.27	0.02	1.28	146.12	3.09	145.83	1.85	150.77	44.00	145.83	1.85
CR-12	CR-12_Spot 187	99664.46	132.20	1.87	20.34	1.06	0.15	1.51	0.02	1.08	142.24	2.01	141.31	1.50	157.87	24.84	141.31	1.50
CR-12	CR-12_Spot 189	30550.25	43.28	2.05	20.43	2.40	0.15	2.76	0.02	1.27	143.79	3.70	144.68	1.82	129.21	57.57	144.68	1.82
CR-12	CR-12_Spot 190	55468.70	207.26	4.55	17.38	1.00	0.60	1.62	0.08	1.27	478.13	6.17	471.40	5.79	510.48	21.99	471.40	5.79
CR-12	CR-12_Spot 191	45701.85	52.37	2.68	19.57	2.46	0.16	2.76	0.02	1.26	146.43	3.77	140.74	1.75	239.58	56.69	140.74	1.75
CR-12	CR-12_Spot 192	25905.64	205.42	1.59	20.38	1.51	0.15	1.83	0.02	1.04	139.43	2.39	139.87	1.44	132.00	35.44	139.87	1.44
CR-12	CR-12_Spot 193	186178.17	164.74	2.47	20.29	1.62	0.15	1.98	0.02	1.14	144.34	2.66	143.00	1.61	166.51	37.87	143.00	1.61
CR-12	CR-12_Spot 194	8451.50	73.00	3.09	20.86	1.79	0.14	2.58	0.02	1.05	137.33	3.32	144.44	1.50	16.04	NA	144.44	1.50
CR-12	CR-12_Spot 195	121598.99	106.00	4.88	19.97	1.94	0.15	2.21	0.02	1.06	144.45	2.98	140.95	1.48	202.33	45.14	140.95	1.48
CR-12	CR-12_Spot 197	9339.56	86.05	3.65	20.17	2.25	0.15	2.59	0.02	1.21	140.27	3.40	142.14	1.70	108.73	54.14	142.14	1.70
CR-12	CR-12_Spot 198	31162.82	142.51	1.44	20.45	1.17	0.15	1.60	0.02	1.06	146.01	2.18	147.01	1.54	129.86	28.22	147.01	1.54
CR-12	CR-12_Spot 199	10063.22	68.91	3.05	20.48	1.97	0.15	2.37	0.02	1.20	138.39	3.07	141.99	1.68	76.98	48.58	141.99	1.68
CR-12	CR-12_Spot 200	17052.62	109.73	2.69	20.60	1.52	0.15	2.00	0.02	1.17	144.70	2.70	147.80	1.71	94.14	38.45	147.80	1.71
CR-12	CR-12_Spot 201	14006.03	78.95	2.78	20.01	1.48	0.15	2.14	0.02	1.36	142.38	2.85	141.60	1.91	155.36	38.73	141.60	1.91
CR-12	CR-12_Spot 202	7250.02	46.07	2.94	19.86	2.36	0.15	2.91	0.02	1.17	142.35	3.87	143.38	1.66	125.13	62.81	143.38	1.66
CR-12	CR-12_Spot 203	7360.33	58.89	2.56	20.75	1.92	0.15	2.98	0.02	1.47	137.60	3.83	144.61	2.11	18.39	NA	144.61	2.11
CR-12	CR-12_Spot 204	22320.48	60.10	2.50	19.59	1.75	0.16	2.22	0.02	1.37	147.97	3.06	143.42	1.94	221.60	40.52	143.42	1.94
CR-12	CR-12_Spot 205	32612.75	86.74	3.19	20.23	1.94	0.15	2.46	0.02	1.44	145.00	3.33	144.41	2.06	154.62	46.77	144.41	2.06
CR-12	CR-12_Spot 206	7572.48	32.57	2.36	20.16	2.30	0.15	2.79	0.02	1.51	138.65	3.61	141.50	2.11	90.12	55.63	141.50	2.11
CR-12	CR-12_Spot 207	61258.66	102.42	2.39	20.22	1.88	0.15	2.27	0.02	1.28	146.24	3.10	145.01	1.84	166.28	43.88	145.01	1.84
CR-12	CR-12_Spot	22413.97	85.64	2.17	15.52	4.14	0.19	4.36	0.02	1.37	179.73	7.18	139.97	1.89	741.04	87.57	139.97	1.89

	208																	
CR-12	CR-12_Spot 209	9456.31	23.16	4.45	20.08	4.11	0.16	4.37	0.02	1.46	147.33	5.99	149.14	2.16	118.23	97.03	149.14	2.16
CR-12	CR-12_Spot 210	19253.00	91.31	2.25	20.24	1.70	0.16	2.19	0.02	1.35	147.17	3.00	147.75	1.97	137.82	40.43	147.75	1.97
CR-12	CR-12_Spot 211	21878.79	79.07	1.78	20.78	1.84	0.15	2.45	0.02	1.49	141.04	3.23	144.72	2.14	79.61	46.14	144.72	2.14
CR-12	CR-12_Spot 214	5302.24	44.97	3.43	20.86	2.60	0.14	2.82	0.02	1.04	135.22	3.57	145.36	1.49	NA	NA	145.36	1.49
CR-12	CR-12_Spot 215	39489.25	36.73	2.24	20.07	2.68	0.15	2.91	0.02	1.14	145.98	3.96	144.04	1.62	177.52	62.45	144.04	1.62
CR-12	CR-12_Spot 216	16357.46	41.74	2.60	20.19	2.69	0.15	3.10	0.02	1.46	143.29	4.15	143.65	2.07	137.41	64.35	143.65	2.07
CR-12	CR-12_Spot 217	16686.78	75.06	2.88	20.04	2.40	0.15	2.68	0.02	1.04	142.42	3.56	141.58	1.46	156.50	57.84	141.58	1.46
CR-12	CR-12_Spot 218	8176.68	26.66	1.33	20.14	3.20	0.17	3.43	0.03	1.14	159.56	5.07	163.61	1.85	100.01	76.59	163.61	1.85
CR-12	CR-12_Spot 219	34272.86	58.35	3.24	20.21	2.53	0.15	2.72	0.02	0.99	145.06	3.68	144.26	1.42	158.04	59.28	144.26	1.42
CR-12	CR-12_Spot 220	19277.83	84.50	2.32	18.26	2.08	0.17	2.41	0.02	1.22	159.66	3.56	145.31	1.75	378.21	46.77	145.31	1.75
CR-12	CR-12_Spot 221	14978.24	78.76	1.98	20.03	2.02	0.16	2.39	0.02	1.25	148.33	3.30	148.07	1.82	152.48	47.91	148.07	1.82
CR-12	CR-12_Spot 222	233101.84	49.40	2.88	19.41	3.12	0.15	3.37	0.02	1.27	146.29	4.59	138.83	1.75	268.87	71.55	138.83	1.75
CR-12	CR-12_Spot 223	29447.47	62.99	3.47	20.16	1.99	0.15	2.30	0.02	1.04	142.69	3.06	141.71	1.45	158.90	48.09	141.71	1.45
CR-12	CR-12_Spot 224	8872.40	67.75	2.41	19.83	2.23	0.15	2.58	0.02	1.22	144.81	3.48	145.03	1.75	141.21	53.24	145.03	1.75
CR-12	CR-12_Spot 225	10753.53	33.49	3.33	19.46	2.57	0.16	2.90	0.02	1.29	146.78	3.96	143.47	1.83	200.63	60.30	143.47	1.83
CR-12	CR-12_Spot 226	11714.65	58.06	2.00	19.54	1.91	0.16	2.39	0.02	1.41	148.79	3.31	145.82	2.03	196.42	44.78	145.82	2.03
CR-12	CR-12_Spot 227	12516.43	62.62	2.25	19.95	2.53	0.15	3.32	0.02	2.16	145.14	4.50	144.84	3.09	149.99	59.24	144.84	3.09
CR-12	CR-12_Spot 228	10370.05	45.54	2.61	19.64	2.22	0.15	2.64	0.02	1.42	146.25	3.60	144.47	2.02	175.17	52.10	144.47	2.02
CR-12	CR-12_Spot 229	26132.32	41.71	2.92	20.37	2.60	0.15	2.95	0.02	1.36	145.35	3.99	146.52	1.98	126.42	61.46	146.52	1.98
CR-12	CR-12_Spot 230	28665.04	35.60	3.22	20.75	2.48	0.15	2.80	0.02	1.29	140.10	3.66	143.36	1.84	85.21	58.81	143.36	1.84
CR-12	CR-12_Spot 231	10826.88	30.80	2.60	19.73	2.87	0.15	3.24	0.02	1.47	145.63	4.40	144.46	2.11	164.61	67.53	144.46	2.11
CR-12	CR-12_Spot 232	18174.35	167.49	3.57	20.43	1.61	0.15	1.98	0.02	1.14	142.50	2.64	144.63	1.63	107.10	38.33	144.63	1.63
CR-12	CR-12_Spot 233	33851.17	85.28	4.51	20.35	1.82	0.15	2.13	0.02	1.09	143.74	2.86	144.38	1.56	133.12	43.09	144.38	1.56
CR-12	CR-12_Spot 234	19970.30	105.93	3.75	20.72	1.45	0.15	1.88	0.02	1.16	138.70	2.43	142.50	1.63	74.10	35.03	142.50	1.63
CR-12	CR-12_Spot 235	76112.24	188.05	1.65	20.37	1.17	0.15	1.78	0.02	1.34	144.51	2.40	144.69	1.91	141.50	27.54	144.69	1.91
CR-12	CR-12_Spot 236	16389.82	90.30	3.97	20.46	1.54	0.15	1.98	0.02	1.21	140.08	2.60	142.60	1.71	97.41	37.23	142.60	1.71
CR-12	CR-12_Spot 237	11788.67	35.81	2.68	19.53	3.62	0.16	3.94	0.02	1.49	147.07	5.39	144.28	2.12	192.34	84.91	144.28	2.12
CR-12	CR-12_Spot 238	11552.40	59.71	1.77	19.28	2.85	0.16	3.17	0.02	1.38	152.90	4.50	148.64	2.03	219.56	66.15	148.64	2.03
CR-12	CR-12_Spot 239	32860.30	73.94	2.58	13.89	4.06	0.23	4.25	0.02	1.25	210.61	8.08	149.03	1.83	971.18	82.89	149.03	1.83
CR-12	CR-12_Spot 240	13691.29	168.57	1.68	19.93	1.62	0.15	2.00	0.02	1.17	142.26	2.66	141.85	1.64	149.10	38.04	141.85	1.64
CR-12	CR-12_Spot 241	41246.34	60.25	2.48	20.63	2.46	0.15	2.73	0.02	1.18	143.55	3.65	146.13	1.71	101.09	58.21	146.13	1.71
CR-12	CR-12_Spot 242	516513.36	52.85	3.15	19.53	2.16	0.16	2.43	0.02	1.12	147.51	3.34	141.51	1.56	245.10	49.78	141.51	1.56
CR-12	CR-12_Spot 243	89561.53	410.71	1.18	20.33	0.81	0.15	1.51	0.02	1.28	138.09	1.95	137.63	1.74	146.09	19.06	137.63	1.74
CR-12	CR-12_Spot 244	9113.47	43.01	5.71	19.85	2.44	0.15	2.81	0.02	1.36	144.72	3.78	145.40	1.95	133.53	57.75	145.40	1.95
CR-12	CR-12_Spot 245	21703.40	137.38	1.91	20.08	1.01	0.15	1.47	0.02	1.06	143.68	1.98	143.34	1.51	149.36	23.98	143.34	1.51

CR-12	CR-12_Spot 246	30648.62	86.04	2.16	20.20	1.88	0.15	2.33	0.02	1.28	144.67	3.14	144.68	1.83	144.55	45.64	144.68	1.83
CR-12	CR-12_Spot 248	16409.22	84.45	2.12	20.12	2.16	0.15	2.62	0.02	1.23	143.96	3.52	144.45	1.75	135.90	54.41	144.45	1.75
CR-12	CR-12_Spot 249	14371.63	95.65	5.42	19.74	1.65	0.16	2.10	0.02	1.26	146.64	2.87	144.91	1.80	174.82	39.22	144.91	1.80
CR-12	CR-12_Spot 250	5407.13	55.07	2.58	19.66	2.08	0.15	2.80	0.02	1.47	143.35	3.74	145.67	2.11	105.04	56.29	145.67	2.11
CR-12	CR-12_Spot 251	30399.38	40.92	3.27	20.29	2.44	0.15	2.73	0.02	1.21	140.73	3.58	140.99	1.68	136.34	57.51	140.99	1.68
CR-12	CR-12_Spot 252	28811.35	78.18	3.04	20.52	1.97	0.15	2.32	0.02	1.19	142.94	3.09	144.98	1.71	109.18	46.89	144.98	1.71
CR-12	CR-12_Spot 253	9431.88	32.42	3.14	20.81	2.98	0.14	3.61	0.02	1.96	137.46	4.65	144.22	2.80	22.22	NA	144.22	2.80
CR-12	CR-12_Spot 254	6977.83	38.80	2.79	19.60	3.35	0.15	4.28	0.02	1.56	141.67	5.66	141.59	2.18	143.01	93.62	141.59	2.18
CR-12	CR-12_Spot 255	10689.63	65.89	1.68	19.19	2.00	0.15	2.40	0.02	1.29	144.09	3.22	139.11	1.78	226.91	46.75	139.11	1.78
CR-12	CR-12_Spot 256	100768.66	129.61	1.60	19.20	2.42	0.16	2.61	0.02	0.98	150.12	3.64	141.95	1.37	281.23	55.40	141.95	1.37
CR-12	CR-12_Spot 257	12582.56	66.72	2.19	19.80	1.95	0.15	2.62	0.02	1.29	145.26	3.55	144.23	1.84	162.05	53.34	144.23	1.84
CR-12	CR-12_Spot 258	9402.17	45.95	3.64	20.46	2.86	0.14	3.07	0.02	1.08	136.51	3.92	140.72	1.50	63.83	NA	140.72	1.50
CR-12	CR-12_Spot 259	4595.26	35.84	3.40	20.99	2.98	0.14	4.85	0.02	1.33	132.15	6.01	144.73	1.91	NA	NA	144.73	1.91
CR-12	CR-12_Spot 260	12428.87	43.19	2.44	19.92	2.00	0.15	2.26	0.02	1.03	144.49	3.04	144.36	1.47	146.56	47.06	144.36	1.47
CR-12	CR-12_Spot 262	22509.91	84.18	2.94	20.38	1.86	0.15	2.26	0.02	1.24	141.03	2.97	142.43	1.74	117.61	44.46	142.43	1.74
CR-12	CR-12_Spot 263	37483.95	73.43	0.82	19.36	2.31	0.24	2.63	0.03	1.24	219.43	5.19	216.61	2.65	249.82	53.27	216.61	2.65
CR-12	CR-12_Spot 264	9837.90	36.17	2.57	19.42	2.81	0.16	3.50	0.02	1.46	147.58	4.81	144.85	2.09	191.64	74.06	144.85	2.09
CR-12	CR-12_Spot 265	8846.80	45.21	3.52	20.33	2.18	0.15	2.49	0.02	1.08	145.07	3.36	149.52	1.60	72.86	53.31	149.52	1.60
CR-12	CR-12_Spot 267	125964.83	44.33	2.45	20.57	2.62	0.15	2.89	0.02	1.22	142.45	3.84	143.77	1.73	120.36	61.65	143.77	1.73
CR-12	CR-12_Spot 268	5118.85	33.16	2.69	20.23	2.58	0.15	4.44	0.02	1.84	138.17	5.73	145.08	2.64	21.06	NA	145.08	2.64
CR-12	CR-12_Spot 269	25033.05	44.21	2.92	20.43	2.25	0.15	2.81	0.02	1.57	144.57	3.78	146.57	2.28	111.75	54.93	146.57	2.28
CR-12	CR-12_Spot 270	39037.96	45.31	2.11	19.30	2.74	0.16	3.00	0.02	1.23	150.81	4.21	144.28	1.75	254.75	63.05	144.28	1.75
CR-12	CR-12_Spot 271	13055.48	51.12	2.28	21.12	2.10	0.14	2.49	0.02	1.30	134.05	3.13	141.55	1.82	3.14	NA	141.55	1.82
CR-12	CR-12_Spot 272	12211.21	56.07	1.62	20.58	2.23	0.17	2.54	0.03	1.15	156.91	3.70	163.20	1.86	62.81	54.00	163.20	1.86
CR-12	CR-12_Spot 273	32426.14	89.65	2.16	20.43	1.82	0.15	2.22	0.02	1.28	142.27	2.95	143.90	1.83	115.16	42.85	143.90	1.83
CR-12	CR-12_Spot 274	32065.85	88.96	1.87	20.74	1.81	0.15	2.24	0.02	1.31	138.80	2.90	142.32	1.85	79.09	43.05	142.32	1.85
CR-12	CR-12_Spot 275	31774.47	48.28	3.69	19.70	2.32	0.16	2.67	0.02	1.28	148.26	3.68	145.05	1.84	199.99	54.35	145.05	1.84
CR-12	CR-12_Spot 276	5345.25	36.18	2.50	19.88	2.75	0.15	3.38	0.02	1.72	138.78	4.38	142.95	2.43	68.00	69.21	142.95	2.43
CR-12	CR-12_Spot 277	18408.25	40.54	3.42	20.54	2.38	0.15	2.64	0.02	1.15	140.17	3.46	143.47	1.62	84.69	56.51	143.47	1.62
CR-12	CR-12_Spot 278	19099.73	47.41	2.46	20.01	2.43	0.15	2.77	0.02	1.32	145.12	3.74	144.97	1.90	147.68	56.95	144.97	1.90
CR-12	CR-12_Spot 279	22057.98	63.62	2.56	20.66	2.07	0.15	2.44	0.02	1.28	141.16	3.22	145.01	1.84	76.94	49.33	145.01	1.84
CR-12	CR-12_Spot 280	12194.34	37.74	3.92	20.21	2.53	0.15	5.00	0.02	4.31	144.49	6.73	147.11	6.26	101.72	60.00	147.11	6.26
CR-12	CR-12_Spot 282	9019.05	72.65	1.71	20.47	1.66	0.15	2.61	0.02	1.01	139.35	3.40	144.69	1.45	49.29	NA	144.69	1.45
CR-12	CR-12_Spot 283	11290.67	46.67	3.83	20.57	2.07	0.15	2.74	0.02	1.17	137.90	3.53	142.73	1.65	55.62	NA	142.73	1.65
CR-12	CR-12_Spot 284	13502.32	69.41	2.38	19.97	1.97	0.15	2.54	0.02	1.30	141.18	3.35	141.45	1.83	136.46	51.24	141.45	1.83
CR-12	CR-12_Spot	44883.40	109.00	1.82	20.19	1.77	0.15	2.26	0.02	1.39	145.07	3.05	144.92	1.99	147.44	41.66	144.92	1.99

	285																	
CR-12	CR-12_Spot 287	18869.26	57.63	2.44	18.55	2.80	0.17	3.17	0.02	1.48	156.77	4.61	145.88	2.13	324.75	63.73	145.88	2.13
CR-12	CR-12_Spot 288	9814.61	51.92	2.87	19.80	2.47	0.15	2.94	0.02	1.59	141.19	3.88	141.44	2.22	136.98	58.15	141.44	2.22
CR-12	CR-12_Spot 289	82876.24	74.82	2.13	20.60	1.60	0.15	1.99	0.02	1.18	139.91	2.60	141.92	1.66	105.96	37.88	141.92	1.66
CR-12	CR-12_Spot 290	61843.12	89.56	2.94	20.17	1.49	0.15	1.88	0.02	1.13	144.31	2.52	143.71	1.60	154.06	35.08	143.71	1.60
CR-12	CR-12_Spot 292	11369.90	54.35	3.21	19.84	2.36	0.15	2.70	0.02	1.24	143.33	3.61	143.34	1.76	143.26	56.17	143.34	1.76
CR-12	CR-12_Spot 294	140949.22	111.43	0.94	11.07	0.74	3.10	1.30	0.25	1.07	1432.00	9.97	1438.99	13.79	1421.61	14.08	1421.61	14.08
CR-12	CR-12_Spot 295	72911.85	47.99	3.52	19.74	2.50	0.16	2.81	0.02	1.28	148.29	3.87	144.67	1.83	206.60	57.92	144.67	1.83
CR-12	CR-12_Spot 296	41086.42	69.51	2.97	20.44	2.03	0.15	2.25	0.02	0.97	140.00	2.95	141.37	1.35	116.83	47.98	141.37	1.35
CR-12	CR-12_Spot 297	36817.81	63.51	2.56	19.85	2.36	0.15	2.62	0.02	1.13	145.38	3.55	143.03	1.60	183.96	55.03	143.03	1.60
CR-12	CR-12_Spot 298	45746.50	81.50	2.26	19.97	2.08	0.15	2.47	0.02	1.34	144.75	3.33	142.96	1.90	174.10	48.44	142.96	1.90
CR-12	CR-12_Spot 299	110842.52	78.06	3.32	13.40	1.04	1.75	1.47	0.17	1.04	1027.97	9.52	1019.23	9.83	1046.62	21.01	1046.62	21.01
CR-12	CR-12_Spot 300	838375.42	290.30	2.10	10.99	0.70	3.06	1.40	0.24	1.21	1421.68	10.75	1410.41	15.39	1438.58	13.43	1438.58	13.43
CR-12	CR-12_Spot 301	30639.83	55.86	3.24	20.94	2.22	0.15	2.58	0.02	1.31	138.21	3.34	143.18	1.86	53.77	53.07	143.18	1.86
CR-12	CR-12_Spot 302	10999.92	28.19	3.73	19.22	2.32	0.16	2.96	0.02	1.78	149.26	4.11	145.00	2.56	217.53	54.76	145.00	2.56
CR-12	CR-12_Spot 303	235806.46	1326.79	2.64	20.18	0.83	0.18	1.68	0.03	1.46	164.52	2.56	164.71	2.38	161.84	19.36	164.71	2.38
CR-12	CR-12_Spot 304	10571.19	73.54	1.95	19.94	2.23	0.15	2.60	0.02	1.30	141.92	3.45	142.82	1.84	126.79	53.12	142.82	1.84
CR-12	CR-12_Spot 305	22264.13	94.99	1.89	18.36	2.48	0.16	2.93	0.02	1.47	153.52	4.18	140.84	2.04	354.08	57.33	140.84	2.04
CR-12	CR-12_Spot 306	6482.77	41.12	3.66	20.22	1.68	0.15	2.03	0.02	1.08	141.46	2.68	147.06	1.57	48.58	40.94	147.06	1.57
CR-12	CR-12_Spot 307	10088.53	68.24	1.87	20.74	1.97	0.14	2.32	0.02	1.21	137.35	2.97	143.81	1.72	27.03	NA	143.81	1.72
CR-12	CR-12_Spot 308	68616.30	626.24	3.66	20.57	0.89	0.15	1.43	0.02	1.11	142.11	1.90	144.10	1.58	108.99	21.27	144.10	1.58
CR-12	CR-12_Spot 309	270494.51	155.36	2.20	19.89	1.40	0.16	1.77	0.02	1.08	150.22	2.48	147.38	1.58	195.30	32.63	147.38	1.58
CR-12	CR-12_Spot 310	6551.31	35.81	2.76	20.01	2.82	0.15	3.06	0.02	1.15	139.23	3.98	143.13	1.63	73.19	67.44	143.13	1.63
CR-12	CR-12_Spot 311	98748.93	63.69	2.60	19.91	2.05	0.16	2.42	0.02	1.28	149.12	3.36	146.76	1.86	186.94	47.83	146.76	1.86
CR-12	CR-12_Spot 312	38164.18	59.51	3.56	19.88	2.60	0.15	2.80	0.02	1.04	144.32	3.76	142.24	1.46	178.60	60.60	142.24	1.46
CR-12	CR-12_Spot 313	12035.76	110.72	2.83	20.94	1.80	0.14	2.17	0.02	1.22	137.48	2.79	144.78	1.75	13.20	NA	144.78	1.75
CR-12	CR-12_Spot 314	62184.91	119.40	2.72	20.62	1.67	0.15	2.02	0.02	1.13	143.05	2.69	145.66	1.63	100.01	39.46	145.66	1.63
CR-12	CR-12_Spot 315	41716.64	146.17	4.56	20.23	1.32	0.15	1.81	0.02	1.23	141.97	2.40	142.30	1.73	136.40	31.33	142.30	1.73
CR-18	CR-18_Spot 1	42742.80	405.83	1.58	20.10	0.90	0.15	1.27	0.02	0.89	143.57	1.69	142.03	1.25	169.05	20.97	142.03	1.25
CR-18	CR-18_Spot 2	21050.74	348.49	0.70	20.05	1.12	0.18	1.60	0.03	1.14	167.74	2.47	168.42	1.89	158.18	26.34	168.42	1.89
CR-18	CR-18_Spot 3	225686.05	1192.29	4.55	19.90	0.70	0.20	1.47	0.03	1.29	181.76	2.44	179.96	2.29	205.23	16.33	179.96	2.29
CR-18	CR-18_Spot 4	27731.22	313.83	5.18	20.31	1.30	0.17	1.57	0.03	0.89	163.67	2.38	165.66	1.46	135.03	30.49	165.66	1.46
CR-18	CR-18_Spot 5	154956.57	314.07	2.44	20.61	1.37	0.18	1.66	0.03	0.93	169.87	2.60	173.38	1.60	121.34	32.35	173.38	1.60
CR-18	CR-18_Spot 6	69789.13	793.31	1.49	20.59	0.79	0.11	1.36	0.02	1.11	106.96	1.38	106.44	1.17	118.60	18.56	106.44	1.17
CR-18	CR-18_Spot 7	163496.01	1987.86	2.27	19.97	0.82	0.18	1.41	0.03	1.14	166.70	2.16	164.68	1.85	195.53	19.11	164.68	1.85
CR-18	CR-18_Spot 8	55500.30	498.64	1.17	18.64	2.36	0.20	2.71	0.03	1.32	180.98	4.50	168.57	2.20	346.38	53.56	168.57	2.20

CR-18	CR-18_Spot 9	44862.73	293.11	2.04	19.88	0.86	0.18	1.57	0.03	1.32	171.88	2.49	170.19	2.22	195.16	19.96	170.19	2.22
CR-18	CR-18_Spot 10	32119.47	298.17	3.08	20.20	1.85	0.10	2.17	0.01	1.05	95.49	1.98	93.27	0.97	151.32	44.56	93.27	0.97
CR-18	CR-18_Spot 11	236442.09	832.43	1.64	19.87	0.73	0.18	1.42	0.03	1.21	169.16	2.21	166.35	2.00	208.63	16.96	166.35	2.00
CR-18	CR-18_Spot 12	238767.00	315.32	1.20	17.79	0.89	0.56	1.38	0.07	1.05	448.67	4.99	446.64	4.53	459.08	19.75	446.64	4.53
CR-18	CR-18_Spot 13	67432.29	217.97	1.41	17.77	2.68	0.17	2.88	0.02	1.04	158.07	4.22	138.93	1.43	455.38	59.61	138.93	1.43
CR-18	CR-18_Spot 14	138585.36	1783.92	2.73	20.51	0.71	0.10	1.42	0.01	1.23	92.42	1.26	90.93	1.11	131.19	16.81	90.93	1.11
CR-18	CR-18_Spot 15	92085.50	656.94	5.07	20.43	0.91	0.12	1.47	0.02	1.15	118.54	1.64	117.60	1.34	137.42	21.38	117.60	1.34
CR-18	CR-18_Spot 16	59360.23	451.36	2.29	20.23	1.10	0.19	1.68	0.03	1.26	178.27	2.74	179.92	2.24	156.37	25.80	179.92	2.24
CR-18	CR-18_Spot 17	45290.92	522.56	2.82	20.56	1.24	0.09	1.99	0.01	1.55	91.02	1.73	90.11	1.39	114.93	29.36	90.11	1.39
CR-18	CR-18_Spot 18	24787.16	472.05	1.90	20.28	1.21	0.12	1.74	0.02	1.24	117.00	1.92	116.16	1.43	134.12	28.68	116.16	1.43
CR-18	CR-18_Spot 19	700429.72	260.79	3.04	16.32	0.92	0.89	1.37	0.11	1.02	645.04	6.55	644.21	6.24	647.93	19.76	644.21	6.24
CR-18	CR-18_Spot 20	10330.22	134.94	1.65	19.94	1.70	0.18	2.29	0.03	1.52	164.11	3.47	166.19	2.49	134.28	40.30	166.19	2.49
CR-18	CR-18_Spot 21	92962.52	523.20	3.53	20.30	1.23	0.14	1.80	0.02	1.30	135.52	2.28	134.52	1.73	153.00	28.97	134.52	1.73
CR-18	CR-18_Spot 22	21214.79	132.69	2.05	20.34	1.64	0.17	2.03	0.02	1.19	155.47	2.93	157.65	1.85	122.29	38.86	157.65	1.85
CR-18	CR-18_Spot 23	18063.40	81.10	1.99	20.11	2.53	0.15	2.77	0.02	1.14	142.25	3.68	142.19	1.60	143.15	59.41	142.19	1.60
CR-18	CR-18_Spot 24	63004.43	602.12	2.81	20.60	0.98	0.12	1.35	0.02	0.93	117.77	1.50	117.93	1.08	114.66	23.19	117.93	1.08
CR-18	CR-18_Spot 25	31437.55	505.91	1.56	17.51	1.82	0.15	2.31	0.02	1.40	142.52	3.07	123.23	1.71	477.00	40.43	123.23	1.71
CR-18	CR-18_Spot 26	53387.14	212.73	1.52	17.32	0.87	0.64	1.18	0.08	0.78	501.86	4.69	500.41	3.77	508.47	19.56	500.41	3.77
CR-18	CR-18_Spot 27	117080.84	680.81	2.07	19.93	1.07	0.18	1.48	0.03	1.03	169.23	2.31	167.28	1.70	196.66	24.83	167.28	1.70
CR-18	CR-18_Spot 28	694530.82	278.20	1.84	5.44	0.49	13.45	1.07	0.53	0.95	2711.60	10.08	2743.65	21.16	2687.79	8.11	2687.79	8.11
CR-18	CR-18_Spot 29	40502.85	230.24	2.61	16.67	1.94	0.24	2.21	0.03	1.07	215.23	4.29	182.66	1.93	588.42	42.05	182.66	1.93
CR-18	CR-18_Spot 30	149354.95	664.90	1.32	20.65	1.18	0.12	1.81	0.02	1.38	113.54	1.95	113.57	1.55	112.99	27.73	113.57	1.55
CR-18	CR-18_Spot 31	15141.99	178.52	1.47	19.28	1.21	0.27	1.55	0.04	0.97	246.03	3.39	247.24	2.34	234.47	28.07	247.24	2.34
CR-18	CR-18_Spot 32	24111.96	243.77	1.82	20.96	1.33	0.11	1.83	0.02	1.24	103.59	1.80	105.81	1.30	52.73	32.14	105.81	1.30
CR-18	CR-18_Spot 33	417308.82	383.57	2.72	19.99	0.90	0.21	1.36	0.03	1.01	190.16	2.36	189.97	1.90	192.56	21.05	189.97	1.90
CR-18	CR-18_Spot 34	41173.87	668.04	1.50	20.16	0.78	0.17	1.58	0.03	1.37	162.69	2.38	162.99	2.21	158.20	18.33	162.99	2.21
CR-18	CR-18_Spot 35	404995.60	2365.33	1.55	20.43	0.78	0.12	1.51	0.02	1.29	117.78	1.67	116.64	1.49	140.87	18.24	116.64	1.49
CR-18	CR-18_Spot 36	81388.86	703.18	2.61	20.38	0.95	0.11	1.66	0.02	1.36	109.55	1.72	108.16	1.46	139.79	22.44	108.16	1.46
CR-18	CR-18_Spot 37	13778.72	222.87	1.18	18.60	1.82	0.20	2.04	0.03	0.92	184.22	3.44	174.31	1.58	313.31	41.52	174.31	1.58
CR-18	CR-18_Spot 38	32594.90	277.69	2.21	19.97	1.22	0.19	1.65	0.03	1.12	176.83	2.69	177.00	1.96	174.54	28.36	177.00	1.96
CR-18	CR-18_Spot 39	1036260.71	277.84	1.65	19.57	1.27	0.16	1.61	0.02	0.98	153.63	2.29	148.06	1.44	240.57	29.25	148.06	1.44
CR-18	CR-18_Spot 40	14250.27	347.49	2.50	18.49	1.73	0.14	2.17	0.02	1.28	131.75	2.68	121.05	1.54	329.26	39.74	121.05	1.54
CR-18	CR-18_Spot 41	11071.09	124.87	1.70	12.71	6.95	0.25	7.08	0.02	1.07	226.95	14.39	149.63	1.58	1130.26	139.45	149.63	1.58
CR-18	CR-18_Spot 42	43031.79	358.97	1.53	19.93	1.23	0.19	1.66	0.03	1.11	176.86	2.70	176.22	1.93	185.43	28.82	176.22	1.93
CR-18	CR-18_Spot 43	3613.80	103.44	2.83	19.49	2.15	0.13	2.43	0.02	1.12	121.58	2.78	124.79	1.39	59.26	51.29	124.79	1.39
CR-18	CR-18_Spot	5754.09	90.29	1.41	17.68	2.30	0.17	3.52	0.02	1.23	157.33	5.13	143.51	1.75	370.78	74.20	143.51	1.75

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CR-18	CR-18_Spot 45	8780.97	163.54	3.03	17.92	2.25	0.17	2.50	0.02	1.06	155.63	3.61	141.60	1.49	375.01	51.05	141.60	1.49
CR-18	CR-18_Spot 46	358245.31	436.84	2.74	17.92	1.15	0.45	1.83	0.06	1.41	374.25	5.71	363.61	5.00	440.58	25.69	363.61	5.00
CR-18	CR-18_Spot 47	586205.80	205.13	4.84	5.51	0.72	12.74	1.14	0.51	0.89	2660.90	10.78	2656.31	19.41	2664.38	11.90	2664.38	11.90
CR-18	CR-18_Spot 48	21820.78	395.90	1.76	18.24	1.59	0.11	2.02	0.01	1.24	107.65	2.06	95.91	1.18	375.68	35.71	95.91	1.18
CR-18	CR-18_Spot 49	86062.61	416.33	1.95	20.50	1.46	0.10	1.90	0.02	1.22	98.25	1.78	97.08	1.17	126.64	34.28	97.08	1.17
CR-18	CR-18_Spot 50	89709.38	900.88	4.72	20.09	0.98	0.17	1.78	0.03	1.48	162.79	2.67	162.04	2.37	173.64	22.84	162.04	2.37
CR-18	CR-18_Spot 51	88456.87	86.24	3.40	19.85	1.88	0.18	2.28	0.03	1.29	168.98	3.55	166.68	2.13	201.19	43.57	166.68	2.13
CR-18	CR-18_Spot 52	299817.40	180.38	2.43	20.42	1.58	0.13	2.03	0.02	1.28	120.66	2.31	119.66	1.51	140.34	37.00	119.66	1.51
CR-18	CR-18_Spot 53	15101.90	124.82	1.30	18.04	2.30	0.16	2.62	0.02	1.12	153.82	3.74	139.18	1.55	385.85	53.23	139.18	1.55
CR-18	CR-18_Spot 54	10738.05	191.71	1.43	15.08	3.46	0.22	3.74	0.02	1.21	198.80	6.76	154.03	1.84	769.90	74.60	154.03	1.84
CR-18	CR-18_Spot 55	61614.61	158.67	1.55	19.34	1.46	0.17	1.70	0.02	0.86	163.39	2.56	156.98	1.33	257.30	33.68	156.98	1.33
CR-18	CR-18_Spot 56	24109.83	138.40	2.00	16.21	2.94	0.23	3.21	0.03	1.27	211.88	6.13	175.61	2.19	637.06	63.41	175.61	2.19
CR-18	CR-18_Spot 57	3766.53	61.90	3.01	19.38	2.72	0.14	2.97	0.02	1.00	136.71	3.79	140.15	1.39	77.37	66.31	140.15	1.39
CR-18	CR-18_Spot 58	48779.93	1077.69	3.37	18.74	0.94	0.21	1.50	0.03	1.16	194.96	2.65	184.28	2.11	326.32	21.43	184.28	2.11
CR-18	CR-18_Spot 59	65733.59	1077.61	1.66	20.97	1.01	0.10	1.51	0.01	1.10	92.87	1.34	93.86	1.03	67.55	24.61	93.86	1.03
CR-18	CR-18_Spot 60	572233.25	793.61	10.55	13.62	0.73	1.75	1.47	0.17	1.27	1027.76	9.48	1031.29	12.12	1020.25	14.78	1020.25	14.78
CR-18	CR-18_Spot 61	196896.14	1166.12	17.87	17.65	0.99	0.50	1.33	0.06	0.89	411.44	4.51	400.81	3.47	471.51	21.91	400.81	3.47
CR-18	CR-18_Spot 62	59712.20	443.61	1.88	20.71	0.97	0.12	1.61	0.02	1.29	113.58	1.73	114.35	1.46	97.32	22.91	114.35	1.46
CR-18	CR-18_Spot 63	19524.43	313.91	1.99	19.51	1.01	0.18	1.39	0.03	0.96	169.05	2.17	166.01	1.58	211.88	23.35	166.01	1.58
CR-18	CR-18_Spot 64	21187.21	605.79	1.87	20.41	1.16	0.10	1.83	0.01	1.41	95.44	1.67	95.00	1.33	106.37	27.56	95.00	1.33
CR-18	CR-18_Spot 65	11118.31	190.26	1.33	19.35	1.62	0.16	2.29	0.02	0.95	150.34	3.21	146.77	1.38	206.94	48.38	146.77	1.38
CR-18	CR-18_Spot 66	198551.65	218.80	1.66	20.45	1.24	0.18	1.72	0.03	1.20	164.20	2.61	166.24	1.96	134.83	29.11	166.24	1.96
CR-18	CR-18_Spot 67	2514907.13	1640.99	1.45	19.98	0.77	0.18	1.70	0.03	1.52	166.72	2.61	164.91	2.47	192.56	17.83	164.91	2.47
CR-18	CR-18_Spot 68	11447.73	161.67	3.21	19.66	2.04	0.10	2.65	0.01	1.07	97.84	2.47	94.90	1.01	169.96	56.55	94.90	1.01
CR-18	CR-18_Spot 69	13917.20	99.93	1.87	20.41	2.54	0.15	2.73	0.02	0.99	140.69	3.59	143.63	1.40	91.33	60.34	143.63	1.40
CR-18	CR-18_Spot 70	48085.42	329.17	2.00	20.05	1.16	0.18	1.74	0.03	1.28	169.91	2.72	169.90	2.14	169.95	27.45	169.90	2.14
CR-18	CR-18_Spot 71	44937.20	353.37	0.74	20.57	1.30	0.10	1.56	0.02	0.87	99.61	1.48	99.20	0.86	109.44	30.70	99.20	0.86
CR-18	CR-18_Spot 72	6992.38	221.84	2.39	10.00	7.18	0.37	7.33	0.03	1.06	317.58	19.99	173.11	1.82	1583.46	135.76	173.11	1.82
CR-18	CR-18_Spot 73	433736.25	449.47	2.54	20.28	0.91	0.20	1.64	0.03	1.37	188.88	2.83	191.39	2.58	157.64	21.32	191.39	2.58
CR-18	CR-18_Spot 74	71749.12	521.00	1.05	20.00	0.80	0.19	1.31	0.03	1.04	175.19	2.12	174.70	1.79	181.76	18.79	174.70	1.79
CR-18	CR-18_Spot 75	93952.74	1320.64	2.08	20.81	0.70	0.12	1.41	0.02	1.22	110.55	1.47	111.49	1.34	90.36	16.72	111.49	1.34
CR-18	CR-18_Spot 76	20482.91	87.88	2.86	19.19	2.22	0.12	2.43	0.02	0.99	110.78	2.55	104.22	1.02	254.06	51.10	104.22	1.02
CR-18	CR-18_Spot 77	145243.63	501.87	1.93	20.22	1.26	0.19	1.96	0.03	1.51	175.90	3.17	177.12	2.63	159.51	29.41	177.12	2.63
CR-18	CR-18_Spot 78	41358.76	274.01	1.75	19.92	1.26	0.18	1.70	0.03	1.14	171.88	2.69	171.06	1.93	183.26	29.34	171.06	1.93
CR-18	CR-18_Spot 80	16974.31	86.66	1.67	19.73	2.10	0.16	2.37	0.02	1.10	147.10	3.25	144.96	1.58	181.62	48.96	144.96	1.58

CR-18	CR-18_Spot 81	23578.07	201.68	3.04	20.33	1.53	0.18	1.80	0.03	0.80	164.57	2.73	167.67	1.33	120.17	37.88	167.67	1.33
CR-18	CR-18_Spot 82	452371.05	877.31	1.11	19.90	0.90	0.19	1.65	0.03	1.38	180.73	2.73	179.35	2.44	198.78	20.94	179.35	2.44
CR-18	CR-18_Spot 83	20737.75	594.09	1.49	20.40	1.32	0.11	1.90	0.02	1.36	106.36	1.91	106.29	1.44	108.08	31.17	106.29	1.44
CR-18	CR-18_Spot 84	9758.52	88.42	4.70	19.36	2.16	0.15	2.52	0.02	1.13	144.58	3.40	141.47	1.58	195.86	52.42	141.47	1.58
CR-18	CR-18_Spot 85	110511.38	793.30	2.95	20.00	0.95	0.19	1.48	0.03	1.14	172.69	2.36	171.97	1.93	182.43	22.20	171.97	1.93
CR-18	CR-18_Spot 86	59986.34	438.74	2.14	20.19	1.11	0.15	1.86	0.02	1.48	138.00	2.40	136.90	2.00	156.92	26.38	136.90	2.00
CR-18	CR-18_Spot 87	46696.47	844.57	1.48	19.33	1.07	0.13	1.76	0.02	1.37	119.90	1.99	113.12	1.53	256.77	25.45	113.12	1.53
CR-18	CR-18_Spot 88	83325.36	282.51	1.51	20.83	1.49	0.10	1.81	0.01	1.03	94.46	1.64	94.71	0.97	88.17	35.43	94.71	0.97
CR-18	CR-18_Spot 89	17211.89	228.52	2.43	18.53	1.31	0.20	1.69	0.03	1.07	183.24	2.83	171.97	1.81	331.06	29.71	171.97	1.81
CR-18	CR-18_Spot 90	19387.91	221.58	1.91	20.17	1.26	0.18	1.58	0.03	0.94	166.48	2.43	168.61	1.57	136.31	29.80	168.61	1.57
CR-18	CR-18_Spot 91	17306.49	493.84	2.33	20.54	1.10	0.10	1.92	0.02	1.34	97.75	1.79	98.13	1.30	88.63	32.86	98.13	1.30
CR-18	CR-18_Spot 92	79355.56	675.71	1.16	20.27	0.94	0.17	1.59	0.03	1.28	160.08	2.35	160.63	2.03	151.94	22.04	160.63	2.03
CR-18	CR-18_Spot 93	13680.92	145.34	2.34	19.97	1.48	0.18	1.87	0.03	1.13	167.54	2.89	169.11	1.88	145.40	34.93	169.11	1.88
CR-18	CR-18_Spot 94	22076.67	173.31	1.27	19.49	1.49	0.16	1.77	0.02	0.95	150.26	2.47	145.73	1.37	222.40	34.47	145.73	1.37
CR-18	CR-18_Spot 95	63909.10	244.71	2.37	20.74	1.50	0.12	2.00	0.02	1.33	115.51	2.18	116.44	1.53	96.46	35.50	116.44	1.53
CR-18	CR-18_Spot 96	18457.63	654.40	3.30	18.20	2.27	0.11	2.62	0.01	1.29	105.03	2.61	93.41	1.20	377.44	51.17	93.41	1.20
CR-18	CR-18_Spot 97	16592.51	179.93	2.37	19.95	1.45	0.17	1.82	0.03	1.04	161.39	2.71	161.63	1.67	157.85	34.90	161.63	1.67
CR-18	CR-18_Spot 98	423187.81	449.55	1.48	20.06	0.97	0.19	1.67	0.03	1.36	180.23	2.75	179.89	2.41	184.71	22.58	179.89	2.41
CR-18	CR-18_Spot 99	9687.83	171.29	1.69	19.75	1.26	0.15	2.35	0.02	1.24	140.73	3.09	140.07	1.72	152.00	46.75	140.07	1.72
CR-18	CR-18_Spot 100	34186.98	236.57	2.90	19.92	1.04	0.18	1.49	0.03	0.99	166.64	2.29	165.54	1.62	182.31	25.89	165.54	1.62
CR-18	CR-18_Spot 101	26609.62	558.70	1.71	20.05	0.90	0.17	1.74	0.03	1.38	162.28	2.61	162.22	2.21	163.16	24.87	162.22	2.21
CR-18	CR-18_Spot 102	24471.09	962.80	1.28	19.87	1.38	0.12	1.99	0.02	1.43	116.91	2.20	113.72	1.61	182.19	32.21	113.72	1.61
CR-18	CR-18_Spot 103	25329.97	116.82	2.10	18.69	1.16	0.40	1.49	0.06	0.93	345.06	4.37	347.84	3.16	326.41	26.43	347.84	3.16
CR-18	CR-18_Spot 104	5473.35	167.51	2.26	20.00	1.24	0.11	2.05	0.02	1.19	110.17	2.14	112.26	1.33	65.15	39.72	112.26	1.33
CR-18	CR-18_Spot 105	56782.07	838.82	1.49	18.93	1.88	0.10	2.23	0.01	1.20	99.37	2.11	90.84	1.08	309.04	42.89	90.84	1.08
CR-18	CR-18_Spot 106	22393.80	529.35	1.13	20.75	1.27	0.10	1.81	0.01	1.28	93.27	1.61	93.99	1.19	74.95	30.38	93.99	1.19
CR-18	CR-18_Spot 107	400430.48	807.33	1.82	20.52	1.05	0.10	1.51	0.01	1.09	94.63	1.37	93.12	1.01	132.68	24.73	93.12	1.01
CR-18	CR-18_Spot 108	60539.65	1195.77	3.01	20.10	0.84	0.19	1.42	0.03	1.14	175.07	2.28	175.27	1.98	172.40	19.61	175.27	1.98
CR-18	CR-18_Spot 109	473604.03	407.96	1.61	20.87	1.33	0.09	1.61	0.01	0.90	91.82	1.41	91.75	0.82	93.63	31.57	91.75	0.82
CR-18	CR-18_Spot 110	17311.67	330.26	1.73	20.08	1.03	0.18	1.60	0.03	1.22	168.90	2.49	170.82	2.06	142.10	24.29	170.82	2.06
CR-18	CR-18_Spot 111	19653.43	202.16	1.87	20.12	1.62	0.14	2.03	0.02	1.21	136.58	2.60	136.23	1.62	142.77	38.45	136.23	1.62
CR-18	CR-18_Spot 112	67764.83	573.45	2.39	20.54	1.31	0.11	1.84	0.02	1.30	110.06	1.92	109.59	1.41	120.33	30.77	109.59	1.41
CR-18	CR-18_Spot 113	131181.16	431.95	2.52	20.31	1.01	0.17	1.71	0.03	1.37	162.49	2.57	163.22	2.21	151.93	23.77	163.22	2.21
CR-18	CR-18_Spot 114	61654.87	318.03	1.95	16.72	2.58	0.22	2.74	0.03	0.93	202.75	5.04	171.50	1.57	583.74	56.02	171.50	1.57
CR-18	CR-18_Spot 115	218103.60	261.51	2.29	19.88	1.37	0.18	1.77	0.03	1.12	170.50	2.79	168.30	1.87	201.10	31.93	168.30	1.87
CR-18	CR-18_Spot	87911.89	914.28	1.61	20.32	0.94	0.17	1.39	0.02	1.02	157.99	2.03	158.82	1.60	145.54	22.11	158.82	1.60

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CR-18	CR-18_Spot 117	28808.63	760.57	1.56	18.04	1.44	0.19	1.94	0.03	1.29	178.29	3.17	161.67	2.06	404.67	32.31	161.67	2.06
CR-18	CR-18_Spot 118	13863.86	68.46	1.45	18.93	2.91	0.16	3.12	0.02	1.10	149.90	4.35	142.38	1.55	270.48	66.96	142.38	1.55
CR-18	CR-18_Spot 119	19798.14	629.03	3.40	20.05	0.89	0.19	1.59	0.03	1.31	175.31	2.56	177.26	2.30	149.04	20.86	177.26	2.30
CR-18	CR-18_Spot 120	11264.96	98.98	2.58	18.33	1.63	0.16	2.14	0.02	1.20	147.71	2.94	136.32	1.61	334.75	40.20	136.32	1.61
CR-18	CR-18_Spot 121	182497.74	240.40	2.66	13.03	0.70	1.91	1.10	0.18	0.84	1083.76	7.30	1071.42	8.29	1108.62	14.04	1108.62	14.04
CR-18	CR-18_Spot 122	673415.14	556.38	0.99	20.63	1.23	0.12	1.74	0.02	1.24	114.39	1.88	114.44	1.40	113.44	28.97	114.44	1.40
CR-18	CR-18_Spot 123	266765.73	1534.12	1.25	20.14	0.86	0.16	1.55	0.02	1.29	154.65	2.23	153.74	1.96	168.49	20.08	153.74	1.96
CR-18	CR-18_Spot 124	15914.41	137.74	1.57	19.64	1.47	0.20	1.98	0.03	1.06	187.51	3.39	187.58	1.96	186.50	38.90	187.58	1.96
CR-18	CR-18_Spot 125	562256.37	850.69	2.07	20.51	0.78	0.16	1.37	0.02	1.12	148.63	1.89	149.87	1.66	128.82	18.34	149.87	1.66
CR-18	CR-18_Spot 126	142578.29	88.87	2.00	8.90	0.70	5.19	1.33	0.34	1.13	1850.92	11.31	1868.32	18.30	1831.39	12.69	1831.39	12.69
CR-18	CR-18_Spot 127	143796.41	229.03	3.55	19.38	1.14	0.19	1.38	0.03	0.78	177.17	2.25	171.31	1.31	256.16	26.28	171.31	1.31
CR-18	CR-18_Spot 128	17534.63	445.06	3.07	19.83	1.19	0.20	1.83	0.03	1.39	183.81	3.08	185.01	2.54	168.33	27.81	185.01	2.54
CR-18	CR-18_Spot 129	7776.05	102.75	2.13	20.34	1.58	0.16	2.62	0.03	1.05	153.39	3.73	159.83	1.65	54.99	NA	159.83	1.65
CR-18	CR-18_Spot 130	138240.64	2043.81	1.77	20.26	0.92	0.19	1.57	0.03	1.28	176.16	2.54	177.95	2.24	152.15	21.48	177.95	2.24
CR-18	CR-18_Spot 131	4883.40	70.75	2.08	19.78	1.90	0.15	2.39	0.02	1.29	138.45	3.09	142.57	1.81	68.38	47.85	142.57	1.81
CR-18	CR-18_Spot 132	7884.42	157.80	3.21	20.21	1.48	0.14	1.96	0.02	1.24	134.65	2.48	138.23	1.69	71.89	36.30	138.23	1.69
CR-18	CR-18_Spot 133	32145.69	322.62	1.71	20.09	0.95	0.18	1.25	0.03	0.80	168.72	1.94	169.67	1.34	155.36	22.47	169.67	1.34
CR-18	CR-18_Spot 134	5046.76	84.96	1.84	19.60	1.87	0.15	2.24	0.02	1.21	145.56	3.04	148.51	1.78	97.81	44.57	148.51	1.78
CR-18	CR-18_Spot 135	25296.17	230.84	2.18	17.29	2.97	0.14	3.16	0.02	1.07	137.42	4.06	117.54	1.25	496.14	65.47	117.54	1.25
CR-18	CR-18_Spot 136	27395.78	245.10	1.82	20.58	1.29	0.10	1.80	0.01	1.24	94.42	1.62	94.38	1.16	95.45	30.83	94.38	1.16
CR-18	CR-18_Spot 137	35652.19	232.01	1.41	20.20	1.31	0.19	1.71	0.03	1.07	177.84	2.79	180.26	1.90	145.79	31.23	180.26	1.90
CR-18	CR-18_Spot 138	175198.20	401.23	1.94	19.84	1.01	0.19	1.41	0.03	0.98	174.47	2.25	172.27	1.67	204.48	23.40	172.27	1.67
CR-18	CR-18_Spot 139	92501.24	342.88	1.64	19.14	1.07	0.21	1.63	0.03	1.23	196.75	2.92	189.42	2.29	285.59	24.57	189.42	2.29
CR-18	CR-18_Spot 140	23440.50	844.52	3.19	20.86	1.05	0.09	1.61	0.01	1.23	89.09	1.37	90.15	1.10	60.96	24.96	90.15	1.10
CR-18	CR-18_Spot 141	25280.31	226.97	2.49	20.25	1.25	0.17	1.62	0.03	1.02	163.48	2.44	165.49	1.67	134.50	29.42	165.49	1.67
CR-18	CR-18_Spot 142	19707.55	159.32	2.06	19.99	1.65	0.15	2.07	0.02	1.25	142.54	2.76	141.63	1.74	157.68	38.81	141.63	1.74
CR-18	CR-18_Spot 143	146082.87	1016.74	2.33	19.95	0.77	0.20	1.50	0.03	1.28	182.80	2.50	182.04	2.30	192.59	17.89	182.04	2.30
CR-18	CR-18_Spot 144	85145.20	472.15	2.30	21.16	1.01	0.10	1.62	0.01	1.26	93.39	1.45	95.17	1.19	48.32	24.19	95.17	1.19
CR-18	CR-18_Spot 145	727511.68	747.91	1.48	20.05	0.96	0.20	1.46	0.03	1.10	188.74	2.51	189.15	2.05	183.49	22.27	189.15	2.05
CR-18	CR-18_Spot 146	20698.99	382.33	1.42	20.91	1.09	0.10	1.53	0.01	1.01	94.16	1.38	95.93	0.97	49.60	27.35	95.93	0.97
CR-18	CR-18_Spot 147	25812.71	434.04	2.29	19.90	1.42	0.10	1.85	0.01	1.16	98.91	1.74	95.77	1.11	175.28	33.46	95.77	1.11
CR-18	CR-18_Spot 148	15496.41	261.11	2.07	20.52	1.43	0.12	1.90	0.02	1.02	114.26	2.06	115.73	1.17	83.56	38.09	115.73	1.17
CR-18	CR-18_Spot 149	34015.00	312.90	2.38	20.99	1.03	0.12	1.46	0.02	0.96	111.68	1.55	114.39	1.09	54.27	26.44	114.39	1.09
CR-18	CR-18_Spot 150	406232.16	581.11	1.53	20.26	0.88	0.17	1.35	0.02	1.03	158.09	1.98	158.14	1.60	157.37	20.64	158.14	1.60
CR-18	CR-18_Spot 151	13847.56	23.66	3.60	13.59	1.16	1.65	1.65	0.17	0.98	988.80	10.43	985.31	9.00	996.54	26.93	996.54	26.93

CR-18	CR-18_Spot 152	77859.49	1069.14	4.51	20.63	0.66	0.11	1.20	0.02	1.00	108.17	1.23	108.21	1.07	107.24	15.52	108.21	1.07
CR-18	CR-18_Spot 153	9839.87	263.05	1.88	19.64	1.25	0.18	1.76	0.03	1.23	168.33	2.72	168.71	2.05	162.97	29.33	168.71	2.05
CR-18	CR-18_Spot 154	50484.73	921.83	1.56	18.56	1.38	0.19	1.72	0.03	1.02	176.87	2.78	164.31	1.66	348.30	31.13	164.31	1.66
CR-18	CR-18_Spot 155	39148.64	402.32	2.87	19.90	1.25	0.18	2.02	0.03	1.58	168.52	3.13	167.48	2.62	183.16	29.18	167.48	2.62
CR-18	CR-18_Spot 156	39918.09	31.77	1.64	8.87	0.97	5.10	1.42	0.33	1.04	1835.49	12.08	1836.23	16.57	1834.65	17.66	1834.65	17.66
CR-18	CR-18_Spot 157	454573.82	398.08	2.24	19.14	1.39	0.12	1.78	0.02	1.10	114.11	1.92	105.88	1.16	289.57	31.82	105.88	1.16
CR-18	CR-18_Spot 158	18158.29	263.63	2.64	19.02	1.16	0.15	1.67	0.02	0.91	141.29	2.20	133.84	1.21	268.31	31.99	133.84	1.21
CR-18	CR-18_Spot 159	39936.23	490.54	1.77	19.87	1.31	0.18	2.11	0.03	1.65	168.44	3.27	167.37	2.73	183.48	30.62	167.37	2.73
CR-18	CR-18_Spot 160	3937861.33	221.59	2.08	20.22	1.38	0.17	1.72	0.03	1.03	159.43	2.54	159.38	1.62	160.13	32.17	159.38	1.62
CR-18	CR-18_Spot 161	21803.06	233.97	1.70	19.59	1.25	0.19	1.49	0.03	0.80	180.08	2.45	178.37	1.40	202.48	29.15	178.37	1.40
CR-18	CR-18_Spot 162	34417.63	317.70	2.39	19.74	1.21	0.18	1.49	0.03	0.85	168.60	2.31	166.59	1.40	196.91	28.32	166.59	1.40
CR-18	CR-18_Spot 163	23105.60	219.16	1.92	19.80	1.36	0.18	1.67	0.03	0.95	169.70	2.61	169.01	1.59	179.32	31.96	169.01	1.59
CR-18	CR-18_Spot 164	8437.20	156.44	2.23	20.30	2.15	0.10	2.34	0.02	0.92	96.99	2.17	98.15	0.90	68.49	51.27	98.15	0.90
CR-18	CR-18_Spot 165	300104.58	617.31	1.45	20.25	1.11	0.13	1.63	0.02	1.19	120.70	1.86	118.84	1.40	157.51	26.09	118.84	1.40
CR-18	CR-18_Spot 166	6967.03	126.40	1.52	19.01	1.96	0.17	2.22	0.02	1.04	161.67	3.32	158.33	1.62	210.89	45.55	158.33	1.62
CR-18	CR-18_Spot 167	12738.93	227.15	2.04	20.14	1.45	0.12	1.78	0.02	1.02	115.14	1.93	115.06	1.17	116.79	34.26	115.06	1.17
CR-18	CR-18_Spot 168	54927.06	151.70	1.42	18.46	1.66	0.30	1.93	0.04	0.97	265.88	4.51	255.32	2.44	359.96	37.56	255.32	2.44
CR-18	CR-18_Spot 169	156504.41	931.74	1.34	20.54	1.09	0.12	1.72	0.02	1.32	111.88	1.82	111.35	1.46	123.03	25.80	111.35	1.46
CR-18	CR-18_Spot 170	25413.06	298.23	1.75	20.06	1.18	0.17	1.62	0.03	1.10	159.09	2.38	159.27	1.73	156.52	27.64	159.27	1.73
CR-18	CR-18_Spot 171	43833.85	300.99	2.08	20.06	1.39	0.13	1.63	0.02	0.85	119.81	1.85	117.43	0.99	167.28	32.58	117.43	0.99
CR-18	CR-18_Spot 172	5958.23	142.96	2.48	19.67	1.61	0.14	1.94	0.02	1.07	134.80	2.45	136.10	1.44	112.11	38.14	136.10	1.44
CR-18	CR-18_Spot 173	24811.64	455.79	2.68	19.85	0.93	0.17	1.53	0.03	1.20	163.19	2.31	161.81	1.92	183.23	21.96	161.81	1.92
CR-18	CR-18_Spot 174	15901.37	283.82	2.23	20.06	1.27	0.17	1.77	0.03	1.21	160.59	2.63	161.70	1.92	144.27	30.50	161.70	1.92
CR-18	CR-18_Spot 175	66349.18	390.30	1.59	20.04	1.00	0.19	1.41	0.03	0.99	178.60	2.31	178.51	1.74	179.77	23.34	178.51	1.74
CR-18	CR-18_Spot 176	15946.05	204.24	2.22	18.71	1.98	0.19	2.49	0.03	1.22	175.53	4.01	165.79	1.99	308.77	49.36	165.79	1.99
CR-18	CR-18_Spot 177	59444.44	118.50	2.06	18.39	1.58	0.19	1.87	0.03	1.00	176.92	3.03	162.40	1.60	375.62	35.51	162.40	1.60
CR-18	CR-18_Spot 178	11833.68	131.58	2.40	19.62	2.10	0.13	2.53	0.02	1.31	121.09	2.88	118.02	1.53	181.80	50.34	118.02	1.53
CR-18	CR-18_Spot 179	674149.72	6635.74	2.90	20.08	0.66	0.15	1.44	0.02	1.28	142.27	1.91	139.84	1.77	182.88	15.49	139.84	1.77
CR-18	CR-18_Spot 180	35265.00	462.48	1.88	19.81	0.87	0.19	1.53	0.03	1.25	175.83	2.46	174.26	2.15	196.90	20.25	174.26	2.15
CR-18	CR-18_Spot 181	255511.00	134.51	1.87	8.13	0.71	6.29	1.15	0.37	0.91	2017.41	10.11	2035.97	15.86	1998.46	12.63	1998.46	12.63
CR-18	CR-18_Spot 182	56104.61	719.36	5.02	20.08	0.69	0.18	1.29	0.03	1.08	167.36	1.99	167.02	1.79	172.09	16.37	167.02	1.79
CR-18	CR-18_Spot 183	233301.99	156.10	2.29	20.06	1.30	0.17	1.71	0.03	1.11	161.14	2.54	159.61	1.75	183.64	30.27	159.61	1.75
CR-18	CR-18_Spot 184	30120454.74	169.11	3.00	20.42	1.17	0.13	1.54	0.02	1.00	126.10	1.82	125.20	1.24	143.02	27.42	125.20	1.24
CR-18	CR-18_Spot 185	528925.60	361.15	4.99	19.89	1.21	0.18	1.87	0.03	1.42	163.99	2.83	161.38	2.26	201.84	28.16	161.38	2.26
CR-18	CR-18_Spot 186	12778.65	398.71	2.55	20.44	1.14	0.10	1.58	0.02	1.09	96.68	1.46	97.24	1.06	83.07	27.18	97.24	1.06
CR-18	CR-18_Spot	24518.97	459.59	4.49	20.42	1.30	0.12	1.74	0.02	1.15	118.84	1.96	119.18	1.36	112.01	30.88	119.18	1.36

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CR-18	CR-18_Spot 188	68121.49	561.38	1.60	18.49	0.68	0.41	1.30	0.06	1.10	352.29	3.86	351.00	3.77	360.78	15.28	351.00	3.77
CR-18	CR-18_Spot 189	40514.03	671.12	2.85	20.89	1.06	0.11	1.71	0.02	1.34	103.53	1.68	105.06	1.39	68.51	25.39	105.06	1.39
CR-18	CR-18_Spot 190	8601.77	105.00	2.35	16.55	2.60	0.18	2.91	0.02	1.30	165.70	4.45	139.91	1.80	552.04	56.82	139.91	1.80
CR-18	CR-18_Spot 191	63394.37	322.08	2.45	20.12	1.15	0.17	1.58	0.03	1.07	162.22	2.36	162.03	1.71	164.89	27.08	162.03	1.71
CR-18	CR-18_Spot 192	47361.00	471.63	2.09	19.92	0.97	0.18	1.46	0.03	1.07	164.69	2.23	163.33	1.73	184.32	23.26	163.33	1.73
CR-18	CR-18_Spot 193	14544.86	106.27	1.90	19.95	2.04	0.14	2.65	0.02	1.38	137.12	3.40	136.52	1.87	147.52	53.13	136.52	1.87
CR-18	CR-18_Spot 194	17492.56	346.96	1.93	20.03	1.20	0.12	1.48	0.02	0.85	116.70	1.64	115.27	0.98	145.94	28.48	115.27	0.98
CR-18	CR-18_Spot 195	65253.01	720.92	2.20	19.26	1.35	0.13	1.75	0.02	1.11	123.03	2.03	115.75	1.27	266.11	31.11	115.75	1.27
CR-18	CR-18_Spot 196	33039.33	278.19	1.58	17.94	2.69	0.14	2.87	0.02	0.94	134.85	3.62	119.33	1.11	417.72	60.50	119.33	1.11
CR-18	CR-18_Spot 197	100096.40	260.03	2.14	19.23	1.80	0.18	2.13	0.03	1.15	168.05	3.30	160.70	1.82	272.78	41.21	160.70	1.82
CR-18	CR-18_Spot 198	17408.59	272.17	1.83	19.89	0.94	0.18	1.54	0.03	0.87	170.88	2.42	171.54	1.47	161.73	29.80	171.54	1.47
CR-18	CR-18_Spot 199	15356.36	720.35	2.77	17.38	3.37	0.14	3.64	0.02	1.32	132.18	4.51	114.05	1.49	471.70	75.04	114.05	1.49
CR-18	CR-18_Spot 200	985473.92	217.39	2.36	19.93	0.94	0.20	1.46	0.03	1.12	183.89	2.45	182.77	2.02	198.26	21.73	182.77	2.02
CR-18	CR-18_Spot 201	123207.37	269.89	3.85	18.09	0.85	0.46	1.30	0.06	0.98	387.72	4.18	383.20	3.66	414.74	18.93	383.20	3.66
CR-18	CR-18_Spot 202	209973.27	586.59	1.24	18.38	0.94	0.43	1.57	0.06	1.26	363.18	4.80	360.41	4.41	380.90	21.17	360.41	4.41
CR-18	CR-18_Spot 203	9188.71	169.33	2.29	19.81	1.41	0.13	2.44	0.02	1.13	119.77	2.76	118.91	1.33	136.91	50.85	118.91	1.33
CR-18	CR-18_Spot 204	33651.10	255.77	1.79	19.78	1.18	0.19	1.58	0.03	0.98	172.67	2.51	170.98	1.65	195.84	28.88	170.98	1.65
CR-18	CR-18_Spot 205	42277.15	262.00	2.08	19.94	1.22	0.17	1.67	0.03	1.15	162.84	2.52	161.71	1.84	179.26	28.35	161.71	1.84
CR-18	CR-18_Spot 206	9925.85	209.15	1.79	15.95	2.76	0.20	3.14	0.02	1.23	182.48	5.24	148.92	1.81	642.74	62.11	148.92	1.81
CR-18	CR-18_Spot 207	187855.76	425.40	2.51	19.13	1.62	0.12	2.12	0.02	1.37	115.48	2.31	107.28	1.45	287.94	36.91	107.28	1.45
CR-18	CR-18_Spot 208	222619.65	1195.22	1.66	20.17	0.91	0.18	1.60	0.03	1.32	170.26	2.51	170.63	2.22	165.19	21.24	170.63	2.22
CR-18	CR-18_Spot 209	204414.01	1547.27	2.33	19.31	0.79	0.20	1.32	0.03	1.06	184.86	2.24	178.55	1.87	266.21	18.07	178.55	1.87
CR-18	CR-18_Spot 210	1063654.31	957.84	12.22	20.54	1.22	0.17	1.61	0.03	1.06	160.92	2.40	163.36	1.70	125.17	28.66	163.36	1.70
CR-18	CR-18_Spot 211	163952.19	1883.95	1.90	20.09	0.58	0.18	1.08	0.03	0.91	171.45	1.70	171.36	1.54	172.61	13.51	171.36	1.54
CR-18	CR-18_Spot 212	24177.11	216.43	1.51	20.55	1.41	0.12	1.65	0.02	0.86	112.60	1.76	113.47	0.97	94.17	33.45	113.47	0.97
CR-18	CR-18_Spot 213	69349.68	251.92	1.89	20.63	1.57	0.11	1.94	0.02	1.15	106.06	1.96	106.00	1.21	107.40	37.08	106.00	1.21
CR-18	CR-18_Spot 214	82757.54	778.06	3.73	19.90	0.79	0.18	1.45	0.03	1.22	164.59	2.20	162.81	1.95	190.28	18.33	162.81	1.95
CR-18	CR-18_Spot 215	26957.78	313.82	1.77	19.15	1.18	0.18	1.67	0.03	1.17	171.48	2.63	164.85	1.90	263.92	27.39	164.85	1.90
CR-18	CR-18_Spot 216	34289.76	448.75	2.09	20.59	1.19	0.13	1.73	0.02	1.25	122.52	2.00	123.74	1.53	98.75	28.50	123.74	1.53
CR-18	CR-18_Spot 217	31320.16	223.88	1.83	20.00	1.20	0.18	1.58	0.03	0.92	169.87	2.48	170.23	1.55	164.88	30.02	170.23	1.55
CR-18	CR-18_Spot 218	72802.27	834.20	1.69	20.33	0.83	0.18	1.40	0.03	1.13	170.12	2.19	172.50	1.92	137.14	19.60	172.50	1.92
CR-18	CR-18_Spot 219	26714.28	456.10	1.70	20.62	1.12	0.10	1.56	0.02	1.08	97.49	1.45	97.86	1.05	88.39	26.69	97.86	1.05
CR-18	CR-18_Spot 220	191193.84	1338.58	5.37	19.78	1.10	0.19	1.63	0.03	1.20	180.50	2.69	178.36	2.10	208.63	25.56	178.36	2.10
CR-18	CR-18_Spot 221	3377.58	77.23	2.20	19.63	2.32	0.14	2.67	0.02	1.29	136.19	3.40	142.98	1.83	19.44	NA	142.98	1.83
CR-18	CR-18_Spot 222	18876.96	260.65	2.42	19.06	1.54	0.19	1.89	0.03	0.80	172.71	3.00	166.16	1.31	263.38	39.34	166.16	1.31

CR-18	CR-18_Spot 223	3128.96	72.83	1.62	19.65	1.83	0.14	2.27	0.02	1.20	136.29	2.90	144.13	1.71	1.76	NA	144.13	1.71
CR-18	CR-18_Spot 224	19782.25	328.17	1.95	20.57	1.49	0.10	1.73	0.01	0.82	92.93	1.53	93.10	0.76	88.43	35.95	93.10	0.76
CR-18	CR-18_Spot 225	111240.44	1616.11	2.90	20.45	1.04	0.11	1.62	0.02	1.24	103.32	1.59	102.06	1.26	132.43	24.45	102.06	1.26
CR-18	CR-18_Spot 226	107116.23	496.45	1.77	19.89	0.98	0.17	1.70	0.02	1.39	160.80	2.52	158.34	2.17	197.09	22.77	158.34	2.17
CR-18	CR-18_Spot 227	151114.58	630.51	9.11	18.73	0.80	0.42	1.58	0.06	1.36	358.14	4.77	361.47	4.79	336.64	18.18	361.47	4.79
CR-18	CR-18_Spot 228	64184.44	700.56	2.44	20.02	0.95	0.18	1.47	0.03	1.12	169.94	2.30	169.39	1.88	177.70	22.10	169.39	1.88
CR-18	CR-18_Spot 229	5363.35	96.88	2.14	17.25	2.04	0.17	2.38	0.02	1.22	158.41	3.49	141.58	1.71	418.08	45.65	141.58	1.71
CR-18	CR-18_Spot 230	70004.07	508.08	1.63	20.19	1.08	0.18	1.72	0.03	1.33	165.35	2.63	165.83	2.18	158.55	25.54	165.83	2.18
CR-18	CR-18_Spot 231	15835.77	124.23	1.80	19.98	1.62	0.20	2.21	0.03	1.17	182.07	3.68	184.57	2.13	149.76	43.95	184.57	2.13
CR-18	CR-18_Spot 232	21880.88	435.72	1.85	19.36	1.11	0.15	1.79	0.02	1.40	140.01	2.34	134.39	1.87	236.29	25.60	134.39	1.87
CR-18	CR-18_Spot 233	136581.04	138.52	2.45	20.26	1.65	0.15	1.98	0.02	1.10	144.08	2.67	143.37	1.56	155.68	38.61	143.37	1.56
CR-18	CR-18_Spot 234	58894.72	763.92	1.74	20.25	0.96	0.17	1.61	0.03	1.28	159.35	2.38	160.20	2.03	146.68	23.00	160.20	2.03
CR-18	CR-18_Spot 235	166039.88	130.26	3.09	18.51	1.02	0.41	1.32	0.05	0.84	346.67	3.87	344.37	2.82	362.08	22.90	344.37	2.82
CR-18	CR-18_Spot 236	62156.13	494.37	2.46	19.96	0.98	0.21	1.90	0.03	1.63	197.49	3.42	198.83	3.19	181.60	22.99	198.83	3.19
CR-18	CR-18_Spot 237	7387002.89	828.58	1.46	20.46	0.83	0.15	1.56	0.02	1.33	146.28	2.13	146.98	1.93	134.97	19.45	146.98	1.93
CR-18	CR-18_Spot 238	67288.71	803.62	1.70	20.57	1.03	0.12	1.71	0.02	1.37	116.37	1.88	116.67	1.58	110.18	24.25	116.67	1.58
CR-18	CR-18_Spot 239	181350.09	1453.73	1.71	19.96	0.90	0.20	1.58	0.03	1.30	182.55	2.64	182.14	2.33	187.74	21.01	182.14	2.33
CR-18	CR-18_Spot 240	65870.29	350.96	2.30	20.38	1.04	0.18	1.44	0.03	1.00	165.75	2.21	168.02	1.66	133.40	24.47	168.02	1.66
CR-18	CR-18_Spot 241	26253.69	356.48	2.17	19.04	1.70	0.19	1.93	0.03	0.91	176.83	3.14	169.50	1.52	275.90	39.11	169.50	1.52
CR-18	CR-18_Spot 242	44190.38	1731.48	15.93	20.66	0.73	0.11	1.34	0.02	1.12	104.72	1.33	105.16	1.17	94.77	17.25	105.16	1.17
CR-18	CR-18_Spot 243	44188.46	177.09	2.43	18.17	2.36	0.12	2.61	0.02	1.10	113.16	2.79	100.37	1.10	391.27	52.96	100.37	1.10
CR-18	CR-18_Spot 244	2124164.53	793.53	3.58	20.57	1.01	0.10	1.46	0.01	1.05	93.57	1.30	92.54	0.97	119.94	23.76	92.54	0.97
CR-18	CR-18_Spot 245	1059500.93	1167.52	1.57	18.58	0.73	0.42	1.24	0.06	1.01	359.61	3.77	359.99	3.53	357.09	16.41	359.99	3.53
CR-18	CR-18_Spot 246	173569.32	1409.01	2.46	20.76	0.83	0.12	1.45	0.02	1.19	114.76	1.57	115.62	1.36	96.95	19.64	115.62	1.36
CR-18	CR-18_Spot 247	20661.08	20.12	1.04	13.36	1.73	1.78	2.11	0.18	1.21	1039.89	13.74	1039.77	11.60	1040.12	34.97	1040.12	34.97
CR-18	CR-18_Spot 248	23811.49	385.83	5.19	20.11	1.45	0.17	1.97	0.03	1.34	163.26	2.98	164.23	2.17	149.34	34.03	164.23	2.17
CR-18	CR-18_Spot 249	7456.41	252.19	2.12	11.52	6.37	0.33	6.82	0.03	2.41	290.07	17.20	179.83	4.28	1310.43	123.81	179.83	4.28
CR-18	CR-18_Spot 250	29420.59	318.67	2.99	20.59	1.27	0.13	1.69	0.02	1.11	127.92	2.03	129.40	1.42	100.36	30.19	129.40	1.42
CR-18	CR-18_Spot 251	329921.89	1645.86	7.94	20.33	0.80	0.17	1.34	0.03	1.07	162.97	2.01	163.72	1.73	152.11	18.73	163.72	1.73
CR-18	CR-18_Spot 252	20856.10	372.31	2.15	20.19	0.99	0.15	1.45	0.02	1.04	139.62	1.89	139.78	1.44	136.92	23.57	139.78	1.44
CR-18	CR-18_Spot 253	19257.29	243.50	1.94	17.90	2.14	0.14	2.50	0.02	1.11	129.92	3.05	114.82	1.26	415.74	50.22	114.82	1.26
CR-18	CR-18_Spot 254	17039.10	251.81	1.63	20.28	1.34	0.12	1.79	0.02	1.17	116.84	1.97	116.74	1.35	118.94	31.82	116.74	1.35
CR-18	CR-18_Spot 255	73355.23	88.17	1.50	14.13	2.00	0.22	2.20	0.02	0.91	204.17	4.06	145.95	1.31	944.15	40.96	145.95	1.31
CR-18	CR-18_Spot 256	40912.26	424.75	2.09	20.22	1.15	0.13	1.77	0.02	1.34	121.90	2.03	120.45	1.60	150.43	26.94	120.45	1.60
CR-18	CR-18_Spot 257	26577.32	333.63	1.74	20.36	1.56	0.09	1.84	0.01	0.97	91.07	1.60	89.79	0.86	124.72	36.80	89.79	0.86
CR-18	CR-18_Spot	214119.93	4390.27	2.66	20.58	0.67	0.09	1.42	0.01	1.25	87.43	1.19	86.18	1.07	121.72	15.81	86.18	1.07

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CR-18	CR-18_Spot 259	46290.48	180.75	2.50	20.48	1.18	0.11	1.50	0.02	0.92	107.53	1.53	106.93	0.98	120.91	27.92	106.93	0.98
CR-18	CR-18_Spot 260	290742.00	1691.43	1.00	20.71	0.78	0.10	1.26	0.01	0.99	94.97	1.15	94.50	0.93	106.86	18.49	94.50	0.93
CR-18	CR-18_Spot 261	8156.74	69.18	1.56	17.07	4.50	0.18	4.80	0.02	1.20	167.79	7.42	146.52	1.74	479.35	102.65	146.52	1.74
CR-18	CR-18_Spot 262	48900.72	249.39	2.28	20.56	1.35	0.13	1.62	0.02	0.91	125.67	1.92	126.41	1.14	111.57	31.78	126.41	1.14
CR-18	CR-18_Spot 263	94242.14	778.11	2.06	20.11	0.71	0.18	1.54	0.03	1.37	167.83	2.38	167.65	2.26	170.44	16.51	167.65	2.26
CR-18	CR-18_Spot 264	52372.98	881.04	1.53	20.48	1.11	0.12	1.53	0.02	1.04	112.39	1.62	111.94	1.16	121.84	26.27	111.94	1.16
CR-18	CR-18_Spot 265	35893.91	295.48	1.39	19.41	1.33	0.17	1.84	0.02	1.22	155.21	2.64	149.62	1.80	241.46	31.64	149.62	1.80
CR-18	CR-18_Spot 266	60022.63	381.68	1.40	20.09	1.22	0.16	1.58	0.02	1.01	150.42	2.21	149.29	1.49	168.32	28.46	149.29	1.49
CR-18	CR-18_Spot 267	28176.46	287.44	2.37	20.60	1.42	0.14	1.80	0.02	1.09	131.70	2.22	133.69	1.44	95.93	33.87	133.69	1.44
CR-18	CR-18_Spot 268	374454.59	2399.22	1.78	18.62	0.80	0.39	1.40	0.05	1.15	337.36	4.03	335.21	3.77	352.17	18.05	335.21	3.77
CR-18	CR-18_Spot 269	385586.97	637.83	2.73	20.09	1.01	0.18	1.59	0.03	1.23	169.79	2.48	169.24	2.05	177.35	23.50	169.24	2.05
CR-18	CR-18_Spot 270	18401.14	512.66	2.49	16.49	2.50	0.13	2.73	0.02	1.09	121.42	3.12	98.66	1.06	593.98	54.21	98.66	1.06
CR-18	CR-18_Spot 271	352049.83	573.62	2.17	20.20	0.92	0.17	1.54	0.03	1.24	161.24	2.30	160.90	1.97	166.26	21.40	160.90	1.97
CR-18	CR-18_Spot 272	13988.84	146.87	2.28	19.44	1.54	0.19	1.77	0.03	0.85	179.37	2.91	177.10	1.48	209.34	36.04	177.10	1.48
CR-18	CR-18_Spot 273	24899.12	803.54	2.31	20.61	0.88	0.09	1.58	0.01	1.31	90.72	1.37	90.69	1.18	91.62	20.90	90.69	1.18
CR-18	CR-18_Spot 274	13117.66	250.01	2.43	19.72	1.69	0.12	2.07	0.02	1.16	118.01	2.31	115.36	1.33	171.93	40.14	115.36	1.33
CR-18	CR-18_Spot 275	460010.70	448.33	2.50	20.42	1.27	0.11	1.84	0.02	1.33	101.89	1.78	100.35	1.32	138.14	29.84	100.35	1.32
CR-18	CR-18_Spot 276	12092.69	158.64	2.37	17.13	2.47	0.18	2.80	0.02	1.25	167.88	4.34	145.82	1.80	491.53	55.39	145.82	1.80
CR-18	CR-18_Spot 277	47908.44	147.04	1.49	20.24	1.94	0.18	2.22	0.03	1.07	167.35	3.42	168.83	1.79	146.56	45.49	168.83	1.79
CR-18	CR-18_Spot 278	45586.98	474.66	1.96	18.58	1.02	0.19	1.69	0.03	1.32	173.95	2.70	161.69	2.11	344.07	23.81	161.69	2.11
CR-18	CR-18_Spot 279	8794.52	218.76	2.29	19.20	1.82	0.11	2.12	0.02	1.04	103.26	2.08	98.81	1.02	207.12	42.88	98.81	1.02
CR-18	CR-18_Spot 280	16912.98	147.73	2.16	19.76	1.80	0.13	2.25	0.02	1.17	121.93	2.59	119.09	1.38	177.76	44.96	119.09	1.38
CR-18	CR-18_Spot 281	130424.45	544.17	1.40	20.39	1.34	0.11	1.94	0.02	1.40	107.18	1.97	105.74	1.47	139.26	31.59	105.74	1.47
CR-18	CR-18_Spot 282	89150.07	526.77	1.78	20.19	1.05	0.18	1.69	0.03	1.33	166.54	2.60	167.02	2.19	159.77	24.58	167.02	2.19
CR-18	CR-18_Spot 283	25385.61	173.33	3.42	19.97	1.49	0.18	1.73	0.03	0.85	166.16	2.65	166.06	1.40	167.55	35.10	166.06	1.40
CR-18	CR-18_Spot 284	208258.02	2330.12	2.26	19.30	0.71	0.18	1.44	0.03	1.26	171.73	2.28	164.67	2.05	270.11	16.21	164.67	2.05
CR-18	CR-18_Spot 285	69110.51	456.60	1.99	20.55	0.94	0.12	1.62	0.02	1.31	116.08	1.78	116.03	1.51	117.26	22.25	116.03	1.51
CR-18	CR-18_Spot 286	11476.33	136.95	2.48	18.89	1.40	0.18	1.90	0.03	1.24	168.20	2.94	161.28	1.98	266.82	32.95	161.28	1.98
CR-18	CR-18_Spot 287	62466.13	732.38	2.54	20.39	0.92	0.18	1.32	0.03	0.95	170.91	2.08	173.58	1.63	134.16	21.70	173.58	1.63
CR-18	CR-18_Spot 288	42732.00	207.42	2.78	19.33	1.79	0.20	2.19	0.03	1.25	183.20	3.68	177.76	2.20	254.01	41.38	177.76	2.20
CR-18	CR-18_Spot 289	12091.53	108.05	1.61	16.74	2.93	0.18	3.10	0.02	0.98	171.44	4.89	145.53	1.41	545.70	64.28	145.53	1.41
CR-18	CR-18_Spot 290	79941.95	206.39	2.16	15.48	2.29	0.21	2.48	0.02	0.95	193.75	4.38	151.08	1.42	751.47	48.37	151.08	1.42
CR-18	CR-18_Spot 291	24076.60	387.86	1.86	19.65	1.38	0.18	2.11	0.03	1.57	170.37	3.31	167.99	2.60	203.42	32.71	167.99	2.60
CR-18	CR-18_Spot 292	148499.20	368.56	1.72	6.78	0.68	7.67	1.22	0.38	1.01	2192.97	10.98	2068.14	17.92	2311.81	11.74	2311.81	11.74
CR-18	CR-18_Spot 293	384129.24	2029.80	2.63	19.98	0.58	0.20	1.31	0.03	1.18	182.98	2.19	182.31	2.11	191.69	13.45	182.31	2.11

CR-18	CR-18_Spot 294	37061.08	117.70	1.44	12.64	1.16	2.08	1.44	0.19	0.85	1141.73	9.89	1131.16	8.83	1161.85	23.11	1161.85	23.11
CR-18	CR-18_Spot 295	372884.44	555.60	1.06	20.71	1.10	0.10	1.62	0.02	1.19	98.03	1.51	97.64	1.16	107.42	25.91	97.64	1.16
CR-18	CR-18_Spot 296	2252793.86	1566.71	1.86	20.02	0.77	0.19	1.40	0.03	1.17	173.38	2.23	172.31	1.98	187.92	17.97	172.31	1.98
CR-18	CR-18_Spot 297	31676.50	244.62	2.91	20.03	1.11	0.21	1.81	0.03	1.42	194.03	3.20	196.31	2.75	166.38	26.26	196.31	2.75
CR-18	CR-18_Spot 298	179172.60	2083.55	1.56	20.22	0.57	0.18	1.09	0.03	0.93	170.67	1.71	171.35	1.57	161.39	13.36	171.35	1.57
CR-18	CR-18_Spot 299	43581.07	399.22	1.73	20.59	0.91	0.18	1.29	0.03	0.88	169.19	2.01	173.69	1.51	106.81	22.36	173.69	1.51
CR-18	CR-18_Spot 300	103157.47	1359.74	28.72	19.99	0.82	0.19	1.55	0.03	1.31	178.50	2.54	177.85	2.31	187.11	19.05	177.85	2.31
CR-18	CR-18_Spot 301	30952.87	361.71	1.56	20.49	1.36	0.12	1.83	0.02	1.13	112.08	1.94	112.02	1.26	113.43	33.97	112.02	1.26
CR-18	CR-18_Spot 302	16905.34	238.88	2.52	20.15	1.45	0.17	1.85	0.03	1.14	162.02	2.77	163.92	1.85	134.32	34.13	163.92	1.85
CR-18	CR-18_Spot 303	63874.71	971.13	0.97	20.29	0.99	0.12	1.45	0.02	1.04	112.94	1.55	111.27	1.15	148.27	23.54	111.27	1.15
CR-18	CR-18_Spot 304	31106.11	453.92	1.89	20.90	1.29	0.11	2.04	0.02	1.57	101.67	1.97	103.21	1.61	65.68	30.92	103.21	1.61
CR-18	CR-18_Spot 305	14823.62	123.28	2.64	19.52	1.68	0.15	2.10	0.02	1.24	139.20	2.73	135.39	1.66	204.76	39.35	135.39	1.66
CR-18	CR-18_Spot 306	158580.31	586.24	1.12	20.29	0.75	0.17	1.39	0.03	1.16	163.50	2.09	163.99	1.88	156.48	17.61	163.99	1.88
CR-18	CR-18_Spot 307	152831.16	1880.41	21.71	20.00	0.73	0.20	1.44	0.03	1.25	181.08	2.40	180.40	2.22	189.94	17.03	180.40	2.22
CR-18	CR-18_Spot 308	273821.83	1558.69	1.18	19.83	0.72	0.19	1.40	0.03	1.20	180.47	2.32	178.07	2.11	211.97	16.64	178.07	2.11
CR-18	CR-18_Spot 309	141573.25	691.84	2.08	19.98	0.58	0.19	1.40	0.03	1.28	179.71	2.31	178.77	2.25	192.06	13.59	178.77	2.25
CR-18	CR-18_Spot 310	1350716.51	453.59	3.20	20.11	1.03	0.19	1.72	0.03	1.37	178.84	2.81	178.86	2.41	178.62	24.10	178.86	2.41
CR-18	CR-18_Spot 311	22491.95	82.18	0.75	16.52	0.84	0.83	1.51	0.10	1.25	615.21	6.96	620.10	7.40	597.23	18.20	620.10	7.40
CR-18	CR-18_Spot 312	88983.93	997.08	4.20	20.95	0.87	0.11	1.41	0.02	1.10	103.92	1.39	105.20	1.15	74.67	20.77	105.20	1.15
CR-18	CR-18_Spot 313	10419.34	81.46	2.12	19.52	2.22	0.18	2.65	0.03	1.34	170.26	4.15	169.28	2.23	183.90	53.26	169.28	2.23
CR-18	CR-18_Spot 314	72042.64	813.12	1.85	20.38	0.98	0.16	1.41	0.02	1.02	150.82	1.98	151.62	1.52	138.21	22.99	151.62	1.52
CR-18	CR-18_Spot 315	67483.90	165.56	1.97	19.01	1.86	0.10	2.21	0.01	1.19	97.60	2.05	89.58	1.06	298.32	42.48	89.58	1.06
CR-20	CR-20_Spot 2	4580.70	131.03	1.65	19.91	2.01	0.14	2.41	0.02	1.32	133.78	3.02	138.31	1.81	54.11	48.15	138.31	1.81
CR-20	CR-20_Spot 3	10758.26	281.57	1.13	20.15	1.38	0.14	1.74	0.02	1.05	131.23	2.14	132.02	1.38	116.96	32.60	132.02	1.38
CR-20	CR-20_Spot 5	491742.18	195.61	1.27	8.20	0.81	6.05	1.43	0.36	1.18	1983.50	12.42	1977.98	20.03	1989.25	14.32	1989.25	14.32
CR-20	CR-20_Spot 6	9162.50	87.61	2.32	19.56	2.60	0.15	5.18	0.02	4.47	146.12	7.05	144.17	6.37	177.87	61.20	144.17	6.37
CR-20	CR-20_Spot 7	12800.40	161.35	1.69	20.03	1.66	0.15	2.22	0.02	0.88	137.80	2.86	137.58	1.20	141.60	47.82	137.58	1.20
CR-20	CR-20_Spot 8	4504.50	84.89	4.62	19.63	2.25	0.21	2.64	0.03	1.34	190.46	4.59	198.80	2.62	88.33	53.99	198.80	2.62
CR-20	CR-20_Spot 9	69743.12	246.75	3.17	20.00	1.18	0.15	1.50	0.02	0.93	146.02	2.04	143.27	1.32	190.84	27.40	143.27	1.32
CR-20	CR-20_Spot 10	20095.25	273.16	1.90	17.77	2.84	0.17	3.06	0.02	1.06	158.20	4.48	139.94	1.47	441.04	63.76	139.94	1.47
CR-20	CR-20_Spot 11	55599.74	216.04	2.32	20.09	1.29	0.15	1.67	0.02	1.06	138.82	2.17	136.43	1.43	179.90	30.12	136.43	1.43
CR-20	CR-20_Spot 14	20564.10	591.13	1.40	20.24	1.00	0.18	1.80	0.03	1.50	163.85	2.72	165.62	2.45	138.38	23.49	165.62	2.45
CR-20	CR-20_Spot 16	7332.57	41.34	3.07	20.37	2.77	0.21	3.00	0.03	1.11	191.24	5.22	202.09	2.22	59.41	NA	202.09	2.22
CR-20	CR-20_Spot 18	5708.06	125.03	2.35	19.87	1.82	0.14	2.60	0.02	1.39	134.87	3.28	137.25	1.89	93.11	51.99	137.25	1.89
CR-20	CR-20_Spot 19	305034.73	307.42	2.04	10.92	0.77	3.17	1.29	0.25	1.03	1449.04	9.94	1439.39	13.34	1463.20	14.58	1463.20	14.58
CR-20	CR-20_Spot	18253.85	183.05	1.33	20.38	1.35	0.15	1.64	0.02	0.92	140.64	2.15	142.02	1.29	117.38	31.92	142.02	1.29

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CR-20	CR-20_Spot 21	3418.85	92.63	2.58	20.28	2.44	0.13	2.80	0.02	1.35	127.76	3.36	137.60	1.84	NA	NA	137.60	1.84
CR-20	CR-20_Spot 22	4583.97	86.31	1.94	20.40	2.15	0.14	2.51	0.02	1.27	135.35	3.18	143.65	1.81	NA	NA	143.65	1.81
CR-20	CR-20_Spot 24	141042.59	405.44	1.84	12.39	0.73	2.27	1.52	0.20	1.34	1203.87	10.72	1196.75	14.60	1216.69	14.28	1216.69	14.28
CR-20	CR-20_Spot 26	29257.79	111.69	1.64	18.32	3.25	0.16	3.50	0.02	1.32	155.01	5.04	140.80	1.84	378.04	73.04	140.80	1.84
CR-20	CR-20_Spot 27	17025.93	103.57	1.73	20.93	2.00	0.15	2.42	0.02	1.02	139.88	3.16	145.29	1.46	48.93	NA	145.29	1.46
CR-20	CR-20_Spot 28	28276.85	343.20	3.18	20.36	1.27	0.14	1.63	0.02	1.03	135.49	2.07	135.70	1.38	131.81	29.87	135.70	1.38
CR-20	CR-20_Spot 30	167344.86	717.10	1.31	17.88	0.88	0.52	1.83	0.07	1.61	424.53	6.36	419.83	6.54	450.12	19.50	419.83	6.54
CR-20	CR-20_Spot 31	32082.80	340.43	2.66	20.14	1.28	0.14	1.70	0.02	1.07	133.36	2.13	131.84	1.40	160.47	30.89	131.84	1.40
CR-20	CR-20_Spot 32	183873.74	146.13	0.75	8.30	0.92	5.91	1.42	0.36	1.07	1962.01	12.30	1960.13	18.15	1963.98	16.48	1963.98	16.48
CR-20	CR-20_Spot 33	5067.21	74.11	4.17	20.66	2.33	0.14	3.02	0.02	1.19	132.26	3.75	141.27	1.67	NA	NA	141.27	1.67
CR-20	CR-20_Spot 34	435443.32	188.41	2.43	18.01	3.63	0.17	3.80	0.02	1.10	156.34	5.50	138.61	1.51	434.12	80.97	138.61	1.51
CR-20	CR-20_Spot 35	12158.90	96.70	1.55	20.20	2.69	0.15	2.99	0.02	1.31	140.49	3.93	141.87	1.84	117.09	63.52	141.87	1.84
CR-20	CR-20_Spot 36	11263.39	122.90	2.76	20.68	1.94	0.14	2.54	0.02	1.20	134.61	3.20	139.16	1.65	55.07	53.46	139.16	1.65
CR-20	CR-20_Spot 37	9058.16	81.81	2.57	19.76	2.82	0.15	3.41	0.02	0.96	141.51	4.51	140.97	1.34	150.65	76.81	140.97	1.34
CR-20	CR-20_Spot 38	14311.33	89.52	2.01	19.59	2.11	0.19	2.61	0.03	1.53	179.88	4.31	178.36	2.69	199.88	49.21	178.36	2.69
CR-20	CR-20_Spot 39	28740.73	326.67	1.86	20.44	1.09	0.14	1.84	0.02	1.48	137.42	2.37	138.24	2.02	123.38	25.94	138.24	2.02
CR-20	CR-20_Spot 40	8426.22	106.38	3.16	20.35	1.95	0.14	2.22	0.02	1.04	134.59	2.79	138.13	1.42	72.59	46.50	138.13	1.42
CR-20	CR-20_Spot 41	4502.91	138.31	1.52	11.95	5.07	0.31	5.19	0.03	1.14	274.50	12.49	177.23	1.99	1215.74	99.69	177.23	1.99
CR-20	CR-20_Spot 42	24121.09	179.93	1.38	20.11	1.52	0.19	2.03	0.03	1.28	173.91	3.24	175.04	2.20	158.47	36.82	175.04	2.20
CR-20	CR-20_Spot 45	13362.16	145.33	3.54	20.12	1.74	0.15	2.04	0.02	1.05	141.22	2.69	141.61	1.48	134.67	41.07	141.61	1.48
CR-20	CR-20_Spot 46	40261.17	120.81	1.48	19.83	1.89	0.15	2.23	0.02	1.17	144.32	3.00	140.70	1.63	204.21	43.99	140.70	1.63
CR-20	CR-20_Spot 47	11945.78	146.12	2.00	20.30	1.59	0.18	2.11	0.03	1.36	172.14	3.34	176.91	2.37	107.06	38.12	176.91	2.37
CR-20	CR-20_Spot 48	16512.07	332.14	2.39	20.32	1.22	0.18	1.82	0.03	0.98	165.32	2.77	168.33	1.63	122.37	36.02	168.33	1.63
CR-20	CR-20_Spot 49	9800.58	218.90	2.41	18.77	1.85	0.16	2.28	0.02	1.32	148.14	3.14	139.84	1.83	283.11	42.42	139.84	1.83
CR-20	CR-20_Spot 50	14444.87	141.52	1.93	19.77	1.70	0.14	2.15	0.02	1.21	136.20	2.74	133.53	1.60	183.09	41.38	133.53	1.60
CR-20	CR-20_Spot 51	117274.22	38.46	2.18	18.87	2.62	0.23	2.96	0.03	1.37	213.31	5.70	202.69	2.73	332.29	59.53	202.69	2.73
CR-20	CR-20_Spot 52	48826.13	155.63	1.35	20.64	1.75	0.15	2.20	0.02	1.33	141.98	2.92	143.50	1.89	116.62	41.37	143.50	1.89
CR-20	CR-20_Spot 53	11331.26	137.47	1.70	19.87	1.88	0.15	2.38	0.02	1.38	137.64	3.06	136.49	1.87	157.46	45.33	136.49	1.87
CR-20	CR-20_Spot 54	6400.44	142.50	2.68	20.46	1.92	0.14	2.62	0.02	1.49	134.92	3.31	140.60	2.07	35.89	NA	140.60	2.07
CR-20	CR-20_Spot 55	21880.14	121.11	1.55	19.62	2.68	0.15	3.07	0.02	1.49	145.69	4.17	141.40	2.08	216.25	62.18	141.40	2.08
CR-20	CR-20_Spot 56	182874.78	257.01	3.59	20.05	1.60	0.15	1.98	0.02	1.17	143.08	2.65	139.99	1.62	194.67	37.18	139.99	1.62
CR-20	CR-20_Spot 57	11581.84	148.27	1.89	20.51	1.81	0.14	2.65	0.02	1.40	133.79	3.32	136.70	1.89	82.45	53.46	136.70	1.89
CR-20	CR-20_Spot 58	10041.74	141.61	2.22	20.12	1.82	0.15	2.31	0.02	1.41	137.73	2.98	138.73	1.93	120.40	43.18	138.73	1.93
CR-20	CR-20_Spot 59	242737.54	147.26	2.50	20.47	1.86	0.15	2.55	0.02	1.74	137.98	3.28	137.44	2.36	147.34	43.61	137.44	2.36
CR-20	CR-20_Spot 60	10856.56	112.41	1.67	20.25	1.96	0.15	2.45	0.02	1.36	141.31	3.23	143.21	1.93	109.56	48.19	143.21	1.93

CR-20	CR-20_Spot 61	9324.36	126.64	3.30	20.43	1.78	0.19	2.10	0.03	1.02	172.58	3.34	179.76	1.80	75.31	43.75	179.76	1.80
CR-20	CR-20_Spot 62	17362.05	87.58	2.26	19.26	1.78	0.15	2.27	0.02	1.41	142.92	3.03	136.45	1.91	251.78	40.87	136.45	1.91
CR-20	CR-20_Spot 63	183801.45	282.75	2.89	17.58	1.60	0.55	1.98	0.07	1.17	447.02	7.17	438.59	4.97	490.65	35.32	438.59	4.97
CR-20	CR-20_Spot 64	9086.45	159.23	2.79	20.67	1.65	0.14	2.20	0.02	1.13	131.04	2.71	135.78	1.52	45.97	45.15	135.78	1.52
CR-20	CR-20_Spot 65	11325.37	91.76	1.82	20.23	1.96	0.15	2.31	0.02	1.19	141.00	3.04	142.55	1.67	114.87	46.74	142.55	1.67
CR-20	CR-20_Spot 66	31338.61	235.65	3.02	19.88	1.82	0.15	2.15	0.02	1.14	141.56	2.84	138.43	1.57	194.33	42.42	138.43	1.57
CR-20	CR-20_Spot 68	19171.95	564.20	1.42	20.51	0.95	0.14	1.84	0.02	1.41	135.11	2.33	136.76	1.90	106.14	28.08	136.76	1.90
CR-20	CR-20_Spot 69	11501.46	187.57	1.52	19.84	1.46	0.19	1.85	0.03	0.99	174.81	2.98	175.77	1.71	161.93	36.70	175.77	1.71
CR-20	CR-20_Spot 70	96967.46	249.10	2.33	17.13	2.55	0.21	3.08	0.03	1.73	192.39	5.40	164.75	2.81	546.68	55.75	164.75	2.81
CR-20	CR-20_Spot 74	7720.83	189.58	1.76	18.40	2.81	0.16	3.06	0.02	1.05	150.09	4.26	139.87	1.46	314.65	65.28	139.87	1.46
CR-20	CR-20_Spot 75	112815.17	218.74	35.46	18.30	1.21	0.42	1.58	0.06	1.02	356.98	4.76	350.12	3.48	401.81	27.00	350.12	3.48
CR-20	CR-20_Spot 76	179690.47	365.61	2.08	19.87	1.63	0.16	2.09	0.02	1.31	148.89	2.89	144.72	1.87	215.78	37.73	144.72	1.87
CR-20	CR-20_Spot 79	6509.43	91.53	2.52	19.79	2.41	0.15	2.75	0.02	1.20	144.93	3.71	146.29	1.74	122.75	58.24	146.29	1.74
CR-20	CR-20_Spot 80	21360.85	484.61	1.06	20.45	1.13	0.15	1.73	0.02	1.30	139.04	2.24	140.16	1.80	120.05	26.70	140.16	1.80
CR-20	CR-20_Spot 81	33522.02	129.77	2.72	20.47	2.47	0.15	2.87	0.02	1.41	141.44	3.79	142.14	1.98	129.54	58.96	142.14	1.98
CR-20	CR-20_Spot 82	43108.12	75.42	2.11	19.38	2.24	0.16	2.40	0.02	0.87	150.21	3.36	143.22	1.23	262.07	51.48	143.22	1.23
CR-20	CR-20_Spot 83	26025.95	130.57	1.64	20.27	1.54	0.15	1.85	0.02	1.02	143.03	2.47	142.90	1.45	145.29	36.11	142.90	1.45
CR-20	CR-20_Spot 86	6030.48	96.42	1.93	20.33	1.88	0.14	2.26	0.02	1.09	135.50	2.87	140.62	1.52	46.84	47.28	140.62	1.52
CR-20	CR-20_Spot 87	40461.55	387.74	1.40	20.13	1.34	0.14	1.73	0.02	1.09	136.44	2.21	134.33	1.45	173.27	31.34	134.33	1.45
CR-20	CR-20_Spot 88	9783.67	255.50	1.62	20.66	0.96	0.14	1.62	0.02	1.27	135.25	2.05	139.87	1.76	54.79	23.71	139.87	1.76
CR-20	CR-20_Spot 89	41050.42	265.59	1.37	20.62	1.50	0.15	1.89	0.02	1.15	137.64	2.43	138.88	1.58	116.24	35.36	138.88	1.58
CR-20	CR-20_Spot 90	38414.13	637.12	2.59	20.14	1.30	0.15	2.07	0.02	1.61	137.85	2.67	135.92	2.16	171.27	30.54	135.92	2.16
CR-20	CR-20_Spot 91	153784.59	452.06	1.05	19.94	1.24	0.16	1.61	0.02	1.04	150.26	2.25	146.50	1.50	210.02	28.67	146.50	1.50
CR-20	CR-20_Spot 92	25885.63	108.46	4.10	20.24	1.84	0.22	2.44	0.03	1.55	199.04	4.40	202.97	3.09	152.73	44.13	202.97	3.09
CR-20	CR-20_Spot 93	30333.92	219.38	2.72	18.36	1.79	0.40	2.13	0.05	1.14	344.07	6.22	338.38	3.76	382.59	40.50	338.38	3.76
CR-20	CR-20_Spot 95	19696.05	145.70	2.80	20.43	1.60	0.14	2.02	0.02	1.09	137.10	2.60	137.97	1.49	122.20	40.20	137.97	1.49
CR-20	CR-20_Spot 100	169781.96	178.99	2.48	20.31	1.61	0.15	1.90	0.02	0.99	139.47	2.47	137.82	1.36	167.64	37.71	137.82	1.36
CR-20	CR-20_Spot 101	166724.19	979.64	1.75	20.61	0.83	0.14	1.62	0.02	1.39	134.51	2.04	134.63	1.86	132.41	19.48	134.63	1.86
CR-20	CR-20_Spot 102	17885.60	309.45	2.24	20.59	1.33	0.14	1.75	0.02	1.11	133.91	2.19	135.90	1.49	98.77	31.94	135.90	1.49
CR-20	CR-20_Spot 103	54220.05	290.75	2.06	20.79	1.39	0.15	1.92	0.02	1.30	139.08	2.49	141.22	1.82	102.73	33.26	141.22	1.82
CR-20	CR-20_Spot 104	73679.49	240.71	2.35	19.58	1.65	0.15	1.89	0.02	0.92	141.46	2.49	135.34	1.23	245.42	37.97	135.34	1.23
CR-20	CR-20_Spot 106	5511.11	118.30	1.41	18.70	2.28	0.16	2.54	0.02	1.11	151.54	3.58	145.86	1.60	241.40	52.73	145.86	1.60
CR-20	CR-20_Spot 108	59702.32	105.71	3.14	19.64	2.40	0.15	2.65	0.02	1.12	141.20	3.49	135.67	1.50	235.16	55.32	135.67	1.50
CR-20	CR-20_Spot 109	7749.78	72.23	3.45	20.94	2.28	0.14	3.41	0.02	1.44	137.47	4.38	145.63	2.07	NA	NA	145.63	2.07
CR-20	CR-20_Spot 110	30980.78	162.46	2.09	20.52	1.83	0.14	2.07	0.02	0.97	136.16	2.64	137.11	1.31	119.77	43.22	137.11	1.31
CR-20	CR-20_Spot	26988.14	126.05	2.68	20.31	2.31	0.14	2.77	0.02	1.51	134.39	3.48	134.03	2.00	140.76	54.48	134.03	2.00

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CR-20	CR-20_Spot 112	57660.61	182.93	2.87	20.58	1.79	0.14	2.19	0.02	1.27	136.12	2.79	136.86	1.72	123.20	42.08	136.86	1.72
CR-20	CR-20_Spot 113	18174.28	172.52	1.79	20.19	1.52	0.15	1.92	0.02	1.11	139.31	2.50	139.19	1.53	141.22	36.78	139.19	1.53
CR-20	CR-20_Spot 114	27891.98	117.88	1.47	19.80	2.33	0.15	2.65	0.02	1.22	143.72	3.55	140.29	1.69	200.71	54.50	140.29	1.69
CR-20	CR-20_Spot 115	18208.64	152.32	2.57	20.36	1.57	0.14	2.19	0.02	1.27	134.46	2.76	135.30	1.70	119.62	42.01	135.30	1.70
CR-20	CR-20_Spot 116	39777.02	727.82	2.01	20.21	1.10	0.14	1.75	0.02	1.36	133.32	2.19	131.86	1.77	159.39	25.84	131.86	1.77
CR-20	CR-20_Spot 117	9983.71	115.56	2.25	20.89	2.12	0.14	2.39	0.02	1.04	132.84	2.98	138.95	1.43	24.79	NA	138.95	1.43
CR-20	CR-20_Spot 119	362034.21	180.11	1.85	20.68	2.26	0.14	2.60	0.02	1.29	135.35	3.30	136.17	1.74	120.98	53.31	136.17	1.74
CR-20	CR-20_Spot 120	45030.95	209.26	1.38	20.54	1.79	0.14	2.09	0.02	1.07	136.31	2.66	137.05	1.45	123.45	42.20	137.05	1.45
CR-20	CR-20_Spot 121	14843.31	84.02	2.58	19.66	1.63	0.21	2.31	0.03	1.44	193.39	4.06	193.19	2.74	195.92	41.93	193.19	2.74
CR-20	CR-20_Spot 122	43094.70	123.97	1.82	19.72	2.10	0.15	2.37	0.02	1.09	140.93	3.12	136.35	1.47	218.74	48.66	136.35	1.47
CR-20	CR-20_Spot 123	9882.01	116.92	1.59	19.36	1.85	0.15	2.29	0.02	1.02	142.46	3.04	138.42	1.39	210.31	47.58	138.42	1.39
CR-20	CR-20_Spot 125	63024.38	160.17	1.52	20.52	1.55	0.15	1.90	0.02	1.10	140.36	2.49	140.92	1.54	130.94	36.40	140.92	1.54
CR-20	CR-20_Spot 126	45027.61	471.19	1.06	19.77	1.21	0.20	1.88	0.03	1.42	182.91	3.15	180.55	2.53	213.47	28.60	180.55	2.53
CR-20	CR-20_Spot 129	72102.24	214.14	2.61	20.31	1.78	0.14	2.31	0.02	1.47	136.41	2.95	135.35	1.97	154.99	41.74	135.35	1.97
CR-20	CR-20_Spot 132	87758.44	480.70	2.01	20.05	1.11	0.15	1.70	0.02	1.29	141.20	2.24	138.37	1.77	189.06	25.74	138.37	1.77
CR-20	CR-20_Spot 133	135788.58	174.56	1.75	20.81	1.58	0.14	1.95	0.02	1.14	134.81	2.46	136.62	1.54	103.06	37.40	136.62	1.54
CR-20	CR-20_Spot 134	10295.48	147.65	2.15	19.90	1.61	0.15	2.49	0.02	1.22	139.04	3.24	138.63	1.67	146.11	51.07	138.63	1.67
CR-20	CR-20_Spot 135	38162.85	106.48	1.59	19.78	1.73	0.19	2.18	0.03	1.33	178.24	3.56	175.97	2.30	208.42	40.18	175.97	2.30
CR-20	CR-20_Spot 137	25001.70	223.42	2.62	20.33	1.56	0.14	1.75	0.02	0.78	134.00	2.20	133.94	1.04	134.91	36.87	133.94	1.04
CR-20	CR-20_Spot 138	16549.96	129.22	1.75	20.10	2.05	0.14	2.56	0.02	1.23	134.32	3.22	133.66	1.63	146.12	52.50	133.66	1.63
CR-20	CR-20_Spot 139	21315.62	305.12	3.29	11.91	4.62	0.27	4.76	0.02	1.11	241.53	10.22	148.66	1.64	1280.55	90.13	148.66	1.64
CR-20	CR-20_Spot 140	77051.23	182.43	3.59	20.46	1.54	0.15	1.92	0.02	1.14	141.22	2.53	141.43	1.60	137.68	36.22	141.43	1.60
CR-20	CR-20_Spot 141	11690.82	126.16	2.61	19.66	2.26	0.15	2.59	0.02	1.20	141.92	3.43	139.58	1.66	181.31	53.49	139.58	1.66
CR-20	CR-20_Spot 144	14742.83	162.21	2.02	20.14	1.92	0.14	2.21	0.02	1.05	135.78	2.81	135.76	1.42	136.10	45.68	135.76	1.42
CR-20	CR-20_Spot 146	249404.27	1802.10	1.72	20.85	1.09	0.15	2.23	0.02	1.95	144.33	3.00	147.08	2.84	99.47	25.66	147.08	2.84
CR-20	CR-20_Spot 150	17522.39	244.38	1.14	20.11	1.72	0.15	2.18	0.02	1.34	139.78	2.84	139.28	1.84	148.27	40.28	139.28	1.84
CR-20	CR-20_Spot 152	4541.06	39.60	2.37	21.31	3.82	0.14	5.42	0.02	3.69	133.24	6.77	148.02	5.40	NA	NA	148.02	5.40
CR-20	CR-20_Spot 153	7407.81	127.64	2.46	19.31	1.64	0.15	1.99	0.02	1.10	139.11	2.59	136.08	1.48	191.16	38.50	136.08	1.48
CR-20	CR-20_Spot 154	244720.50	169.39	2.99	11.41	0.84	2.85	1.30	0.24	0.99	1368.62	9.74	1362.23	12.11	1378.60	16.16	1378.60	16.16
CR-20	CR-20_Spot 155	34416.03	613.70	1.54	20.23	1.33	0.14	1.90	0.02	1.36	134.84	2.40	133.79	1.80	153.46	31.15	133.79	1.80
CR-20	CR-20_Spot 156	41472.68	406.87	5.46	19.84	1.29	0.15	1.86	0.02	1.32	143.09	2.48	139.50	1.82	202.96	30.35	139.50	1.82
CR-20	CR-20_Spot 158	173843.51	417.15	2.57	20.28	1.40	0.15	2.12	0.02	1.60	140.33	2.78	138.98	2.20	163.15	32.65	138.98	2.20
CR-20	CR-20_Spot 159	170807.07	1896.85	34.85	20.29	0.88	0.14	1.54	0.02	1.26	136.67	1.97	135.22	1.68	162.05	20.69	135.22	1.68
CR-20	CR-20_Spot 161	14452.81	234.09	2.21	19.81	1.71	0.15	2.03	0.02	1.07	144.35	2.74	142.47	1.51	175.22	40.31	142.47	1.51
CR-20	CR-20_Spot 162	73330.86	332.15	2.84	20.08	1.18	0.18	1.60	0.03	1.07	170.25	2.50	169.46	1.79	181.12	27.58	169.46	1.79

CR-20	CR-20_Spot163	17194.34	206.71	2.46	19.49	1.85	0.15	2.46	0.02	1.46	141.56	3.25	136.83	1.97	221.48	45.94	136.83	1.97
CR-20	CR-20_Spot164	97800.42	826.46	2.98	12.20	0.86	1.12	1.81	0.10	1.59	760.71	9.71	606.26	9.23	1246.18	16.90	1246.18	16.90
CR-20	CR-20_Spot165	51477.61	109.72	2.20	19.42	2.54	0.15	2.80	0.02	1.17	144.32	3.76	137.66	1.59	255.32	58.50	137.66	1.59
CR-20	CR-20_Spot171	29459.96	138.08	2.49	19.67	1.78	0.15	2.21	0.02	1.30	145.23	2.99	140.85	1.81	217.31	41.47	140.85	1.81
CR-20	CR-20_Spot173	31940.35	74.33	2.39	19.12	2.65	0.16	2.88	0.02	1.14	152.65	4.09	144.24	1.62	285.37	60.60	144.24	1.62
CR-20	CR-20_Spot174	18203.88	141.38	2.50	20.06	1.78	0.15	2.27	0.02	1.39	139.32	2.96	138.30	1.91	156.66	42.06	138.30	1.91
CR-20	CR-20_Spot179	654242.16	431.32	1.09	9.92	0.66	4.04	1.27	0.29	1.09	1642.38	10.36	1641.04	15.74	1644.09	12.31	1644.09	12.31
CR-20	CR-20_Spot170	113430.79	82.80	2.50	20.38	1.74	0.15	2.14	0.02	1.25	142.00	2.83	141.30	1.74	153.80	40.71	141.30	1.74
CR-20	CR-20_Spot181	3709.64	107.74	1.62	21.12	2.25	0.13	2.57	0.02	1.22	128.28	3.09	143.06	1.72	NA	NA	143.06	1.72
CR-20	CR-20_Spot182	174919.66	153.66	2.49	20.39	1.65	0.15	1.92	0.02	0.99	138.43	2.49	137.46	1.35	155.12	38.63	137.46	1.35
CR-20	CR-20_Spot183	14465.71	71.91	2.05	18.69	2.26	0.16	2.62	0.02	1.20	153.88	3.74	143.62	1.70	314.86	52.95	143.62	1.70
CR-20	CR-20_Spot185	13847.86	884.04	1.48	17.71	3.20	0.17	3.63	0.02	1.61	155.43	5.23	137.53	2.19	437.80	72.45	137.53	2.19
CR-20	CR-20_Spot189	1082105.90	681.04	1.72	20.08	1.09	0.15	1.75	0.02	1.36	138.52	2.26	135.32	1.83	193.65	25.43	135.32	1.83
CR-20	CR-20_Spot190	11691.01	109.71	1.74	20.01	1.57	0.14	2.10	0.02	1.38	135.55	2.67	135.11	1.84	143.41	37.29	135.11	1.84
CR-20	CR-20_Spot191	60256.95	166.58	1.44	20.83	2.04	0.14	3.35	0.02	2.66	136.50	4.28	138.84	3.66	95.93	48.24	138.84	3.66
CR-20	CR-20_Spot192	37794.09	241.32	1.78	19.89	1.65	0.14	2.13	0.02	1.31	135.65	2.70	132.15	1.71	197.33	39.03	132.15	1.71
CR-20	CR-20_Spot194	23759.42	129.13	2.55	20.35	1.85	0.15	2.22	0.02	1.15	144.24	2.98	144.93	1.65	132.92	44.49	144.93	1.65
CR-20	CR-20_Spot195	46793.80	436.47	2.66	19.17	2.67	0.15	3.26	0.02	1.87	144.06	4.38	135.55	2.51	286.55	61.09	135.55	2.51
CR-20	CR-20_Spot196	53364.13	249.98	1.99	20.57	1.69	0.14	2.13	0.02	1.28	136.67	2.72	137.43	1.74	123.38	40.09	137.43	1.74
CR-20	CR-20_Spot197	9369.12	140.29	2.59	19.36	2.38	0.15	2.88	0.02	1.02	138.13	3.72	134.17	1.35	206.72	62.58	134.17	1.35
CR-20	CR-20_Spot198	722647.84	356.79	1.92	20.14	1.37	0.14	1.80	0.02	1.17	135.29	2.28	132.46	1.53	185.25	31.81	132.46	1.53
CR-20	CR-20_Spot200	8643.40	105.97	2.42	20.12	2.14	0.15	2.54	0.02	1.30	138.31	3.28	140.19	1.80	106.02	51.54	140.19	1.80
CR-20	CR-20_Spot201	28118.27	371.77	2.70	20.09	1.36	0.18	1.68	0.03	0.83	168.06	2.60	168.17	1.38	166.47	34.04	168.17	1.38
CR-20	CR-20_Spot202	11736.74	83.20	2.25	21.41	2.07	0.14	2.63	0.02	1.57	135.17	3.33	144.43	2.24	NA	NA	144.43	2.24
CR-20	CR-20_Spot203	10993.61	159.97	3.34	19.66	1.99	0.15	2.53	0.02	1.52	139.12	3.29	136.77	2.06	179.27	47.16	136.77	2.06
CR-20	CR-20_Spot204	8553.10	106.28	1.81	19.76	1.81	0.15	2.27	0.02	1.14	141.65	3.00	141.20	1.59	149.10	46.09	141.20	1.59
CR-20	CR-20_Spot206	187468.14	200.46	1.57	20.61	1.62	0.15	2.00	0.02	1.17	139.19	2.60	139.84	1.62	128.19	38.07	139.84	1.62
CR-20	CR-20_Spot207	153687.87	381.18	2.11	20.19	1.01	0.18	1.49	0.03	1.09	168.26	2.31	167.79	1.81	174.91	23.50	167.79	1.81
CR-20	CR-20_Spot208	7213.02	87.62	2.25	19.87	2.12	0.19	2.49	0.03	1.09	177.63	4.05	181.90	1.95	121.16	52.68	181.90	1.95
CR-20	CR-20_Spot209	153826.13	370.98	1.84	12.89	1.26	1.13	1.67	0.11	1.10	766.21	8.99	644.06	6.74	1141.17	25.01	644.06	6.74
CR-20	CR-20_Spot212	65014.22	210.07	4.35	13.41	0.81	1.90	1.45	0.18	1.21	1080.45	9.67	1091.27	12.12	1058.70	16.33	1058.70	16.33
CR-20	CR-20_Spot214	90210.13	935.87	1.74	20.18	0.94	0.16	1.64	0.02	1.34	154.56	2.35	153.17	2.03	175.81	21.96	153.17	2.03
CR-20	CR-20_Spot216	81835.56	113.19	2.31	20.19	1.79	0.15	2.07	0.02	1.04	145.54	2.81	143.86	1.47	172.95	41.81	143.86	1.47
CR-20	CR-20_Spot217	14477.29	109.87	1.78	19.49	2.14	0.15	2.34	0.02	0.94	141.33	3.09	136.79	1.27	218.27	49.59	136.79	1.27
CR-20	CR-20_Spot218	10917.57	138.19	2.22	20.06	1.60	0.15	2.05	0.02	1.27	141.53	2.71	142.05	1.78	132.77	37.92	142.05	1.78
CR-20	CR-20_Spot	77348.92	315.54	1.77	20.16	1.13	0.15	1.71	0.02	1.29	144.41	2.30	142.51	1.82	175.83	26.29	142.51	1.82

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CR-20	CR-20_Spot 220	5394.64	138.86	2.50	20.59	2.04	0.14	2.50	0.02	1.20	136.65	3.20	144.80	1.72	NA	NA	144.80	1.72
CR-28	CR-28_Spot 1	41016.98	155.23	3.69	18.59	1.77	0.18	2.13	0.02	1.19	166.12	3.27	153.63	1.81	348.07	39.95	153.63	1.81
CR-28	CR-28_Spot 2	162948.72	258.25	1.86	18.89	1.54	0.19	1.88	0.03	1.07	174.96	3.02	164.18	1.74	323.23	34.95	164.18	1.74
CR-28	CR-28_Spot 3	1107194.36	368.03	37.18	9.09	0.77	4.88	1.68	0.32	1.49	1799.39	14.14	1798.50	23.43	1800.41	13.93	1800.41	13.93
CR-28	CR-28_Spot 4	216620.17	74.65	2.37	8.88	0.83	5.11	1.29	0.33	0.99	1838.11	10.98	1835.14	15.77	1841.45	15.10	1841.45	15.10
CR-28	CR-28_Spot 5	99719.11	702.17	1.95	20.41	0.92	0.17	1.60	0.03	1.31	163.44	2.41	165.20	2.13	137.96	21.51	165.20	2.13
CR-28	CR-28_Spot 7	119256.04	69.44	2.18	8.54	1.05	5.56	1.78	0.34	1.43	1909.28	15.29	1909.85	23.65	1908.65	18.92	1908.65	18.92
CR-28	CR-28_Spot 8	33812.35	157.91	2.19	20.36	1.33	0.17	1.64	0.03	0.96	162.05	2.45	164.27	1.55	129.69	31.25	164.27	1.55
CR-28	CR-28_Spot 9	129050.41	124.40	1.94	20.14	1.51	0.16	1.90	0.02	1.16	151.35	2.67	150.24	1.73	168.76	35.14	150.24	1.73
CR-28	CR-28_Spot 10	1028122.13	146.19	2.69	8.49	0.86	5.66	1.36	0.35	1.05	1925.75	11.71	1930.72	17.51	1920.38	15.41	1920.38	15.41
CR-28	CR-28_Spot 12	340053.24	46.83	2.51	8.15	0.80	6.32	1.97	0.37	1.80	2020.94	17.28	2048.82	31.64	1992.57	14.16	1992.57	14.16
CR-28	CR-28_Spot 13	1393944.85	851.15	2.69	20.59	0.90	0.15	1.56	0.02	1.28	145.16	2.11	146.54	1.85	122.61	21.10	146.54	1.85
CR-28	CR-28_Spot 14	15790.53	60.71	4.12	20.62	2.30	0.14	2.89	0.02	1.43	135.77	3.67	139.44	1.98	71.98	59.55	139.44	1.98
CR-28	CR-28_Spot 15	353400.27	193.24	1.80	20.54	1.69	0.18	2.50	0.03	1.84	164.77	3.80	167.52	3.04	125.41	39.80	167.52	3.04
CR-28	CR-28_Spot 16	14077.71	44.00	2.29	20.79	2.24	0.15	2.48	0.02	1.05	138.31	3.21	143.71	1.50	46.46	NA	143.71	1.50
CR-28	CR-28_Spot 17	213153.57	81.71	3.55	8.83	0.76	5.34	1.30	0.34	1.05	1874.60	11.13	1898.86	17.33	1847.81	13.82	1847.81	13.82
CR-28	CR-28_Spot 19	8862.15	70.05	3.59	19.87	2.25	0.14	3.09	0.02	1.24	136.15	3.93	136.70	1.68	126.53	66.54	136.70	1.68
CR-28	CR-28_Spot 20	143566.29	67.48	2.03	20.67	1.74	0.15	2.08	0.02	1.14	141.27	2.75	143.32	1.62	107.11	41.16	143.32	1.62
CR-28	CR-28_Spot 21	32545.24	236.33	1.43	18.24	1.42	0.20	1.65	0.03	0.84	183.36	2.77	168.36	1.39	381.20	32.01	168.36	1.39
CR-28	CR-28_Spot 22	44173.13	267.38	2.75	20.18	1.17	0.18	1.42	0.03	0.80	164.76	2.16	165.56	1.31	153.26	27.43	165.56	1.31
CR-28	CR-28_Spot 23	457077.11	371.98	2.30	20.17	1.15	0.17	2.02	0.02	1.67	155.29	2.91	154.47	2.54	167.90	26.85	154.47	2.54
CR-28	CR-28_Spot 24	21501.44	146.01	2.56	19.69	1.31	0.17	1.89	0.02	1.35	159.34	2.79	157.02	2.10	193.98	30.68	157.02	2.10
CR-28	CR-28_Spot 25	27865.72	35.31	3.08	21.71	2.62	0.15	2.98	0.02	1.42	139.10	3.87	149.36	2.09	NA	NA	149.36	2.09
CR-28	CR-28_Spot 26	142096.04	159.84	2.74	20.11	1.33	0.17	1.99	0.03	1.48	162.81	2.99	162.20	2.38	171.62	30.94	162.20	2.38
CR-28	CR-28_Spot 27	32610.40	92.10	3.88	20.27	1.85	0.14	2.13	0.02	0.99	136.78	2.72	136.79	1.34	136.64	44.26	136.79	1.34
CR-28	CR-28_Spot 28	174403.84	736.29	4.01	20.64	1.00	0.11	1.77	0.02	1.46	107.87	1.81	107.68	1.56	112.17	23.63	107.68	1.56
CR-28	CR-28_Spot 30	101532.21	192.26	2.98	20.70	1.38	0.16	1.80	0.02	1.16	147.30	2.47	150.20	1.73	100.92	32.64	150.20	1.73
CR-28	CR-28_Spot 31	148976.64	402.55	1.97	20.39	1.06	0.18	2.03	0.03	1.73	164.46	3.09	166.31	2.85	137.90	24.95	166.31	2.85
CR-28	CR-28_Spot 32	302262.36	115.89	1.24	13.46	0.91	1.80	1.23	0.18	0.83	1045.67	8.01	1047.08	7.98	1042.71	18.33	1042.71	18.33
CR-28	CR-28_Spot 33	75716.24	140.26	2.74	20.41	1.71	0.15	2.11	0.02	1.25	145.89	2.87	146.65	1.81	133.54	40.08	146.65	1.81
CR-28	CR-28_Spot 34	344863.16	80.31	2.58	8.88	0.77	5.10	1.37	0.33	1.13	1836.00	11.61	1835.29	18.05	1836.79	13.93	1836.79	13.93
CR-28	CR-28_Spot 35	126381.37	665.15	4.96	20.79	0.94	0.11	1.78	0.02	1.51	107.31	1.81	107.98	1.61	92.54	22.40	107.98	1.61
CR-28	CR-28_Spot 36	69563.05	66.16	3.28	15.34	2.68	0.23	2.93	0.03	1.19	210.78	5.58	164.25	1.93	769.03	56.35	164.25	1.93
CR-28	CR-28_Spot 37	630324.16	428.96	1.97	6.81	0.72	8.41	1.67	0.42	1.51	2275.80	15.19	2242.58	28.60	2305.77	12.42	2305.77	12.42
CR-28	CR-28_Spot 38	114939.38	204.31	4.27	20.01	1.16	0.17	1.92	0.02	1.53	157.06	2.80	155.40	2.35	182.23	27.15	155.40	2.35

CR-28	CR-28_Spot 39	12999.12	66.98	2.77	19.65	1.62	0.15	1.98	0.02	1.10	137.81	2.55	135.54	1.48	177.06	38.32	135.54	1.48
CR-28	CR-28_Spot 40	5722093.59	1422.07	1.52	20.32	0.86	0.18	1.62	0.03	1.37	164.93	2.46	165.93	2.25	150.62	20.08	165.93	2.25
CR-28	CR-28_Spot 41	6258.59	60.06	3.00	20.61	1.98	0.15	2.26	0.02	0.99	140.64	2.97	149.20	1.46	NA	NA	149.20	1.46
CR-28	CR-28_Spot 42	219677.44	183.60	2.96	21.10	1.58	0.10	1.95	0.01	1.14	92.97	1.73	94.35	1.07	57.68	37.72	94.35	1.07
CR-28	CR-28_Spot 43	67862.73	786.17	3.26	20.92	1.12	0.11	1.96	0.02	1.61	104.38	1.94	105.86	1.69	70.68	26.73	105.86	1.69
CR-28	CR-28_Spot 44	7320.89	60.30	2.91	19.70	2.04	0.16	2.43	0.02	1.11	146.58	3.32	147.82	1.63	126.52	50.97	147.82	1.63
CR-28	CR-28_Spot 45	18845.89	107.75	3.26	19.76	2.00	0.11	2.37	0.02	1.25	109.02	2.45	105.91	1.31	177.38	46.95	105.91	1.31
CR-28	CR-28_Spot 46	72472.48	367.29	2.51	20.39	1.00	0.17	1.98	0.03	1.70	162.13	2.96	164.24	2.76	131.44	23.70	164.24	2.76
CR-28	CR-28_Spot 47	20747.40	30.55	2.37	17.82	2.27	0.18	2.77	0.02	1.56	168.76	4.31	151.34	2.33	420.41	51.21	151.34	2.33
CR-28	CR-28_Spot 48	50614.28	47.19	5.59	19.36	2.09	0.23	2.41	0.03	1.22	211.89	4.62	208.63	2.49	248.27	48.04	208.63	2.49
CR-28	CR-28_Spot 49	518433.79	68.21	2.42	5.82	0.85	12.10	1.48	0.51	1.21	2611.87	13.89	2670.02	26.50	2567.08	14.22	2567.08	14.22
CR-28	CR-28_Spot 50	8273.85	30.77	2.41	18.91	2.92	0.17	3.14	0.02	1.13	155.14	4.52	149.95	1.67	235.12	67.69	149.95	1.67
CR-28	CR-28_Spot 51	47293.07	89.73	1.86	20.35	2.24	0.14	2.60	0.02	1.31	136.95	3.33	137.31	1.78	130.75	52.80	137.31	1.78
CR-28	CR-28_Spot 52	131934.50	666.36	4.09	20.37	0.99	0.12	1.68	0.02	1.36	114.74	1.83	113.65	1.53	137.41	23.24	113.65	1.53
CR-28	CR-28_Spot 53	9137.74	110.25	2.13	20.29	1.74	0.12	2.17	0.02	1.29	117.39	2.41	119.51	1.53	74.54	41.45	119.51	1.53
CR-28	CR-28_Spot 54	497726.20	330.18	2.01	20.28	1.08	0.16	1.76	0.02	1.39	154.22	2.52	154.30	2.12	152.96	25.31	154.30	2.12
CR-28	CR-28_Spot 55	86353.78	525.39	5.62	20.74	1.08	0.11	1.89	0.02	1.55	106.23	1.91	106.77	1.64	94.02	25.76	106.77	1.64
CR-28	CR-28_Spot 56	143280.38	70.47	1.03	8.49	0.72	5.63	1.29	0.35	1.08	1920.22	11.15	1922.65	17.91	1917.57	12.84	1917.57	12.84
CR-28	CR-28_Spot 57	523343.36	165.86	4.43	5.77	0.65	11.47	1.49	0.48	1.34	2562.36	13.89	2534.09	27.98	2584.79	10.92	2584.79	10.92
CR-28	CR-28_Spot 58	1757034.73	486.98	2.18	20.14	0.96	0.17	1.72	0.03	1.43	162.12	2.58	161.38	2.28	172.93	22.51	161.38	2.28
CR-28	CR-28_Spot 59	3375609.34	154.41	1.71	20.04	1.78	0.17	2.09	0.02	1.09	159.16	3.07	157.60	1.69	182.42	41.51	157.60	1.69
CR-28	CR-28_Spot 60	381140.42	88.60	1.44	8.94	0.79	5.13	1.59	0.33	1.39	1840.70	13.55	1856.42	22.35	1822.95	14.31	1822.95	14.31
CR-28	CR-28_Spot 61	392358.57	687.33	4.73	20.59	1.16	0.11	1.76	0.02	1.32	106.37	1.78	105.84	1.39	118.32	27.30	105.84	1.39
CR-28	CR-28_Spot 62	17869.01	109.76	3.40	19.75	1.85	0.17	2.23	0.03	1.25	161.28	3.33	160.01	1.97	179.92	43.21	160.01	1.97
CR-28	CR-28_Spot 63	713902.26	229.58	2.89	20.13	1.06	0.18	1.57	0.03	1.15	166.93	2.42	166.47	1.90	173.43	24.79	166.47	1.90
CR-28	CR-28_Spot 64	122314.28	336.68	1.52	18.18	1.14	0.20	1.97	0.03	1.60	181.46	3.27	164.91	2.61	402.74	25.51	164.91	2.61
CR-28	CR-28_Spot 65	93888.90	290.87	2.59	19.78	1.25	0.17	1.64	0.02	1.06	157.20	2.39	153.75	1.60	209.46	29.09	153.75	1.60
CR-28	CR-28_Spot 66	100957.85	210.05	1.66	18.30	1.27	0.31	1.63	0.04	1.03	271.80	3.89	258.62	2.60	386.84	28.46	258.62	2.60
CR-28	CR-28_Spot 67	50607.91	164.89	3.64	20.24	1.62	0.14	2.01	0.02	1.16	135.60	2.55	134.85	1.55	148.89	38.43	134.85	1.55
CR-28	CR-28_Spot 68	176995.74	147.92	4.19	20.30	1.57	0.16	1.92	0.02	1.10	154.34	2.75	154.58	1.69	150.74	36.73	154.58	1.69
CR-28	CR-28_Spot 69	29199.97	162.41	2.84	20.27	1.51	0.18	1.95	0.03	1.17	164.54	2.96	166.62	1.93	134.71	36.63	166.62	1.93
CR-28	CR-28_Spot 70	3514625.38	351.75	4.60	13.24	0.64	1.94	1.61	0.19	1.48	1093.97	10.81	1101.85	15.01	1078.35	12.87	1078.35	12.87
CR-28	CR-28_Spot 71	26846.01	145.55	3.01	20.32	1.59	0.16	1.86	0.02	0.95	148.56	2.57	149.82	1.41	128.58	37.54	149.82	1.41
CR-28	CR-28_Spot 72	16303.75	68.35	3.23	19.34	1.75	0.18	1.99	0.03	0.94	167.01	3.07	162.63	1.51	229.48	40.63	162.63	1.51
CR-28	CR-28_Spot 73	232633.08	45.00	2.79	19.94	2.55	0.16	2.99	0.02	1.57	153.80	4.27	151.02	2.34	196.83	59.24	151.02	2.34
CR-28	CR-28_Spot	1873063.01	410.38	1.63	20.08	1.16	0.16	1.73	0.02	1.29	148.04	2.39	145.86	1.86	183.06	26.99	145.86	1.86

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CR-28	CR-28_Spot 75	42063.76	190.83	3.88	20.23	1.58	0.17	1.96	0.02	1.15	155.55	2.82	155.95	1.77	149.48	37.13	155.95	1.77
CR-28	CR-28_Spot 76	229163.62	427.73	1.91	20.06	0.93	0.19	1.59	0.03	1.29	179.12	2.61	178.71	2.28	184.48	21.65	178.71	2.28
CR-28	CR-28_Spot 77	119934.30	736.39	3.05	20.64	1.03	0.11	1.81	0.02	1.49	107.32	1.85	106.89	1.58	116.73	24.26	106.89	1.58
CR-28	CR-28_Spot 78	109222.00	691.20	1.77	19.95	1.85	0.13	2.20	0.02	1.20	126.67	2.62	123.06	1.46	195.06	42.97	123.06	1.46
CR-28	CR-28_Spot 79	199717.20	208.93	3.10	19.38	1.82	0.18	2.27	0.03	1.35	167.09	3.49	160.20	2.14	265.88	41.74	160.20	2.14
CR-28	CR-28_Spot 80	295757.28	354.47	1.69	19.91	1.19	0.18	1.77	0.03	1.31	168.11	2.75	165.57	2.14	204.16	27.73	165.57	2.14
CR-28	CR-28_Spot 81	30745.01	84.81	2.08	20.11	1.61	0.17	1.96	0.02	1.12	158.09	2.87	158.12	1.76	157.56	37.65	158.12	1.76
CR-28	CR-28_Spot 82	51991.29	182.35	2.05	20.62	1.42	0.12	2.04	0.02	1.46	118.19	2.28	118.73	1.71	107.47	33.74	118.73	1.71
CR-28	CR-28_Spot 83	2431873.43	38.74	2.53	5.57	0.77	13.01	1.57	0.53	1.37	2680.56	14.80	2724.36	30.43	2647.67	12.72	2647.67	12.72
CR-28	CR-28_Spot 84	329126.53	204.22	3.60	17.93	3.24	0.19	3.45	0.03	1.19	179.98	5.70	160.80	1.89	439.87	72.19	160.80	1.89
CR-28	CR-28_Spot 85	172595.51	89.79	1.83	17.91	3.52	0.17	3.74	0.02	1.25	163.16	5.64	144.65	1.79	441.01	78.41	144.65	1.79
CR-28	CR-28_Spot 86	11200.49	41.75	3.90	21.01	2.53	0.15	2.77	0.02	1.11	139.12	3.59	146.78	1.61	10.35	NA	146.78	1.61
CR-28	CR-28_Spot 87	84935.30	211.02	5.05	19.94	1.24	0.15	1.71	0.02	1.17	142.58	2.27	139.49	1.61	194.38	28.95	139.49	1.61
CR-28	CR-28_Spot 88	32492.21	39.00	3.87	19.71	2.52	0.18	2.80	0.03	1.21	165.79	4.28	162.86	1.95	207.86	58.49	162.86	1.95
CR-28	CR-28_Spot 90	258442.01	106.86	1.77	8.55	0.73	5.62	1.10	0.35	0.82	1919.22	9.48	1928.04	13.72	1909.69	13.10	1909.69	13.10
CR-28	CR-28_Spot 91	334467.77	246.46	8.06	13.85	0.97	1.52	1.58	0.15	1.25	939.93	9.69	918.33	10.68	990.88	19.72	990.88	19.72
CR-28	CR-28_Spot 92	48074.21	244.78	2.45	20.12	0.95	0.17	1.41	0.03	1.05	162.04	2.12	161.69	1.67	167.00	22.13	161.69	1.67
CR-28	CR-28_Spot 93	24707.78	68.85	3.80	20.51	1.82	0.14	2.23	0.02	1.28	135.55	2.82	137.08	1.74	108.91	42.97	137.08	1.74
CR-28	CR-28_Spot 94	133708.43	108.07	2.07	20.30	1.32	0.18	1.71	0.03	1.08	166.00	2.61	166.71	1.77	155.97	30.99	166.71	1.77
CR-28	CR-28_Spot 95	80429.91	229.64	3.14	20.30	1.30	0.16	1.89	0.02	1.37	153.94	2.70	154.01	2.08	152.96	30.48	154.01	2.08
CR-28	CR-28_Spot 96	19994.23	486.95	4.67	12.64	6.87	0.19	7.17	0.02	2.00	180.43	11.85	115.04	2.28	1155.26	136.75	115.04	2.28
CR-28	CR-28_Spot 97	8184.91	87.49	3.13	20.09	1.55	0.15	1.95	0.02	1.18	140.12	2.55	142.63	1.66	97.84	36.63	142.63	1.66
CR-28	CR-28_Spot 98	120872.33	270.20	3.08	20.16	1.15	0.16	1.62	0.02	1.14	147.80	2.23	146.41	1.65	170.11	26.97	146.41	1.65
CR-28	CR-28_Spot 99	19827.74	144.09	4.82	20.30	1.65	0.14	1.95	0.02	1.04	137.36	2.50	138.13	1.43	124.06	38.73	138.13	1.43
CR-28	CR-28_Spot 100	383746.59	63.48	1.64	5.47	0.83	13.42	1.45	0.53	1.19	2709.68	13.70	2752.66	26.63	2677.77	13.74	2677.77	13.74
CR-28	CR-28_Spot 101	301385.74	678.93	2.55	20.33	0.71	0.18	1.39	0.03	1.19	164.47	2.11	165.25	1.94	153.26	16.73	165.25	1.94
CR-28	CR-28_Spot 102	398024.42	59.83	1.70	7.74	0.79	6.96	1.45	0.39	1.22	2106.58	12.88	2126.69	22.03	2086.99	13.91	2086.99	13.91
CR-28	CR-28_Spot 103	12907.27	58.13	2.66	18.86	2.43	0.18	2.82	0.03	1.37	172.16	4.47	164.39	2.22	280.21	56.56	164.39	2.22
CR-28	CR-28_Spot 104	1008823.44	448.57	5.31	10.39	1.61	0.99	2.20	0.07	1.51	696.57	11.10	462.27	6.73	1551.09	30.15	1551.09	30.15
CR-28	CR-28_Spot 105	37357.63	148.23	1.55	20.59	1.42	0.15	1.82	0.02	1.08	142.94	2.43	145.29	1.55	104.27	34.64	145.29	1.55
CR-28	CR-28_Spot 106	12189.28	44.64	2.71	20.54	2.48	0.15	2.81	0.02	1.26	142.80	3.74	147.29	1.83	68.81	59.77	147.29	1.83
CR-28	CR-28_Spot 107	208869.56	67.22	1.84	8.91	0.77	4.95	1.33	0.32	1.08	1811.49	11.20	1794.63	16.94	1830.92	13.89	1830.92	13.89
CR-28	CR-28_Spot 108	138397.16	918.52	3.77	20.76	0.96	0.11	1.83	0.02	1.55	104.71	1.82	105.04	1.62	97.21	22.79	105.04	1.62
CR-28	CR-28_Spot 109	19237.53	110.67	2.44	19.84	1.60	0.17	2.26	0.02	1.40	155.79	3.26	154.65	2.14	173.13	41.43	154.65	2.14
CR-28	CR-28_Spot 110	28011.30	74.12	2.05	19.87	1.88	0.14	2.41	0.02	1.50	137.03	3.09	134.51	2.00	180.94	43.79	134.51	2.00

CR-28	CR-28_Spot 111	72321.08	171.05	1.94	20.24	1.24	0.14	1.62	0.02	1.04	136.44	2.07	135.50	1.40	152.81	28.98	135.50	1.40
CR-28	CR-28_Spot 112	216520.75	196.13	2.68	20.19	1.21	0.18	1.70	0.03	1.20	165.79	2.60	166.01	1.96	162.51	28.35	166.01	1.96
CR-28	CR-28_Spot 113	49992.37	138.53	1.86	19.88	1.15	0.17	1.67	0.03	1.21	162.81	2.51	161.05	1.92	188.42	26.66	161.05	1.92
CR-28	CR-28_Spot 114	175822.36	1134.60	3.95	20.55	1.04	0.11	1.76	0.02	1.42	107.32	1.79	106.85	1.51	117.70	24.49	106.85	1.51
CR-28	CR-28_Spot 115	100444.18	39.07	1.13	8.79	0.90	5.23	1.29	0.34	0.93	1857.22	11.02	1863.47	14.97	1850.21	16.33	1850.21	16.33
CR-28	CR-28_Spot 116	17665.67	82.12	2.31	20.53	1.86	0.14	2.25	0.02	1.23	129.21	2.73	131.72	1.60	83.25	44.88	131.72	1.60
CR-28	CR-28_Spot 117	64526.49	226.23	2.63	20.61	1.40	0.12	1.67	0.02	0.89	115.75	1.83	116.43	1.02	101.75	33.44	116.43	1.02
CR-28	CR-28_Spot 118	139212.67	182.36	1.97	18.76	2.00	0.17	2.30	0.02	1.13	162.77	3.45	151.71	1.69	326.81	45.39	151.71	1.69
CR-28	CR-28_Spot 119	180056.09	408.40	2.23	19.91	1.13	0.17	1.86	0.02	1.47	157.62	2.71	155.24	2.26	193.60	26.36	155.24	2.26
CR-28	CR-28_Spot 120	23835.57	82.63	2.42	20.98	2.10	0.14	2.54	0.02	1.43	132.17	3.15	137.20	1.94	42.74	NA	137.20	1.94
CR-28	CR-28_Spot 121	467318.73	277.46	6.97	8.88	0.70	5.19	1.29	0.34	1.08	1851.29	10.95	1866.43	17.46	1834.29	12.70	1834.29	12.70
CR-28	CR-28_Spot 122	25130.79	140.30	3.52	20.51	1.31	0.18	1.88	0.03	1.35	164.65	2.86	169.31	2.26	98.23	30.99	169.31	2.26
CR-28	CR-28_Spot 123	40071.22	222.59	2.82	20.52	1.42	0.16	1.80	0.02	1.10	153.52	2.56	156.51	1.70	107.57	33.56	156.51	1.70
CR-28	CR-28_Spot 124	80983.77	308.79	2.80	20.42	0.93	0.16	1.68	0.02	1.40	153.91	2.40	155.60	2.15	127.91	22.16	155.60	2.15
CR-28	CR-28_Spot 125	271306.40	117.97	1.40	8.13	0.69	6.28	1.18	0.37	0.95	2015.19	10.30	2036.69	16.63	1993.22	12.26	1993.22	12.26
CR-28	CR-28_Spot 126	26326.48	101.54	2.72	20.56	1.82	0.15	2.35	0.02	1.37	137.98	3.03	140.45	1.90	95.59	45.22	140.45	1.90
CR-28	CR-28_Spot 127	97945.33	440.01	2.42	20.17	1.01	0.17	1.69	0.02	1.35	157.16	2.46	156.92	2.10	160.77	23.68	156.92	2.10
CR-28	CR-28_Spot 128	286735.08	119.86	1.71	9.78	0.72	4.17	1.19	0.30	0.95	1667.94	9.73	1676.68	13.99	1656.93	13.28	1656.93	13.28
CR-28	CR-28_Spot 129	87655.63	248.11	3.74	20.52	1.25	0.16	1.69	0.02	1.13	152.84	2.40	154.90	1.73	120.98	29.68	154.90	1.73
CR-28	CR-28_Spot 130	272282.25	420.96	1.29	20.43	0.98	0.18	1.68	0.03	1.36	166.20	2.58	168.22	2.26	137.55	23.14	168.22	2.26
CR-28	CR-28_Spot 131	249948.34	106.81	2.02	19.91	1.94	0.13	2.37	0.02	1.36	119.89	2.68	116.04	1.56	197.09	45.14	116.04	1.56
CR-28	CR-28_Spot 132	125296.76	254.33	2.85	20.57	1.17	0.17	1.54	0.03	1.01	161.37	2.30	164.34	1.63	118.05	27.61	164.34	1.63
CR-28	CR-28_Spot 133	519363.57	867.24	4.99	20.82	1.02	0.11	1.69	0.02	1.35	104.88	1.69	105.52	1.41	90.33	24.15	105.52	1.41
CR-28	CR-28_Spot 134	98773.78	37.24	1.59	8.82	0.70	5.21	1.30	0.34	1.09	1854.41	11.06	1863.71	17.70	1843.99	12.68	1843.99	12.68
CR-28	CR-28_Spot 135	265040.29	150.13	4.47	20.06	1.95	0.17	2.24	0.03	1.10	161.44	3.34	160.53	1.74	174.87	45.46	160.53	1.74
CR-28	CR-28_Spot 136	325674.85	32.25	1.40	5.71	1.11	11.94	1.68	0.50	1.26	2599.54	15.72	2598.40	26.92	2600.42	18.49	2600.42	18.49
CR-28	CR-28_Spot 137	296221.94	1104.38	1.43	20.42	0.75	0.17	1.43	0.03	1.22	159.77	2.11	161.60	1.94	132.78	17.61	161.60	1.94
CR-28	CR-28_Spot 138	35217.12	110.39	1.79	20.04	1.49	0.16	1.97	0.02	1.29	151.96	2.78	151.44	1.93	160.13	34.89	151.44	1.93
CR-28	CR-28_Spot 139	41714.04	611.64	1.90	19.62	2.17	0.11	2.67	0.02	1.56	105.57	2.68	100.73	1.56	216.17	50.25	100.73	1.56
CR-28	CR-28_Spot 140	144916.97	42.49	0.37	6.40	0.66	8.17	1.38	0.38	1.21	2250.42	12.48	2079.90	21.52	2409.31	11.24	2409.31	11.24
CR-28	CR-28_Spot 141	159977.18	241.84	2.64	20.10	1.00	0.17	1.43	0.03	1.02	161.72	2.14	161.07	1.63	171.30	23.45	161.07	1.63
CR-28	CR-28_Spot 142	98319040.60	179.17	3.33	9.32	0.61	4.82	0.93	0.33	0.71	1787.97	7.83	1822.11	11.23	1748.36	11.09	1748.36	11.09
CR-28	CR-28_Spot 143	19009323.09	222.04	2.81	19.44	2.11	0.19	2.44	0.03	1.23	175.42	3.93	169.73	2.05	252.91	48.56	169.73	2.05
CR-28	CR-28_Spot 144	194843.11	657.02	3.54	20.49	1.03	0.11	1.50	0.02	1.09	107.73	1.53	106.86	1.16	127.08	24.18	106.86	1.16
CR-28	CR-28_Spot 145	22726.00	226.45	3.39	14.65	2.02	0.23	2.31	0.03	1.11	213.46	4.45	160.22	1.76	850.87	42.06	160.22	1.76
CR-28	CR-28_Spot	67507.36	207.75	2.91	20.00	1.41	0.17	1.83	0.02	1.17	159.67	2.71	158.51	1.82	176.90	33.03	158.51	1.82

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CR-28	CR-28_Spot 147	108222.37	156.97	4.38	20.00	1.56	0.16	2.01	0.02	1.27	154.40	2.88	152.71	1.91	180.39	36.33	152.71	1.91
CR-28	CR-28_Spot 148	373968.21	968.71	2.58	17.92	1.48	0.20	2.06	0.03	1.44	183.41	3.46	164.41	2.33	435.81	32.99	164.41	2.33
CR-28	CR-28_Spot 149	393692.88	1264.17	2.29	20.19	0.58	0.18	1.40	0.03	1.27	164.95	2.13	164.99	2.07	164.35	13.52	164.99	2.07
CR-28	CR-28_Spot 150	109583.24	667.04	1.17	20.04	0.77	0.18	1.55	0.03	1.35	165.70	2.37	164.86	2.19	177.68	17.97	164.86	2.19
CR-28	CR-28_Spot 151	65438.21	369.97	2.83	20.15	0.94	0.17	1.53	0.02	1.20	157.37	2.23	157.21	1.87	159.82	22.00	157.21	1.87
CR-28	CR-28_Spot 152	29985.54	51.69	2.43	16.78	3.59	0.17	3.82	0.02	1.32	163.08	5.76	136.73	1.79	565.05	78.14	136.73	1.79
CR-28	CR-28_Spot 153	338134.07	159.63	2.71	20.03	1.27	0.16	1.69	0.02	1.13	150.85	2.37	148.82	1.66	182.84	29.47	148.82	1.66
CR-28	CR-28_Spot 154	37219.85	124.54	1.37	20.59	1.55	0.13	1.93	0.02	1.12	127.23	2.31	128.42	1.43	105.13	37.09	128.42	1.43
CR-28	CR-28_Spot 155	10951.40	89.78	2.54	21.07	1.70	0.14	1.99	0.02	1.01	133.73	2.49	141.33	1.42	0.72	NA	141.33	1.42
CR-28	CR-28_Spot 156	365972.36	376.20	1.73	20.66	1.14	0.16	2.13	0.02	1.80	149.94	2.97	152.20	2.71	114.19	26.87	152.20	2.71
CR-28	CR-28_Spot 157	30691.36	88.86	2.03	20.79	1.83	0.14	2.37	0.02	1.50	130.88	2.90	133.83	1.99	77.50	43.47	133.83	1.99
CR-28	CR-28_Spot 158	127874.45	986.67	3.87	20.86	0.92	0.11	1.48	0.02	1.16	101.68	1.43	102.31	1.18	87.10	21.74	102.31	1.18
CR-28	CR-28_Spot 159	279029.38	80.40	0.90	8.60	0.72	5.59	1.14	0.35	0.88	1914.34	9.81	1931.38	14.67	1895.92	13.03	1895.92	13.03
CR-28	CR-28_Spot 160	424226.68	426.27	3.99	19.87	1.00	0.18	1.61	0.03	1.26	168.71	2.51	166.14	2.07	204.90	23.29	166.14	2.07
CR-28	CR-28_Spot 161	8988.35	102.65	3.33	20.23	1.71	0.15	2.03	0.02	1.07	138.77	2.63	141.92	1.50	85.16	40.79	141.92	1.50
CR-28	CR-28_Spot 162	360604.70	1115.60	3.55	20.54	1.07	0.11	1.77	0.02	1.41	106.18	1.79	105.25	1.48	127.21	25.24	105.25	1.48
CR-28	CR-28_Spot 163	77420.93	277.12	1.89	20.40	0.92	0.17	1.47	0.03	1.15	162.04	2.20	163.82	1.86	136.05	21.55	163.82	1.86
CR-28	CR-28_Spot 164	62410.58	53.72	2.70	20.26	2.37	0.16	2.92	0.02	1.68	148.96	4.04	148.67	2.47	153.49	55.78	148.67	2.47
CR-28	CR-28_Spot 165	18128.26	72.65	2.47	20.24	1.79	0.17	2.23	0.02	1.26	157.03	3.24	158.92	1.98	128.69	43.14	158.92	1.98
CR-28	CR-28_Spot 166	5980124.50	839.25	1.59	19.84	0.85	0.20	1.74	0.03	1.52	182.67	2.92	180.30	2.71	213.47	19.70	180.30	2.71
CR-28	CR-28_Spot 167	298818.26	124.18	1.73	8.48	0.67	5.46	1.21	0.34	1.01	1894.80	10.39	1868.03	16.33	1924.24	12.04	1924.24	12.04
CR-28	CR-28_Spot 168	246260.40	50.06	1.43	8.74	0.68	5.15	1.27	0.33	1.08	1844.99	10.81	1821.97	17.07	1871.04	12.21	1871.04	12.21
CR-28	CR-28_Spot 169	327482.89	1132.36	1.42	20.30	0.99	0.17	1.70	0.02	1.38	157.55	2.48	157.52	2.15	158.05	23.06	157.52	2.15
CR-28	CR-28_Spot 170	393371.24	132.99	2.02	8.83	0.78	5.19	1.28	0.33	1.02	1851.73	10.92	1851.77	16.36	1851.67	14.15	1851.67	14.15
CR-28	CR-28_Spot 171	2468194.82	495.94	1.67	20.17	1.13	0.16	2.07	0.02	1.73	152.50	2.93	151.05	2.58	175.06	26.42	151.05	2.58
CR-28	CR-28_Spot 172	144468.01	947.05	3.86	20.70	0.91	0.11	1.58	0.02	1.29	103.55	1.56	103.27	1.33	110.04	21.44	103.27	1.33
CR-28	CR-28_Spot 173	35153.83	166.75	2.80	20.31	1.29	0.18	1.59	0.03	0.85	165.67	2.44	167.39	1.41	141.14	31.61	167.39	1.41
CR-28	CR-28_Spot 174	73297.68	41.57	2.40	19.48	2.34	0.16	2.61	0.02	1.16	150.73	3.65	144.29	1.66	253.19	53.75	144.29	1.66
CR-28	CR-28_Spot 175	861270.41	404.70	2.90	19.56	0.78	0.29	1.53	0.04	1.32	256.11	3.47	256.61	3.32	251.55	17.83	256.61	3.32
CR-28	CR-28_Spot 176	69753.00	180.58	2.15	20.26	1.47	0.12	1.77	0.02	0.97	117.51	1.96	115.39	1.11	160.71	34.53	115.39	1.11
CR-28	CR-28_Spot 177	56754.99	31.44	1.39	16.23	1.37	0.96	1.69	0.11	0.96	682.02	8.37	689.67	6.30	656.85	29.67	689.67	6.30
CR-28	CR-28_Spot 178	32398.19	191.42	1.94	6.25	1.61	9.48	2.03	0.43	1.23	2385.43	18.64	2305.36	23.77	2454.53	27.34	2454.53	27.34
CR-28	CR-28_Spot 179	33831.74	52.86	2.60	20.43	2.34	0.15	2.57	0.02	1.04	142.70	3.42	143.54	1.48	128.75	55.19	143.54	1.48
CR-28	CR-28_Spot 180	265656.98	113.30	2.64	20.72	1.82	0.16	2.29	0.02	1.39	153.00	3.25	155.53	2.13	114.05	42.88	155.53	2.13
CR-28	CR-28_Spot 181	107956.71	234.82	2.17	20.39	1.03	0.17	1.49	0.02	1.06	155.81	2.15	156.28	1.64	148.66	24.37	156.28	1.64

CR-28	CR-28_Spot 182	268688.46	485.97	2.94	20.14	0.99	0.22	1.61	0.03	1.27	201.47	2.94	203.26	2.54	180.54	23.02	203.26	2.54
CR-28	CR-28_Spot 183	94396.78	223.87	1.87	20.57	1.36	0.18	1.79	0.03	1.16	169.09	2.79	172.12	1.97	126.89	32.11	172.12	1.97
CR-28	CR-28_Spot 184	167782.08	46.40	3.05	20.33	2.24	0.15	2.46	0.02	1.02	144.35	3.31	143.59	1.45	156.88	52.49	143.59	1.45
CR-28	CR-28_Spot 185	367544.27	96.44	3.24	20.07	1.63	0.17	2.01	0.02	1.17	160.25	2.98	158.37	1.82	188.13	38.03	158.37	1.82
CR-28	CR-28_Spot 186	143128.78	185.90	5.50	20.26	1.48	0.16	1.91	0.02	1.21	154.21	2.74	153.66	1.84	162.71	34.70	153.66	1.84
CR-28	CR-28_Spot 187	44313.91	210.33	1.85	20.00	1.20	0.16	1.70	0.02	1.20	153.25	2.42	151.36	1.79	182.50	28.07	151.36	1.79
CR-28	CR-28_Spot 188	2321450.37	94.78	6.56	8.78	0.76	5.17	1.23	0.33	0.97	1848.11	10.47	1833.96	15.41	1864.04	13.76	1864.04	13.76
CR-28	CR-28_Spot 189	30601.88	66.23	2.87	19.86	1.80	0.14	2.27	0.02	1.37	134.86	2.86	131.69	1.78	191.06	42.06	131.69	1.78
CR-28	CR-28_Spot 190	65500.22	282.97	3.70	20.33	1.00	0.14	1.38	0.02	0.95	131.59	1.70	130.80	1.23	145.88	23.44	130.80	1.23
CR-28	CR-28_Spot 191	14640.31	152.17	1.93	20.55	1.23	0.17	1.68	0.03	1.15	159.24	2.48	164.43	1.86	82.66	29.25	164.43	1.86
CR-28	CR-28_Spot 192	214829.06	567.15	1.50	20.63	1.04	0.10	1.78	0.02	1.45	100.32	1.70	99.53	1.43	119.12	24.52	99.53	1.43
CR-28	CR-28_Spot 193	223221.57	273.51	3.12	19.38	2.24	0.17	2.61	0.02	1.33	159.00	3.84	152.03	1.99	264.17	51.50	152.03	1.99
CR-28	CR-28_Spot 194	391030.20	56.78	1.37	5.52	0.69	12.53	1.34	0.50	1.15	2644.88	12.56	2619.56	24.66	2664.29	11.39	2664.29	11.39
CR-28	CR-28_Spot 195	54330.77	13.15	1.01	7.03	3.18	7.61	3.36	0.39	1.07	2185.64	30.13	2114.68	19.28	2252.89	54.96	2252.89	54.96
CR-28	CR-28_Spot 196	21816.71	181.56	2.22	20.19	1.08	0.17	1.65	0.03	1.24	160.78	2.45	161.97	1.98	143.28	25.46	161.97	1.98
CR-28	CR-28_Spot 197	20448.17	76.72	3.82	19.67	1.86	0.14	2.31	0.02	1.16	134.31	2.90	130.47	1.50	202.79	46.20	130.47	1.50
CR-28	CR-28_Spot 198	68594.67	127.89	2.90	18.96	1.97	0.13	2.30	0.02	1.17	124.32	2.69	114.77	1.33	310.99	44.92	114.77	1.33
CR-28	CR-28_Spot 199	110571.94	889.43	2.47	20.82	1.08	0.11	1.68	0.02	1.29	105.58	1.69	106.05	1.36	94.92	25.55	106.05	1.36
CR-28	CR-28_Spot 200	96630.20	992.26	2.63	17.79	1.85	0.12	2.28	0.02	1.33	118.70	2.55	102.53	1.35	456.17	41.03	102.53	1.35
CR-28	CR-28_Spot 201	26167.19	129.95	2.86	19.79	1.52	0.18	1.98	0.03	1.26	164.92	3.01	162.81	2.02	195.35	35.51	162.81	2.02
CR-28	CR-28_Spot 202	80012.73	273.63	2.55	20.05	1.20	0.18	1.84	0.03	1.38	170.37	2.88	169.54	2.31	181.88	28.19	169.54	2.31
CR-28	CR-28_Spot 203	1279583.31	353.14	2.48	15.71	0.70	1.05	1.41	0.12	1.22	728.62	7.34	727.89	8.43	730.87	14.88	727.89	8.43
CR-28	CR-28_Spot 204	152465.27	391.48	2.52	18.64	1.58	0.19	2.11	0.03	1.40	178.43	3.46	165.38	2.29	354.99	35.70	165.38	2.29
CR-28	CR-28_Spot 205	23010.36	168.29	3.49	20.04	1.10	0.17	1.46	0.03	0.95	162.68	2.19	162.60	1.52	163.84	25.88	162.60	1.52
CR-28	CR-28_Spot 206	385557.01	151.99	2.56	8.11	0.47	6.28	1.03	0.37	0.91	2015.49	9.00	2022.99	15.82	2007.80	8.42	2007.80	8.42
CR-28	CR-28_Spot 207	269560.95	890.53	4.53	19.88	1.40	0.12	2.09	0.02	1.56	112.01	2.22	107.45	1.66	210.01	32.38	107.45	1.66
CR-28	CR-28_Spot 208	307518.26	59.56	2.32	8.90	0.85	5.08	1.61	0.33	1.37	1832.98	13.69	1824.50	21.76	1842.60	15.46	1842.60	15.46
CR-28	CR-28_Spot 209	73506.36	900.31	3.21	20.97	0.78	0.11	1.61	0.02	1.41	101.47	1.55	102.42	1.43	79.39	18.50	102.42	1.43
CR-28	CR-28_Spot 210	316649.10	1092.14	2.95	20.05	0.83	0.18	1.61	0.03	1.38	168.13	2.50	166.43	2.28	192.13	19.27	166.43	2.28
CR-28	CR-28_Spot 211	87254.13	103.15	2.00	19.57	1.48	0.17	1.95	0.02	1.26	161.39	2.90	155.90	1.94	242.59	34.18	155.90	1.94
CR-28	CR-28_Spot 212	77779.61	65.33	4.28	19.67	1.99	0.18	2.31	0.03	1.17	167.31	3.56	162.87	1.89	230.57	45.99	162.87	1.89
CR-28	CR-28_Spot 213	46692.47	216.10	10.07	20.24	1.51	0.17	1.99	0.02	1.30	157.96	2.91	158.09	2.03	155.90	35.33	158.09	2.03
CR-28	CR-28_Spot 214	189591.10	374.74	2.58	20.04	0.83	0.18	1.45	0.03	1.19	168.57	2.25	167.02	1.96	190.37	19.23	167.02	1.96
CR-28	CR-28_Spot 215	52268.69	167.41	3.01	20.56	1.07	0.16	1.52	0.02	1.08	153.29	2.16	155.41	1.66	120.59	25.20	155.41	1.66
CR-28	CR-28_Spot 216	21408.54	219.71	1.46	14.31	1.45	0.25	1.91	0.03	1.25	226.05	3.88	166.09	2.04	907.41	29.90	166.09	2.04
CR-28	CR-28_Spot	23590.31	254.41	1.93	20.83	1.56	0.10	2.05	0.02	1.33	98.46	1.92	99.58	1.31	71.56	37.10	99.58	1.31

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CR-28	CR-28_Spot 218	878040.01	195.73	2.96	5.71	0.68	12.03	1.47	0.50	1.30	2607.04	13.80	2605.65	27.95	2608.11	11.39	2608.11	11.39
CR-28	CR-28_Spot 219	93714.28	135.93	4.08	20.32	1.40	0.16	1.82	0.02	1.17	153.03	2.59	152.95	1.77	154.28	32.69	152.95	1.77
CR-28	CR-28_Spot 220	18736.99	55.08	2.81	20.10	2.14	0.15	2.62	0.02	1.50	144.86	3.53	144.53	2.14	150.24	50.22	144.53	2.14
CR-28	CR-28_Spot 221	21380.90	103.16	2.48	20.12	2.00	0.17	2.28	0.03	1.09	159.98	3.38	160.47	1.72	152.74	47.06	160.47	1.72
CR-28	CR-28_Spot 222	107172.18	442.11	2.03	20.09	1.12	0.19	1.96	0.03	1.60	172.39	3.10	171.72	2.72	181.68	26.09	171.72	2.72
CR-28	CR-28_Spot 223	238691.70	57.95	1.34	9.31	0.99	4.76	1.52	0.32	1.15	1777.81	12.73	1794.89	17.98	1757.81	18.16	1757.81	18.16
CR-28	CR-28_Spot 224	178243.19	1298.96	50.42	19.22	0.71	0.18	1.51	0.02	1.33	166.11	2.31	157.82	2.08	285.97	16.27	157.82	2.08
CR-28	CR-28_Spot 225	151738.59	263.21	3.31	20.39	1.00	0.15	1.72	0.02	1.40	145.65	2.33	145.50	2.02	148.01	23.37	145.50	2.02
CR-28	CR-28_Spot 226	75123.32	45.63	1.30	8.39	0.77	5.67	1.13	0.34	0.83	1926.22	9.77	1910.11	13.66	1943.58	13.83	1943.58	13.83
CR-28	CR-28_Spot 227	136097.67	511.56	2.24	20.52	1.28	0.10	1.84	0.02	1.32	99.90	1.75	98.54	1.29	132.44	30.08	98.54	1.29
CR-28	CR-28_Spot 228	444215.03	336.31	4.55	20.54	1.26	0.16	1.93	0.02	1.46	153.10	2.74	154.44	2.22	132.31	29.62	154.44	2.22
CR-28	CR-28_Spot 229	24616.99	113.47	3.95	20.66	2.20	0.11	2.44	0.02	1.05	107.33	2.48	108.08	1.12	90.62	52.22	108.08	1.12
CR-28	CR-28_Spot 230	278308.03	186.32	3.33	20.95	1.14	0.17	1.79	0.03	1.39	157.27	2.61	162.13	2.22	84.60	26.97	162.13	2.22
CR-28	CR-28_Spot 231	19372.38	73.03	3.88	20.28	1.86	0.17	2.27	0.03	1.25	159.68	3.35	161.83	1.99	127.90	44.55	161.83	1.99
CR-28	CR-28_Spot 232	16432.11	168.18	3.44	20.61	1.27	0.14	1.66	0.02	1.06	134.54	2.09	137.52	1.44	82.23	30.34	137.52	1.44
CR-28	CR-28_Spot 233	53475.95	204.09	1.52	20.28	1.14	0.17	1.58	0.03	1.07	162.67	2.37	163.37	1.73	152.50	27.04	163.37	1.73
CR-28	CR-28_Spot 234	1062248.67	134.74	4.96	8.53	0.66	5.68	1.23	0.35	1.04	1928.72	10.61	1941.55	17.36	1914.95	11.87	1914.95	11.87
CR-28	CR-28_Spot 235	1640128.12	1045.85	2.38	20.29	0.92	0.18	1.59	0.03	1.29	163.99	2.40	164.17	2.10	161.39	21.46	164.17	2.10
CR-28	CR-28_Spot 236	701480.69	432.32	1.43	19.71	0.97	0.18	1.67	0.03	1.36	169.31	2.60	165.13	2.22	228.19	22.29	165.13	2.22
CR-28	CR-28_Spot 237	534822.54	98.74	1.37	8.86	0.79	5.14	1.30	0.33	1.03	1842.65	11.04	1839.04	16.52	1846.73	14.25	1846.73	14.25
CR-28	CR-28_Spot 238	799109.33	211.52	3.94	5.70	0.74	12.02	1.30	0.50	1.07	2605.94	12.22	2598.74	22.87	2611.52	12.40	2611.52	12.40
CR-28	CR-28_Spot 239	49371.69	185.61	1.63	20.08	1.38	0.18	1.78	0.03	1.12	164.12	2.69	163.49	1.81	173.20	32.24	163.49	1.81
CR-28	CR-28_Spot 240	131214.75	200.18	1.68	19.92	1.39	0.18	1.83	0.03	1.20	167.49	2.83	165.20	1.95	199.96	32.24	165.20	1.95
CR-28	CR-28_Spot 241	90981.59	284.83	3.91	20.04	1.43	0.17	2.00	0.03	1.40	161.27	2.99	159.70	2.20	184.24	33.47	159.70	2.20
CR-28	CR-28_Spot 242	27839.04	99.05	3.28	19.75	1.68	0.17	2.02	0.02	1.10	159.51	2.98	156.71	1.71	201.40	39.21	156.71	1.71
CR-28	CR-28_Spot 243	87881.02	156.19	3.38	20.26	1.24	0.16	1.78	0.02	1.28	153.02	2.53	152.89	1.93	155.17	29.02	152.89	1.93
CR-28	CR-28_Spot 245	1746946.71	259.77	2.55	7.29	1.05	6.68	1.69	0.35	1.33	2069.36	14.96	1949.25	22.35	2191.15	18.28	2191.15	18.28
CR-28	CR-28_Spot 246	154398.78	803.89	3.72	19.81	1.12	0.19	1.85	0.03	1.47	173.08	2.94	170.29	2.46	211.38	26.01	170.29	2.46
CR-28	CR-28_Spot 247	63087.17	287.37	2.81	20.37	1.02	0.18	1.86	0.03	1.55	165.33	2.84	167.13	2.55	139.76	24.42	167.13	2.55
CR-28	CR-28_Spot 248	1171952.38	291.30	2.48	8.18	0.89	6.16	1.43	0.37	1.12	1998.68	12.51	2009.87	19.36	1987.11	15.83	1987.11	15.83
CR-28	CR-28_Spot 249	319539.54	403.03	1.54	9.01	0.86	4.07	1.67	0.27	1.44	1649.18	13.64	1523.63	19.51	1813.07	15.54	1813.07	15.54
CR-28	CR-28_Spot 250	536763.86	236.28	4.50	19.78	0.99	0.18	1.74	0.03	1.43	168.09	2.69	164.56	2.32	217.97	22.92	164.56	2.32
CR-28	CR-28_Spot 251	44437.95	179.87	4.63	20.51	1.37	0.16	1.94	0.02	1.37	150.71	2.72	152.80	2.07	117.81	32.35	152.80	2.07
CR-28	CR-28_Spot 252	59889.11	81.86	4.32	19.35	2.64	0.16	2.95	0.02	1.30	150.52	4.12	143.76	1.85	258.33	60.72	143.76	1.85
CR-28	CR-28_Spot 253	30202.33	121.48	2.54	20.03	1.63	0.13	1.91	0.02	1.01	119.77	2.16	117.36	1.17	167.85	38.02	117.36	1.17

CR-28	CR-28_Spot 254	336827.82	503.65	1.79	20.87	1.03	0.11	1.88	0.02	1.58	104.23	1.86	104.73	1.64	92.74	24.29	104.73	1.64
CR-28	CR-28_Spot 255	62772.08	262.94	5.19	20.32	1.27	0.18	1.72	0.03	1.16	164.64	2.62	166.03	1.90	144.73	29.89	166.03	1.90
CR-28	CR-28_Spot 256	79260.04	196.30	3.02	20.14	1.69	0.17	1.94	0.03	0.94	162.30	2.91	161.92	1.50	167.83	39.57	161.92	1.50
CR-28	CR-28_Spot 257	5403107.63	606.53	2.13	20.26	0.86	0.17	1.68	0.03	1.44	162.25	2.51	162.23	2.30	162.49	20.17	162.23	2.30
CR-28	CR-28_Spot 258	33489.78	52.92	3.48	19.88	1.46	0.16	1.85	0.02	1.12	148.18	2.55	145.65	1.61	188.94	34.26	145.65	1.61
CR-28	CR-28_Spot 259	1098749.90	351.37	2.05	6.85	0.75	8.47	1.69	0.42	1.51	2282.21	15.32	2263.38	28.86	2299.10	12.87	2299.10	12.87
CR-28	CR-28_Spot 260	1502429.57	1324.23	2.65	20.65	0.95	0.11	1.51	0.02	1.17	106.46	1.52	105.81	1.23	121.08	22.29	105.81	1.23
CR-28	CR-28_Spot 261	587772.90	132.45	2.56	8.65	0.86	5.48	1.50	0.34	1.23	1897.66	12.88	1905.18	20.23	1889.44	15.53	1889.44	15.53
CR-28	CR-28_Spot 262	129803.63	201.61	5.17	20.06	1.14	0.16	1.66	0.02	1.20	150.65	2.32	148.51	1.77	184.35	26.53	148.51	1.77
CR-28	CR-28_Spot 263	20297.92	44.27	3.00	20.40	2.19	0.15	2.46	0.02	1.10	146.04	3.34	147.80	1.61	117.65	51.79	147.80	1.61
CR-28	CR-28_Spot 264	262044.34	105.86	2.82	20.02	2.01	0.17	2.35	0.02	1.23	159.13	3.47	156.79	1.91	194.16	46.64	156.79	1.91
CR-28	CR-28_Spot 265	29531.63	233.93	1.94	20.58	1.04	0.17	1.50	0.03	1.09	160.43	2.23	164.19	1.76	105.16	24.52	164.19	1.76
CR-28	CR-28_Spot 266	105595.69	174.29	4.96	20.09	1.51	0.17	2.06	0.02	1.41	158.91	3.04	157.52	2.20	179.73	35.13	157.52	2.20
CR-28	CR-28_Spot 267	165325.99	279.95	2.45	20.43	0.96	0.17	1.57	0.02	1.24	157.65	2.29	158.65	1.94	142.66	22.44	158.65	1.94
CR-28	CR-28_Spot 268	489899.99	102.96	1.34	19.44	1.81	0.15	2.12	0.02	1.10	145.66	2.87	138.54	1.50	263.21	41.58	138.54	1.50
CR-28	CR-28_Spot 269	441367.93	232.10	1.96	19.88	1.05	0.17	1.74	0.02	1.39	159.68	2.57	156.23	2.15	211.14	24.30	156.23	2.15
CR-28	CR-28_Spot 270	145443.72	133.81	1.85	20.60	1.40	0.15	1.93	0.02	1.34	140.40	2.54	141.42	1.87	123.07	32.98	141.42	1.87
CR-28	CR-28_Spot 271	124379.03	227.19	1.49	20.11	1.17	0.16	1.77	0.02	1.32	149.00	2.45	147.12	1.92	179.03	27.41	147.12	1.92
CR-28	CR-28_Spot 272	114816.82	59.11	1.16	9.36	0.90	4.61	1.38	0.31	1.04	1751.45	11.48	1756.09	15.94	1745.89	16.54	1745.89	16.54
CR-28	CR-28_Spot 273	54811.76	172.26	4.51	20.68	1.36	0.16	1.82	0.02	1.20	149.12	2.52	151.80	1.80	106.77	32.31	151.80	1.80
CR-28	CR-28_Spot 274	89873.46	242.32	3.12	20.36	1.06	0.17	1.43	0.02	0.95	156.67	2.07	157.17	1.47	149.10	24.97	157.17	1.47
CR-28	CR-28_Spot 276	1959439.02	109.12	1.14	8.64	0.74	5.62	1.26	0.35	1.03	1919.89	10.90	1941.18	17.19	1896.96	13.28	1896.96	13.28
CR-28	CR-28_Spot 277	12708.12	99.56	3.46	20.01	1.74	0.15	2.20	0.02	1.34	144.64	2.96	144.62	1.91	144.94	40.91	144.62	1.91
CR-28	CR-28_Spot 278	12730.15	79.26	2.61	19.88	1.83	0.15	2.43	0.02	1.08	144.20	3.26	143.14	1.52	161.63	50.90	143.14	1.52
CR-28	CR-28_Spot 279	106963.03	189.62	3.57	20.31	1.41	0.15	1.78	0.02	1.09	143.40	2.38	142.42	1.53	159.63	33.01	142.42	1.53
CR-28	CR-28_Spot 280	349127.06	340.43	1.64	19.68	0.99	0.18	1.55	0.03	1.19	167.16	2.38	162.17	1.90	238.27	22.84	162.17	1.90
CR-28	CR-28_Spot 281	69005.85	259.72	1.67	19.96	1.06	0.17	1.41	0.03	0.92	161.87	2.11	159.39	1.45	198.42	24.73	159.39	1.45
CR-28	CR-28_Spot 282	298688.38	225.22	2.61	20.41	1.24	0.12	1.87	0.02	1.40	117.06	2.06	115.29	1.60	153.25	29.01	115.29	1.60
CR-28	CR-28_Spot 283	751362.64	474.30	1.39	17.59	0.97	0.61	1.68	0.08	1.37	485.82	6.47	484.02	6.38	494.29	21.34	484.02	6.38
CR-28	CR-28_Spot 284	2267891.71	141.54	1.94	8.92	0.85	5.25	1.58	0.34	1.33	1860.13	13.49	1878.03	21.71	1840.15	15.43	1840.15	15.43
CR-28	CR-28_Spot 285	152115.17	60.15	2.91	20.41	1.91	0.16	2.25	0.02	1.18	147.42	3.08	147.27	1.72	149.91	44.89	147.27	1.72
CR-28	CR-28_Spot 286	114652.93	267.44	2.33	19.78	1.04	0.17	1.72	0.02	1.37	160.38	2.55	156.28	2.11	221.29	24.07	156.28	2.11
CR-28	CR-28_Spot 287	926800.38	185.84	3.24	6.07	0.72	10.49	1.19	0.46	0.96	2479.47	11.07	2443.71	19.44	2508.89	12.04	2508.89	12.04
CR-28	CR-28_Spot 288	923488.84	32.55	1.81	4.95	0.88	15.36	1.37	0.55	1.06	2838.09	13.10	2825.10	24.17	2847.31	14.31	2847.31	14.31
CR-28	CR-28_Spot 289	110748.31	234.74	1.75	20.09	1.00	0.18	1.54	0.03	1.17	168.35	2.39	167.13	1.93	185.50	23.34	167.13	1.93
CR-28	CR-28_Spot	52221.80	351.17	1.48	19.99	1.08	0.18	1.61	0.03	1.19	167.30	2.48	165.59	1.95	191.67	25.27	165.59	1.95

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CR-28	CR-28_Spot 291	42616.25	168.90	3.18	20.77	1.26	0.17	1.69	0.03	1.09	155.87	2.44	159.74	1.72	97.46	30.53	159.74	1.72
CR-28	CR-28_Spot 292	297776.64	225.31	2.96	20.53	1.03	0.17	1.37	0.03	0.91	162.73	2.07	164.34	1.47	139.50	24.23	164.34	1.47
CR-28	CR-28_Spot 293	76506.86	295.66	1.61	20.42	1.40	0.12	1.91	0.02	1.29	115.93	2.09	114.47	1.47	146.01	32.99	114.47	1.47
CR-28	CR-28_Spot 294	663650.29	638.84	4.41	20.73	0.89	0.11	1.54	0.02	1.26	108.12	1.58	107.66	1.35	118.19	21.00	107.66	1.35
CR-28	CR-28_Spot 296	266938.17	309.79	3.10	20.27	1.18	0.18	1.89	0.03	1.48	164.36	2.87	164.05	2.39	168.79	27.48	164.05	2.39
CR-28	CR-28_Spot 297	28194.16	239.93	2.41	20.53	1.08	0.10	1.40	0.02	0.89	99.29	1.33	98.58	0.87	116.47	25.64	98.58	0.87
CR-28	CR-28_Spot 298	106148.70	360.98	2.22	20.20	1.60	0.16	2.12	0.02	1.38	152.59	3.00	151.23	2.06	173.67	37.44	151.23	2.06
CR-28	CR-28_Spot 299	65725.02	217.25	1.76	20.10	1.43	0.16	1.90	0.02	1.23	149.46	2.64	147.48	1.79	180.93	33.77	147.48	1.79
CR-28	CR-28_Spot 300	168026.26	267.68	2.15	19.95	1.23	0.17	1.56	0.03	0.96	162.37	2.34	159.57	1.52	203.33	28.57	159.57	1.52
CR-28	CR-28_Spot 301	213176.30	72.87	1.35	5.26	0.74	13.99	1.21	0.53	0.96	2749.30	11.48	2752.13	21.52	2747.21	12.13	2747.21	12.13
CR-28	CR-28_Spot 302	131392.83	171.94	5.39	19.72	2.10	0.17	2.40	0.02	1.16	160.62	3.56	155.94	1.78	230.07	48.52	155.94	1.78
CR-28	CR-28_Spot 303	151312.40	180.37	2.98	20.05	1.43	0.16	1.80	0.02	1.10	154.01	2.57	151.58	1.64	191.53	33.25	151.58	1.64
CR-28	CR-28_Spot 304	351433.45	314.46	3.77	9.53	0.73	3.92	1.74	0.27	1.58	1617.93	14.09	1541.89	21.66	1718.30	13.46	1718.30	13.46
CR-28	CR-28_Spot 305	51053.98	93.77	4.91	20.58	2.07	0.15	2.31	0.02	1.02	140.19	3.02	141.03	1.42	126.02	48.81	141.03	1.42
CR-28	CR-28_Spot 306	222120.05	66.53	0.81	8.58	0.65	5.52	1.42	0.34	1.26	1904.16	12.21	1896.24	20.76	1912.78	11.63	1912.78	11.63
CR-28	CR-28_Spot 307	417154.38	131.27	1.76	8.56	0.81	5.51	1.38	0.34	1.11	1902.05	11.83	1888.11	18.25	1917.28	14.46	1917.28	14.46
CR-28	CR-28_Spot 308	21155.99	88.16	4.37	19.92	2.42	0.11	2.77	0.02	1.35	106.03	2.79	102.59	1.37	183.94	56.47	102.59	1.37
CR-28	CR-28_Spot 309	298408.60	2583.97	1.70	20.90	0.86	0.10	1.63	0.02	1.38	98.55	1.53	98.43	1.35	101.52	20.35	98.43	1.35
CR-28	CR-28_Spot 310	149975.22	86.29	2.77	19.77	1.74	0.12	2.20	0.02	1.35	118.33	2.46	112.76	1.51	231.91	40.14	112.76	1.51
CR-28	CR-28_Spot 311	27297.49	135.85	2.40	20.43	1.44	0.11	1.87	0.02	1.15	103.38	1.83	102.02	1.16	134.90	34.53	102.02	1.16
CR-28	CR-28_Spot 312	194341.11	654.05	1.25	20.11	0.90	0.18	1.72	0.03	1.46	164.65	2.61	162.60	2.35	194.23	20.90	162.60	2.35
CR-28	CR-28_Spot 313	244557.85	990.12	3.24	20.93	0.90	0.11	1.62	0.02	1.35	103.38	1.59	103.48	1.39	101.10	21.20	103.48	1.39
CR-28	CR-28_Spot 314	320396.33	877.14	4.47	20.48	0.93	0.11	1.66	0.02	1.37	105.63	1.66	103.57	1.41	152.33	21.77	103.57	1.41
CR-28	CR-28_Spot 315	49241.81	124.05	3.14	20.49	1.53	0.15	1.99	0.02	1.27	144.02	2.68	144.31	1.82	139.17	35.97	144.31	1.82
CR-29	CR-29_Spot 1	5366.04	75.21	2.08	20.59	2.26	0.14	2.47	0.02	1.00	130.17	3.02	138.15	1.37	NA	NA	138.15	1.37
CR-29	CR-29_Spot 2	368972.64	391.88	88.55	5.79	0.66	11.89	1.50	0.50	1.34	2596.12	14.02	2610.73	28.85	2584.74	11.00	2584.74	11.00
CR-29	CR-29_Spot 3	207798.05	67.11	2.91	8.61	0.71	5.59	1.36	0.35	1.15	1913.87	11.67	1929.42	19.21	1897.03	12.83	1897.03	12.83
CR-29	CR-29_Spot 4	31106.88	102.96	2.04	11.75	5.56	0.31	5.70	0.03	1.27	271.84	13.60	167.36	2.09	1307.56	108.01	167.36	2.09
CR-29	CR-29_Spot 5	14615.95	101.86	3.95	19.81	1.49	0.15	1.99	0.02	1.27	138.95	2.58	137.24	1.73	168.30	35.68	137.24	1.73
CR-29	CR-29_Spot 6	4129.47	51.31	2.77	20.66	1.71	0.16	4.51	0.03	1.18	149.49	6.27	163.48	1.90	NA	NA	163.48	1.90
CR-29	CR-29_Spot 7	21230.91	186.25	3.71	19.50	1.88	0.18	2.20	0.03	1.13	164.78	3.34	160.90	1.80	220.85	43.59	160.90	1.80
CR-29	CR-29_Spot 8	78563.38	153.22	1.41	20.69	1.38	0.16	1.64	0.02	0.88	147.02	2.25	149.68	1.31	104.38	32.69	149.68	1.31
CR-29	CR-29_Spot 9	6870.37	192.20	3.11	20.00	1.43	0.16	2.77	0.02	0.99	147.28	3.80	151.62	1.48	77.97	61.55	151.62	1.48
CR-29	CR-29_Spot 10	10401.06	203.04	1.41	20.06	1.22	0.16	1.62	0.02	0.92	154.08	2.32	157.34	1.43	104.15	31.58	157.34	1.43
CR-29	CR-29_Spot 11	14793517.02	356.60	2.73	6.74	0.70	8.90	1.57	0.44	1.40	2328.27	14.32	2343.94	27.59	2314.54	11.98	2314.54	11.98

CR-29	CR-29_Spot 12	41682.35	262.76	3.38	19.01	0.85	0.35	1.24	0.05	0.86	306.55	3.27	309.99	2.61	280.48	20.26	309.99	2.61
CR-29	CR-29_Spot 13	36082.76	206.08	2.36	20.02	1.15	0.17	1.52	0.03	0.99	160.05	2.26	160.25	1.56	157.02	27.19	160.25	1.56
CR-29	CR-29_Spot 14	268000.78	739.31	2.50	20.29	1.05	0.14	1.74	0.02	1.39	129.70	2.12	128.95	1.78	143.53	24.56	128.95	1.78
CR-29	CR-29_Spot 15	83573.58	414.41	1.74	20.35	0.84	0.16	1.49	0.02	1.23	151.72	2.10	153.02	1.86	131.39	19.76	153.02	1.86
CR-29	CR-29_Spot 16	22118.70	271.96	2.17	19.12	1.32	0.18	1.69	0.03	1.04	170.71	2.65	164.69	1.70	255.10	30.51	164.69	1.70
CR-29	CR-29_Spot 17	14991.46	96.61	1.66	19.46	1.66	0.18	2.19	0.03	1.05	166.53	3.36	164.23	1.70	199.37	44.58	164.23	1.70
CR-29	CR-29_Spot 18	3522.39	149.48	2.85	9.49	4.30	0.36	4.37	0.03	0.75	312.37	11.75	164.96	1.22	1638.75	79.97	164.96	1.22
CR-29	CR-29_Spot 19	35701.94	408.41	1.61	20.31	1.13	0.17	1.90	0.03	1.53	161.54	2.84	163.77	2.47	129.10	26.72	163.77	2.47
CR-29	CR-29_Spot 20	43071.77	182.79	2.92	19.88	1.25	0.17	1.67	0.02	1.11	158.81	2.46	157.18	1.72	183.12	29.15	157.18	1.72
CR-29	CR-29_Spot 21	163240.00	1070.25	1.62	20.37	0.87	0.18	1.60	0.03	1.34	164.08	2.42	165.96	2.20	137.08	20.36	165.96	2.20
CR-29	CR-29_Spot 22	144262.51	178.71	2.09	11.76	0.83	2.45	1.68	0.21	1.46	1257.58	12.09	1230.23	16.31	1304.68	16.11	1304.68	16.11
CR-29	CR-29_Spot 23	57169.51	174.81	2.39	19.94	1.12	0.18	1.74	0.03	1.32	168.79	2.71	168.05	2.19	179.13	26.37	168.05	2.19
CR-29	CR-29_Spot 24	25625.66	881.85	3.98	20.94	0.97	0.11	1.57	0.02	1.23	104.09	1.55	106.57	1.30	47.56	23.39	106.57	1.30
CR-29	CR-29_Spot 26	26717.97	674.83	4.65	17.05	3.01	0.13	3.32	0.02	1.37	126.81	3.96	106.68	1.45	522.77	66.37	106.68	1.45
CR-29	CR-29_Spot 27	29578.43	397.04	2.93	20.70	1.01	0.10	1.61	0.02	1.26	98.45	1.51	99.30	1.24	77.95	24.06	99.30	1.24
CR-29	CR-29_Spot 28	1579721.05	307.71	1.81	19.97	1.55	0.16	2.64	0.02	2.14	153.74	3.77	151.62	3.21	186.44	35.96	151.62	3.21
CR-29	CR-29_Spot 29	100179.85	230.55	2.39	19.30	1.38	0.18	1.69	0.03	0.99	167.66	2.62	161.19	1.57	259.97	31.62	161.19	1.57
CR-29	CR-29_Spot 30	178329.90	553.32	2.44	20.76	0.93	0.10	1.40	0.01	1.04	95.15	1.27	95.26	0.98	92.33	22.12	95.26	0.98
CR-29	CR-29_Spot 31	716763.21	380.17	1.40	20.44	0.98	0.17	1.70	0.03	1.39	158.39	2.50	160.17	2.20	131.81	23.01	160.17	2.20
CR-29	CR-29_Spot 32	5156.70	63.09	2.39	19.02	3.21	0.16	3.40	0.02	1.09	146.84	4.65	145.35	1.56	170.96	75.20	145.35	1.56
CR-29	CR-29_Spot 33	102328.05	342.96	2.52	20.16	0.87	0.17	1.49	0.03	1.21	160.76	2.22	160.77	1.93	160.71	20.28	160.77	1.93
CR-29	CR-29_Spot 34	176010.14	200.25	1.38	20.31	1.31	0.16	1.73	0.02	1.13	147.83	2.38	147.98	1.65	145.46	30.70	147.98	1.65
CR-29	CR-29_Spot 35	107157.11	954.45	4.52	20.58	0.85	0.11	1.57	0.02	1.32	105.20	1.57	104.95	1.37	110.90	19.98	104.95	1.37
CR-29	CR-29_Spot 36	351645.35	259.78	2.26	6.81	0.65	8.95	1.05	0.44	0.83	2332.44	9.59	2368.05	16.39	2301.40	11.11	2301.40	11.11
CR-29	CR-29_Spot 37	4550.79	123.76	2.07	19.55	1.54	0.15	1.88	0.02	1.06	138.74	2.43	141.90	1.49	85.03	36.72	141.90	1.49
CR-29	CR-29_Spot 38	38200.98	325.39	1.97	19.87	0.95	0.17	1.66	0.02	1.33	155.91	2.40	154.13	2.02	183.00	23.41	154.13	2.02
CR-29	CR-29_Spot 39	180413.68	104.89	2.25	19.57	1.50	0.15	1.80	0.02	1.00	142.50	2.40	137.41	1.36	228.03	34.58	137.41	1.36
CR-29	CR-29_Spot 40	100562.93	925.25	1.11	20.14	0.75	0.18	1.58	0.03	1.39	165.83	2.42	166.17	2.28	160.94	17.68	166.17	2.28
CR-29	CR-29_Spot 42	170477.88	128.26	2.89	9.22	0.83	4.77	1.38	0.32	1.10	1780.40	11.61	1794.54	17.30	1763.84	15.22	1763.84	15.22
CR-29	CR-29_Spot 43	76898.61	66.41	1.34	5.93	0.76	9.43	1.20	0.41	0.93	2381.11	11.03	2205.32	17.40	2535.15	12.72	2535.15	12.72
CR-29	CR-29_Spot 44	12116.28	183.28	2.98	19.77	1.53	0.17	1.91	0.03	1.10	159.15	2.82	159.46	1.73	154.53	36.69	159.46	1.73
CR-29	CR-29_Spot 45	479364.68	169.97	1.62	8.13	0.75	6.14	1.28	0.36	1.04	1995.60	11.17	2000.39	17.84	1990.63	13.31	1990.63	13.31
CR-29	CR-29_Spot 46	88582.99	176.36	2.31	10.88	0.70	3.11	1.23	0.25	1.01	1436.02	9.44	1424.28	12.93	1453.44	13.27	1453.44	13.27
CR-29	CR-29_Spot 47	7452.88	105.10	1.60	20.92	1.78	0.16	2.13	0.03	1.05	149.39	2.96	160.51	1.67	NA	NA	160.51	1.67
CR-29	CR-29_Spot 48	244351.45	765.11	1.52	20.40	0.86	0.16	1.66	0.02	1.42	154.52	2.37	155.81	2.18	134.74	20.23	155.81	2.18
CR-29	CR-29_Spot	470168.17	56.89	2.22	19.11	1.67	0.23	2.03	0.03	1.15	210.34	3.85	203.50	2.30	287.68	38.23	203.50	2.30

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CR-29	CR-29_Spot 50	4241.24	69.63	2.14	19.45	1.87	0.16	2.38	0.02	1.43	152.43	3.37	156.83	2.22	84.55	45.10	156.83	2.22
CR-29	CR-29_Spot 51	60895.54	246.69	3.43	20.89	1.41	0.11	1.69	0.02	0.94	105.65	1.70	107.29	1.00	68.83	33.52	107.29	1.00
CR-29	CR-29_Spot 52	408274.25	70.91	0.58	5.47	0.68	12.81	1.33	0.51	1.15	2665.45	12.56	2658.89	24.97	2670.42	11.29	2670.42	11.29
CR-29	CR-29_Spot 53	17370.39	112.15	2.96	19.97	1.88	0.17	2.22	0.03	1.04	159.07	3.27	159.89	1.64	146.87	45.98	159.89	1.64
CR-29	CR-29_Spot 54	20815.35	1348.75	1.63	20.86	0.95	0.10	1.59	0.02	1.27	100.72	1.52	102.97	1.30	47.97	22.81	102.97	1.30
CR-29	CR-29_Spot 55	27093.94	312.53	2.31	20.42	1.06	0.12	1.45	0.02	0.98	117.70	1.61	118.17	1.15	108.05	25.17	118.17	1.15
CR-29	CR-29_Spot 56	67259.94	150.07	2.25	19.99	1.08	0.18	1.47	0.03	0.99	169.01	2.29	168.50	1.65	176.15	25.26	168.50	1.65
CR-29	CR-29_Spot 57	145712.08	231.77	2.49	5.97	0.80	8.61	1.43	0.37	1.19	2298.07	13.02	2052.46	20.91	2524.21	13.37	2524.21	13.37
CR-29	CR-29_Spot 58	20362.27	442.69	1.62	20.31	1.09	0.17	1.74	0.03	1.34	158.19	2.54	161.09	2.13	114.94	26.08	161.09	2.13
CR-29	CR-29_Spot 59	12126.86	347.80	2.51	20.55	1.19	0.11	1.93	0.02	1.52	105.23	1.93	107.06	1.61	64.07	28.50	107.06	1.61
CR-29	CR-29_Spot 60	110002.79	65.91	1.69	8.12	0.75	6.19	1.45	0.37	1.24	2003.52	12.68	2011.73	21.49	1995.05	13.28	1995.05	13.28
CR-29	CR-29_Spot 61	70214.26	47.30	1.34	5.55	0.69	12.73	1.24	0.51	1.03	2659.96	11.65	2676.90	22.47	2647.08	11.48	2647.08	11.48
CR-29	CR-29_Spot 62	38033.65	457.62	2.70	20.33	1.04	0.17	1.51	0.02	1.09	157.34	2.20	159.08	1.72	131.20	24.55	159.08	1.72
CR-29	CR-29_Spot 63	62245.65	503.21	2.33	20.28	0.96	0.16	1.59	0.02	1.27	154.34	2.28	155.00	1.95	144.31	22.55	155.00	1.95
CR-29	CR-29_Spot 64	18622.08	307.12	1.88	20.35	1.03	0.17	1.47	0.02	1.05	155.99	2.13	159.04	1.65	109.94	24.43	159.04	1.65
CR-29	CR-29_Spot 65	250085.58	317.11	2.18	5.81	0.77	11.26	1.27	0.48	1.01	2544.79	11.83	2509.58	20.97	2572.97	12.87	2572.97	12.87
CR-29	CR-29_Spot 66	6866.99	51.11	2.73	20.53	2.50	0.13	2.85	0.02	1.29	126.39	3.38	132.07	1.69	20.78	NA	132.07	1.69
CR-29	CR-29_Spot 67	175209.87	1972.08	0.52	20.08	0.72	0.17	1.46	0.02	1.27	155.83	2.12	154.51	1.95	175.92	16.86	154.51	1.95
CR-29	CR-29_Spot 68	56420.38	865.21	3.10	20.10	1.18	0.11	1.84	0.02	1.40	109.76	1.91	107.13	1.49	167.03	27.61	107.13	1.49
CR-29	CR-29_Spot 69	4391.45	32.06	3.43	19.54	2.30	0.17	2.67	0.03	1.21	157.01	3.88	161.80	1.94	85.34	56.37	161.80	1.94
CR-29	CR-29_Spot 70	8878.33	80.05	1.83	20.66	1.98	0.15	2.35	0.02	1.17	140.67	3.09	147.24	1.70	31.08	NA	147.24	1.70
CR-29	CR-29_Spot 71	81936.77	534.37	3.05	20.38	1.11	0.16	1.63	0.02	1.19	151.94	2.30	152.74	1.80	139.42	26.16	152.74	1.80
CR-29	CR-29_Spot 72	68590.29	148.18	0.94	9.81	0.78	3.97	1.28	0.28	1.01	1628.89	10.39	1609.83	14.42	1653.58	14.54	1653.58	14.54
CR-29	CR-29_Spot 73	34984.78	542.32	1.49	20.19	0.94	0.17	1.65	0.02	1.36	156.63	2.40	157.12	2.11	149.20	22.06	157.12	2.11
CR-29	CR-29_Spot 74	146234.96	227.14	1.68	19.62	1.12	0.18	1.68	0.03	1.25	166.19	2.57	161.63	2.00	231.50	25.84	161.63	2.00
CR-29	CR-29_Spot 75	4447.71	76.48	2.88	20.26	1.92	0.14	2.78	0.02	1.45	129.40	3.38	136.77	1.96	NA	NA	136.77	1.96
CR-29	CR-29_Spot 76	20700.68	89.52	2.67	19.26	2.04	0.15	2.33	0.02	1.12	143.53	3.12	137.33	1.52	247.31	47.07	137.33	1.52
CR-29	CR-29_Spot 77	13076.51	159.29	2.91	19.85	1.20	0.17	1.66	0.03	1.12	161.39	2.47	161.84	1.79	154.85	28.47	161.84	1.79
CR-29	CR-29_Spot 78	23593.61	362.63	2.58	20.37	0.98	0.17	1.56	0.03	1.20	159.80	2.30	162.71	1.93	116.79	23.23	162.71	1.93
CR-29	CR-29_Spot 79	54666.98	393.23	1.63	20.33	0.93	0.18	1.60	0.03	1.30	164.24	2.42	166.06	2.12	138.17	21.90	166.06	2.12
CR-29	CR-29_Spot 80	348406.79	1290.79	2.40	21.00	0.98	0.11	1.79	0.02	1.49	105.68	1.79	107.15	1.59	72.73	23.30	107.15	1.59
CR-29	CR-29_Spot 81	58893.85	57.80	2.18	20.04	2.17	0.14	2.42	0.02	1.09	137.42	3.12	135.44	1.46	171.63	50.55	135.44	1.46
CR-29	CR-29_Spot 82	2997679.87	140.58	2.24	8.73	0.71	5.27	1.11	0.33	0.85	1863.29	9.45	1859.10	13.75	1867.94	12.79	1867.94	12.79
CR-29	CR-29_Spot 83	11808.03	36.91	4.76	19.04	2.38	0.23	2.75	0.03	1.30	206.92	5.15	203.37	2.60	247.57	55.83	203.37	2.60
CR-29	CR-29_Spot 84	497383.56	210.16	1.62	8.73	0.62	5.18	1.03	0.33	0.83	1849.91	8.78	1834.13	13.20	1867.69	11.15	1867.69	11.15

CR-29	CR-29_Spot85	5661.88	64.08	3.05	20.39	2.21	0.16	2.53	0.03	1.21	152.83	3.59	161.89	1.93	14.53	NA	161.89	1.93
CR-29	CR-29_Spot86	20489.01	304.80	2.67	18.87	1.23	0.18	1.65	0.02	1.09	167.14	2.54	158.43	1.70	292.37	28.32	158.43	1.70
CR-29	CR-29_Spot87	135687.74	71.61	2.61	19.97	1.54	0.14	1.95	0.02	1.20	136.89	2.50	133.88	1.59	189.38	35.77	133.88	1.59
CR-29	CR-29_Spot88	22444.98	187.48	2.34	19.43	1.40	0.18	1.91	0.03	1.12	168.00	2.96	163.73	1.82	228.55	35.68	163.73	1.82
CR-29	CR-29_Spot89	18544.89	200.13	2.71	20.35	1.23	0.18	1.69	0.03	1.15	164.24	2.56	167.92	1.91	111.56	29.24	167.92	1.91
CR-29	CR-29_Spot90	30617.91	143.57	2.99	16.89	3.35	0.14	3.59	0.02	1.28	133.13	4.48	110.74	1.40	553.74	73.12	110.74	1.40
CR-29	CR-29_Spot91	24714.51	210.84	2.35	20.16	1.16	0.17	1.84	0.03	1.42	160.67	2.74	161.68	2.26	145.91	27.56	161.68	2.26
CR-29	CR-29_Spot92	6328.31	181.58	4.57	13.70	3.19	0.25	3.37	0.03	1.07	225.56	6.81	162.57	1.72	946.96	65.35	162.57	1.72
CR-29	CR-29_Spot93	16821.39	162.88	2.27	20.41	1.43	0.16	1.90	0.02	1.18	153.23	2.70	156.46	1.82	103.55	35.23	156.46	1.82
CR-29	CR-29_Spot94	155561.98	172.98	1.44	20.27	1.51	0.18	1.92	0.03	1.18	165.16	2.93	165.72	1.94	157.18	35.45	165.72	1.94
CR-29	CR-29_Spot95	20639.57	184.63	1.43	20.31	1.26	0.17	1.64	0.03	1.03	162.41	2.47	165.12	1.68	123.03	30.15	165.12	1.68
CR-29	CR-29_Spot96	841503.90	879.70	2.53	16.20	0.76	0.93	1.35	0.11	1.11	668.30	6.59	670.12	7.05	662.17	16.34	670.12	7.05
CR-29	CR-29_Spot97	63358.35	388.09	2.01	19.98	1.19	0.17	1.67	0.02	1.16	155.74	2.41	153.90	1.77	183.74	27.93	153.90	1.77
CR-29	CR-29_Spot98	33699.50	160.29	1.20	15.98	0.76	0.96	1.37	0.11	1.13	680.90	6.79	682.12	7.34	676.84	16.38	682.12	7.34
CR-29	CR-29_Spot99	38465.22	158.90	2.05	20.21	1.35	0.18	1.82	0.03	1.19	163.81	2.75	164.84	1.93	148.93	32.34	164.84	1.93
CR-29	CR-29_Spot100	134490.53	338.70	2.17	11.05	0.54	3.18	1.28	0.26	1.16	1453.31	9.90	1468.88	15.23	1430.60	10.37	1430.60	10.37
CR-29	CR-29_Spot101	26482.94	114.15	1.95	17.42	0.98	0.55	1.30	0.07	0.74	442.81	4.68	434.81	3.10	484.63	23.74	434.81	3.10
CR-29	CR-29_Spot102	1010483.99	332.93	1.25	20.03	1.04	0.16	1.61	0.02	1.23	153.21	2.29	150.84	1.84	190.09	24.11	150.84	1.84
CR-29	CR-29_Spot103	721415.56	132.26	2.04	5.29	0.77	13.93	1.17	0.53	0.88	2744.78	11.05	2762.27	19.71	2731.93	12.66	2731.93	12.66
CR-29	CR-29_Spot104	82318.98	371.71	2.94	20.08	1.40	0.17	2.23	0.03	1.73	161.89	3.33	160.81	2.75	177.62	32.64	160.81	2.75
CR-29	CR-29_Spot105	411690.19	316.22	1.35	8.91	0.75	4.50	1.22	0.29	0.97	1730.06	10.17	1645.76	14.11	1833.56	13.51	1833.56	13.51
CR-29	CR-29_Spot106	131873.84	328.95	1.39	20.32	1.24	0.16	1.90	0.02	1.44	151.29	2.67	151.31	2.15	151.02	29.16	151.31	2.15
CR-29	CR-29_Spot107	121652.42	1069.11	2.19	18.74	0.87	0.42	1.53	0.06	1.26	357.18	4.61	359.95	4.41	339.28	19.72	359.95	4.41
CR-29	CR-29_Spot108	18688.21	381.72	2.16	20.47	1.01	0.13	1.68	0.02	1.28	127.04	2.01	128.35	1.63	102.65	25.78	128.35	1.63
CR-29	CR-29_Spot109	11250.61	84.35	1.19	19.88	2.06	0.15	2.53	0.02	1.46	143.79	3.39	143.52	2.07	148.11	48.40	143.52	2.07
CR-29	CR-29_Spot110	1950199.45	252.30	2.26	7.61	0.79	7.13	1.28	0.39	1.00	2127.79	11.39	2137.17	18.26	2118.72	13.91	2118.72	13.91
CR-29	CR-29_Spot111	85351.81	1460.14	2.21	20.51	0.73	0.11	1.38	0.02	1.16	104.53	1.37	103.41	1.20	130.11	17.41	103.41	1.20
CR-29	CR-29_Spot112	59831.44	293.81	1.03	20.56	1.02	0.18	1.43	0.03	1.00	165.39	2.18	168.59	1.66	119.85	24.11	168.59	1.66
CR-29	CR-29_Spot113	62404.81	1247.72	2.76	20.61	1.06	0.11	1.85	0.02	1.51	106.76	1.87	106.40	1.60	114.82	25.02	106.40	1.60
CR-29	CR-29_Spot114	14008.23	346.21	3.01	18.44	1.61	0.12	2.33	0.02	1.38	111.45	2.46	101.21	1.38	336.15	42.70	101.21	1.38
CR-29	CR-29_Spot115	26628.93	259.83	2.25	20.45	1.12	0.16	1.57	0.02	0.98	154.50	2.25	157.01	1.51	116.21	29.02	157.01	1.51
CR-29	CR-29_Spot116	17018.97	337.46	2.24	19.57	1.49	0.18	2.13	0.03	1.51	166.77	3.27	164.07	2.45	205.35	34.70	164.07	2.45
CR-29	CR-29_Spot117	59303.59	224.95	5.66	20.30	1.32	0.16	1.71	0.02	1.08	152.53	2.42	152.79	1.63	148.57	30.97	152.79	1.63
CR-29	CR-29_Spot118	40299.55	288.92	6.23	20.44	1.14	0.16	1.58	0.02	1.10	153.01	2.25	154.75	1.68	126.07	26.88	154.75	1.68
CR-29	CR-29_Spot119	21530.63	234.40	2.23	20.29	1.18	0.16	1.93	0.02	1.48	152.03	2.73	153.63	2.25	127.22	29.07	153.63	2.25
CR-29	CR-29_Spot	11905.09	199.43	1.71	20.19	1.44	0.13	1.79	0.02	1.04	122.71	2.07	123.26	1.27	112.02	34.52	123.26	1.27

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CR-29	CR-29_Spot 121	51461.38	584.78	1.46	20.34	0.96	0.18	1.59	0.03	1.26	165.86	2.43	167.63	2.08	140.74	22.69	167.63	2.08
CR-29	CR-29_Spot 122	11570.91	50.52	0.61	7.44	2.48	6.20	2.69	0.34	0.95	2004.98	23.55	1876.94	15.51	2139.60	44.04	2139.60	44.04
CR-29	CR-29_Spot 123	8821.44	175.07	1.77	13.78	1.42	0.26	1.65	0.03	0.84	233.58	3.45	168.25	1.40	955.72	29.05	168.25	1.40
CR-29	CR-29_Spot 125	15328.93	168.29	3.26	20.33	1.29	0.17	1.96	0.03	1.17	160.04	2.90	163.53	1.89	108.80	37.20	163.53	1.89
CR-29	CR-29_Spot 126	12137.02	189.62	2.13	20.25	1.37	0.17	2.00	0.03	1.44	160.73	2.98	164.47	2.34	105.94	32.95	164.47	2.34
CR-29	CR-29_Spot 127	215570.29	5420.29	1.09	20.08	0.85	0.16	1.90	0.02	1.70	153.08	2.70	151.25	2.54	181.47	19.70	151.25	2.54
CR-29	CR-29_Spot 128	51208.65	271.23	1.63	17.15	2.27	0.15	2.49	0.02	1.00	142.21	3.30	120.14	1.19	528.25	49.88	120.14	1.19
CR-29	CR-29_Spot 129	155993.66	234.49	2.49	7.60	0.57	7.19	1.23	0.40	1.08	2135.25	10.93	2155.41	19.86	2115.89	10.06	2115.89	10.06
CR-29	CR-29_Spot 130	29799.69	305.92	2.90	19.99	1.12	0.17	1.52	0.02	0.94	158.78	2.24	157.97	1.47	170.83	27.92	157.97	1.47
CR-29	CR-29_Spot 131	15671.72	128.71	2.13	20.10	1.24	0.17	1.76	0.03	1.16	161.10	2.63	162.77	1.86	136.56	31.22	162.77	1.86
CR-29	CR-29_Spot 132	523872.90	355.13	1.78	8.79	0.76	5.33	1.65	0.34	1.46	1873.45	14.07	1886.16	23.84	1859.38	13.80	1859.38	13.80
CR-29	CR-29_Spot 133	128127.86	957.10	3.10	20.65	0.88	0.11	1.58	0.02	1.31	105.48	1.58	105.18	1.37	112.26	20.79	105.18	1.37
CR-29	CR-29_Spot 134	137518.62	501.80	1.31	19.70	0.99	0.17	1.60	0.02	1.25	155.71	2.31	151.30	1.88	223.33	22.91	151.30	1.88
CR-29	CR-29_Spot 135	65998.04	138.32	1.99	15.62	0.70	1.08	1.30	0.12	1.09	743.46	6.85	746.79	7.69	733.47	14.93	746.79	7.69
CR-29	CR-29_Spot 136	17374.62	163.50	1.82	18.71	2.20	0.15	2.58	0.02	1.34	142.20	3.42	132.35	1.76	309.72	50.05	132.35	1.76
CR-29	CR-29_Spot 137	11246.18	102.24	2.68	20.06	1.79	0.17	2.39	0.02	1.31	155.18	3.44	157.28	2.04	123.26	47.18	157.28	2.04
CR-29	CR-29_Spot 138	142878.73	921.30	2.56	20.74	0.89	0.11	1.58	0.02	1.30	107.32	1.61	107.46	1.39	104.31	21.11	107.46	1.39
CR-29	CR-29_Spot 139	130492.22	1019.44	1.56	20.20	0.91	0.17	1.55	0.02	1.25	156.48	2.25	155.67	1.92	168.74	21.39	155.67	1.92
CR-29	CR-29_Spot 140	55167.34	494.21	4.20	20.48	0.98	0.12	1.79	0.02	1.50	113.33	1.92	112.56	1.67	129.50	23.09	112.56	1.67
CR-29	CR-29_Spot 141	4740.53	42.19	2.35	17.66	2.54	0.19	3.07	0.03	1.09	177.06	4.99	164.06	1.76	354.38	64.87	164.06	1.76
CR-29	CR-29_Spot 142	90285.58	205.78	2.78	20.25	1.07	0.17	1.68	0.02	1.29	159.23	2.48	159.11	2.03	161.06	25.08	159.11	2.03
CR-29	CR-29_Spot 144	152658.74	771.72	3.40	20.51	0.87	0.11	1.47	0.02	1.18	108.19	1.50	107.06	1.25	132.95	20.44	107.06	1.25
CR-29	CR-29_Spot 145	1052605.52	178.62	5.74	5.57	0.70	12.47	1.15	0.50	0.91	2640.44	10.81	2630.19	19.67	2648.28	11.64	2648.28	11.64
CR-29	CR-29_Spot 146	992749.16	253.02	1.47	6.72	0.73	7.40	1.59	0.36	1.42	2161.18	14.27	1985.80	24.24	2332.19	12.47	2332.19	12.47
CR-29	CR-29_Spot 147	13401.35	224.26	1.99	20.29	1.30	0.17	1.74	0.03	1.15	160.28	2.58	163.71	1.86	109.83	30.88	163.71	1.86
CR-29	CR-29_Spot 148	719752.61	174.18	2.21	8.86	0.76	5.19	1.40	0.33	1.17	1850.85	11.89	1854.19	18.88	1847.07	13.76	1847.07	13.76
CR-29	CR-29_Spot 149	7386.03	77.06	1.78	19.59	1.99	0.15	2.83	0.02	1.33	141.96	3.74	141.42	1.86	150.93	58.47	141.42	1.86
CR-29	CR-29_Spot 150	96468.71	932.53	3.89	20.58	0.95	0.11	1.63	0.02	1.33	105.42	1.64	104.71	1.38	121.55	22.38	104.71	1.38
CR-29	CR-29_Spot 151	5161.02	165.92	1.81	15.48	2.81	0.23	3.02	0.03	1.09	206.23	5.63	168.11	1.81	667.83	60.22	168.11	1.81
CR-29	CR-29_Spot 152	11372.15	133.34	1.74	20.20	1.54	0.16	1.98	0.02	1.24	154.16	2.83	157.00	1.92	110.67	36.58	157.00	1.92
CR-29	CR-29_Spot 153	25437.11	74.92	1.82	19.86	2.18	0.14	2.48	0.02	1.18	135.55	3.14	132.74	1.55	185.17	50.71	132.74	1.55
CR-29	CR-29_Spot 154	71051.71	677.10	2.04	19.98	0.82	0.18	1.63	0.03	1.41	164.44	2.48	162.80	2.27	188.11	19.17	162.80	2.27
CR-29	CR-29_Spot 155	10790.28	170.85	2.04	20.47	1.26	0.17	1.72	0.03	1.09	159.27	2.53	165.11	1.77	73.28	31.61	165.11	1.77
CR-29	CR-29_Spot 156	22619.08	147.45	2.98	20.21	1.34	0.14	1.77	0.02	1.07	134.95	2.24	134.68	1.43	139.62	33.04	134.68	1.43
CR-29	CR-29_Spot 157	37399.37	103.57	1.57	19.70	1.68	0.18	2.01	0.03	1.10	167.16	3.10	163.99	1.78	212.33	39.11	163.99	1.78

CR-29	CR-29_Spot 158	43840.86	171.07	1.98	19.35	1.76	0.18	2.15	0.03	1.23	169.95	3.36	163.93	1.99	254.60	40.46	163.93	1.99
CR-29	CR-29_Spot 159	21017.69	58.60	2.22	19.94	2.66	0.15	2.94	0.02	1.25	145.65	3.99	144.44	1.79	165.37	62.17	144.44	1.79
CR-29	CR-29_Spot 160	11342.84	179.39	3.22	20.46	1.47	0.16	1.98	0.03	1.08	154.01	2.82	159.27	1.70	73.85	39.37	159.27	1.70
CR-29	CR-29_Spot 161	107003.75	246.72	2.68	20.23	1.23	0.17	1.69	0.03	1.16	159.37	2.49	159.46	1.83	157.97	28.69	159.46	1.83
CR-29	CR-29_Spot 162	56211.11	817.60	2.62	20.41	1.09	0.11	1.80	0.02	1.44	103.62	1.78	102.43	1.46	131.11	25.69	102.43	1.46
CR-29	CR-29_Spot 163	55310.16	126.28	2.02	20.33	1.37	0.17	1.73	0.03	1.05	163.34	2.61	165.02	1.70	139.03	32.26	165.02	1.70
CR-29	CR-29_Spot 164	19505.37	205.36	2.30	20.64	1.63	0.12	1.90	0.02	0.95	114.77	2.06	116.46	1.10	79.77	39.02	116.46	1.10
CR-29	CR-29_Spot 165	134192.88	473.10	1.94	19.75	0.92	0.18	1.31	0.03	0.94	165.30	2.00	161.87	1.50	214.84	21.34	161.87	1.50
CR-29	CR-29_Spot 166	37706.98	212.93	2.12	20.23	1.64	0.11	1.94	0.02	1.03	103.88	1.91	102.06	1.04	145.92	38.45	102.06	1.04
CR-29	CR-29_Spot 167	458660.91	1417.47	2.75	20.65	0.92	0.11	1.63	0.02	1.34	105.31	1.63	104.91	1.39	114.20	21.73	104.91	1.39
CR-29	CR-29_Spot 168	31736.22	188.34	2.98	20.23	1.14	0.17	1.79	0.03	1.37	160.27	2.65	161.55	2.18	141.39	27.07	161.55	2.18
CR-29	CR-29_Spot 169	141578.72	171.97	1.58	16.21	0.94	0.94	1.48	0.11	1.14	671.46	7.28	676.62	7.35	654.15	20.17	676.62	7.35
CR-29	CR-29_Spot 170	22191.88	1016.84	3.42	19.55	1.46	0.12	1.91	0.02	1.23	111.07	2.01	106.48	1.30	210.64	33.91	106.48	1.30
CR-29	CR-29_Spot 171	16304.57	70.99	2.12	19.48	1.00	0.22	1.71	0.03	1.34	202.29	3.13	201.72	2.67	208.91	24.43	201.72	2.67
CR-29	CR-29_Spot 172	12706.47	110.76	2.18	20.46	2.51	0.12	2.79	0.02	1.11	114.31	3.02	116.02	1.28	78.93	60.83	116.02	1.28
CR-29	CR-29_Spot 173	3551.94	37.65	2.68	18.83	2.99	0.21	4.26	0.03	1.00	194.30	7.53	198.80	1.95	139.90	97.24	198.80	1.95
CR-29	CR-29_Spot 174	125186.65	352.62	1.52	17.43	0.94	0.60	1.76	0.08	1.48	476.74	6.70	472.40	6.76	497.67	20.83	472.40	6.76
CR-29	CR-29_Spot 175	2150797.24	2741.03	2.38	19.96	0.75	0.17	1.61	0.02	1.43	158.03	2.36	155.63	2.20	194.31	17.35	155.63	2.20
CR-29	CR-29_Spot 176	5753.45	80.79	1.62	19.32	2.18	0.17	2.71	0.03	1.06	160.13	4.01	160.62	1.69	152.86	58.37	160.62	1.69
CR-29	CR-29_Spot 177	323500.03	449.54	3.84	10.02	0.67	1.51	1.68	0.11	1.54	935.20	10.28	673.66	9.88	1615.49	12.40	1615.49	12.40
CR-29	CR-29_Spot 178	43153.78	177.88	3.85	20.24	1.13	0.16	1.50	0.02	0.98	152.27	2.12	152.65	1.48	146.41	26.65	152.65	1.48
CR-29	CR-29_Spot 179	19243.33	825.90	3.58	20.75	0.91	0.10	1.40	0.02	1.07	101.33	1.35	102.79	1.09	67.14	21.70	102.79	1.09
CR-29	CR-29_Spot 180	70303.36	282.93	2.27	20.25	1.32	0.16	1.71	0.02	1.08	150.22	2.39	150.14	1.61	151.47	30.96	150.14	1.61
CR-29	CR-29_Spot 181	6806.70	60.12	2.01	19.93	2.22	0.14	2.53	0.02	1.19	137.25	3.25	139.71	1.65	95.04	52.91	139.71	1.65
CR-29	CR-29_Spot 182	66094.49	88.35	2.52	8.41	0.96	5.77	1.56	0.35	1.23	1941.44	13.53	1948.99	20.76	1933.37	17.19	1933.37	17.19
CR-29	CR-29_Spot 183	52299.05	557.85	3.33	20.73	0.83	0.11	1.70	0.02	1.48	105.64	1.71	106.19	1.56	93.40	19.85	106.19	1.56
CR-29	CR-29_Spot 184	129388.02	936.01	2.63	20.91	0.89	0.10	1.48	0.02	1.18	100.56	1.41	101.40	1.18	80.46	21.10	101.40	1.18
CR-29	CR-29_Spot 185	122356.27	120.88	1.54	19.55	1.45	0.18	1.93	0.03	1.28	165.54	2.95	160.53	2.03	237.85	33.45	160.53	2.03
CR-29	CR-29_Spot 186	119512.75	335.64	1.35	20.13	0.89	0.18	1.77	0.03	1.53	170.31	2.78	170.32	2.58	170.16	20.75	170.32	2.58
CR-29	CR-29_Spot 187	73037.43	879.01	4.18	20.83	1.05	0.11	1.64	0.02	1.26	104.07	1.62	104.90	1.31	85.20	24.81	104.90	1.31
CR-29	CR-29_Spot 188	40692.84	855.28	4.39	20.85	1.11	0.11	1.72	0.02	1.31	105.22	1.72	106.58	1.39	74.67	26.29	106.58	1.39
CR-29	CR-29_Spot 189	602250.53	171.84	1.45	9.59	0.75	4.35	1.05	0.30	0.73	1702.16	8.64	1705.04	10.86	1698.60	13.90	1698.60	13.90
CR-29	CR-29_Spot 190	68085.46	337.94	1.49	20.38	1.11	0.17	1.83	0.03	1.45	162.38	2.74	164.15	2.35	136.71	26.09	164.15	2.35
CR-29	CR-29_Spot 191	90073.04	99.89	1.39	9.24	0.79	4.67	1.30	0.31	1.03	1762.52	10.88	1761.93	15.91	1763.21	14.47	1763.21	14.47
CR-29	CR-29_Spot 192	63040.64	55.12	2.49	19.17	2.59	0.18	2.87	0.03	1.24	170.98	4.51	163.36	2.01	277.77	59.19	163.36	2.01
CR-29	CR-29_Spot	141448.61	1480.60	1.97	20.23	0.74	0.18	1.48	0.03	1.29	165.50	2.27	165.93	2.11	159.30	17.30	165.93	2.11

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CR-29	CR-29_Spot 194	14694.25	128.13	1.64	21.03	2.23	0.14	2.49	0.02	0.97	129.45	3.03	135.30	1.30	23.33	NA	135.30	1.30
CR-29	CR-29_Spot 195	16393.40	295.40	2.50	19.83	0.95	0.18	1.33	0.03	0.93	171.80	2.10	171.90	1.57	170.37	22.19	171.90	1.57
CR-29	CR-29_Spot 196	31470.13	592.17	1.93	20.73	0.94	0.09	1.61	0.01	1.31	90.92	1.40	91.14	1.18	85.20	22.37	91.14	1.18
CR-29	CR-29_Spot 197	130335.16	1272.70	1.91	20.37	0.85	0.17	1.57	0.02	1.33	157.26	2.29	158.16	2.07	143.78	19.93	158.16	2.07
CR-29	CR-29_Spot 199	22932.54	104.38	1.38	19.69	1.44	0.17	1.79	0.02	1.06	161.28	2.67	158.82	1.66	197.69	33.49	158.82	1.66
CR-29	CR-29_Spot 200	112095.16	112.28	1.99	8.51	0.81	5.51	1.36	0.34	1.09	1901.52	11.70	1890.37	17.91	1913.70	14.58	1913.70	14.58
CR-29	CR-29_Spot 201	101450.36	103.41	1.51	8.90	0.72	5.26	1.35	0.34	1.14	1863.14	11.52	1890.46	18.74	1832.79	13.00	1832.79	13.00
CR-29	CR-29_Spot 202	114504.68	559.45	1.93	20.45	0.97	0.16	1.79	0.02	1.51	147.81	2.47	148.79	2.22	132.12	22.81	148.79	2.22
CR-29	CR-29_Spot 203	43133.58	145.24	2.05	19.89	1.34	0.17	1.82	0.03	1.23	163.01	2.75	161.35	1.96	187.19	31.30	161.35	1.96
CR-29	CR-29_Spot 204	19282.71	89.82	2.90	20.18	2.12	0.17	2.36	0.02	0.98	157.32	3.44	159.04	1.54	131.46	50.54	159.04	1.54
CR-29	CR-29_Spot 205	171029.71	101.07	1.72	19.95	1.44	0.16	1.80	0.02	1.08	149.25	2.50	146.65	1.56	190.77	33.53	146.65	1.56
CR-29	CR-29_Spot 206	6092.00	173.28	1.27	16.00	4.69	0.20	4.85	0.02	1.23	184.24	8.17	153.32	1.86	601.67	101.52	153.32	1.86
CR-29	CR-29_Spot 207	152578.25	1708.32	2.95	20.73	0.74	0.11	1.63	0.02	1.46	103.77	1.61	103.96	1.50	99.48	17.53	103.96	1.50
CR-29	CR-29_Spot 208	6256.75	88.97	2.08	17.87	2.29	0.19	2.98	0.03	1.21	174.20	4.77	161.65	1.93	348.23	61.55	161.65	1.93
CR-29	CR-29_Spot 209	56639.82	261.42	1.76	20.00	1.15	0.17	1.49	0.03	0.95	161.13	2.22	160.25	1.50	174.11	26.82	160.25	1.50
CR-29	CR-29_Spot 210	79372.78	290.63	2.78	19.86	0.99	0.18	1.40	0.03	1.00	168.63	2.18	166.82	1.64	194.05	22.92	166.82	1.64
CR-29	CR-29_Spot 211	68375.82	352.76	2.49	19.95	1.15	0.18	1.93	0.03	1.55	165.69	2.96	164.50	2.52	182.73	26.98	164.50	2.52
CR-29	CR-29_Spot 212	140905.75	90.88	1.28	11.75	0.93	2.69	1.40	0.23	1.04	1325.34	10.36	1335.62	12.59	1308.73	18.10	1308.73	18.10
CR-29	CR-29_Spot 213	118455.75	203.39	1.52	20.58	1.39	0.16	1.72	0.02	1.02	149.13	2.38	151.36	1.52	113.91	32.76	151.36	1.52
CR-29	CR-29_Spot 214	65818.38	584.87	6.27	20.57	0.92	0.11	1.82	0.02	1.56	103.77	1.79	103.46	1.60	110.92	22.06	103.46	1.60
CR-29	CR-29_Spot 215	359798.05	92.82	1.91	8.39	0.74	5.80	1.29	0.35	1.05	1946.49	11.16	1955.74	17.77	1936.66	13.29	1936.66	13.29
CR-29	CR-29_Spot 216	73346.07	767.73	2.84	20.87	0.88	0.11	1.58	0.02	1.30	106.19	1.59	107.48	1.39	77.33	21.15	107.48	1.39
CR-29	CR-29_Spot 217	3075.09	66.21	2.14	19.75	1.94	0.13	2.30	0.02	1.06	127.89	2.76	135.99	1.42	NA	NA	135.99	1.42
CR-29	CR-29_Spot 218	106402.24	75.50	2.99	20.38	1.86	0.17	2.11	0.03	0.99	160.98	3.15	162.66	1.60	136.33	43.81	162.66	1.60
CR-29	CR-29_Spot 219	18504.91	947.34	2.55	17.51	2.15	0.13	2.41	0.02	1.07	123.83	2.80	107.12	1.14	458.01	47.83	107.12	1.14
CR-29	CR-29_Spot 220	8439.13	45.57	2.70	19.92	2.41	0.14	2.68	0.02	1.09	134.03	3.36	135.16	1.45	114.17	57.70	135.16	1.45
CR-29	CR-29_Spot 221	6234.85	64.64	2.57	19.46	1.90	0.17	2.30	0.02	1.09	156.43	3.34	157.35	1.69	142.50	47.64	157.35	1.69
CR-29	CR-29_Spot 222	296603.17	117.64	1.54	8.09	0.68	6.21	1.21	0.37	1.01	2006.31	10.62	2010.49	17.43	2001.98	11.99	2001.98	11.99
CR-29	CR-29_Spot 223	36309.03	80.32	1.79	8.97	0.85	4.83	1.24	0.32	0.90	1789.65	10.41	1770.53	13.87	1812.01	15.52	1812.01	15.52
CR-29	CR-29_Spot 224	32452.00	151.13	3.53	15.98	3.83	0.20	4.22	0.02	1.76	187.61	7.22	151.26	2.63	673.89	81.91	151.26	2.63
CR-29	CR-29_Spot 225	26898.29	840.22	2.33	19.21	1.13	0.12	1.69	0.02	1.26	113.22	1.81	106.41	1.33	259.00	25.88	106.41	1.33
CR-29	CR-29_Spot 226	28754.58	218.76	2.45	19.87	1.41	0.18	1.84	0.03	1.18	167.11	2.84	166.16	1.94	180.57	32.95	166.16	1.94
CR-29	CR-29_Spot 227	8441.30	61.21	3.64	19.50	2.09	0.15	2.52	0.02	1.21	139.76	3.29	138.13	1.66	167.52	51.63	138.13	1.66
CR-29	CR-29_Spot 228	28779.64	305.60	1.94	20.13	1.07	0.17	1.58	0.03	1.13	159.90	2.33	160.50	1.78	151.03	25.84	160.50	1.78
CR-29	CR-29_Spot 230	73397.08	350.24	4.16	20.31	1.13	0.16	1.83	0.02	1.44	150.93	2.57	151.23	2.15	146.23	26.46	151.23	2.15

CR-29	CR-29_Spot 231	27571.96	122.90	3.39	19.52	1.38	0.23	1.60	0.03	0.78	206.25	2.99	204.73	1.58	223.66	32.33	204.73	1.58
CR-29	CR-29_Spot 232	105628.38	561.96	1.61	20.32	1.03	0.17	1.78	0.02	1.44	157.08	2.58	157.74	2.25	147.07	24.25	157.74	2.25
CR-29	CR-29_Spot 233	171615.85	97.15	1.77	5.76	0.64	11.98	1.17	0.50	0.97	2603.02	10.93	2620.53	20.99	2589.41	10.67	2589.41	10.67
CR-29	CR-29_Spot 234	31644.06	118.06	1.50	20.29	1.79	0.13	2.18	0.02	1.23	123.31	2.53	122.71	1.49	134.83	42.20	122.71	1.49
CR-29	CR-29_Spot 235	21198.91	321.42	1.89	19.63	1.27	0.17	1.94	0.02	1.46	158.26	2.84	155.37	2.24	201.58	29.75	155.37	2.24
CR-29	CR-29_Spot 236	12797.43	231.61	1.16	19.67	0.94	0.19	1.39	0.03	0.96	176.57	2.25	176.59	1.67	176.20	23.47	176.59	1.67
CR-29	CR-29_Spot 237	10596.55	128.26	1.97	19.30	1.71	0.17	2.04	0.03	1.10	162.77	3.07	159.55	1.73	209.92	39.79	159.55	1.73
CR-29	CR-29_Spot 238	157090.89	124.65	0.61	8.49	0.76	5.79	1.33	0.36	1.10	1944.47	11.54	1970.52	18.59	1916.83	13.62	1916.83	13.62
CR-29	CR-29_Spot 240	419174.85	957.82	1.78	20.58	0.66	0.17	1.43	0.03	1.27	161.92	2.15	164.78	2.07	120.23	15.50	164.78	2.07
CR-29	CR-29_Spot 241	44510.93	793.14	4.87	19.59	2.12	0.12	2.43	0.02	1.18	114.74	2.64	109.62	1.28	222.30	49.19	109.62	1.28
CR-29	CR-29_Spot 242	132445.00	970.02	4.28	20.75	1.10	0.11	1.90	0.02	1.55	105.98	1.91	106.34	1.63	97.91	25.96	106.34	1.63
CR-29	CR-29_Spot 243	16406.86	143.96	1.62	15.82	3.05	0.21	3.25	0.02	0.91	190.36	5.64	153.13	1.38	681.36	66.67	153.13	1.38
CR-29	CR-29_Spot 244	20907.30	88.70	3.07	12.21	4.22	0.29	4.37	0.03	1.06	261.58	10.07	167.22	1.75	1223.73	83.29	167.22	1.75
CR-29	CR-29_Spot 245	39759.81	134.87	2.46	18.21	2.36	0.16	2.69	0.02	1.26	147.38	3.69	132.70	1.66	390.55	53.35	132.70	1.66
CR-29	CR-29_Spot 246	554062.82	374.87	2.46	19.95	0.86	0.19	1.45	0.03	1.17	175.48	2.34	173.89	2.01	196.90	20.03	173.89	2.01
CR-29	CR-29_Spot 247	509263.74	146.86	1.02	8.07	0.78	6.34	1.32	0.37	1.07	2023.49	11.59	2036.74	18.68	2009.99	13.75	2009.99	13.75
CR-29	CR-29_Spot 248	49313.99	473.00	1.32	19.71	0.93	0.18	1.70	0.03	1.40	169.06	2.64	165.97	2.29	212.53	22.24	165.97	2.29
CR-29	CR-29_Spot 249	28181.67	113.67	5.52	20.26	1.85	0.16	2.20	0.02	1.15	153.26	3.13	154.24	1.76	138.15	43.96	154.24	1.76
CR-29	CR-29_Spot 250	17701.08	149.10	4.30	19.77	1.31	0.17	1.86	0.02	1.28	157.03	2.70	155.41	1.97	181.45	31.22	155.41	1.97
CR-29	CR-29_Spot 251	61454.90	716.88	5.14	20.85	1.00	0.11	1.68	0.02	1.36	108.15	1.73	109.28	1.47	83.38	23.71	109.28	1.47
CR-29	CR-29_Spot 252	74307.87	37.30	2.29	8.86	0.76	5.17	1.28	0.33	1.04	1847.46	10.93	1853.37	16.71	1840.80	13.72	1840.80	13.72
CR-29	CR-29_Spot 253	6108.18	55.07	3.17	20.86	2.38	0.13	3.44	0.02	0.97	126.39	4.09	134.83	1.30	NA	NA	134.83	1.30
CR-29	CR-29_Spot 254	67840.03	463.20	1.33	20.18	0.84	0.19	1.45	0.03	1.18	174.69	2.32	175.68	2.05	161.30	19.58	175.68	2.05
CR-29	CR-29_Spot 255	21304.45	146.76	1.00	20.10	1.30	0.16	1.78	0.02	1.10	149.61	2.47	149.74	1.63	147.58	32.60	149.74	1.63
CR-29	CR-29_Spot 256	65605.52	100.39	1.65	19.91	1.95	0.15	2.27	0.02	1.16	143.71	3.04	140.86	1.61	191.01	45.48	140.86	1.61
CR-29	CR-29_Spot 257	198175.25	116.39	2.20	20.03	1.23	0.17	1.47	0.03	0.80	162.77	2.20	161.29	1.27	184.39	28.68	161.29	1.27
CR-29	CR-29_Spot 258	62935.94	336.38	1.88	20.63	1.20	0.11	1.94	0.02	1.53	103.36	1.91	103.14	1.57	108.42	28.28	103.14	1.57
CR-29	CR-29_Spot 259	24083.38	251.90	1.12	20.35	1.22	0.16	1.75	0.02	1.12	149.71	2.44	151.43	1.67	122.48	31.84	151.43	1.67
CR-29	CR-29_Spot 260	77275.54	1324.47	3.97	20.01	0.72	0.17	1.38	0.03	1.18	161.83	2.06	160.35	1.86	183.58	16.77	160.35	1.86
CR-29	CR-29_Spot 261	13312.15	110.27	3.08	19.56	1.80	0.15	2.25	0.02	1.35	139.99	2.94	136.77	1.82	195.04	41.84	136.77	1.82
CR-29	CR-29_Spot 262	43315.57	516.35	1.32	20.04	0.91	0.18	1.60	0.03	1.32	167.40	2.47	167.01	2.17	173.00	21.20	167.01	2.17
CR-29	CR-29_Spot 263	6331.59	91.49	2.39	19.42	1.55	0.15	1.95	0.02	0.92	137.66	2.51	136.70	1.25	154.24	40.24	136.70	1.25
CR-29	CR-29_Spot 264	841890.16	166.92	2.28	5.75	0.77	12.14	1.17	0.51	0.88	2615.15	10.95	2643.06	19.07	2593.59	12.81	2593.59	12.81
CR-29	CR-29_Spot 265	18977.88	49.76	4.04	19.44	1.98	0.22	2.33	0.03	1.22	204.59	4.31	202.75	2.44	225.93	45.85	202.75	2.44
CR-29	CR-29_Spot 266	133896.11	1329.48	3.06	20.60	0.78	0.11	1.43	0.02	1.20	103.48	1.41	102.73	1.23	120.70	18.36	102.73	1.23
CR-29	CR-29_Spot	223392.37	155.95	2.06	11.33	0.70	2.94	1.24	0.24	1.03	1393.53	9.43	1397.56	12.90	1387.35	13.46	1387.35	13.46

	267																	
CR-29	CR-29_Spot 268	171158.50	381.15	2.48	16.68	0.82	0.81	1.48	0.10	1.23	600.46	6.71	601.13	7.08	597.94	17.66	601.13	7.08
CR-29	CR-29_Spot 269	29513.16	316.08	1.89	19.98	1.10	0.17	1.61	0.03	1.17	162.74	2.43	162.02	1.88	173.12	25.80	162.02	1.88
CR-29	CR-29_Spot 270	56139.49	229.37	2.51	20.23	1.29	0.17	1.70	0.02	1.10	158.88	2.50	159.11	1.72	155.50	30.32	159.11	1.72
CR-29	CR-29_Spot 271	39359.73	598.12	2.83	19.41	1.26	0.18	1.77	0.03	1.24	164.96	2.69	159.34	1.95	246.45	28.99	159.34	1.95
CR-29	CR-29_Spot 272	64423.90	70.72	1.95	20.57	2.09	0.15	2.37	0.02	1.11	145.37	3.21	147.10	1.61	117.33	49.37	147.10	1.61
CR-29	CR-29_Spot 273	51986.35	299.62	1.91	19.82	0.96	0.18	1.59	0.03	1.27	163.84	2.41	161.27	2.03	201.12	22.29	161.27	2.03
CR-29	CR-29_Spot 274	81990.39	63.25	3.44	19.10	2.47	0.23	2.85	0.03	1.42	206.23	5.31	198.91	2.78	290.76	56.36	198.91	2.78
CR-29	CR-29_Spot 275	63020.73	157.40	1.51	19.60	1.42	0.16	1.81	0.02	1.11	148.86	2.50	143.85	1.58	229.44	32.93	143.85	1.58
CR-29	CR-29_Spot 276	46332.66	814.86	4.46	20.25	0.92	0.11	1.50	0.02	1.16	106.97	1.52	105.08	1.21	149.25	22.25	105.08	1.21
CR-29	CR-29_Spot 277	16001.22	152.01	2.67	19.80	1.40	0.17	1.85	0.02	1.19	158.65	2.72	157.63	1.85	173.82	33.19	157.63	1.85
CR-29	CR-29_Spot 278	147728.75	941.86	1.16	20.50	0.70	0.17	1.38	0.02	1.18	156.00	1.99	157.63	1.84	131.38	16.55	157.63	1.84
CR-29	CR-29_Spot 279	273295.19	505.30	1.85	20.14	0.78	0.18	1.47	0.03	1.24	167.83	2.27	167.32	2.06	174.94	18.15	167.32	2.06
CR-29	CR-29_Spot 280	43120.99	150.66	1.32	20.37	1.24	0.18	1.48	0.03	0.81	164.72	2.25	166.81	1.33	134.68	29.12	166.81	1.33
CR-29	CR-29_Spot 281	133138.44	1219.26	2.46	20.60	0.64	0.11	1.39	0.02	1.23	103.53	1.37	102.85	1.26	119.42	15.15	102.85	1.26
CR-29	CR-29_Spot 282	23739.95	124.70	1.85	20.55	1.70	0.15	2.04	0.02	1.03	139.39	2.66	141.66	1.44	100.85	41.71	141.66	1.44
CR-29	CR-29_Spot 283	46107.68	260.26	2.45	20.02	1.05	0.17	1.59	0.02	1.19	158.97	2.34	157.71	1.86	177.69	24.67	157.71	1.86
CR-29	CR-29_Spot 284	695345.81	225.50	2.88	19.57	1.17	0.18	1.70	0.03	1.23	167.33	2.61	161.86	1.96	245.32	26.92	161.86	1.96
CR-29	CR-29_Spot 285	44911.44	1202.16	3.10	20.47	0.87	0.11	1.42	0.02	1.13	104.85	1.42	104.01	1.16	124.06	20.46	104.01	1.16
CR-29	CR-29_Spot 286	267312.78	1130.15	2.62	19.88	0.82	0.17	1.44	0.02	1.18	161.33	2.15	158.33	1.85	205.61	19.12	158.33	1.85
CR-29	CR-29_Spot 287	513872.97	70.38	0.69	5.52	0.68	12.96	1.19	0.52	0.97	2676.39	11.21	2693.80	21.45	2663.25	11.30	2663.25	11.30
CR-29	CR-29_Spot 288	29991.94	740.46	3.18	19.99	1.27	0.11	1.98	0.02	1.52	108.11	2.03	105.24	1.58	171.92	29.61	105.24	1.58
CR-29	CR-29_Spot 289	92267.75	163.81	2.13	13.27	0.79	1.85	1.31	0.18	1.05	1064.03	8.66	1059.44	10.23	1073.49	15.90	1073.49	15.90
CR-29	CR-29_Spot 290	27210.83	334.26	1.31	20.30	1.02	0.17	1.57	0.03	1.18	161.72	2.35	163.74	1.91	132.17	24.50	163.74	1.91
CR-29	CR-29_Spot 291	31518.52	418.40	2.69	20.48	1.06	0.16	1.92	0.02	1.59	153.97	2.75	156.54	2.46	114.65	25.35	156.54	2.46
CR-29	CR-29_Spot 292	105217.07	122.20	1.36	8.72	0.78	5.31	1.18	0.34	0.88	1870.41	10.07	1869.07	14.34	1871.88	14.07	1871.88	14.07
CR-29	CR-29_Spot 293	253400.09	233.28	1.29	19.96	1.35	0.17	1.81	0.03	1.21	163.70	2.73	161.49	1.92	195.81	31.34	161.49	1.92
CR-29	CR-29_Spot 294	10459.37	102.60	1.67	20.16	1.93	0.17	2.22	0.03	1.01	157.40	3.24	160.72	1.60	107.69	46.82	160.72	1.60
CR-29	CR-29_Spot 295	49846.01	267.98	2.40	20.15	1.14	0.17	1.50	0.02	0.97	155.75	2.16	155.32	1.48	162.33	26.72	155.32	1.48
CR-29	CR-29_Spot 296	41143.65	124.32	2.50	5.32	0.91	12.99	1.38	0.50	1.04	2679.22	13.02	2626.65	22.43	2719.12	14.98	2719.12	14.98
CR-29	CR-29_Spot 297	246259.34	45.95	1.26	8.84	0.68	5.11	1.29	0.33	1.10	1837.14	10.95	1828.13	17.45	1847.35	12.31	1847.35	12.31
CR-29	CR-29_Spot 298	140216.26	379.16	2.43	20.18	0.97	0.17	1.61	0.03	1.29	160.77	2.40	160.32	2.04	167.35	22.75	160.32	2.04
CR-29	CR-29_Spot 299	32111.91	204.33	1.11	18.37	2.46	0.22	2.59	0.03	0.78	205.83	4.83	191.92	1.47	368.17	55.69	191.92	1.47
CR-29	CR-29_Spot 300	12176.73	173.10	3.36	20.70	1.35	0.16	1.72	0.03	1.05	153.78	2.45	160.30	1.66	54.42	32.44	160.30	1.66
CR-29	CR-29_Spot 301	2558.87	62.74	2.46	9.53	11.90	0.33	12.28	0.02	1.31	290.30	31.00	153.53	1.99	1616.35	228.12	153.53	1.99
CR-29	CR-29_Spot 302	7927.34	137.31	2.26	19.93	1.48	0.17	1.71	0.03	0.84	157.37	2.49	160.22	1.33	114.64	35.12	160.22	1.33

CR-29	CR-29_Spot 303	8834.22	85.10	2.95	18.64	1.84	0.18	2.19	0.03	1.10	170.31	3.43	162.23	1.76	284.11	43.29	162.23	1.76
CR-29	CR-29_Spot 304	573142.81	627.40	3.76	9.10	0.75	4.77	1.41	0.32	1.19	1779.66	11.80	1765.70	18.37	1796.05	13.64	1796.05	13.64
CR-29	CR-29_Spot 305	8761.37	240.33	1.12	20.62	1.19	0.09	1.64	0.01	1.12	91.66	1.44	93.74	1.04	37.70	28.68	93.74	1.04
CR-29	CR-29_Spot 306	197622.26	243.72	1.90	8.94	0.66	5.07	1.15	0.33	0.95	1831.16	9.79	1834.98	15.17	1826.80	11.88	1826.80	11.88
CR-29	CR-29_Spot 307	6947.97	140.58	2.35	19.16	1.76	0.13	2.31	0.02	1.03	123.87	2.70	120.09	1.22	197.21	48.20	120.09	1.22
CR-29	CR-29_Spot 308	964232.74	241.07	2.50	20.34	1.35	0.17	1.70	0.02	1.04	156.19	2.46	156.36	1.61	153.60	31.50	156.36	1.61
CR-29	CR-29_Spot 309	99141.69	395.54	3.16	20.35	0.97	0.11	1.68	0.02	1.37	103.45	1.65	101.65	1.38	145.20	22.85	101.65	1.38
CR-29	CR-29_Spot 310	20086.37	828.60	2.92	20.27	0.94	0.11	1.62	0.02	1.32	104.74	1.61	103.84	1.36	125.09	22.09	103.84	1.36
CR-29	CR-29_Spot 311	57272.69	157.79	3.05	20.11	1.80	0.16	2.13	0.02	1.13	146.68	2.91	145.40	1.62	167.35	42.17	145.40	1.62
CR-29	CR-29_Spot 312	2787165.34	1001.52	2.22	20.00	1.11	0.18	1.73	0.03	1.33	167.57	2.68	165.85	2.19	191.97	25.73	165.85	2.19
CR-29	CR-29_Spot 313	1340076.86	221.26	2.49	6.77	0.57	8.82	1.33	0.43	1.20	2319.56	12.11	2321.84	23.39	2317.54	9.76	2317.54	9.76
CR-29	CR-29_Spot 314	127821.85	1097.88	1.60	20.33	0.75	0.17	1.30	0.03	1.06	161.68	1.94	162.58	1.71	148.44	17.50	162.58	1.71
CR-29	CR-29_Spot 315	172050.47	324.66	0.91	20.21	0.90	0.17	1.77	0.03	1.52	162.83	2.66	162.78	2.45	163.52	21.06	162.78	2.45

APPENDIX D

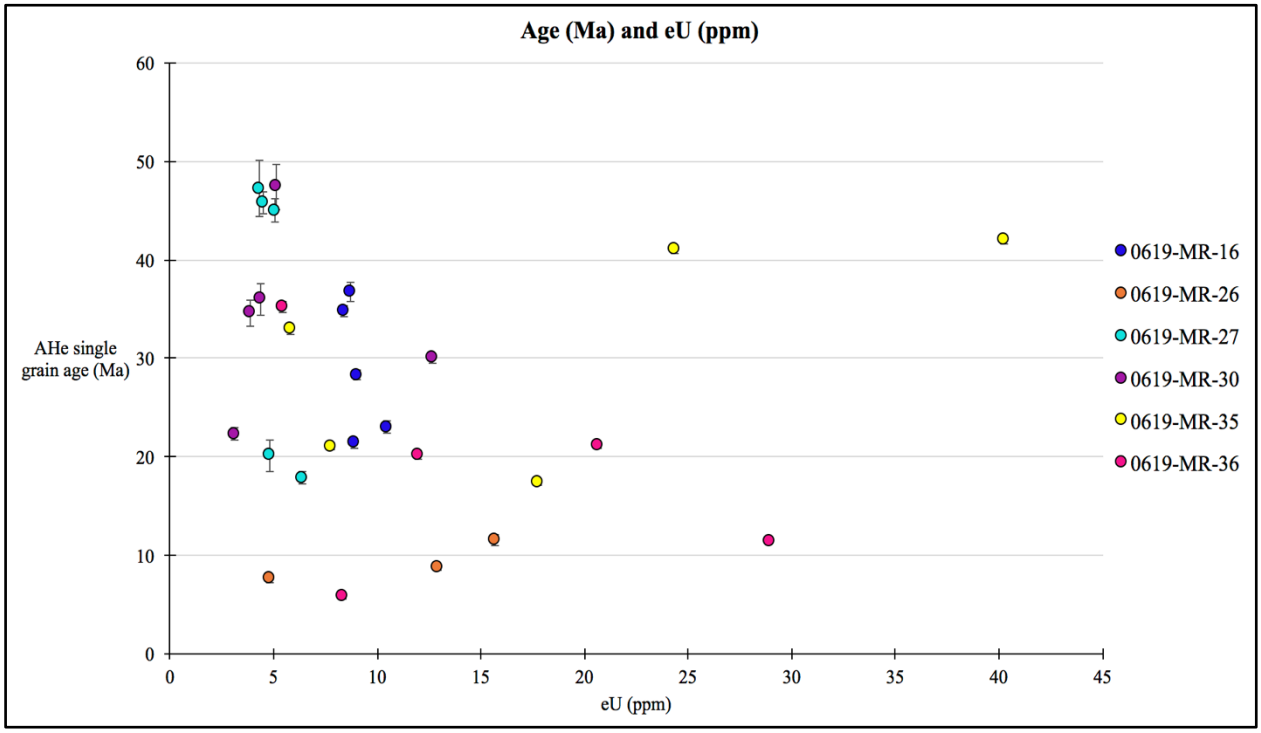
APATITE (U-TH)/HE DATA

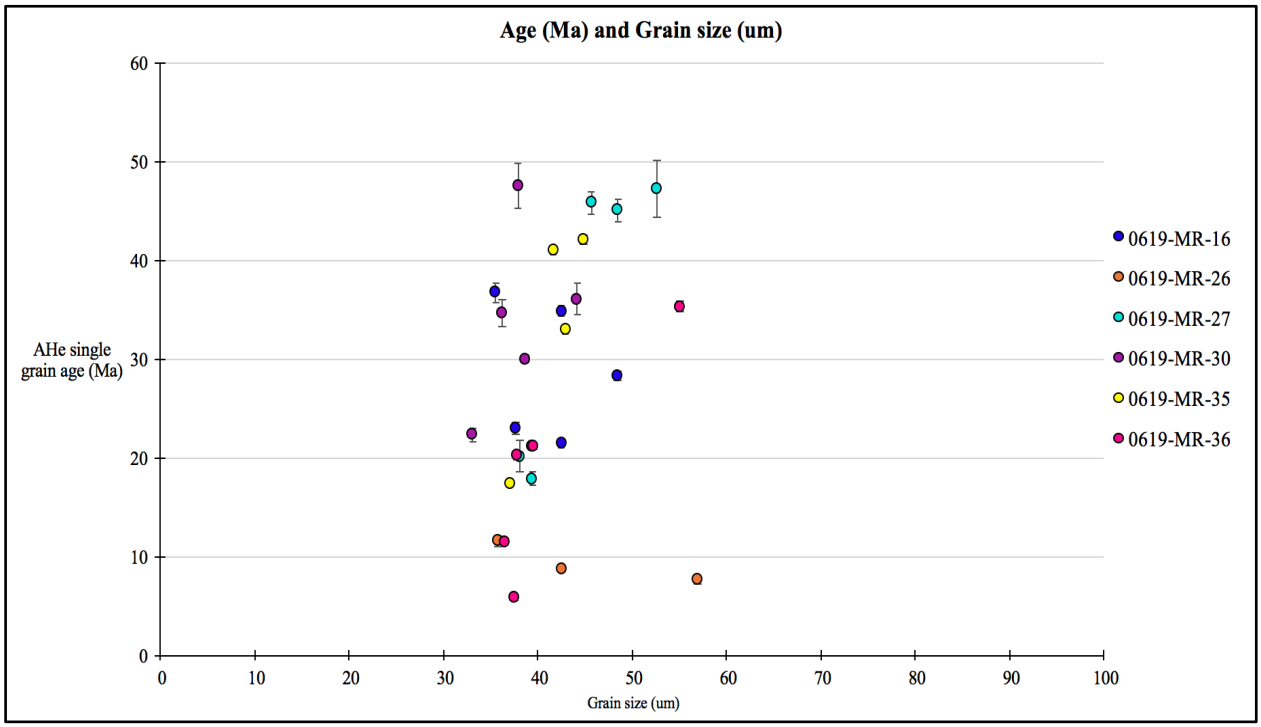
Apatite (U-Th)/He Analyses for Outcrop and Subsurface Samples

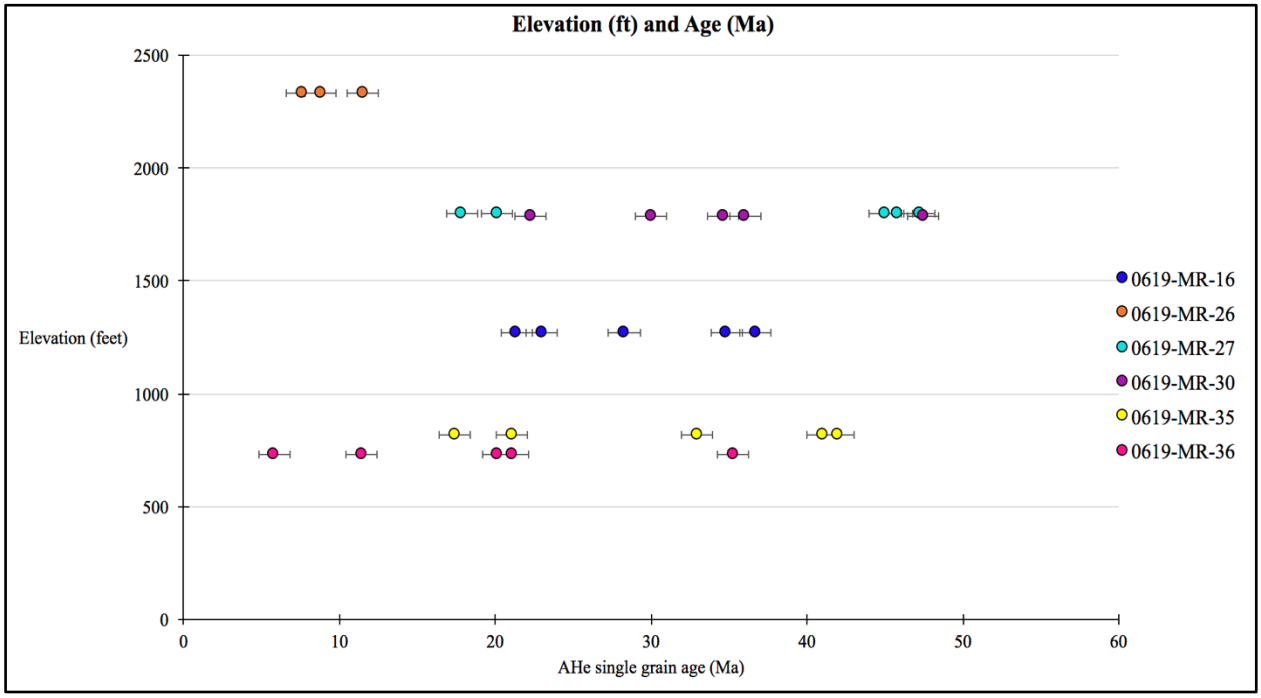
Sample	Elevation or Depth (ft)	Rs (um)	ppm U (Ca)	ppm Th (Ca)	ppm Sm (Ca)	Th/U	eU	nmol 4He/g (Ca)	raw age (Ma)	1s ± date (Ma)	Corr. Age (Ma)	1 sigma ± (Ma)
Digger Creek												
0619MR16_Ap1	1272	42.51	4.69	13.42	121.47	2.94	8.40	0.99	22.92	0.35	34.82	0.53
0619MR16_Ap2	1272	35.56	3.58	14.95	345.72	4.29	8.70	0.90	22.24	0.60	36.69	0.98
0619MR16_Ap3	1272	37.69	5.71	16.99	160.51	3.05	10.44	0.76	14.24	0.38	22.99	0.61
0619MR16_Ap4	1272	48.44	5.33	13.27	123.03	2.55	9.01	0.92	19.70	0.34	28.27	0.49
0619MR16_Ap5	1272	42.52	5.49	11.90	135.63	2.22	8.91	0.65	14.13	0.29	21.38	0.45
Crowfoot Point												
0619MR26_Ap2	2334	35.81	9.53	24.96	64.76	2.69	15.67	0.58	6.91	0.36	11.52	0.60
0619MR26_Ap3	2334	42.62	7.59	21.46	65.77	2.90	12.92	0.40	5.76	0.18	8.78	0.27
0619MR26_Ap4	2334	56.97	2.66	7.62	84.73	2.94	4.84	0.14	5.61	0.28	7.60	0.38
0619MR26_Ap1	2334	40.29	2.86	7.05	93.59	2.53	4.94	0.05	1.85	1.19	2.87	1.86
0619MR27_Ap1	1798	52.61	2.11	4.67	237.00	2.27	4.32	0.65	34.61	2.08	47.24	2.84
0619MR27_Ap2	1798	45.67	2.07	5.91	228.65	2.93	4.52	0.64	31.69	0.79	45.81	1.13
0619MR27_Ap3	1798	38.11	2.49	6.43	180.47	2.65	4.84	0.29	12.74	0.98	20.12	1.55
0619MR27_Ap4	1798	48.54	2.21	7.36	245.50	3.41	5.09	0.73	31.79	0.83	45.01	1.18
0619MR27_Ap5	1798	39.46	3.70	7.78	188.83	2.15	6.41	0.36	11.48	0.43	17.86	0.67
0619MR30_Ap1	1789	38.68	6.37	19.65	355.91	3.16	12.64	1.17	18.97	0.28	30.00	0.44
0619MR30_Ap2	1789	36.21	2.40	4.07	114.37	1.74	3.89	0.40	21.37	0.83	34.62	1.35
0619MR30_Ap3	1789	37.91	2.55	5.82	264.74	2.34	5.15	0.70	30.33	1.46	47.46	2.29
0619MR30_Ap4	1789	44.20	2.19	7.03	109.17	3.30	4.34	0.52	24.20	1.06	36.01	1.58
0619MR30_Ap5	1789	33.13	1.64	3.22	151.53	2.02	3.10	0.18	13.24	0.38	22.29	0.63
Grindstone Creek												
0619MR35_Ap1	820	39.45	1.40	20.64	326.69	15.12	7.77	0.48	13.27	0.20	21.08	0.31
0619MR35_Ap2	820	37.03	5.68	44.90	337.51	8.10	17.78	0.95	10.52	0.14	17.41	0.23
0619MR35_Ap3	820	42.95	3.99	5.98	93.90	1.54	5.83	0.66	22.00	0.31	32.95	0.47
0619MR35_Ap4	820	41.65	12.44	49.04	97.11	4.04	24.38	3.46	26.47	0.29	41.02	0.45
0619MR35_Ap5	820	44.87	19.99	80.83	286.38	4.15	40.25	5.99	28.10	0.30	42.02	0.45

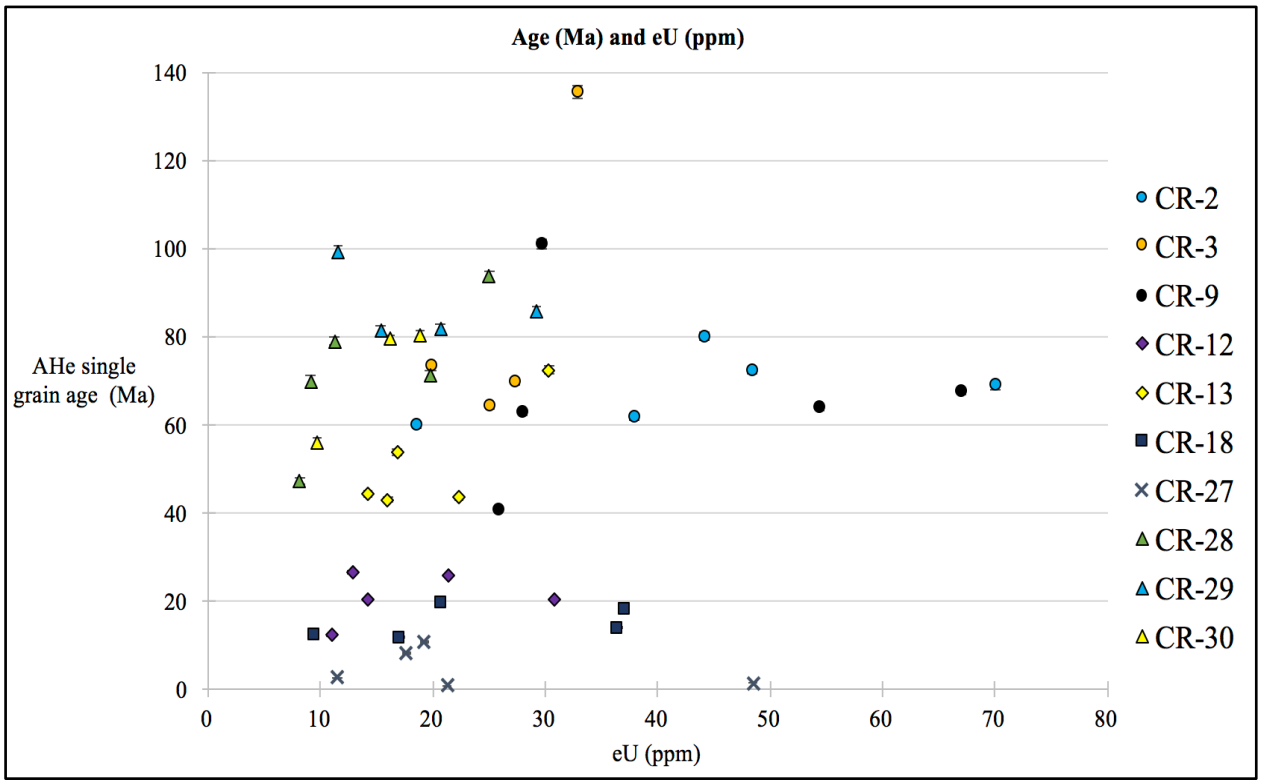
0619MR36_Ap1	733	37.54	4.18	15.98	94.77	3.92	8.36	0.16	3.56	0.18	5.80	0.30
0619MR36_Ap2	733	55.06	3.71	5.72	80.06	1.58	5.42	0.72	25.88	0.40	35.25	0.55
0619MR36_Ap3	733	39.56	12.04	33.40	164.50	2.85	20.63	1.46	13.39	0.18	21.13	0.28
0619MR36_Ap4	733	36.57	12.07	66.55	272.52	5.66	28.92	1.04	6.85	0.10	11.41	0.17
0619MR36_Ap5	733	37.83	4.10	27.49	314.74	6.88	12.01	0.74	12.42	0.23	20.17	0.38
Martinez 25-2 borehole												
CR-2_Ap1	-4081	41.22	23.92	58.55	59.24	2.51	37.90	8.18	39.96	0.46	61.80	0.71
CR-2_Ap2	-4081	37.74	50.85	80.80	58.52	1.63	70.03	16.23	42.84	0.51	68.85	0.83
CR_2_Ap3	-4081	42.29	10.76	32.20	56.13	3.07	18.56	3.91	39.16	0.45	59.97	0.70
CR_2_Ap4	-4081	37.82	29.83	58.57	130.11	2.01	44.15	11.80	49.72	0.55	79.97	0.90
CR_2_Ap5	-4081	55.67	29.30	78.17	169.39	2.74	48.39	13.73	52.84	0.56	72.33	0.77
CR_3_Ap2	-4181	41.70	12.78	24.23	305.84	1.94	19.89	4.92	48.12	0.55	73.23	0.84
CR_3_Ap3	-4181	42.74	14.66	42.59	95.82	2.98	25.08	5.67	42.21	0.45	64.27	0.69
CR_3_Ap4	-4181	39.87	16.63	44.07	86.31	2.72	27.35	6.52	44.35	0.49	69.75	0.78
CR_3_Ap5	-4181	46.12	21.08	47.96	119.59	2.33	32.87	16.36	92.57	0.99	135.58	1.46
CR_9_Ap1	-4236	45.97	18.02	41.17	432.43	2.34	29.69	10.58	69.06	0.76	100.93	1.11
CR_9_Ap2	-4236	49.64	18.07	40.77	80.66	2.31	27.99	6.65	44.19	0.48	62.95	0.68
CR_9_Ap3	-4236	50.10	46.56	86.51	54.53	1.91	67.06	17.29	47.63	0.53	67.50	0.76
CR_9_Ap4	-4236	39.98	41.91	51.42	101.51	1.26	54.42	12.08	41.22	0.47	64.07	0.75
CR_9_Ap5	-4236	52.75	12.82	45.71	498.67	3.66	25.86	3.84	29.35	0.31	40.87	0.43
Dodge Land Co. 1 borehole												
CR_12_Ap1	-7820	56.27	17.40	14.37	126.58	0.85	21.36	2.16	19.11	0.23	25.81	0.32
CR_12_Ap2	-7820	60.80	8.13	9.93	111.91	1.25	10.98	0.53	9.34	0.12	12.33	0.16
CR_12_Ap3	-7820	60.58	10.24	9.53	74.12	0.96	12.81	1.36	20.05	0.26	26.48	0.34
CR_12_Ap4	-7820	69.96	28.36	8.32	107.21	0.30	30.81	2.64	16.08	0.23	20.34	0.29
CR_12_Ap5	-7820	49.98	11.92	8.17	78.64	0.70	14.20	1.10	14.56	0.22	20.47	0.31
CR_13_Ap1	-7845	55.24	19.23	45.00	112.97	2.40	30.29	8.58	52.84	0.59	72.40	0.81
CR_13_Ap2	-7845	46.92	11.23	11.23	72.69	1.03	14.20	2.32	30.68	0.47	44.28	0.68
CR_13_Ap3	-7845	53.23	12.79	14.63	128.00	1.17	16.81	3.46	38.99	0.48	53.70	0.66
CR_13_Ap4	-7845	51.58	16.68	22.42	73.19	1.38	22.27	3.72	31.16	0.38	43.53	0.54
CR_13_Ap5	-7845	45.70	12.25	13.82	105.17	1.16	15.97	2.49	29.44	0.44	42.98	0.65

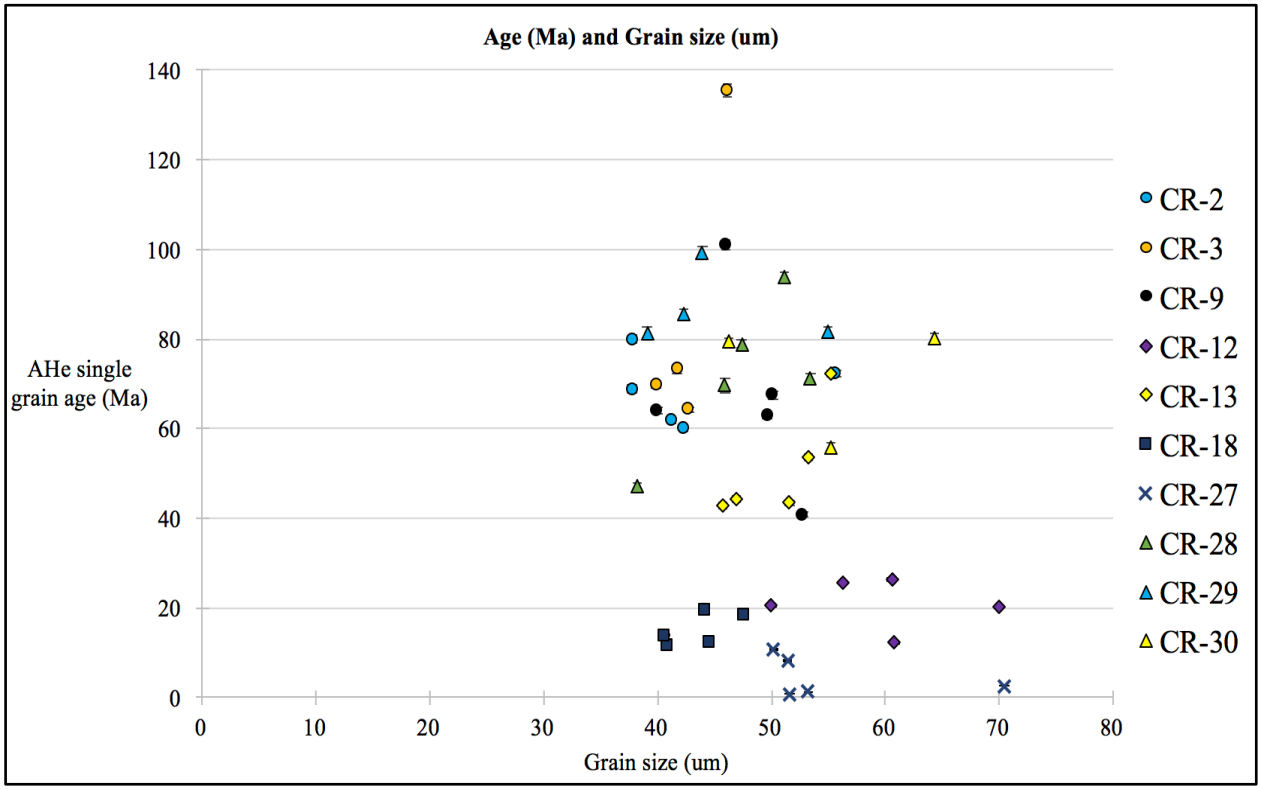
Jelly Bend 18-8 borehole												
CR_18_Ap1	-7008	44.53	5.49	14.86	89.55	2.78	9.39	0.41	8.28	0.20	12.35	0.29
CR_18_Ap2	-7008	47.51	27.20	40.54	61.52	1.53	36.97	2.52	12.69	0.15	18.32	0.21
CR_18_Ap3	-7008	40.83	14.19	9.48	131.24	0.69	17.03	0.69	7.66	0.11	11.70	0.17
CR_18_Ap4	-7008	40.62	27.10	37.93	94.49	1.44	36.42	1.76	9.02	0.11	13.95	0.17
CR_18_Ap5	-7008	44.11	14.03	25.68	125.91	1.88	20.63	1.43	13.07	0.15	19.49	0.23
Buttes Community C-1 borehole												
CR_27_Ap1	-6534	51.57	14.86	24.58	133.22	1.70	21.24	0.07	0.59	0.02	0.83	0.02
CR_27_Ap2	-6534	51.40	12.59	18.83	134.85	1.53	17.63	0.55	5.90	0.07	8.26	0.10
CR_27_Ap3	-6534	53.23	40.77	30.35	126.87	0.76	48.47	0.26	0.99	0.02	1.37	0.02
CR_27_Ap4	-6534	70.45	7.92	9.82	265.88	1.27	11.46	0.12	2.09	0.03	2.64	0.04
CR_27_Ap5	-6534	50.19	13.44	22.23	120.48	1.70	19.21	0.78	7.67	0.09	10.84	0.13
Gorrill Land Co. 1-29 borehole												
CR_28_Ap1	-4430	47.39	8.37	9.50	138.97	1.17	11.25	3.21	55.05	0.68	78.94	0.98
CR_28_Ap2	-4430	38.20	5.85	7.88	96.32	1.38	8.14	1.26	29.81	0.41	47.25	0.66
CR_28_Ap3	-4430	53.39	17.13	8.51	129.94	0.51	19.73	5.43	52.00	0.75	71.15	1.03
CR_28_Ap4	-4430	51.11	16.02	33.10	257.88	2.12	24.98	8.75	66.83	0.73	93.75	1.03
CR_28_Ap5	-4430	45.89	8.12	2.82	68.83	0.36	9.11	2.32	48.26	1.07	69.71	1.55
CR_29_Ap1	-4610	43.90	7.91	13.31	112.00	1.73	11.55	4.05	66.80	0.78	99.37	1.17
CR_29_Ap2	-4610	42.27	21.04	33.56	60.88	1.64	29.18	8.89	56.52	0.67	85.77	1.02
CR_29_Ap3	-4610	39.06	11.14	16.16	91.48	1.49	15.35	4.23	51.80	0.71	81.42	1.13
CR_29_Ap4	-4610	54.96	15.66	19.27	103.19	1.26	20.65	6.61	60.01	0.73	81.81	1.00
CR_30_Ap1	-4790	46.24	9.17	23.81	299.60	2.66	16.15	4.47	54.46	0.66	79.43	0.97
CR_30_Ap2	-4790	55.21	7.59	7.38	82.05	1.00	9.70	2.10	41.11	0.77	55.83	1.05
CR_30_Ap3	-4790	64.30	9.27	36.11	237.30	4.00	18.83	6.01	61.34	0.82	80.36	1.08

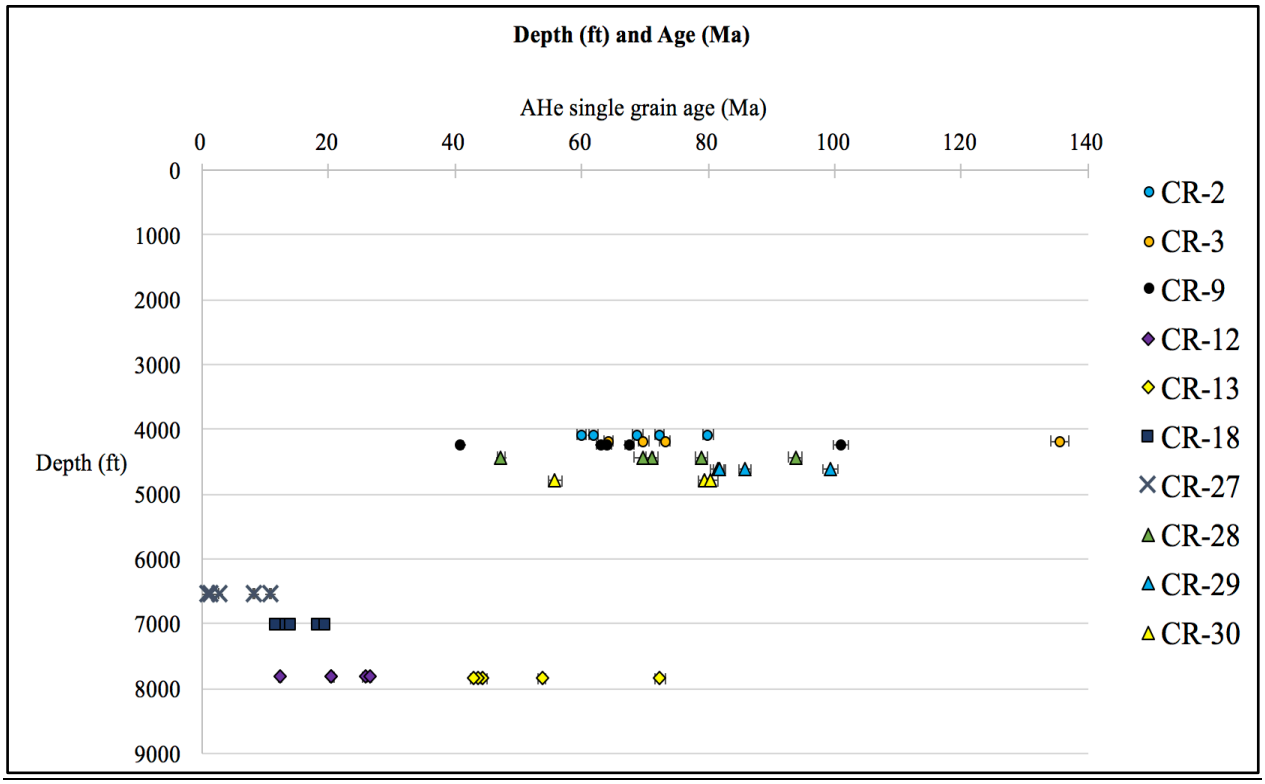

Age (Ma) and eU (ppm)
AHe single grain age (Ma)
eU (ppm)
0619-MR-16
0619-MR-26
0619-MR-27
0619-MR-30
0619-MR-35
0619-MR-36


Age (Ma) and Grain size (um)
AHe single grain age (Ma)
Grain size (um)
0619-MR-16
0619-MR-26
0619-MR-27
0619-MR-30
0619-MR-35
0619-MR-36


Elevation (ft) and Age (Ma)
Elevation (feet)
2500
2000
1500
1000
500
0
0
10
20
30
40
50
60
AHe single grain age (Ma)
0619-MR-16
0619-MR-26
0619-MR-27
0619-MR-30
0619-MR-35
0619-MR-36


Age (Ma) and eU (ppm)
AHe single grain age (Ma)
140
120
100
80
60
40
20
0
0
10
20
30
40
50
60
70
80
eU (ppm)
CR-2
CR-3
CR-9
CR-12
CR-13
CR-18
CR-27
CR-28
CR-29
CR-30


Age (Ma) and Grain size (um)
AHe single grain age (Ma)
Grain size (um)
0
20
40
60
80
100
120
140
0
10
20
30
40
50
60
70
80
CR-2
CR-3
CR-9
CR-12
CR-13
CR-18
CR-27
CR-28
CR-29
CR-30


Depth (ft) and Age (Ma)
AHe single grain age (Ma)
Depth (ft)
0
20
40
60
80
100
120
140
0
1000
2000
3000
4000
5000
6000
7000
8000
9000
CR-2
CR-3
CR-9
CR-12
CR-13
CR-18
CR-27
CR-28
CR-29
CR-30

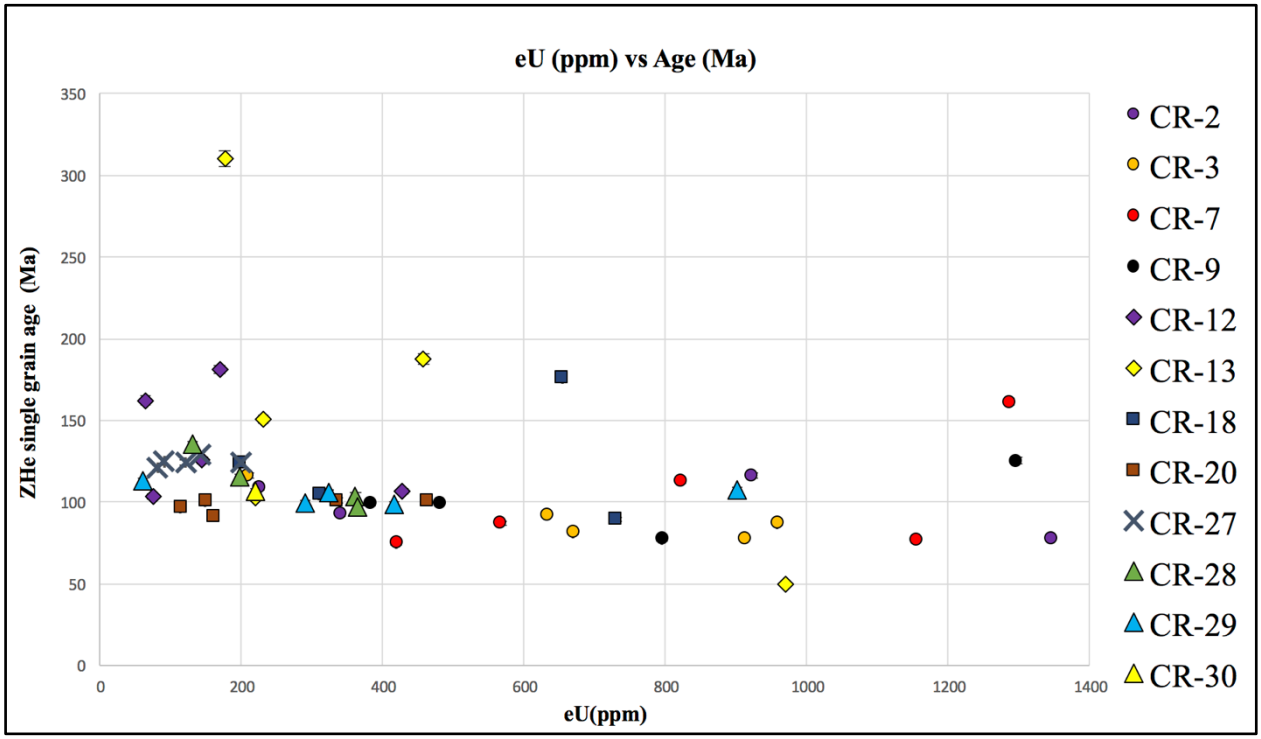
APPENDIX E

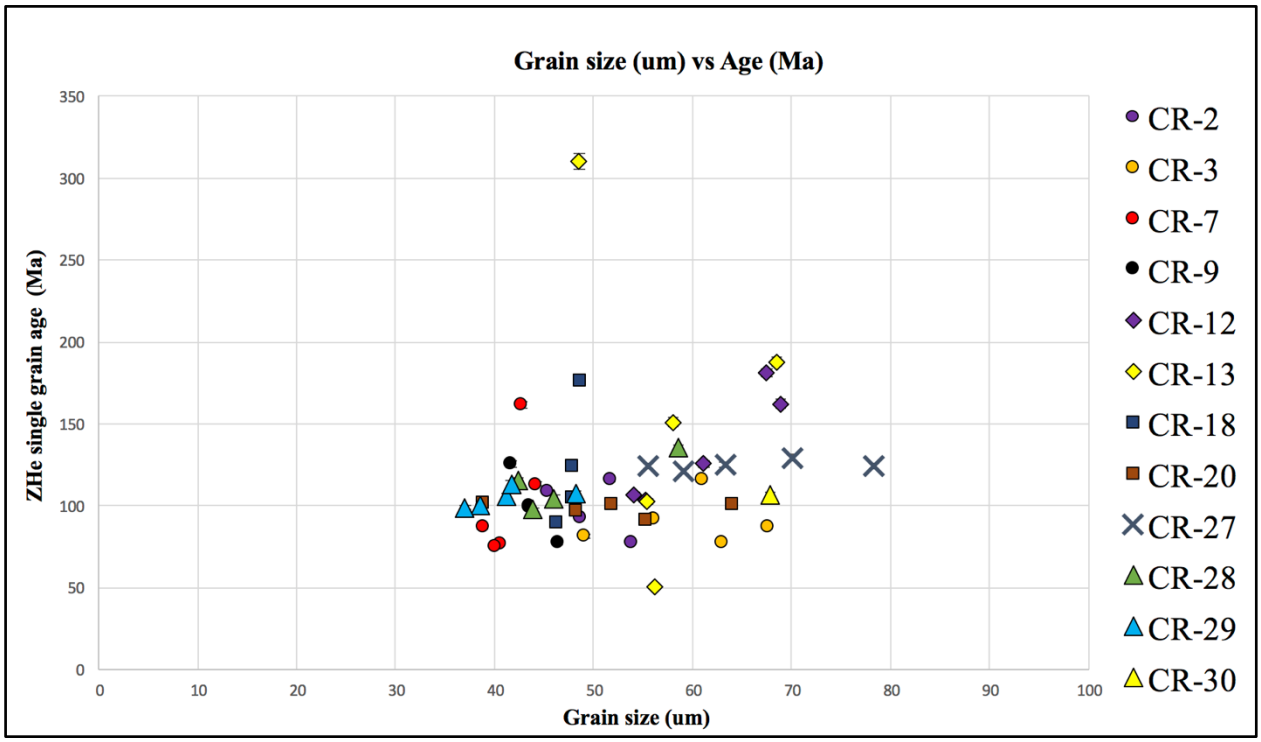
ZIRCON (U-TH)/HE DATA

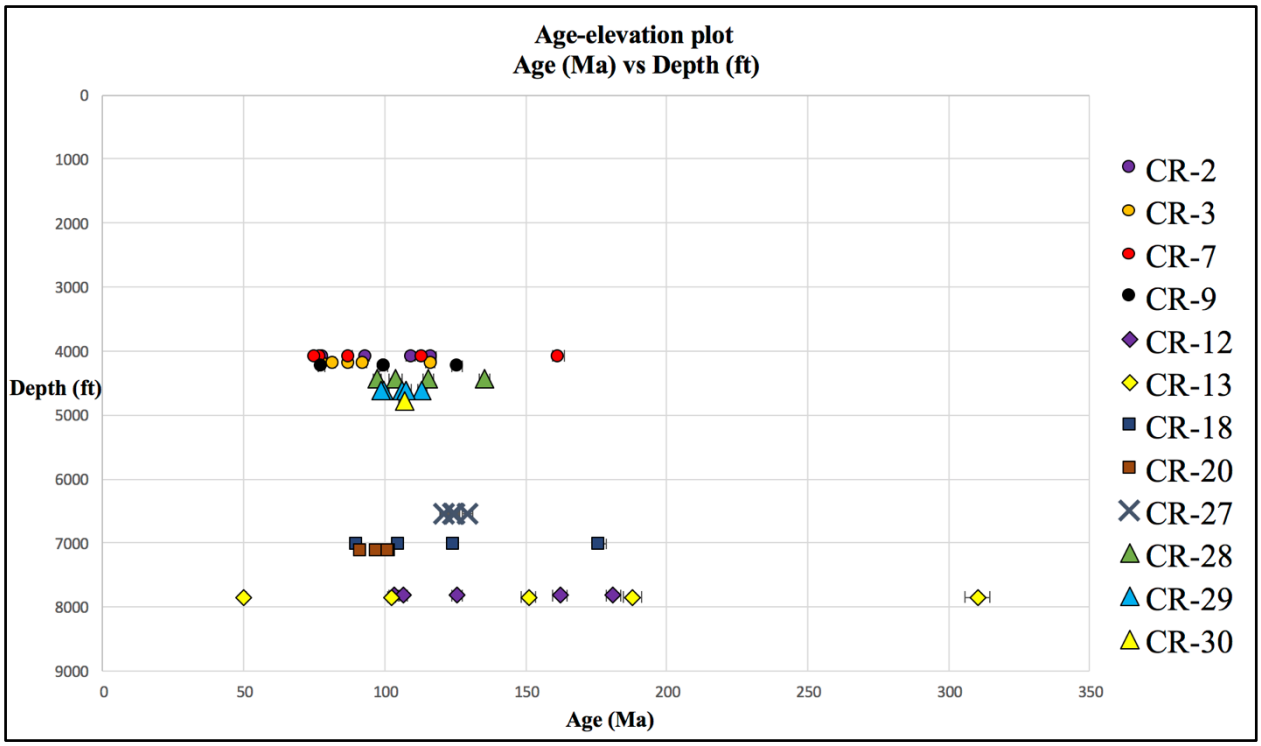
Zircon (U-Th)/He Analyses for Subsurface Samples

Sample Name	Maximum Sampled Depth (ft)	Rs (um)	U (ppm)	Th (ppm)	Th/ U	eU	4He (nmol/ g)	raw age (Ma)	1s ± date (Ma)	Corr. Age (Ma)	1 sigma ± Ma
Martinez 25-2 borehole											
CR_2_Zr1	4081	48.57	312.66	119.88	0.39	340.83	129.00	69.80	0.96	93.08	1.29
CR_2_Zr3	4081	45.34	213.95	52.10	0.25	226.19	98.55	80.29	1.16	109.26	1.59
CR_2_Zr4	4081	51.68	895.24	116.56	0.13	922.63	446.70	89.15	1.26	116.39	1.66
CR_2_Zr5	4081	53.82	1212.95	562.38	0.48	1345.10	438.55	60.17	0.79	77.96	1.03
CR_3_Zr1	4181	67.54	887.31	304.70	0.35	958.92	370.28	71.20	0.96	87.22	1.18
CR_3_Zr2	4181	60.90	191.44	78.86	0.42	209.98	105.87	92.79	1.25	116.34	1.58
CR_3_Zr3	4181	62.90	858.60	231.32	0.28	912.96	309.53	62.57	0.89	77.83	1.11
CR_3_Zr4	4181	49.08	605.04	276.48	0.47	670.02	222.58	61.30	0.84	81.57	1.12
CR_3_Zr5	4181	56.05	587.27	191.75	0.33	632.33	247.79	72.26	0.99	92.47	1.27
CR_7_Zr1	4077	40.58	1056.46	419.37	0.41	1155.01	339.00	54.20	0.74	76.91	1.06
CR_7_Zr2	4077	44.19	735.83	365.53	0.51	821.73	367.47	82.37	1.09	113.36	1.51
CR_7_Zr3	4077	38.77	521.53	195.50	0.38	567.47	185.87	60.45	0.83	87.28	1.21
CR_7_Zr4	4077	40.04	378.11	177.03	0.48	419.71	119.50	52.58	0.69	75.06	0.99
CR_7_Zr5	4077	42.73	1144.29	606.80	0.54	1286.89	813.72	116.12	1.52	161.56	2.14
CR_9_Zr1	4236	46.41	725.93	295.47	0.42	795.37	246.87	57.30	0.78	77.57	1.07
CR_9_Zr2	4236	41.65	1200.77	409.09	0.35	1296.91	630.40	89.49	1.26	125.52	1.78
CR_9_Zr3	4236	43.52	344.58	162.13	0.48	382.68	149.39	71.97	0.94	99.58	1.32
CR_9_Zr4	4236	43.48	439.87	178.35	0.42	481.78	188.69	72.21	0.99	99.87	1.38
Dodge Land Co. 1 borehole											
CR_12_Zr1	7820	55.23	70.26	21.08	0.31	75.22	32.81	80.38	1.25	103.23	1.61
CR_12_Zr2	7820	67.50	160.12	40.32	0.26	169.59	137.17	148.12	2.08	181.06	2.55
CR_12_Zr3	7820	54.12	412.50	67.94	0.17	428.46	192.27	82.68	1.19	106.62	1.54
CR_12_Zr4	7820	61.14	135.62	40.87	0.31	145.22	79.26	100.38	1.60	125.61	2.01
CR_12_Zr5	7820	68.91	59.96	21.62	0.37	65.04	47.23	133.15	2.10	162.23	2.58
CR_13_Zr1	7845	58.01	215.33	70.23	0.33	231.83	150.54	119.23	1.91	151.08	2.44
CR_13_Zr2	7845	68.51	436.92	89.91	0.21	458.05	386.11	154.29	2.54	187.94	3.11
CR_13_Zr3	7845	56.21	950.10	84.93	0.09	970.06	206.02	39.29	0.65	50.19	0.83

CR_13_Zr4	7845	55.44	209.27	48.79	0.24	220.73	95.62	79.83	1.13	102.35	1.45
CR_13_Zr5	7845	48.56	161.70	65.19	0.41	177.02	227.69	233.74	3.34	310.31	4.49
Jelly Bend 18-8 borehole											
CR_18_Zr1	7008	47.78	180.31	78.75	0.45	198.82	100.17	92.72	1.26	124.26	1.70
CR_18_Zr2	7008	46.24	661.55	292.56	0.45	730.30	262.31	66.25	0.88	89.80	1.21
CR_18_Zr4	7008	48.61	590.97	267.20	0.46	653.76	471.26	132.19	1.86	176.04	2.49
CR_18_Zr5	7008	47.85	284.14	112.86	0.41	310.66	131.88	78.23	1.09	104.79	1.47
CR_20_Zr1	7106	64.00	131.82	75.03	0.58	149.45	65.90	81.22	1.11	100.80	1.39
CR_20_Zr2	7106	48.21	104.67	42.55	0.42	114.67	45.06	72.44	1.03	96.84	1.39
CR_20_Zr3	7106	38.76	429.95	141.42	0.34	463.18	176.52	70.28	0.98	101.39	1.42
CR_20_Zr4	7106	55.20	149.14	53.42	0.37	161.69	62.33	71.09	1.00	91.37	1.29
CR_20_Zr5	7106	51.79	311.63	103.42	0.34	335.93	140.93	77.32	1.07	101.10	1.40
Buttes Community C-1 borehole											
CR_27_Zr1	6534	78.30	188.68	47.47	0.26	199.84	113.73	104.64	1.49	124.37	1.77
CR_27_Zr2	6534	59.13	73.54	34.52	0.48	81.65	42.58	95.93	1.31	121.18	1.66
CR_27_Zr3	6534	70.14	132.28	42.93	0.33	142.37	82.42	106.41	1.50	129.22	1.83
CR_27_Zr4	6534	55.51	113.78	32.55	0.29	121.44	64.06	97.05	1.38	124.40	1.78
CR_27_Zr5	6534	63.30	82.60	36.08	0.45	91.08	49.73	100.42	1.37	124.77	1.71
Gorrill Land Co. 1-29 borehole											
CR_28_Zr2	4430	58.59	123.05	36.17	0.30	131.56	76.62	107.06	1.55	135.32	1.97
CR_28_Zr3	4430	46.02	342.66	81.74	0.24	361.87	150.54	76.68	1.73	103.85	2.35
CR_28_Zr4	4430	42.35	182.72	66.82	0.38	198.42	89.18	82.79	1.20	115.49	1.68
CR_28_Zr5	4430	43.92	327.20	160.70	0.50	364.96	139.78	70.62	0.97	97.42	1.35
CR_29_Zr1	4610	41.21	303.46	87.10	0.29	323.93	132.49	75.40	1.09	106.17	1.55
CR_29_Zr2	4610	38.54	268.25	94.07	0.36	290.36	108.71	69.05	1.02	99.88	1.49
CR_29_Zr3	4610	37.01	387.79	123.33	0.33	416.77	151.96	67.26	0.95	98.88	1.41
CR_29_Zr4	4610	41.70	57.01	19.70	0.35	61.64	27.02	80.77	1.24	113.30	1.76
CR_29_Zr5	4610	48.20	837.73	271.49	0.33	901.54	394.88	80.70	1.13	107.78	1.52
CR_30_Zr1	4790	67.83	207.37	57.14	0.28	220.80	104.82	87.42	1.23	106.90	1.51


eU (ppm) vs Age (Ma)
ZHe single grain age (Ma)
eU(ppm)
0
50
100
150
200
250
300
350
0
200
400
600
800
1000
1200
1400
CR-2
CR-3
CR-7
CR-9
CR-12
CR-13
CR-18
CR-20
CR-27
CR-28
CR-29
CR-30

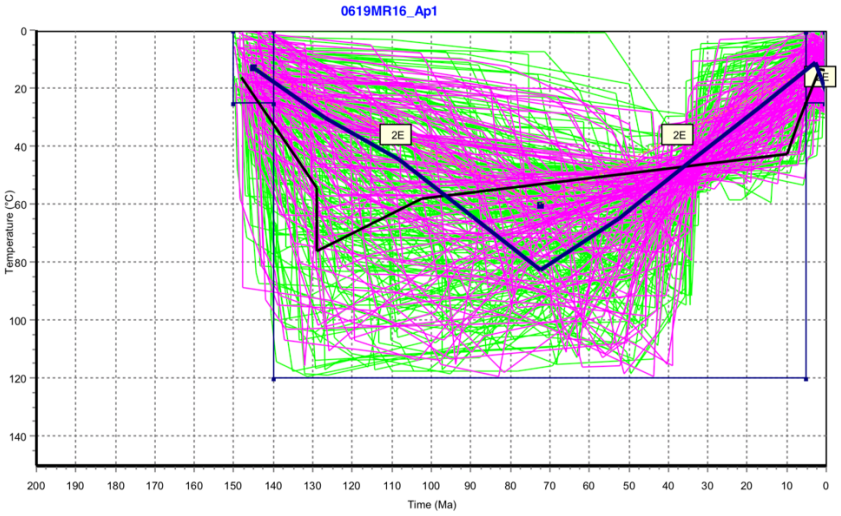

Grain size (um) vs Age (Ma)
ZHe single grain age (Ma)
Grain size (um)
0
50
100
150
200
250
300
350
0
10
20
30
40
50
60
70
80
90
100
CR-2
CR-3
CR-7
CR-9
CR-12
CR-13
CR-18
CR-20
CR-27
CR-28
CR-29
CR-30

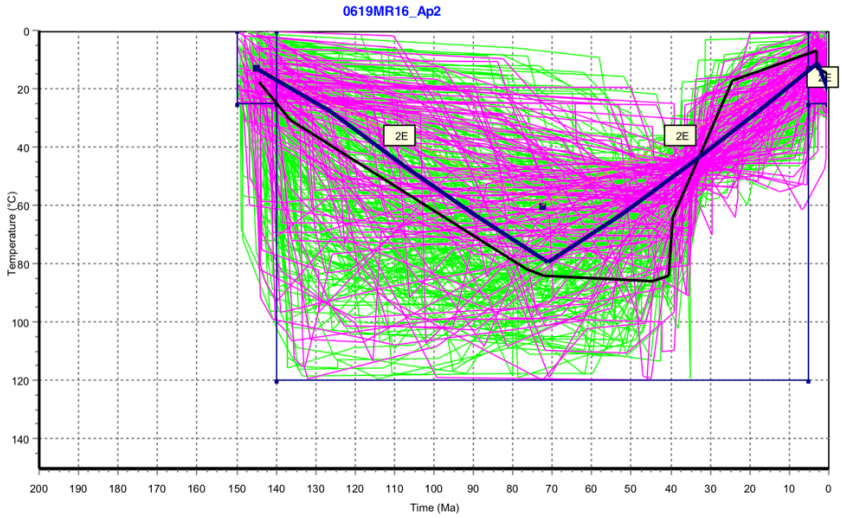

Age-elevation plot
Age (Ma) vs Depth (ft)
Depth (ft)
0
1000
2000
3000
4000
5000
6000
7000
8000
9000
0
50
100
150
200
250
300
350
Age (Ma)
CR-2
CR-3
CR-7
CR-9
CR-12
CR-13
CR-18
CR-20
CR-27
CR-28
CR-29
CR-30

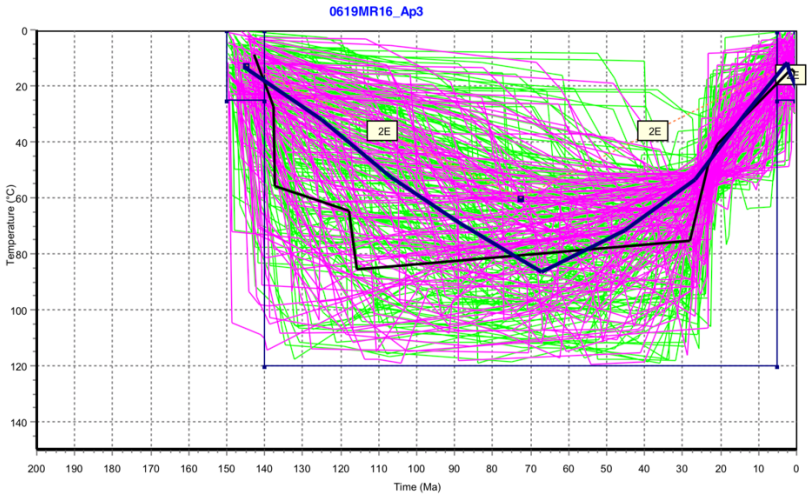
APPENDIX F

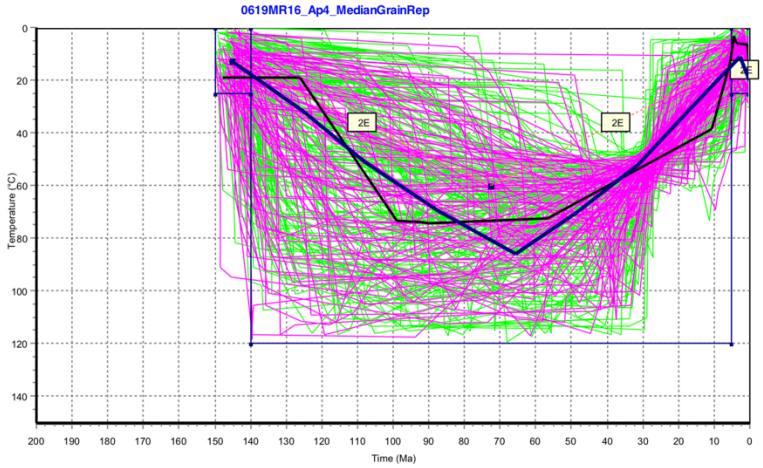
INVERSE THERMAL MODELING FOR ALL INDIVIDUAL GRAINS

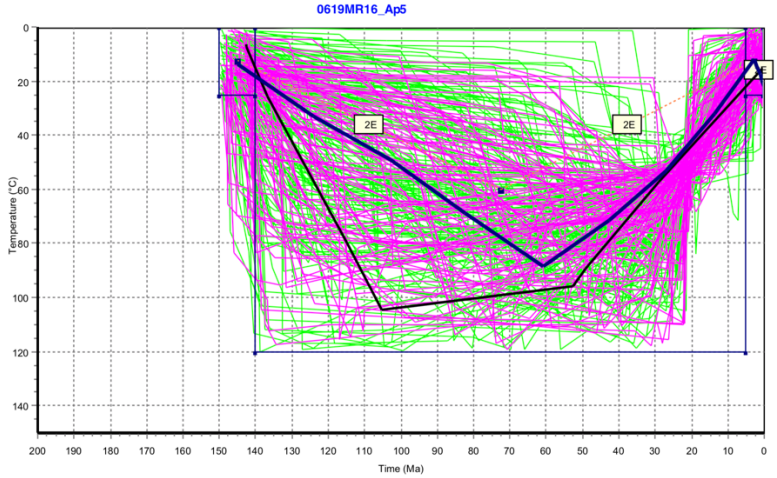
Single Apatite Grain - Thermal Modeling Plots for Outcrop Samples

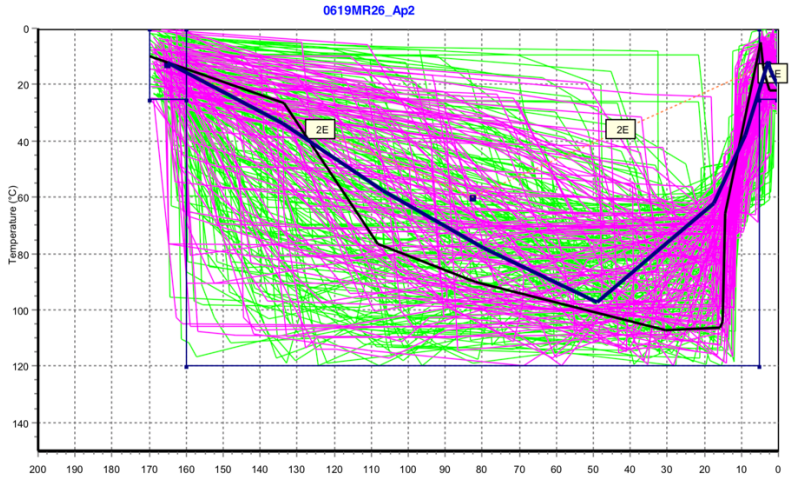


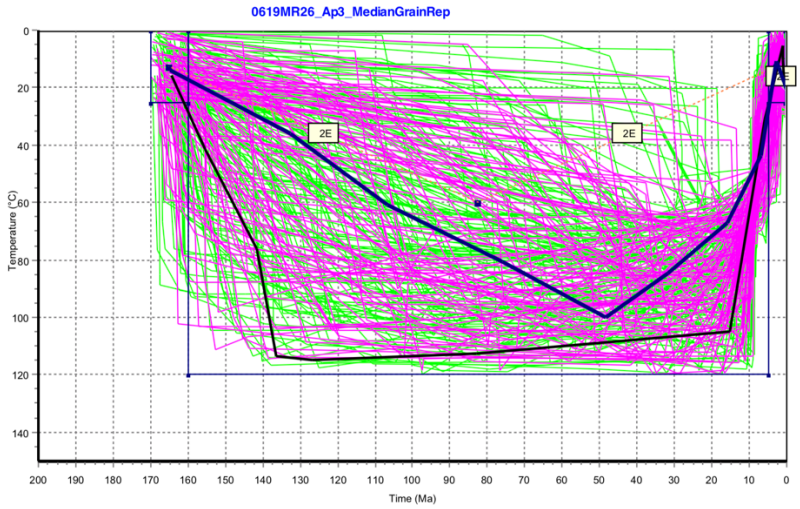


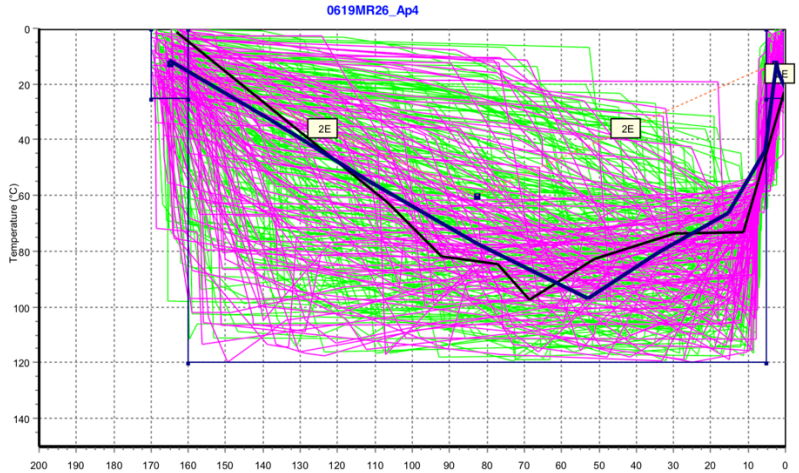

0619MR16_Ap3
Temperature (°C)
Time (Ma)
2E
2E
2E

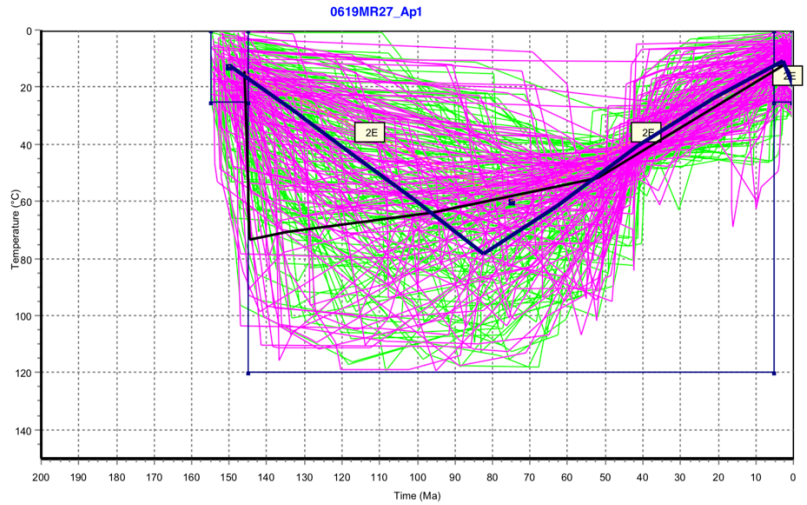

0619MR16_Ap4_MedianGrainRep
Temperature (°C)
Time (Ma)
2E
2E
2E

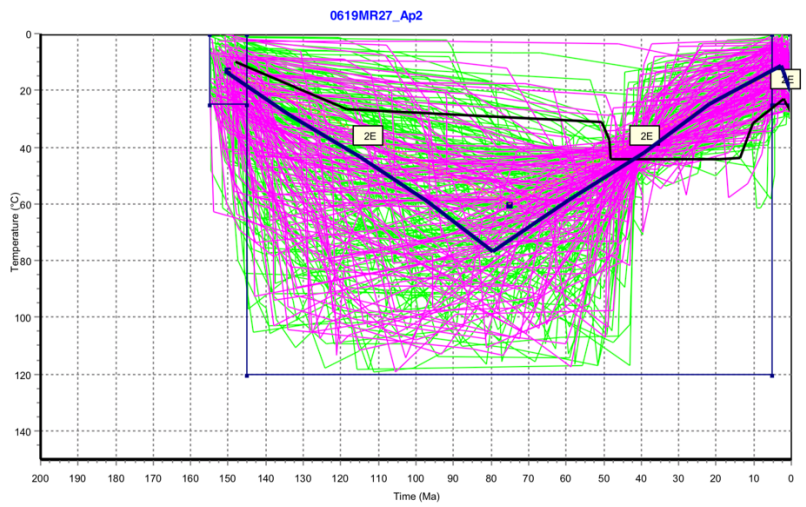

0619MR16_Ap5
Temperature (°C)
Time (Ma)
2E
2E
2E

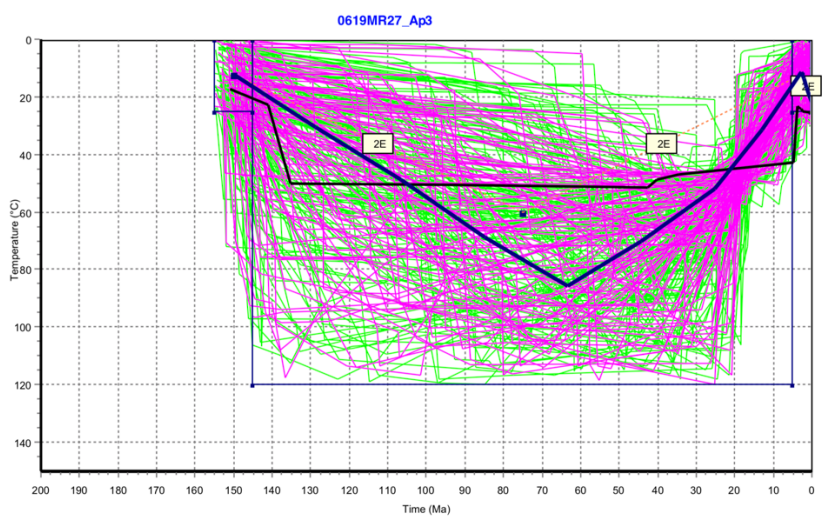

0619MR26_Ap2
Temperature (°C)
2E
2E
2E

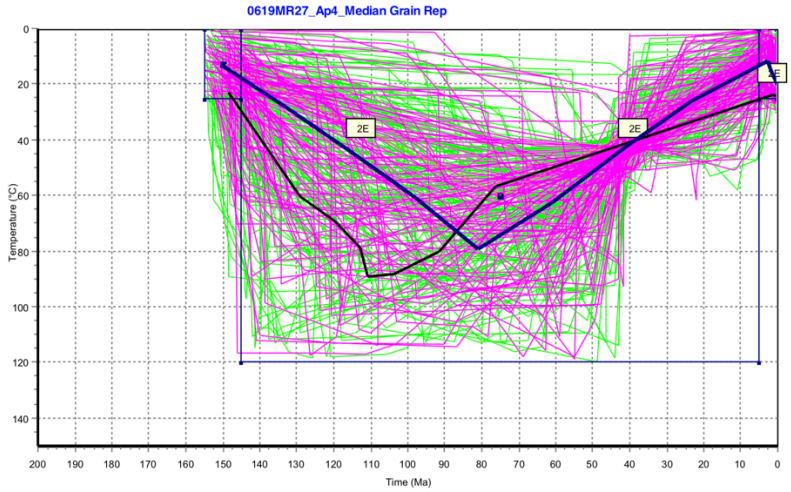

0619MR26_Ap3_MedianGrainRep
Temperature (°C)
Time (Ma)
2E
2E
2E

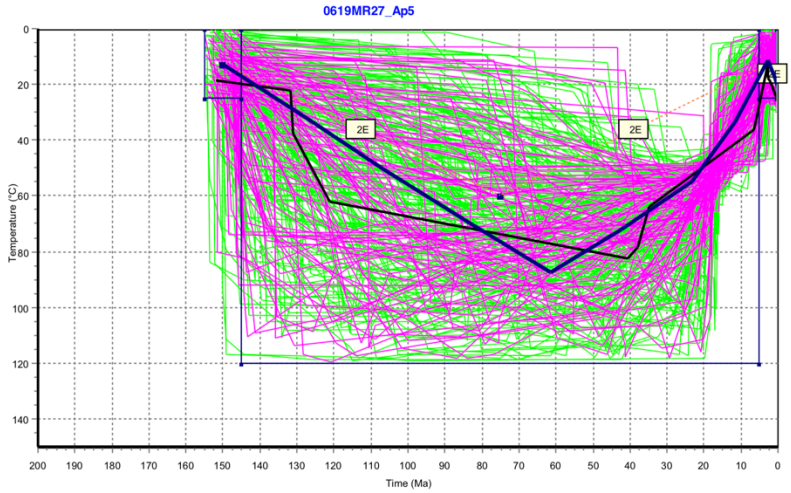

0619MR26_Ap4
Temperature (°C)
2E
2E
2E

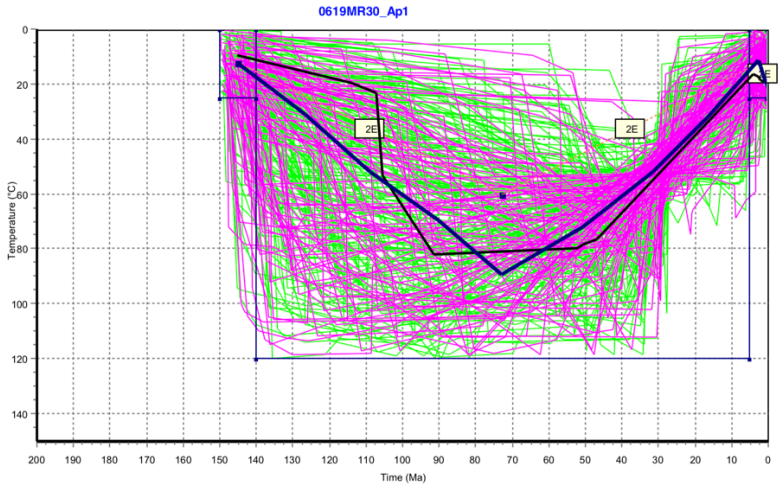

0619MR27_Ap1
Temperature (°C)
Time (Ma)
2E
2E
2E

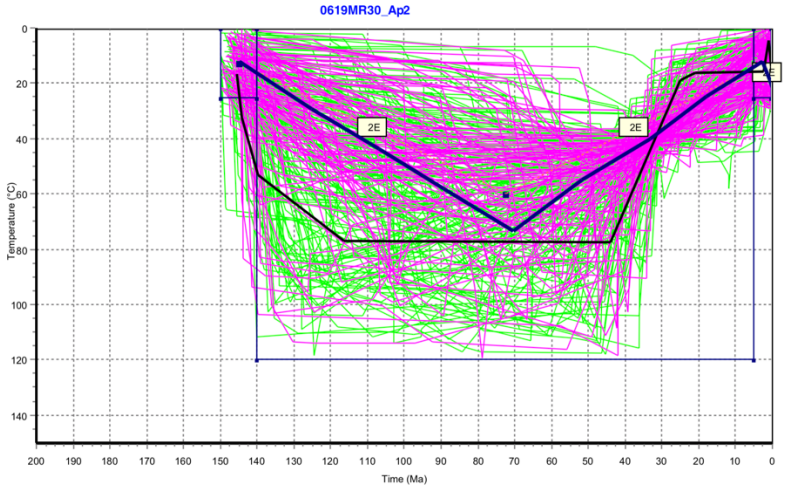

0619MR27_Ap2
Temperature (°C)
Time (Ma)
2E
2E
2E

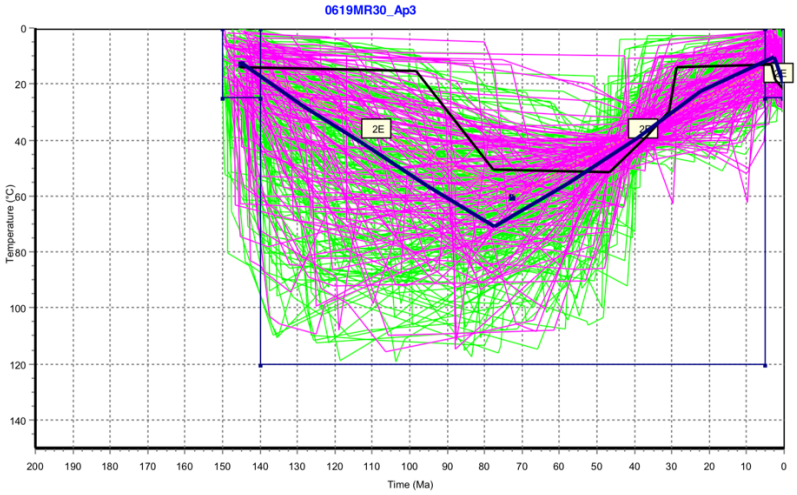

0619MR27_Ap3
Temperature (°C)
Time (Ma)
2E
2E
2E

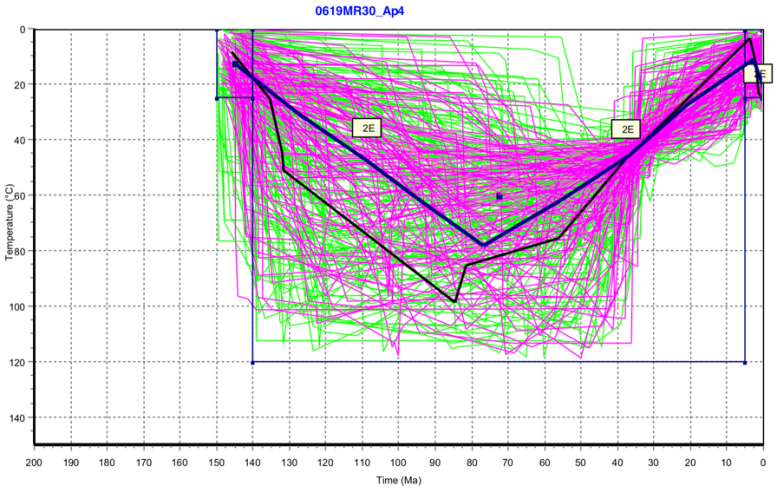

0619MR27_Ap4_Median Grain Rep
Temperature (°C)
Time (Ma)
2E
2E
2E

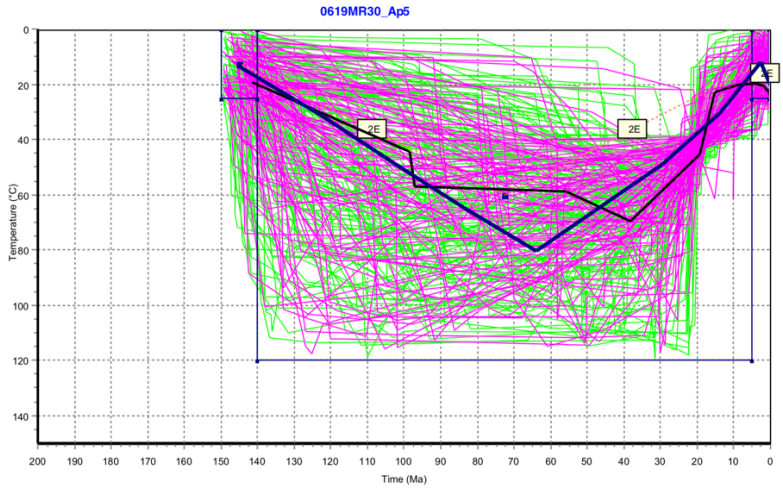

0619MR27_Ap5
Temperature (°C)
Time (Ma)
2E
2E
2E

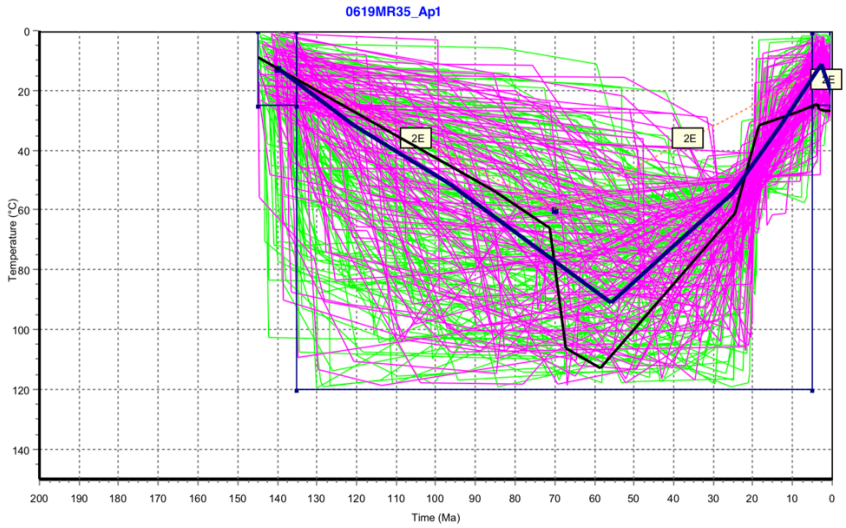

0619MR30_Ap1
Temperature (°C)
Time (Ma)
2E
2E
2E

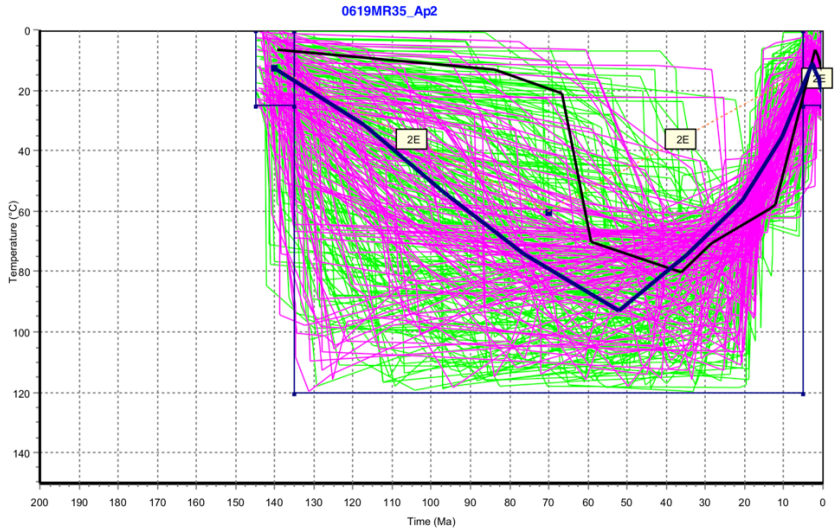

0619MR30_Ap2
Temperature (°C)
Time (Ma)
2E
2E
2E

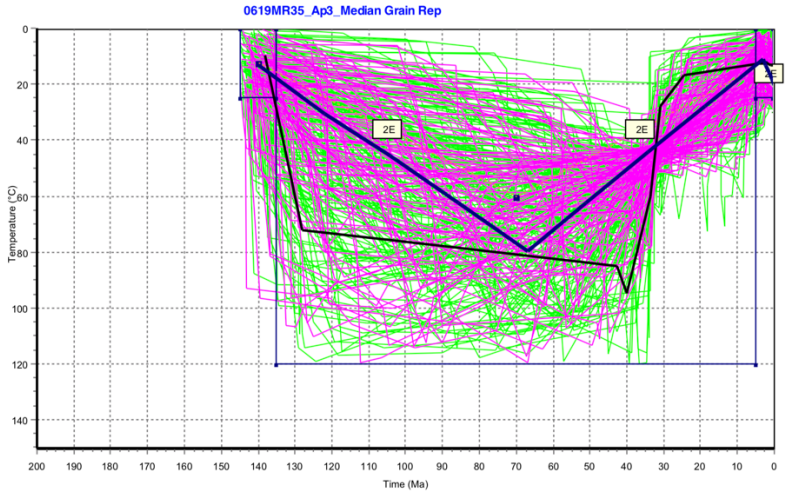

0619MR30_Ap3
Temperature (°C)
Time (Ma)
2E
2E
2E

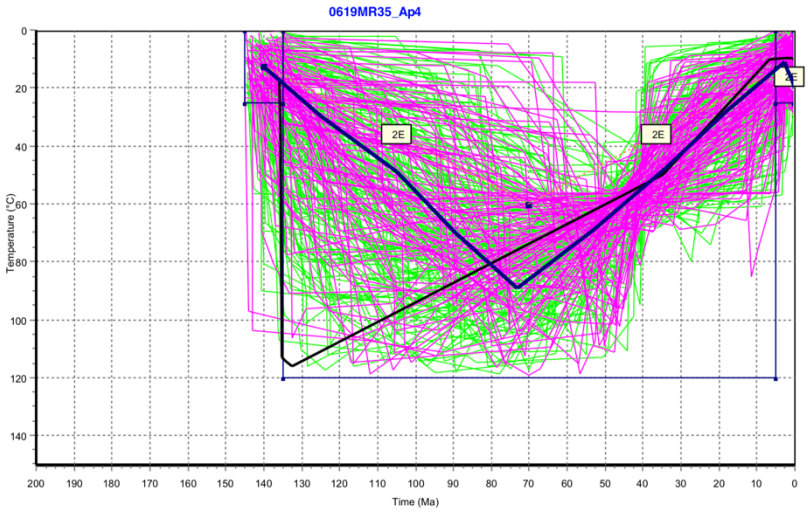

0619MR30_Ap4
Temperature (°C)
Time (Ma)
2E
2E
2E

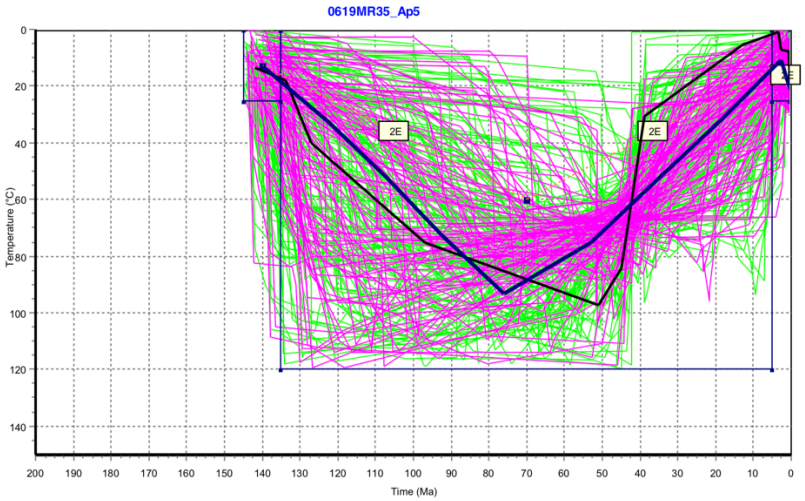

0619MR30_Ap5
Temperature (°C)
Time (Ma)
2E
2E
2E

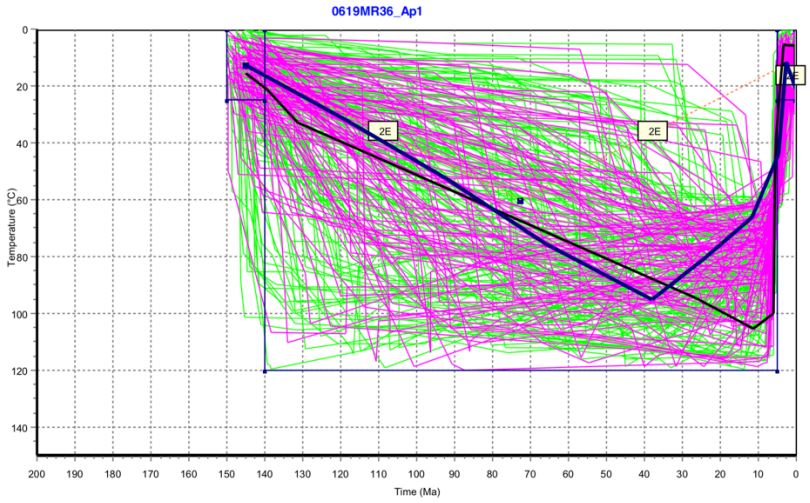

0619MR35_Ap1
Temperature (°C)
Time (Ma)
2E
2E
2E

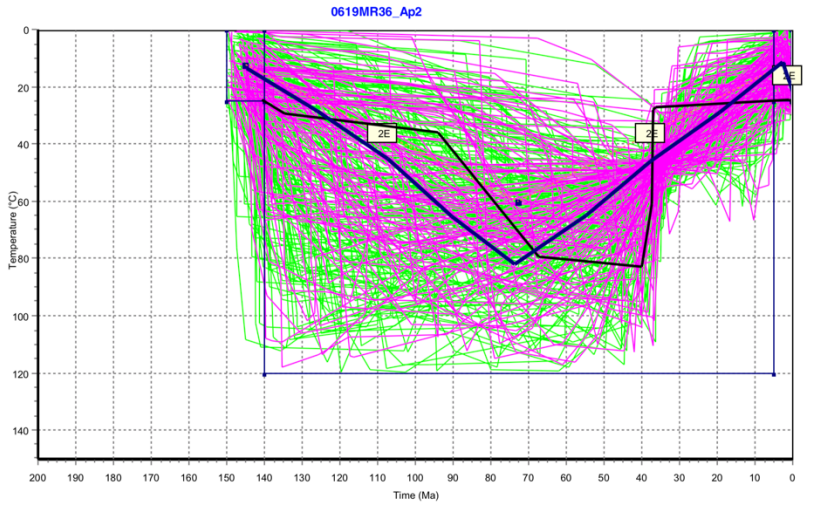

0619MR35_Ap2
Temperature (°C)
Time (Ma)
2E
2E
2E

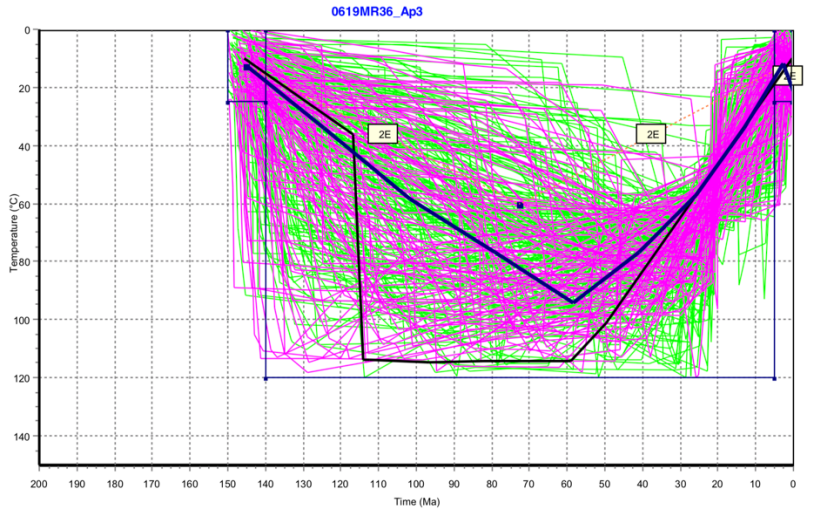

0619MR35_Ap3_Median Grain Rep
Temperature (°C)
Time (Ma)
2E
2E
2E

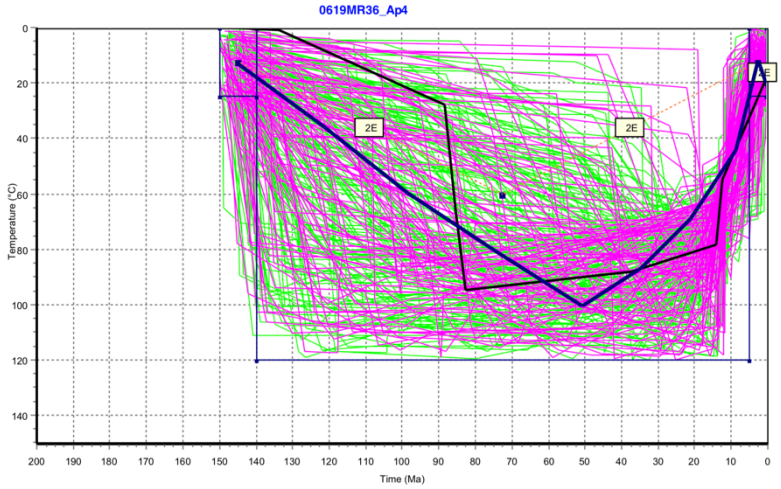

0619MR35_Ap4
Temperature (°C)
Time (Ma)
2E
2E
2E

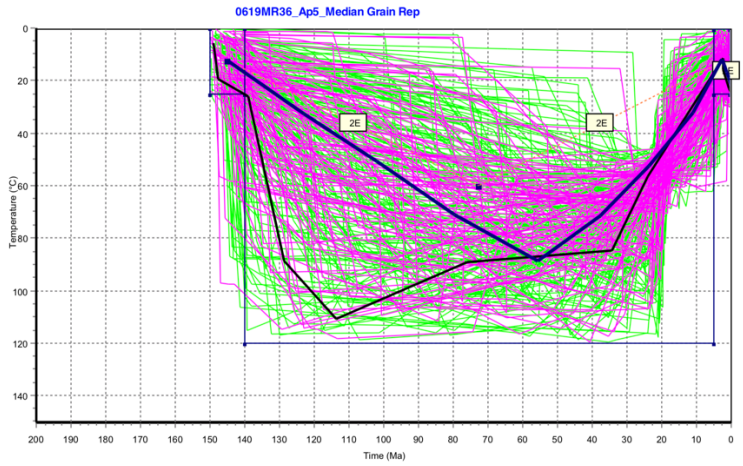

0619MR35_Ap5
Temperature (°C)
Time (Ma)
2E
2E
2E


0619MR36_Ap1
Temperature (°C)
Time (Ma)
2E
2E
2E

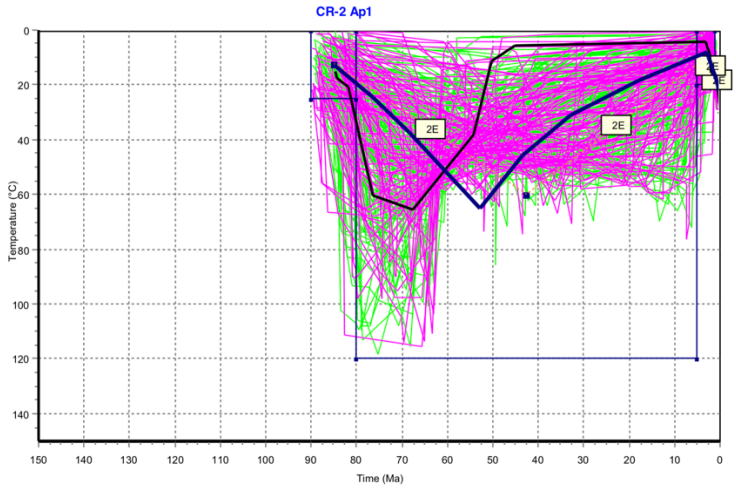

0619MR36_Ap2
Temperature (°C)
Time (Ma)
2E
2E
2E

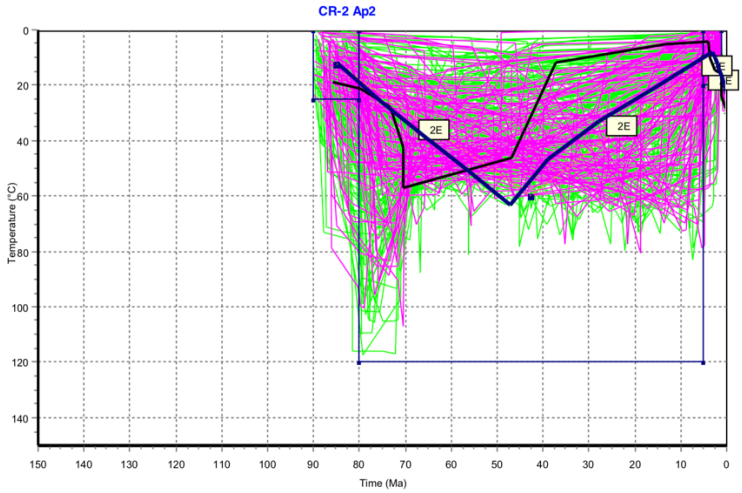

0619MR36_Ap3
Temperature (°C)
Time (Ma)
2E
2E
2E

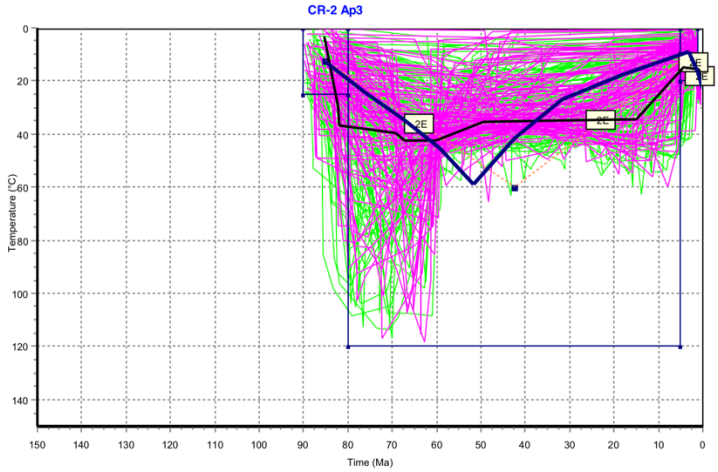

0619MR36_Ap4
Temperature (°C)
Time (Ma)
2E
2E
2E

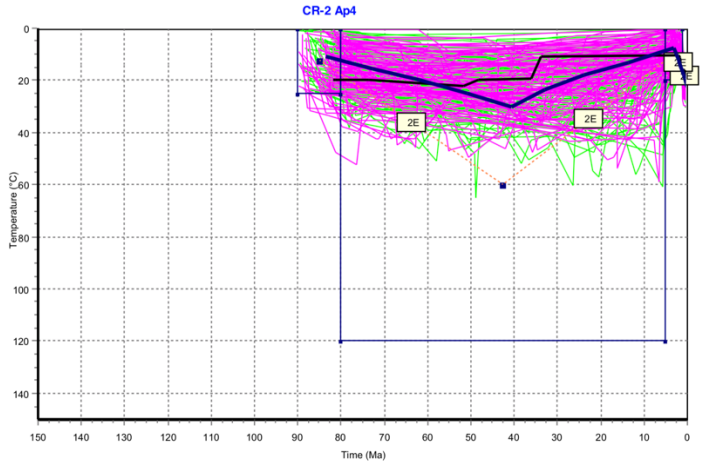

0619MR36_Ap5_Median Grain Rep
Temperature (°C)
Time (Ma)
2E
2E
2E

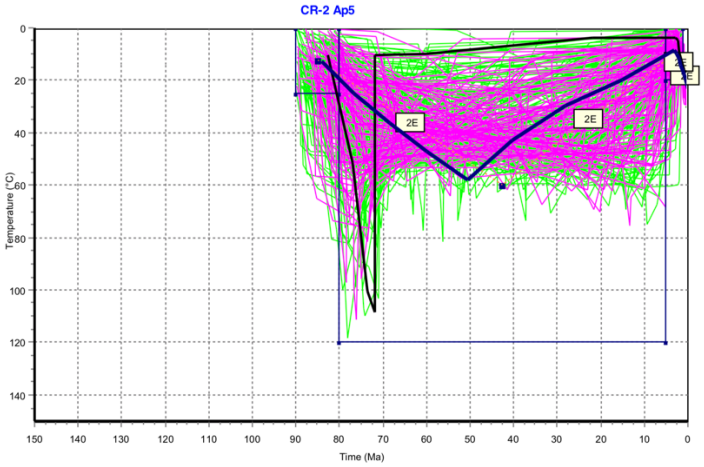
Single Apatite Grain - Thermal Modeling Plots for Subsurface Samples

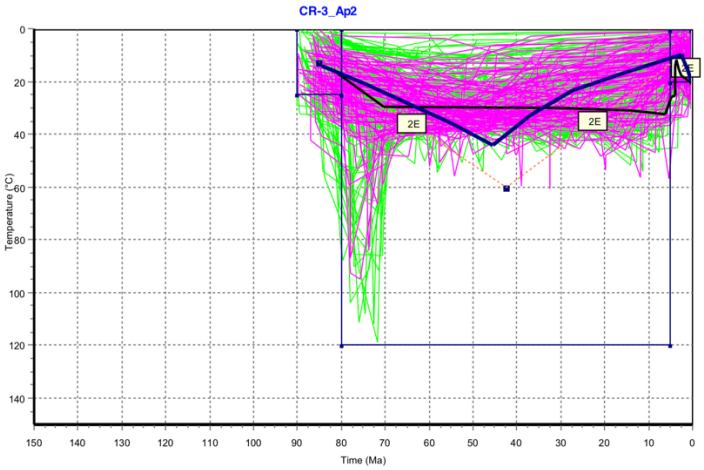


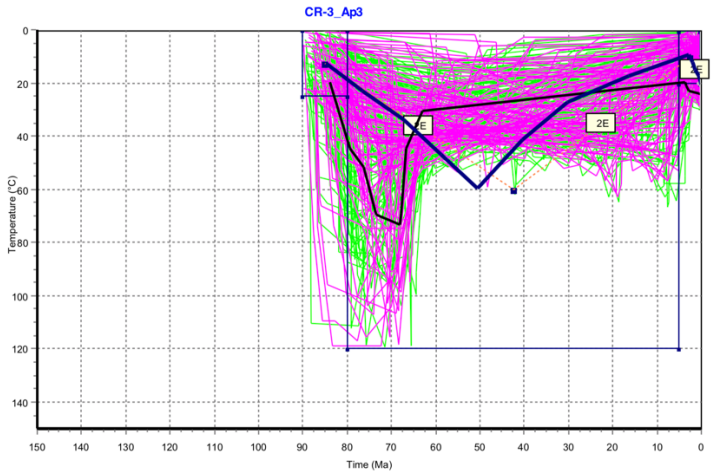


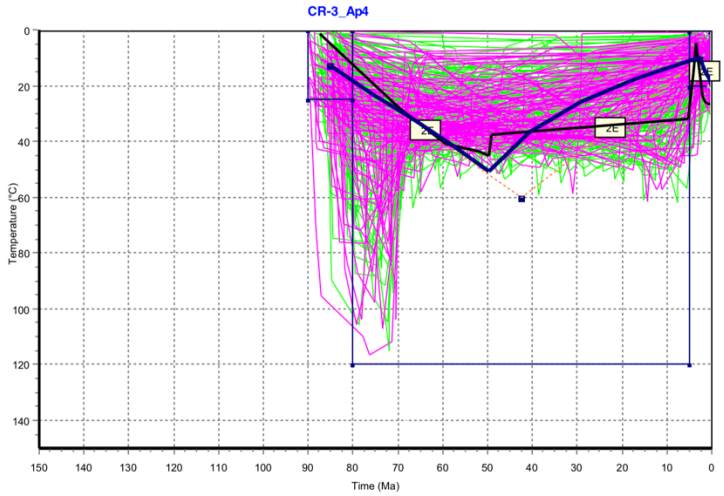


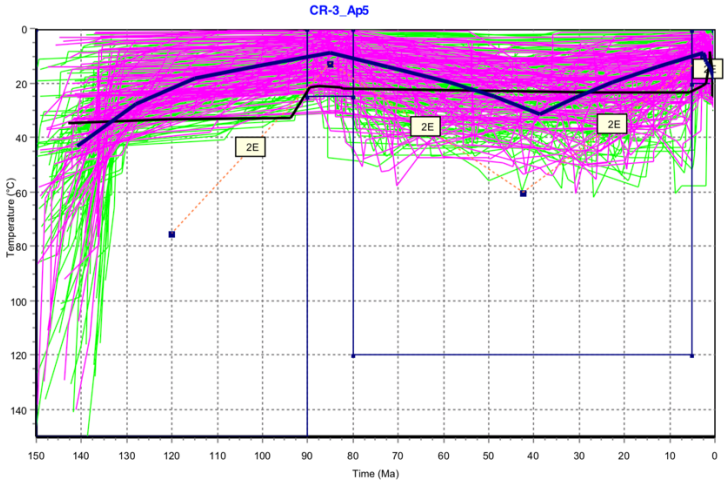

CR-2 Ap4
Temperature (°C)
Time (Ma)
2E
2E

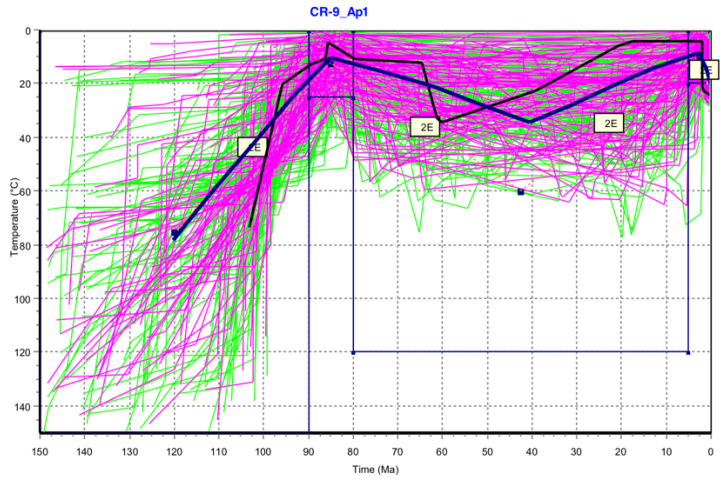

CR-2 Ap5
Temperature (°C)
Time (Ma)
2E
2E

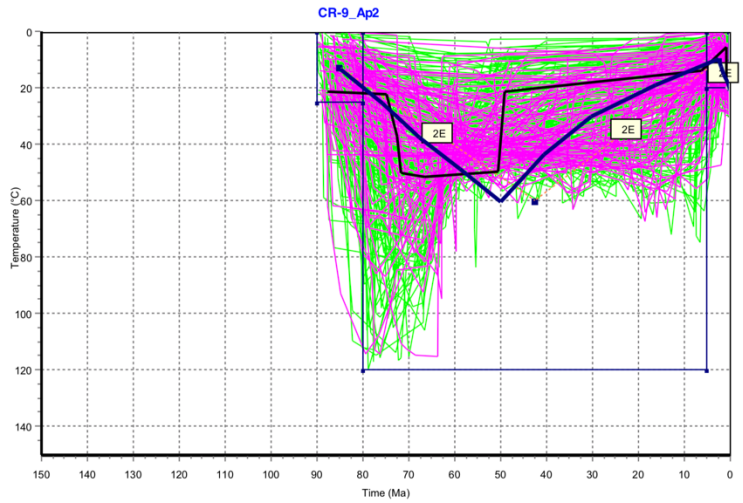

CR-3_Ap2
Temperature (°C)
Time (Ma)
2E
2E

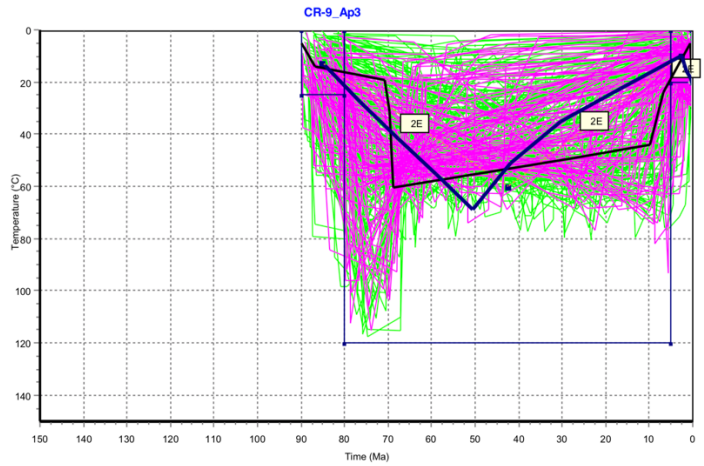

CR-3_Ap3
Temperature (°C)
Time (Ma)
2E
2E
2E

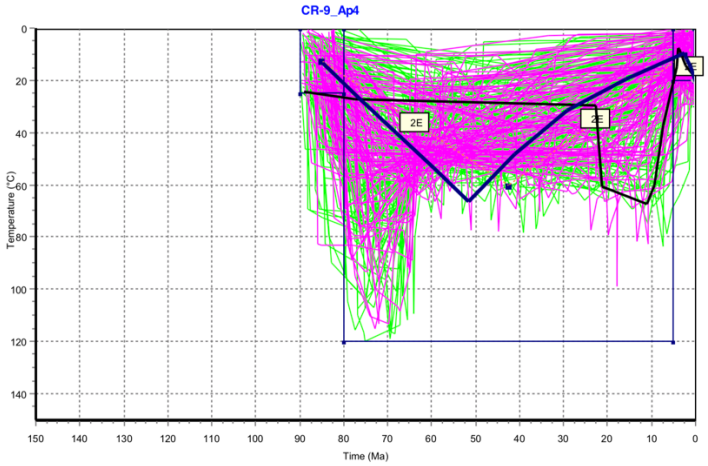

CR-3_Ap4
Temperature (°C)
Time (Ma)
2E
2E
2E

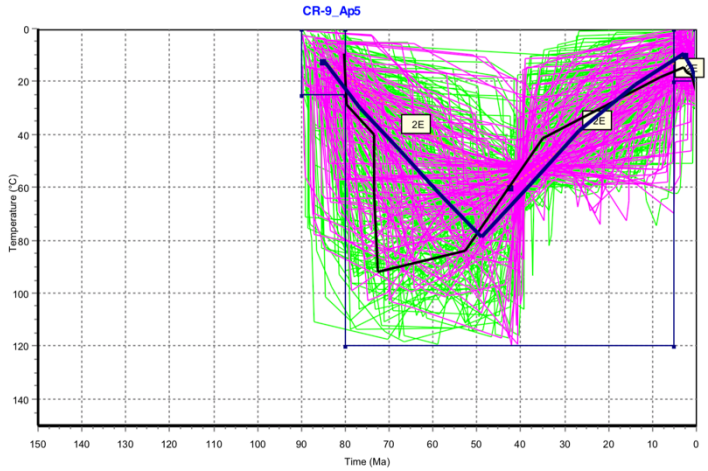

CR-3_Ap5
Temperature (°C)
Time (Ma)
2E
2E
2E
2E

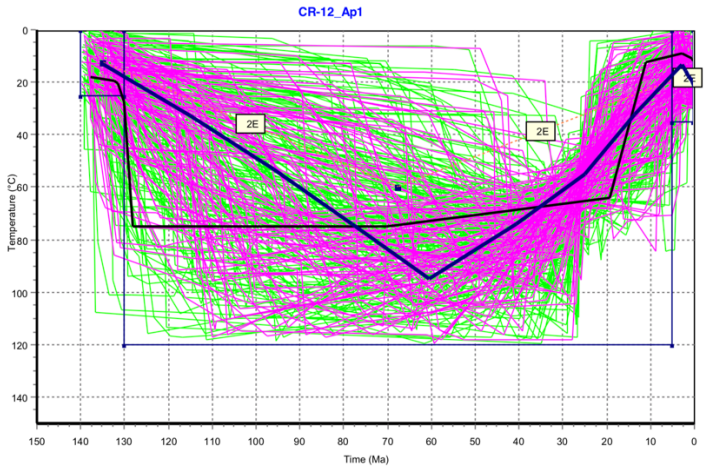

CR-9_Ap1
Temperature (°C)
Time (Ma)
2E
2E
2E
2E

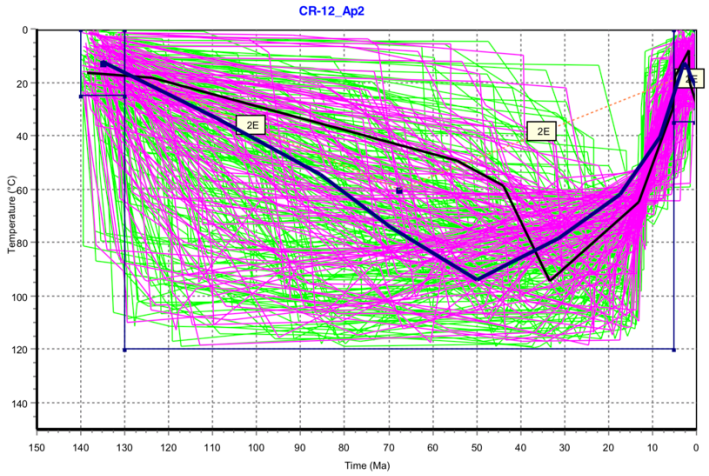

CR-9_Ap2
Temperature (°C)
Time (Ma)
2E
2E
2E

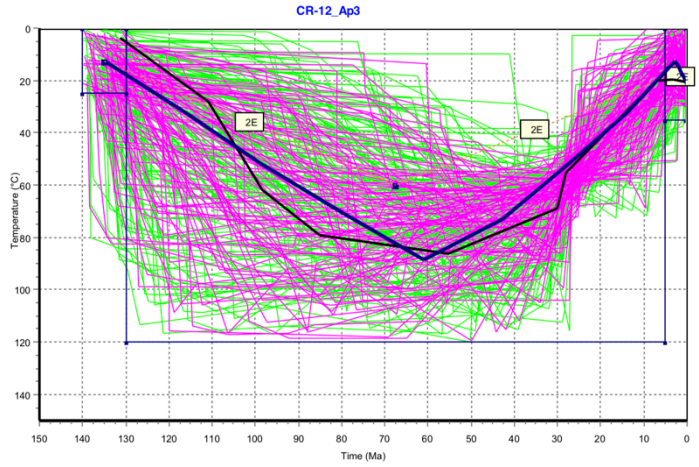

CR-9_Ap3
Temperature (°C)
Time (Ma)
2E
2E
2E

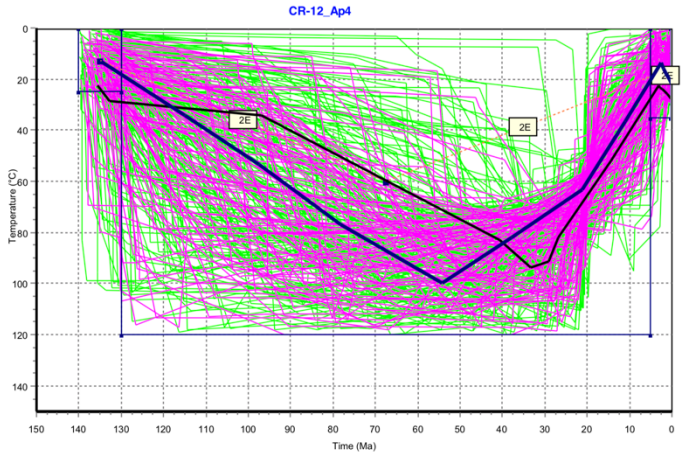

CR-9_Ap4
Temperature (°C)
Time (Ma)
2E
2E

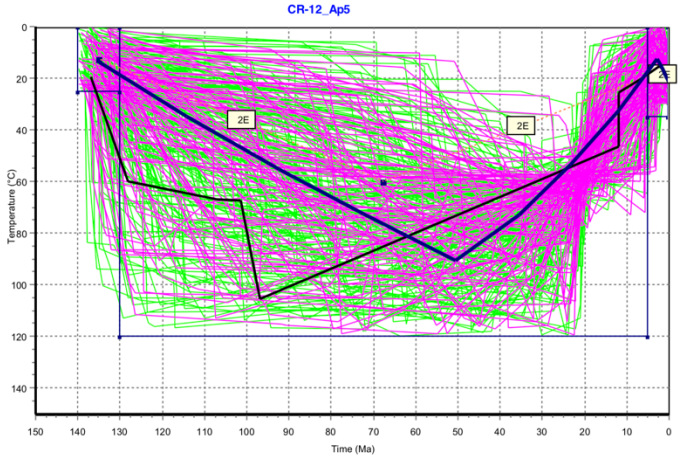

CR-9_Ap5
Temperature (°C)
Time (Ma)
2E
2E

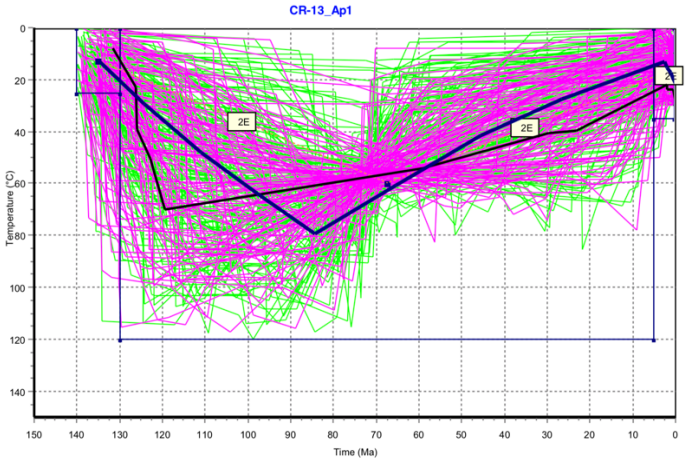

CR-12_Ap1
Temperature (°C)
Time (Ma)
2E
2E

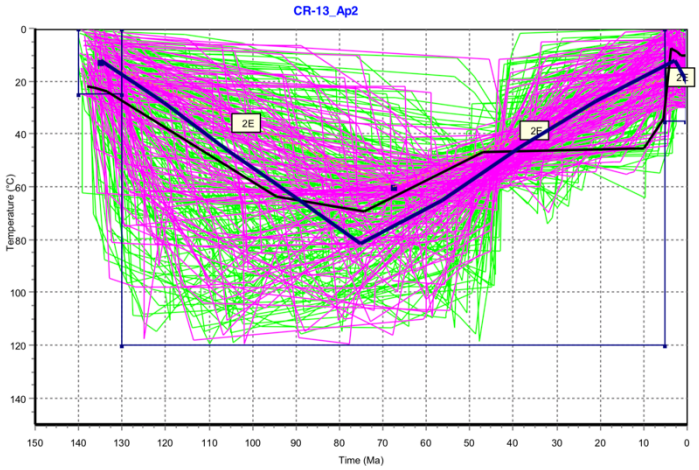

CR-12_Ap2
Temperature (°C)
Time (Ma)
2E
2E

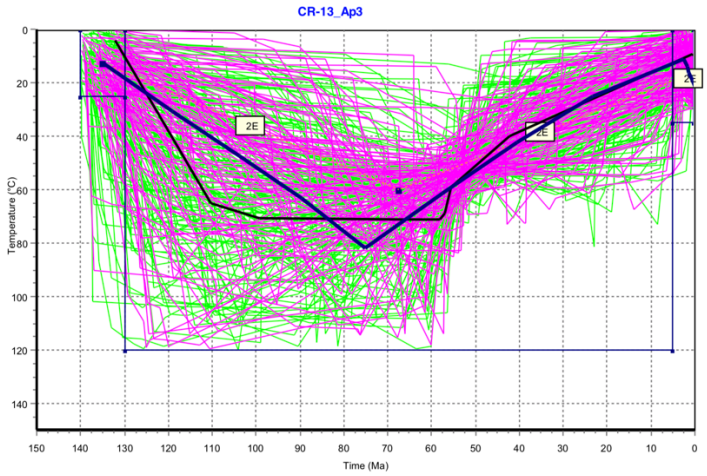

CR-12_Ap3
Temperature (°C)
Time (Ma)
2E
2E

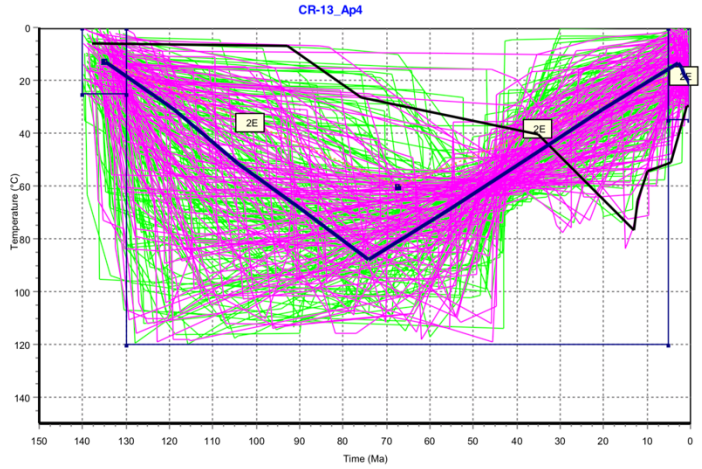

CR-12_Ap4
Temperature (°C)
Time (Ma)
2E
2E

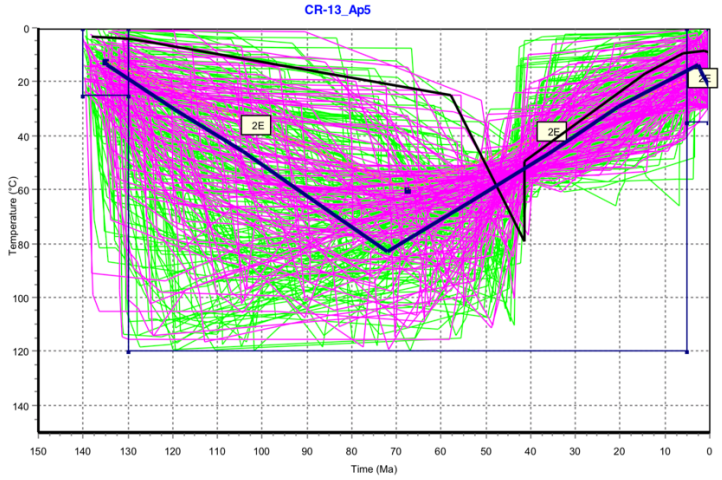

CR-12_Ap5
Temperature (°C)
Time (Ma)
2E
2E
2E

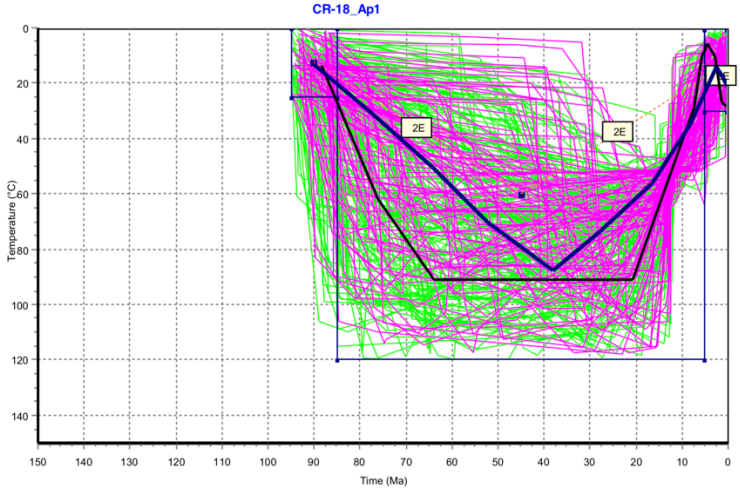

CR-13_Ap1
Temperature (°C)
Time (Ma)
2E
2E
2E

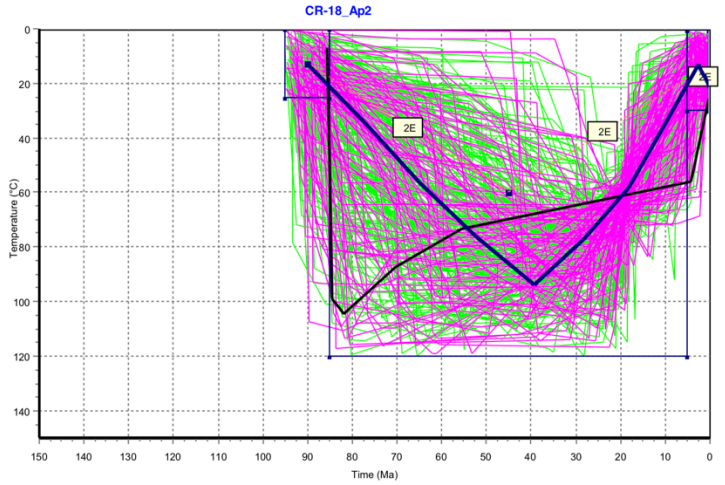

CR-13_Ap2
Temperature (°C)
Time (Ma)
2E
2E
2E

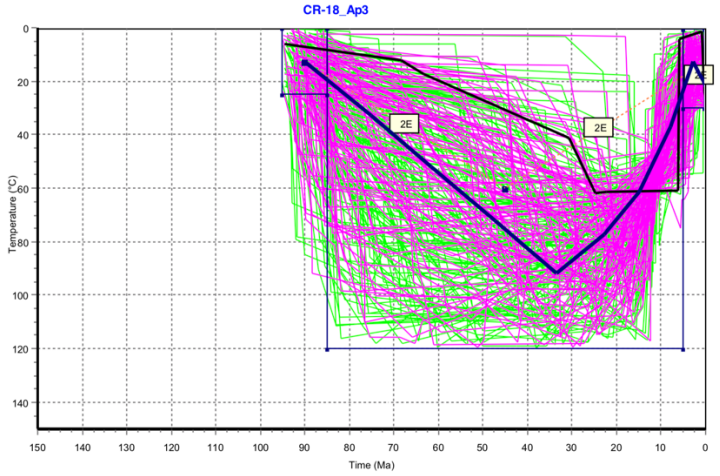

CR-13_Ap3
Temperature (°C)
Time (Ma)
2E
2E
2E

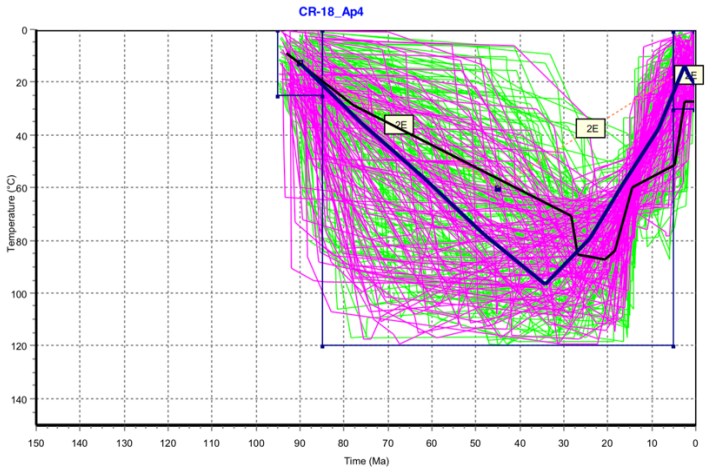

CR-13_Ap4
Temperature (°C)
Time (Ma)
2E
2E
2E

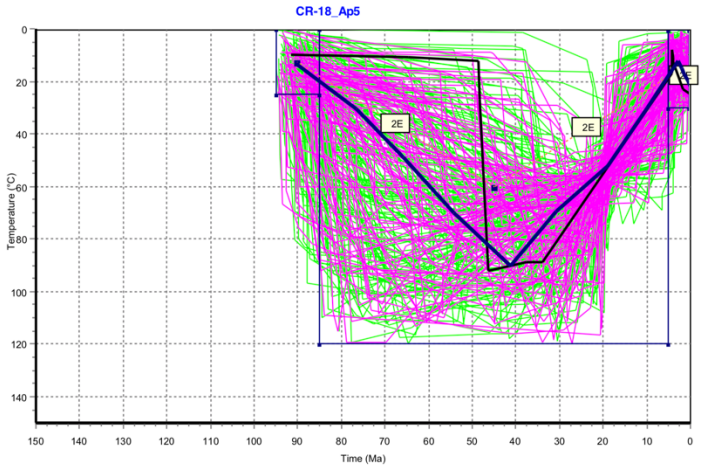

CR-13_Ap5
Temperature (°C)
Time (Ma)
2E
2E
2E

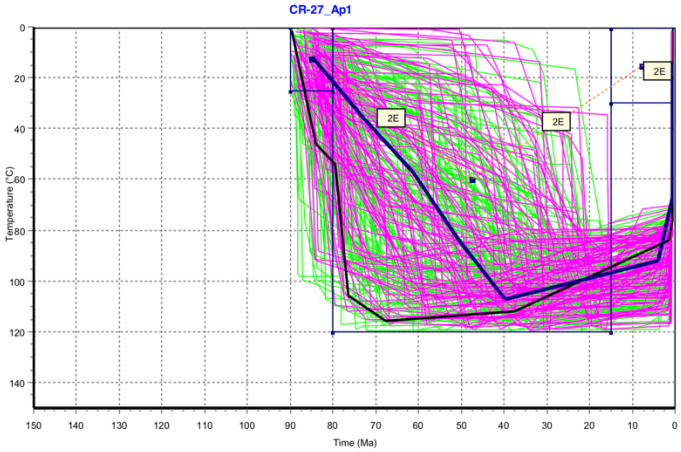

CR-18_Ap1
Temperature (°C)
Time (Ma)
2E
2E
2E

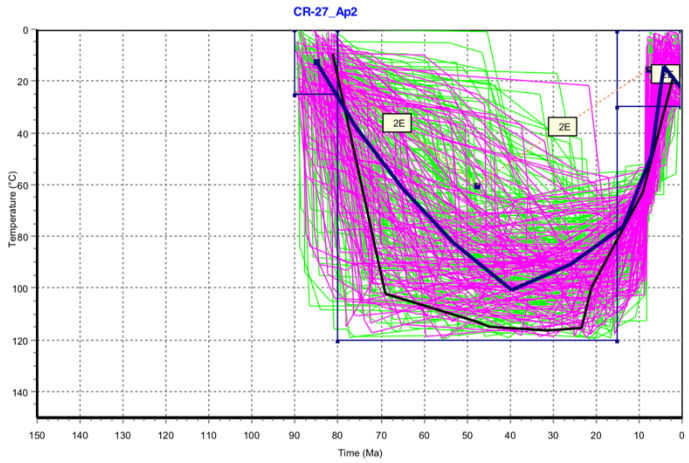

CR-18_Ap2
Temperature (°C)
Time (Ma)
2E
2E
2E

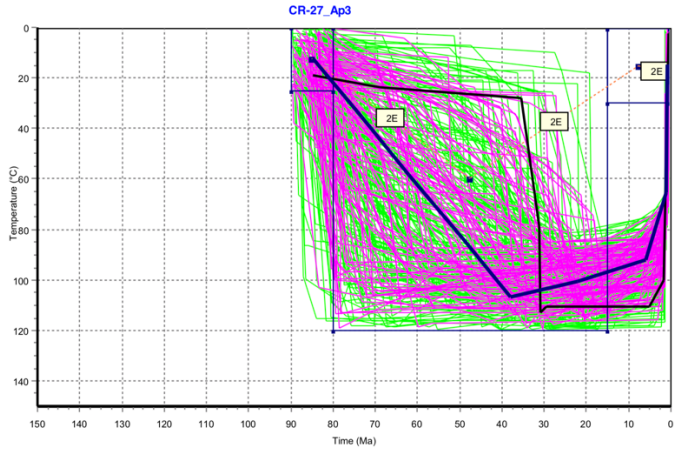

CR-18_Ap3
Temperature (°C)
Time (Ma)
2E
2E
2E

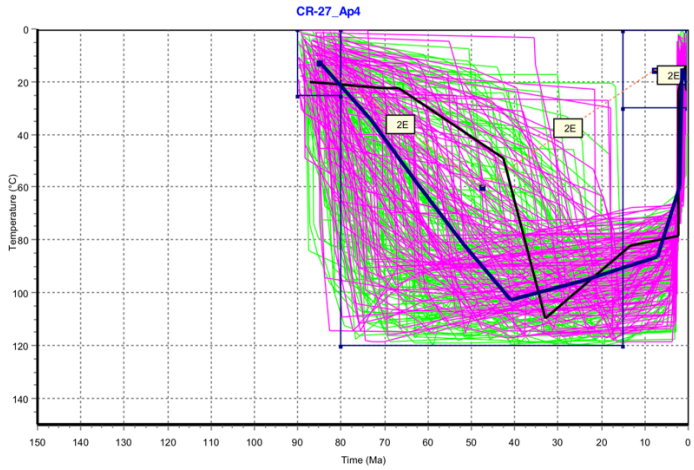

CR-18_Ap4
Temperature (°C)
Time (Ma)
2E
2E
2E

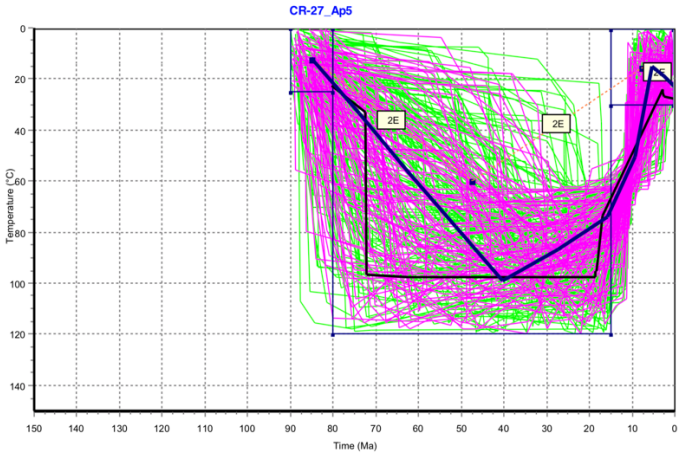

CR-18_Ap5
Temperature (°C)
Time (Ma)
2E
2E
2E

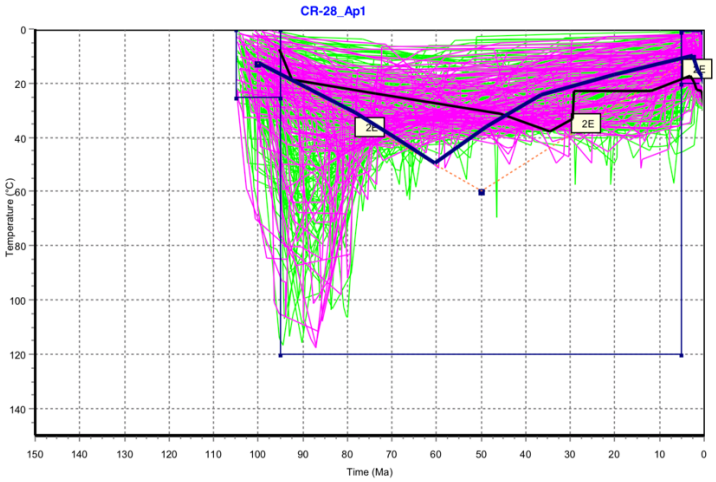

CR-27_Ap1
Temperature (°C)
Time (Ma)
2E
2E
2E

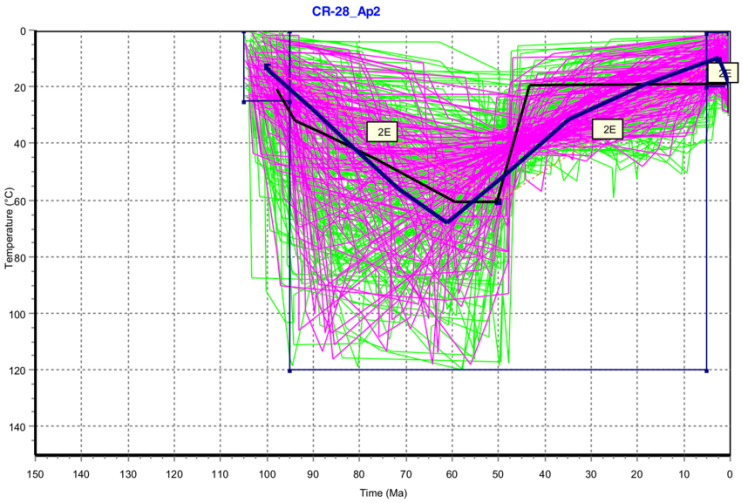

CR-27_Ap2
Temperature (°C)
Time (Ma)
2E
2E

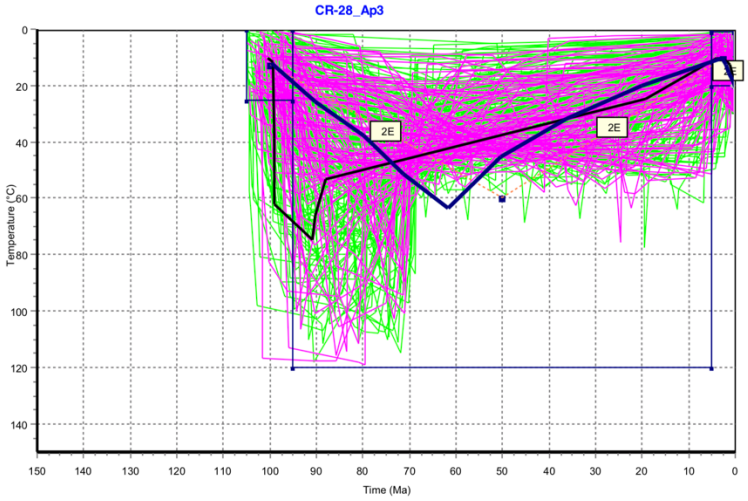

CR-27_Ap3
Temperature (°C)
Time (Ma)
2E
2E
2E

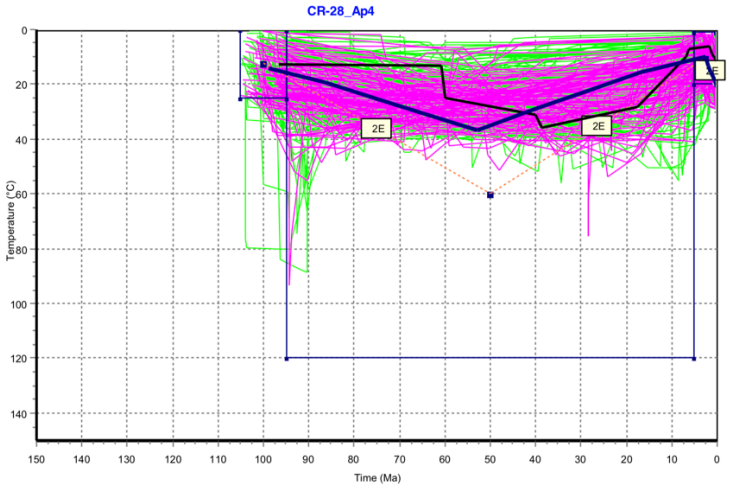

CR-27_Ap4
Temperature (°C)
Time (Ma)
2E
2E
2E

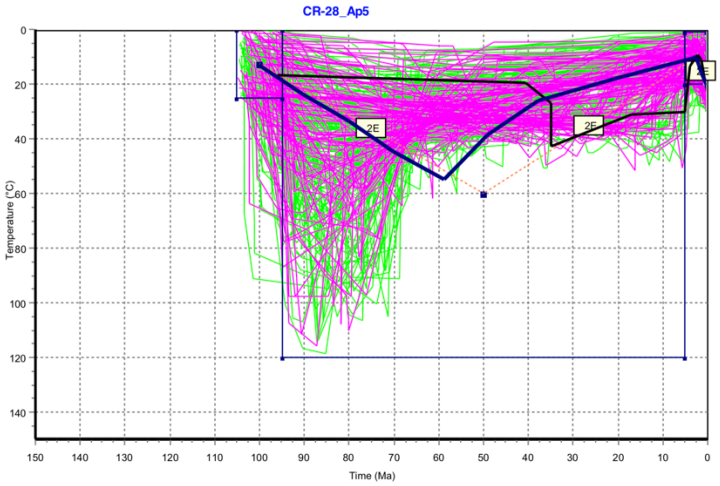

CR-27_Ap5
Temperature (°C)
Time (Ma)
2E
2E
2E

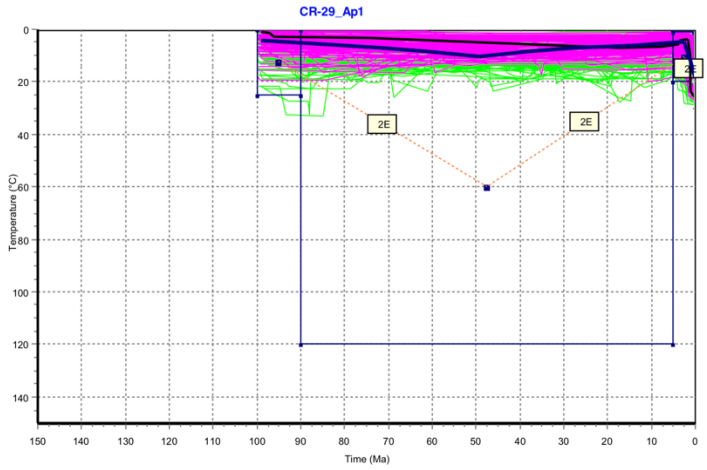

CR-28_Ap1
Temperature (°C)
Time (Ma)
2E
2E
2E

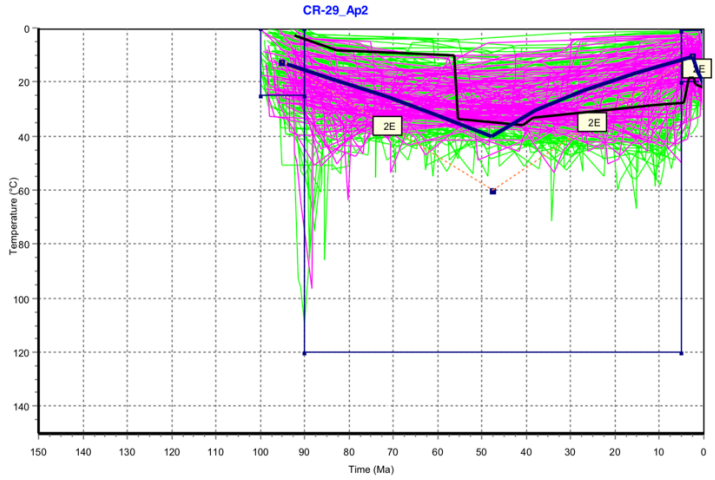

CR-28_Ap2
Temperature (°C)
Time (Ma)
2E
2E
2E

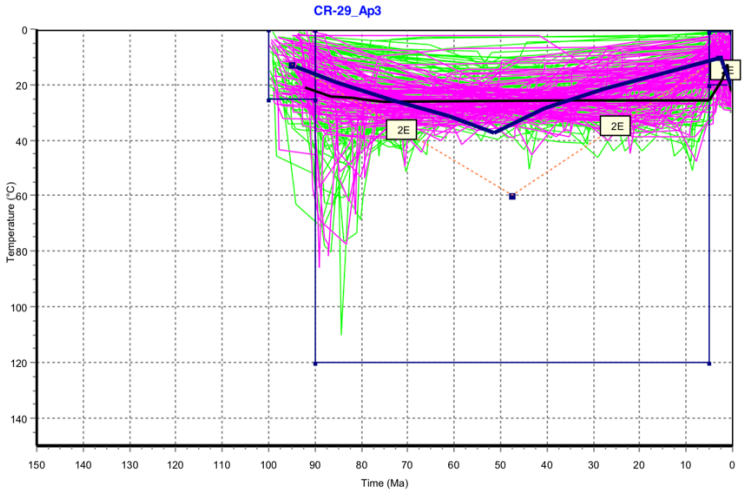

CR-28_Ap3
Temperature (°C)
Time (Ma)
2E
2E

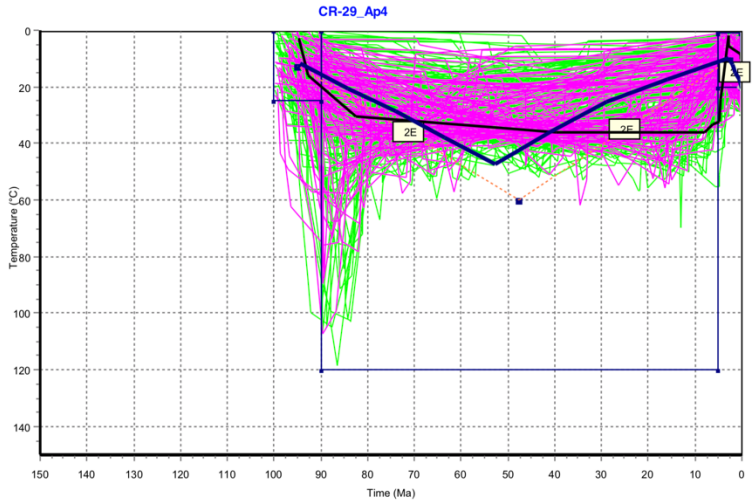

CR-28_Ap4
Temperature (°C)
Time (Ma)
2E
2E

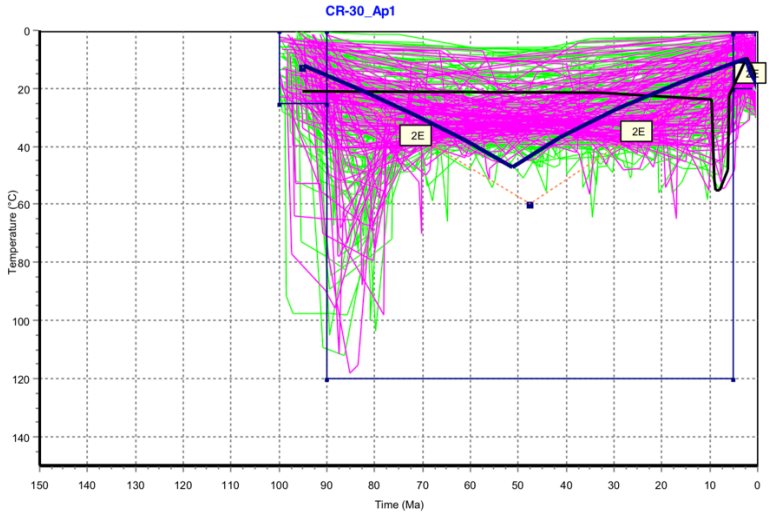

CR-28_Ap5
Temperature (°C)
Time (Ma)
2E
2E

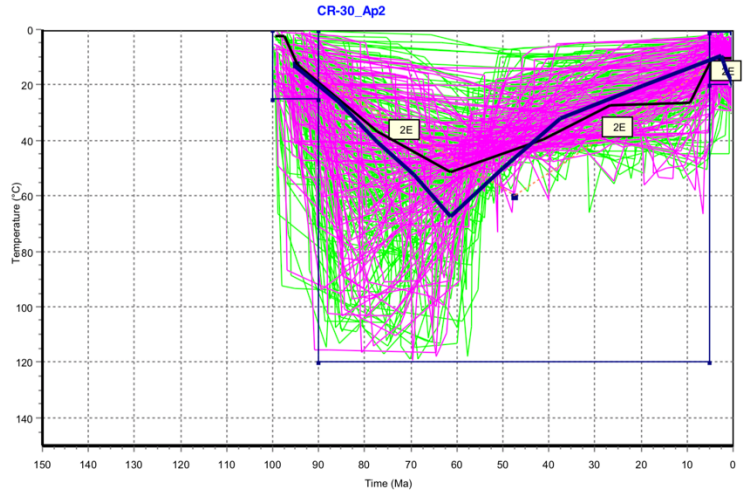

CR-29_Ap1
Temperature (°C)
Time (Ma)
2E
2E
2E

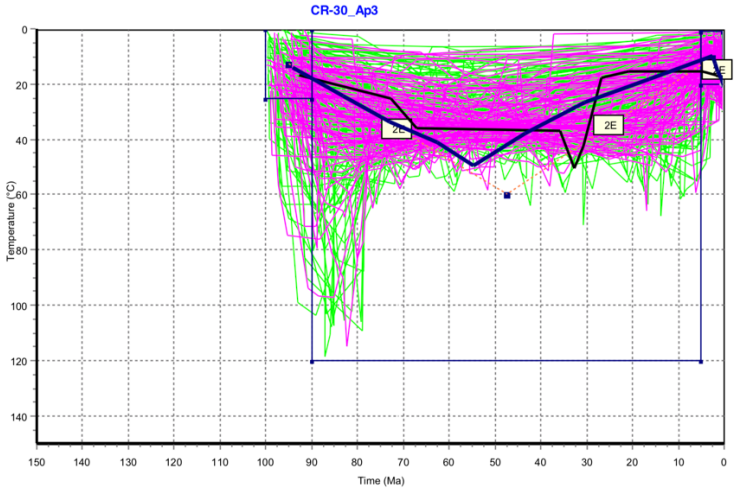

CR-29_Ap2
Temperature (°C)
Time (Ma)
2E
2E
2E


CR-29_Ap3
Temperature (°C)
Time (Ma)
2E
2E
2E

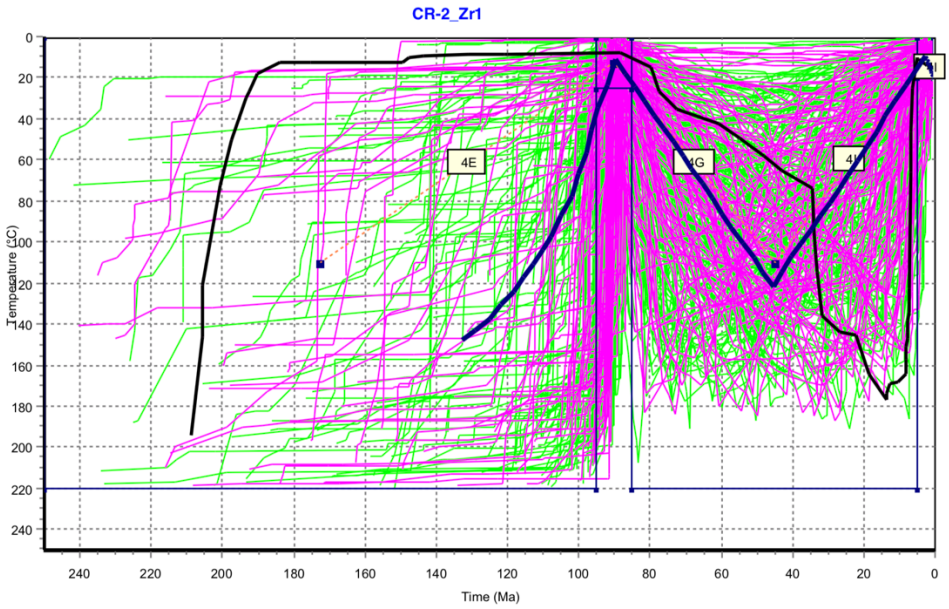

CR-29_Ap4
Temperature (°C)
Time (Ma)
2E
2E
2E

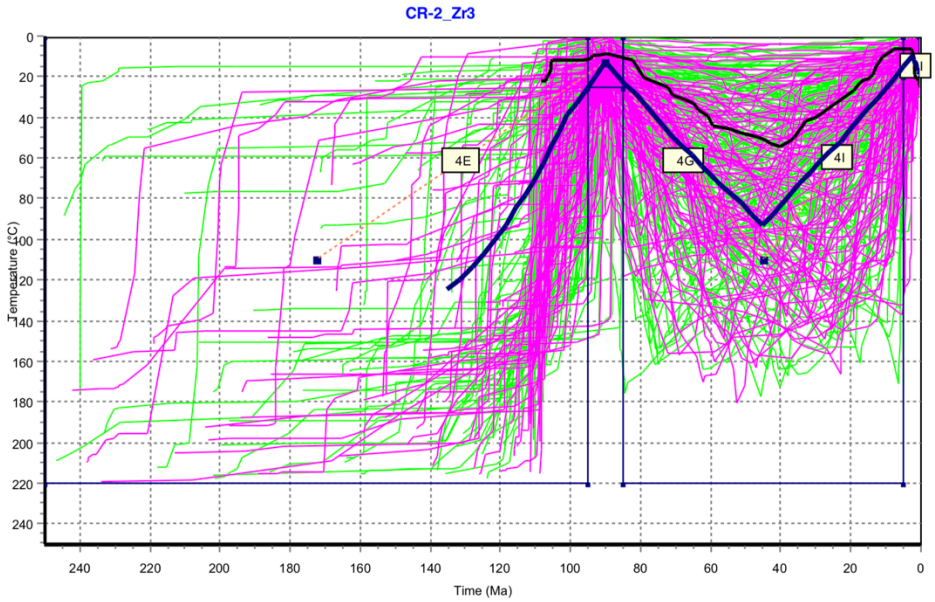

CR-30_Ap1
Temperature (°C)
Time (Ma)
2E
2E
2E

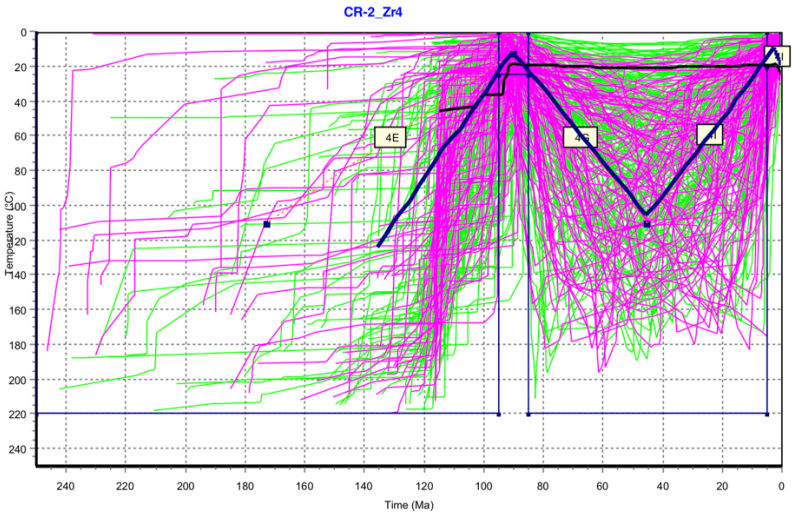

CR-30_Ap2
Temperature (°C)
Time (Ma)
2E
2E
2E

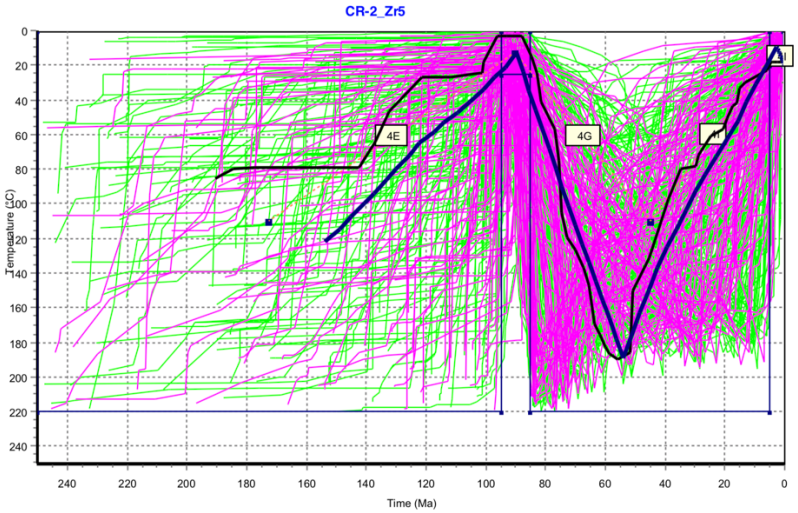

CR-30_Ap3
Temperature (°C)
Time (Ma)
2E
2E
2E

Single Zircon Grain - Thermal Modeling Plots for Subsurface Samples






CR-2_Zr4
4E
4G
4I
Temperature (ºC)
Time (Ma)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4G
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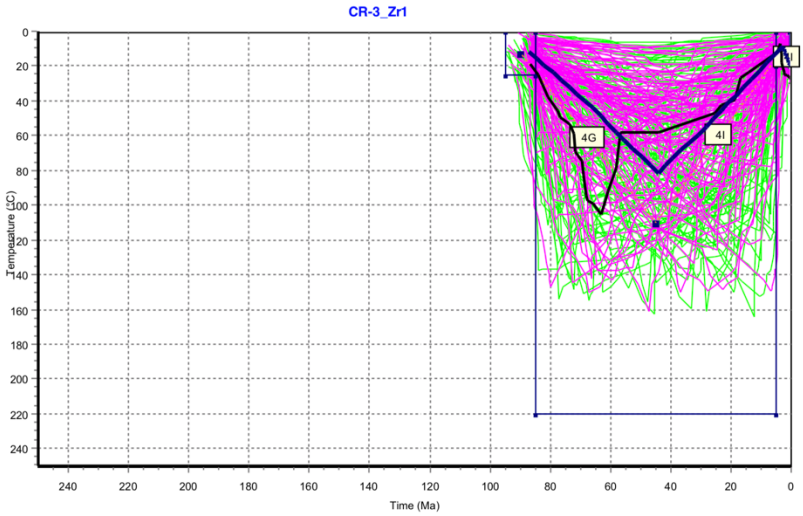
Temperature (ºC)
Time (Ma)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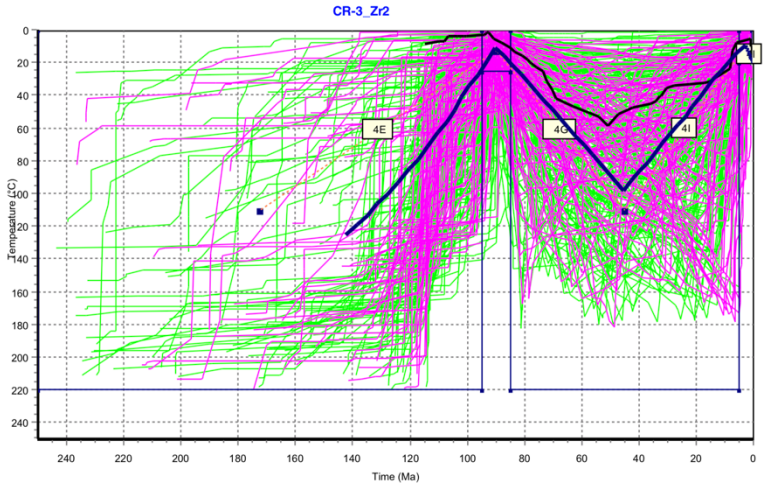
Temperature (ºC)
Time (Ma)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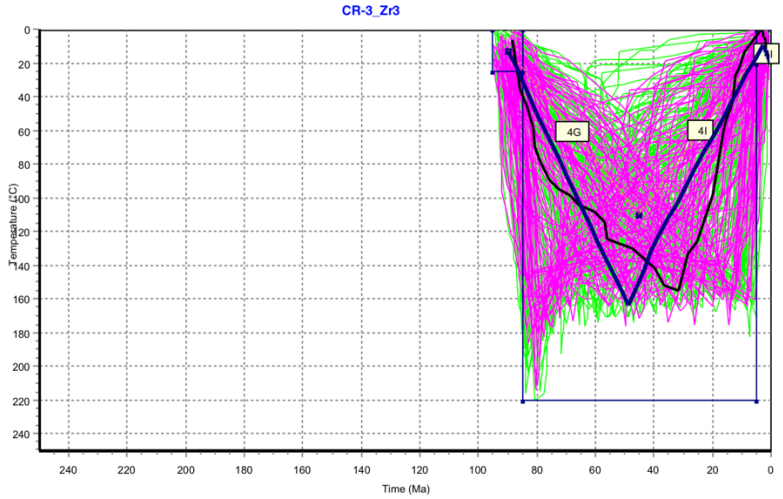
4G
4I
Temperature (°C)
Time (Ma)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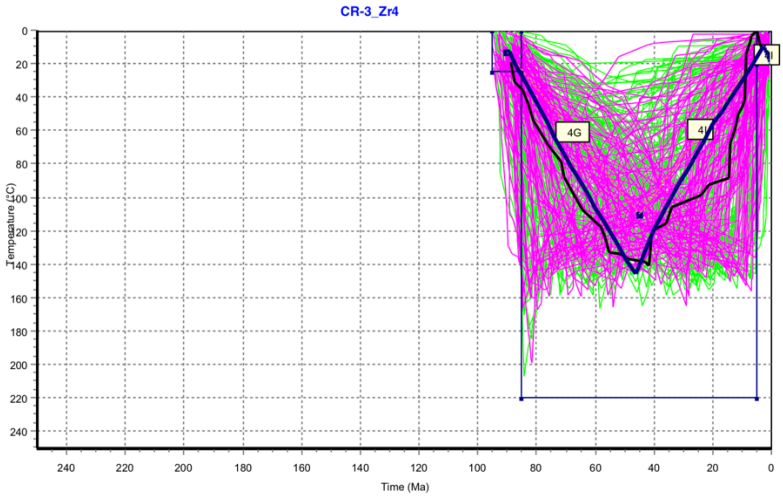
Temperature (°C)
Time (Ma)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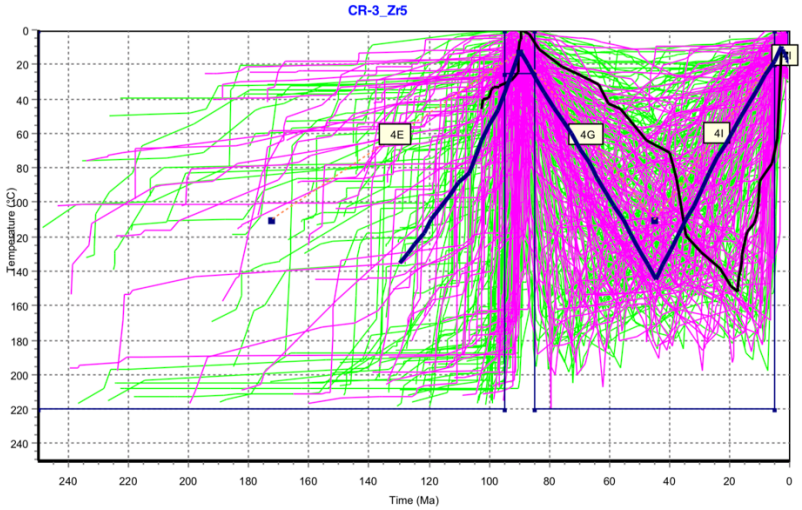
Temperature (°C)
Time (Ma)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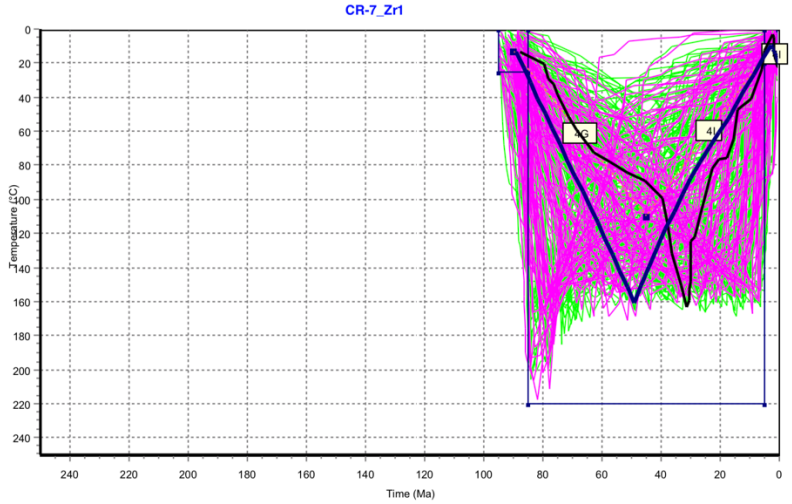
4G
4I
Temperature (ºC)
Time (Ma)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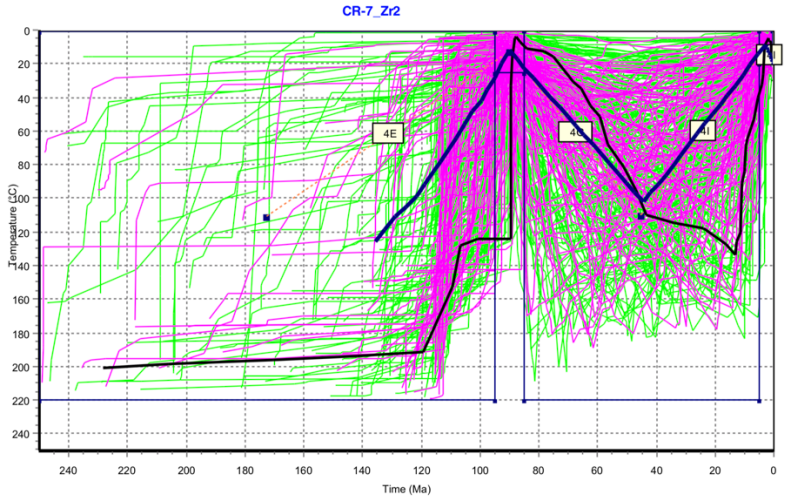
Temperature (ºC)
Time (Ma)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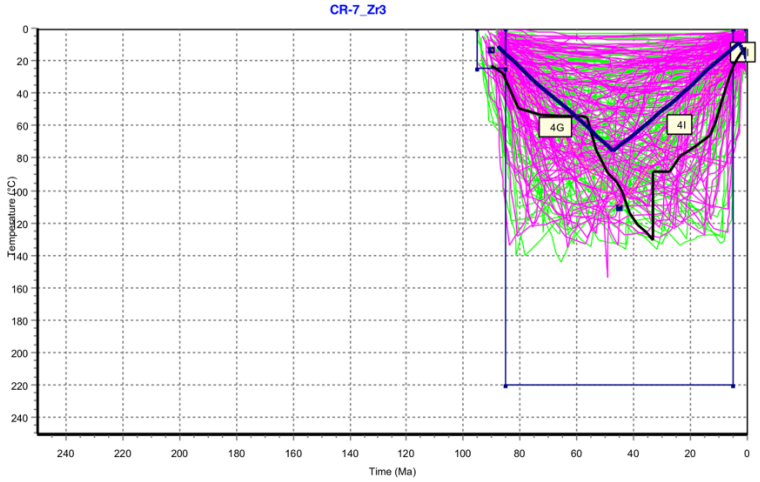
4E
4I
Temperature (ºC)
Time (Ma)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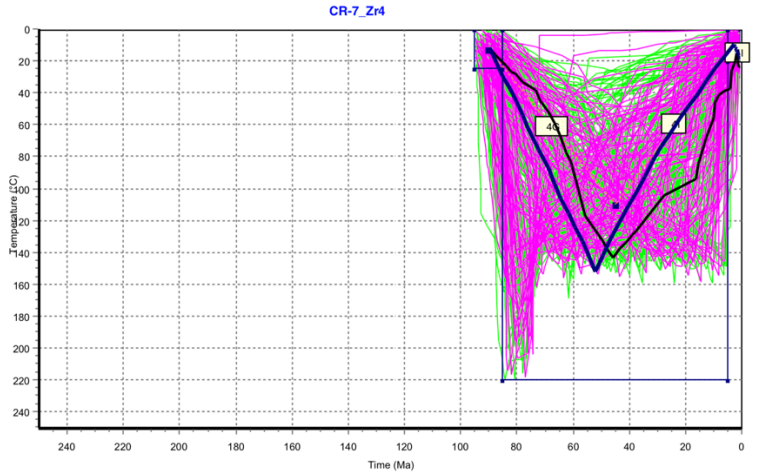
Temperature (ºC)
Time (Ma)
4G
4I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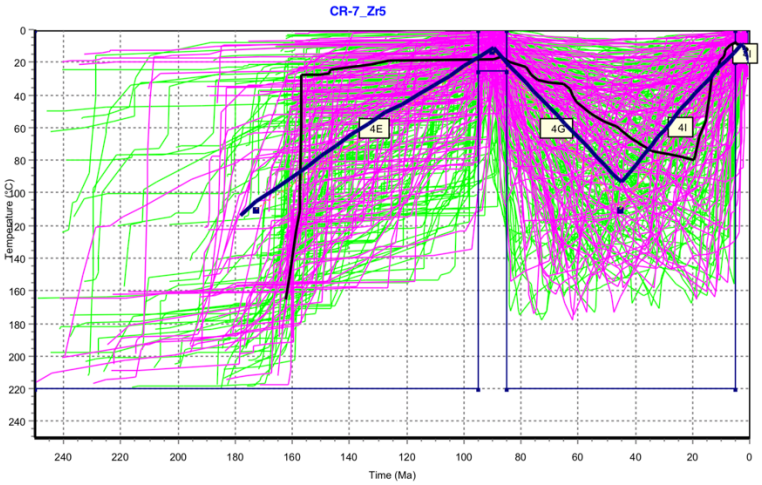
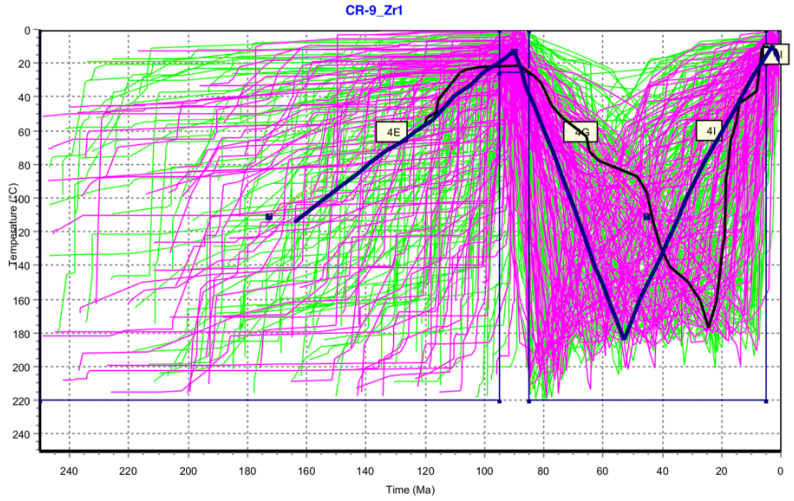
Temperature (ºC)
Time (Ma)
4G
4I


CR-7_Zr5
Temperature (ºC)
Time (Ma)
4E
4G
4I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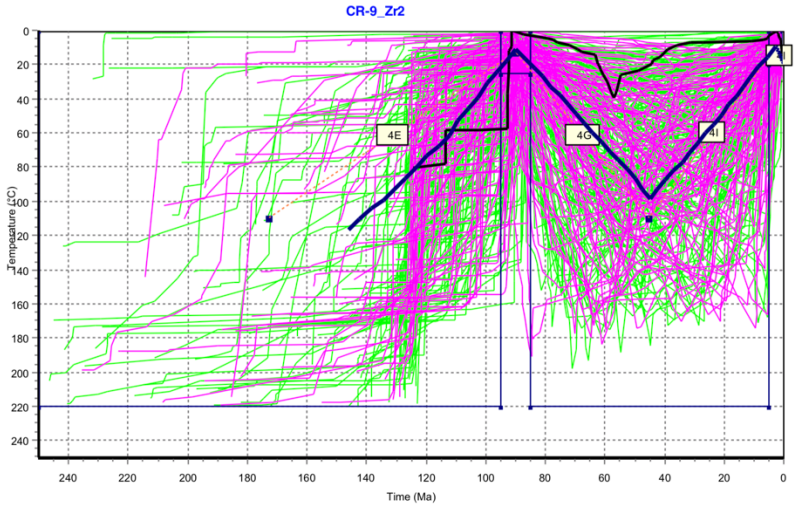
4E
4G
4I
Temperature (°C)
Time (Ma)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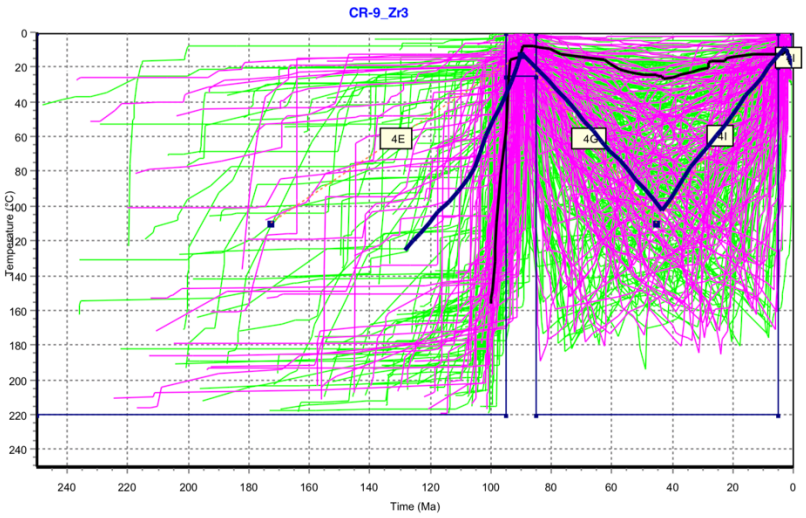
4E
4G
4I
Temperature (°C)
Time (Ma)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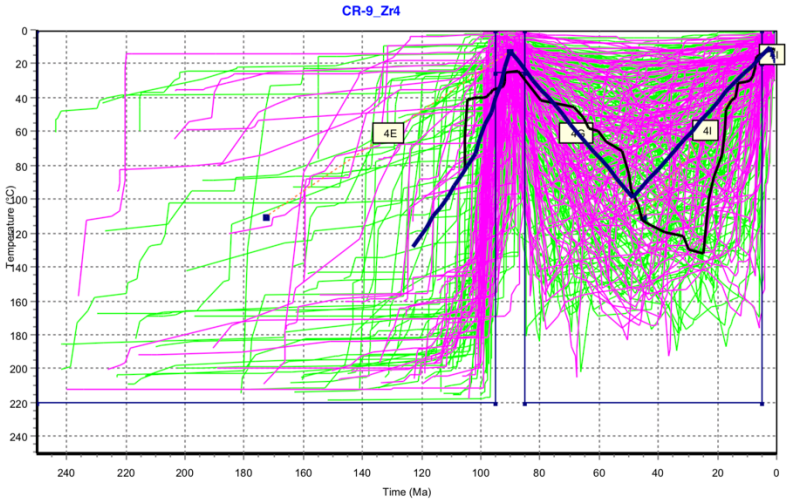
4I
Temperature (°C)
Time (Ma)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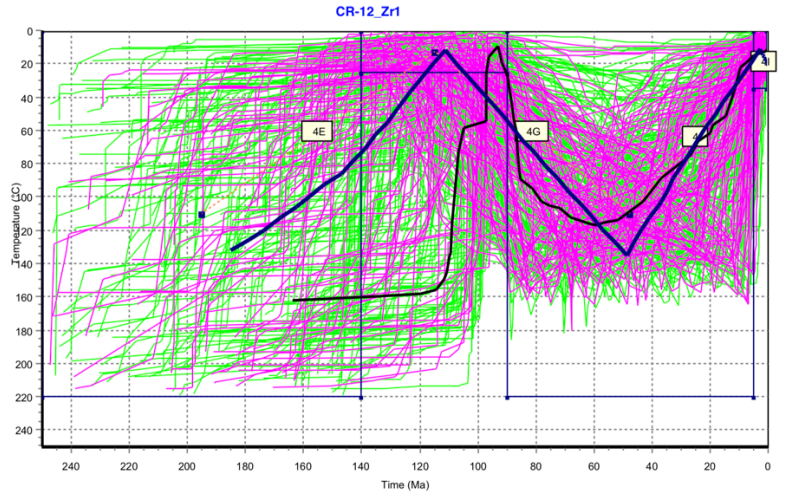
Temperature (ºC)
Time (Ma)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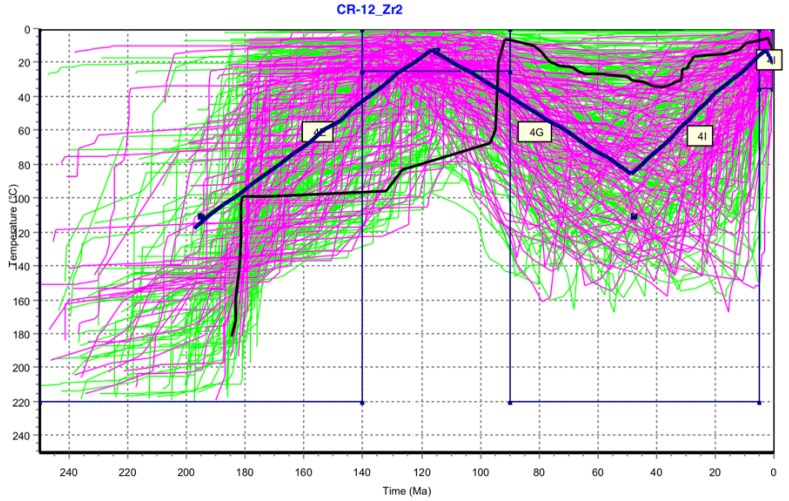
4I
Temperature (ºC)
Time (Ma)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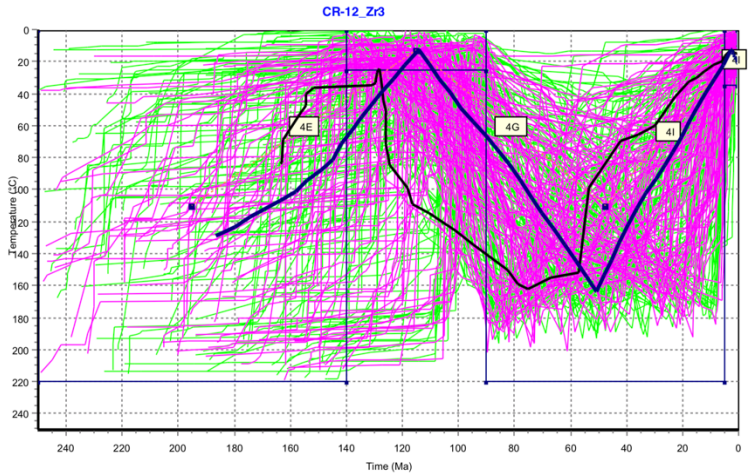
4I
Temperature (ºC)
Time (Ma)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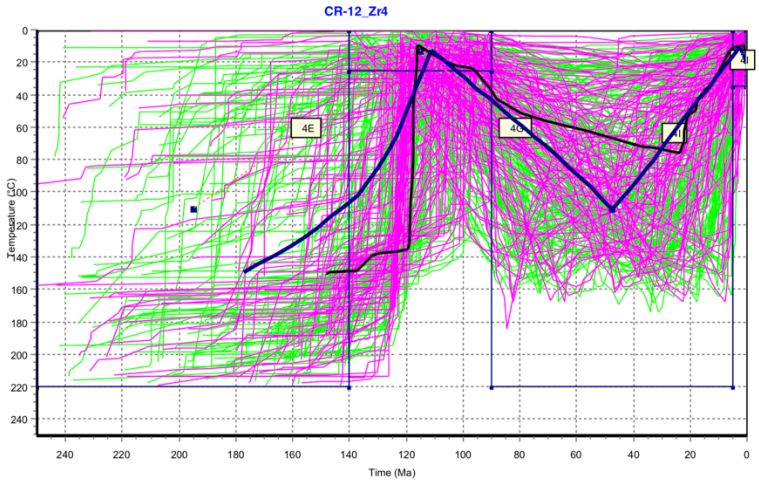
Temperature (C)
Time (Ma)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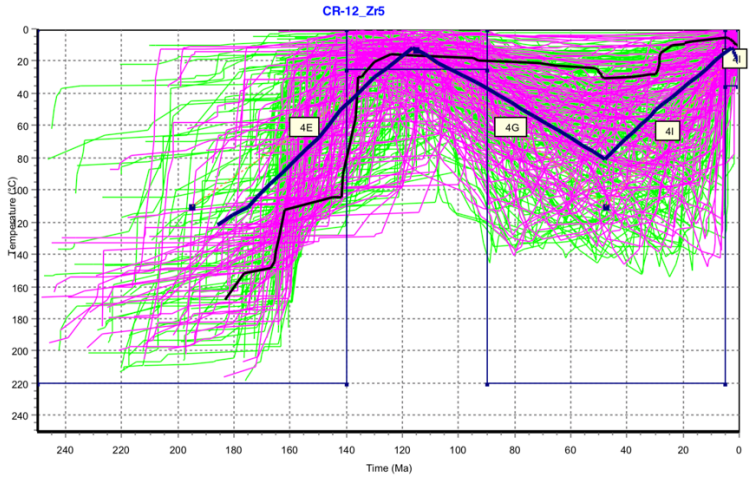
Temperature (C)
Time (Ma)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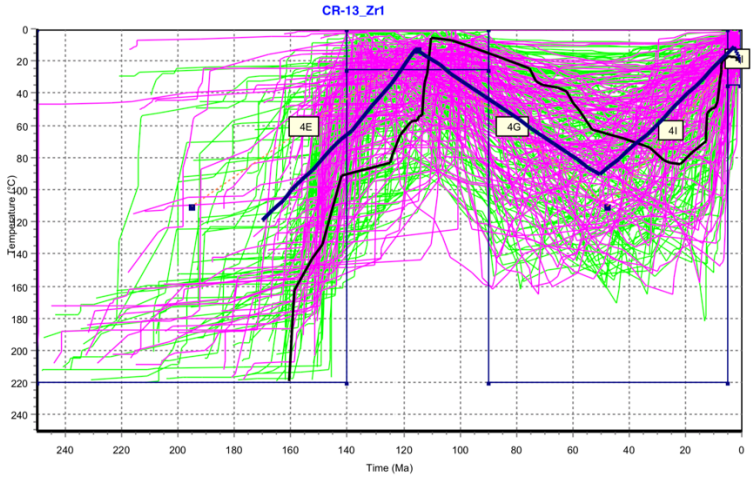
4E
4G
4I
Temperature (C)
Time (Ma)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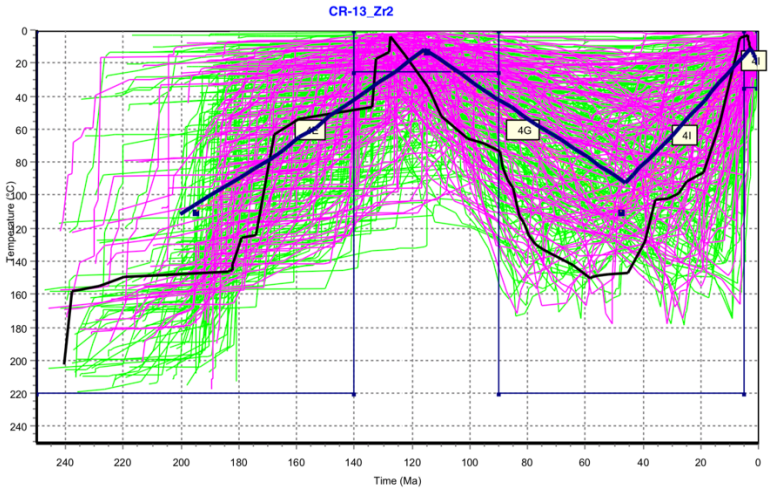
Temperature (C)
Time (Ma)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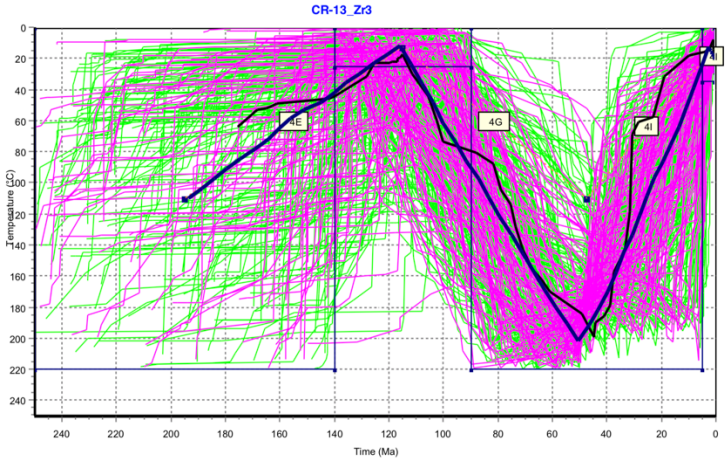
Temperature (C)
Time (Ma)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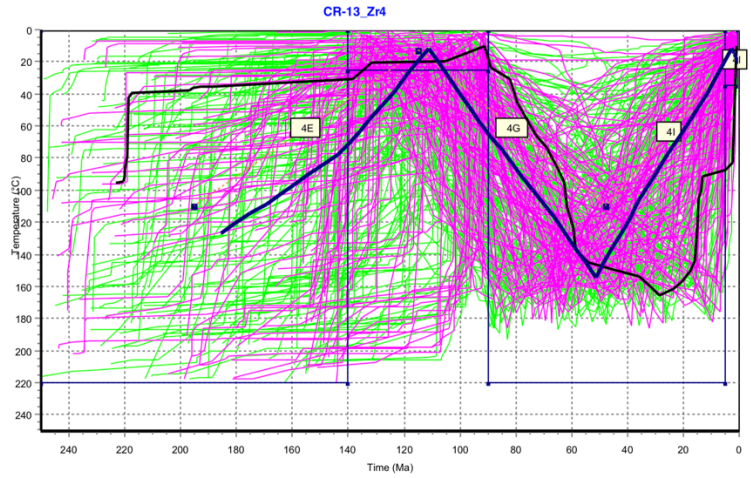
Temperature (C)
Time (Ma)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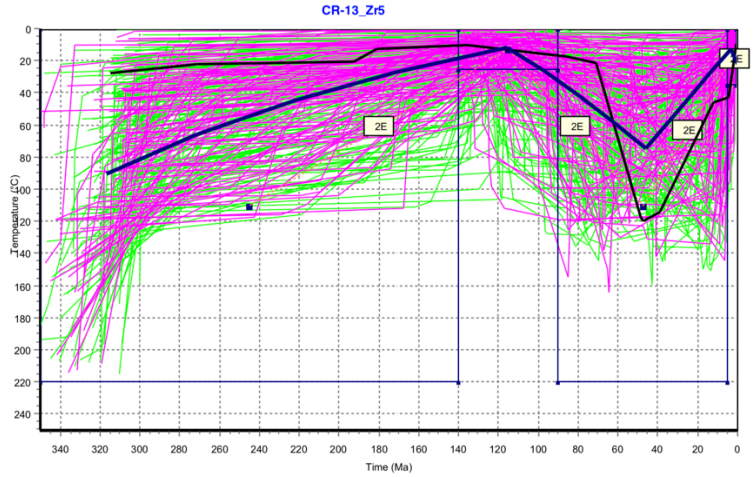
4I
Temperature (C)
Time (Ma)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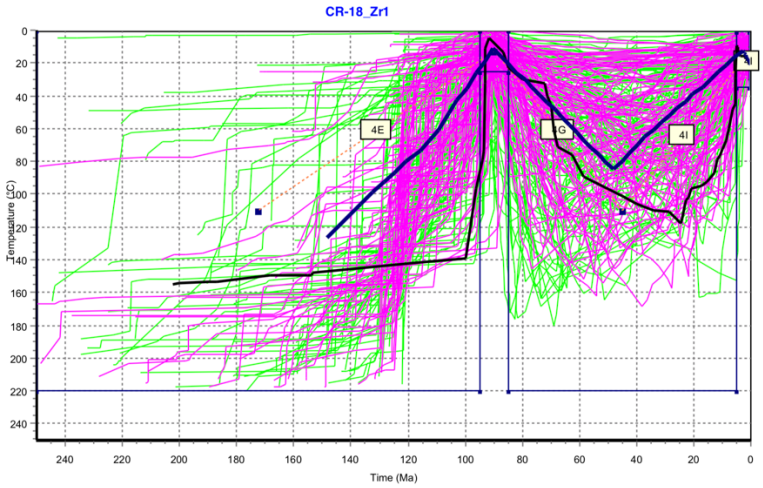
2E
2E
2E
Temperature (C)
Time (Ma)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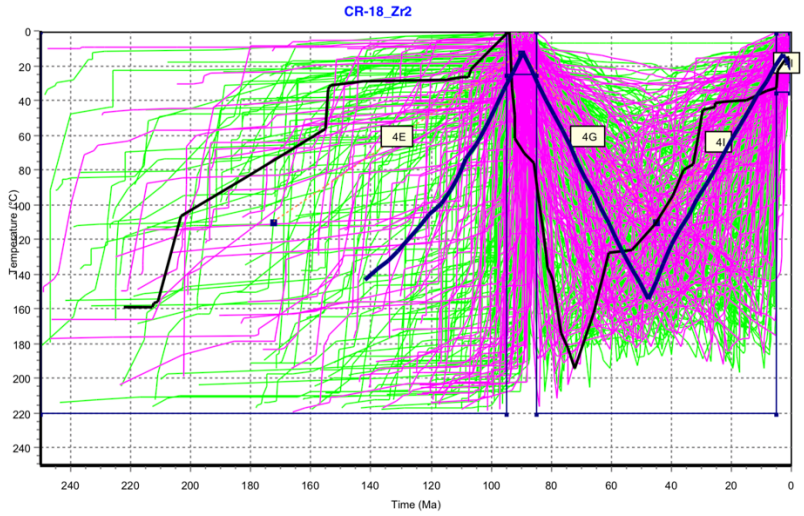
4G
4I
Temperature (C)
Time (Ma)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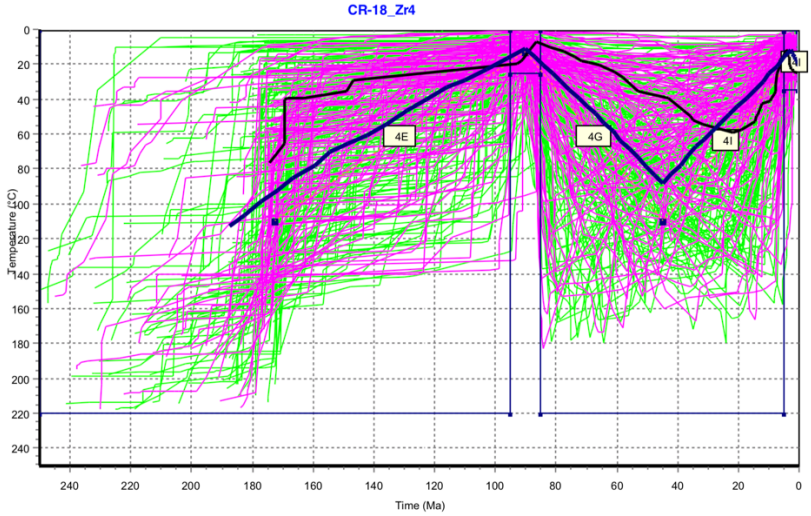
4I
Temperature (°C)
Time (Ma)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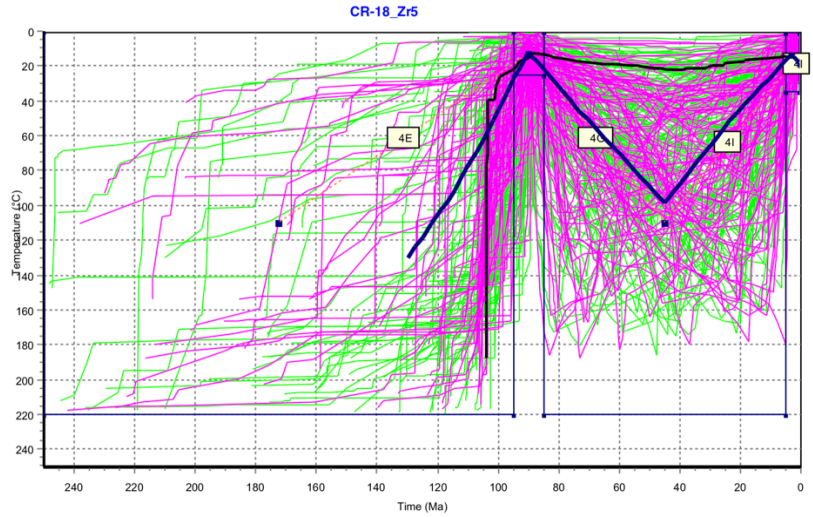
4G
4I
Temperature (°C)
Time (Ma)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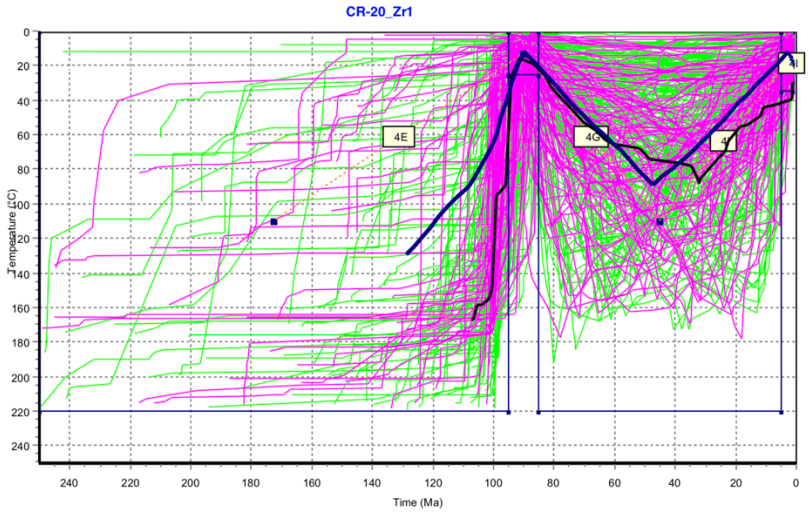
4I
Temperature (°C)
Time (Ma)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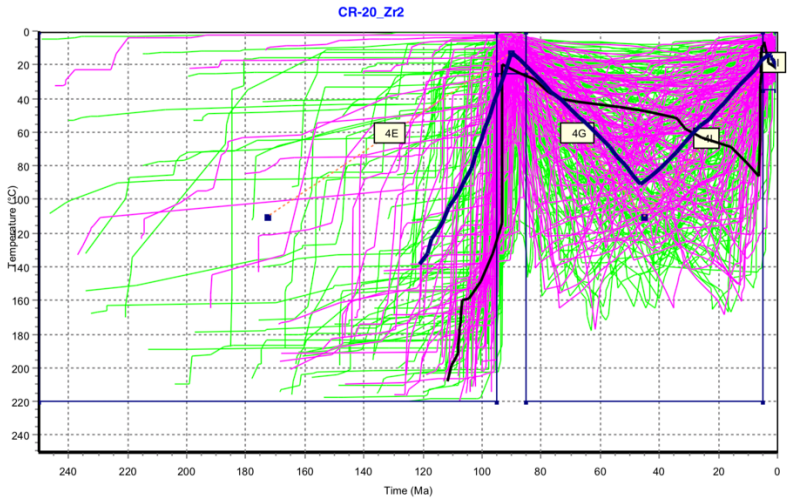
Time (Ma)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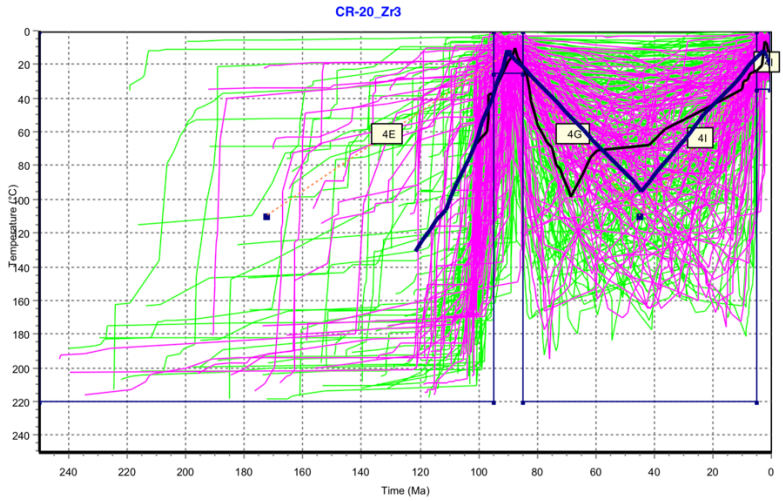
4I
Temperature (ºC)
Time (Ma)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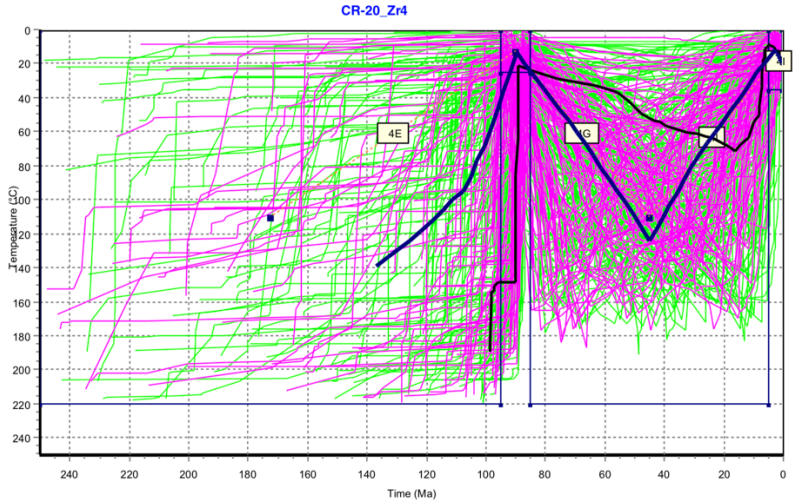
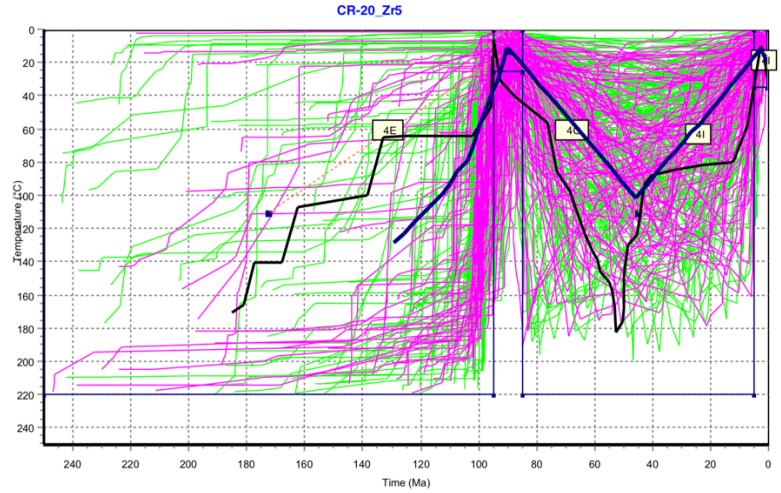
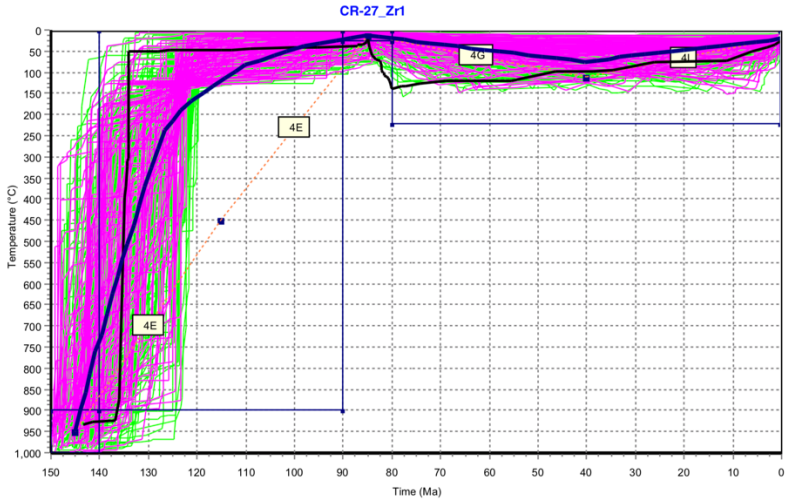
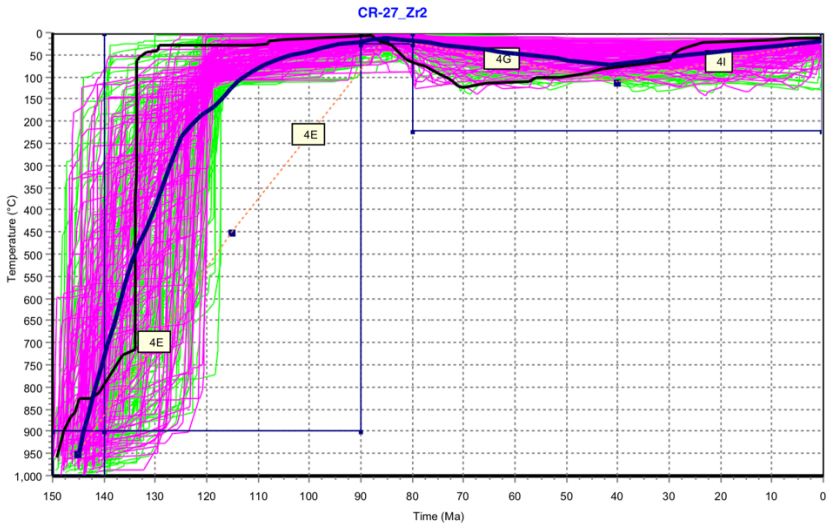
4I
Temperature (ºC)
Time (Ma)


CR-20_Zr4
Temperature (°C)
Time (Ma)
4E
4G
4I


CR-20_Zr5
Temperature (°C)
Time (Ma)
4E
4G
4I


CR-27_Zr1
Temperature (°C)
Time (Ma)
4E
4G
4I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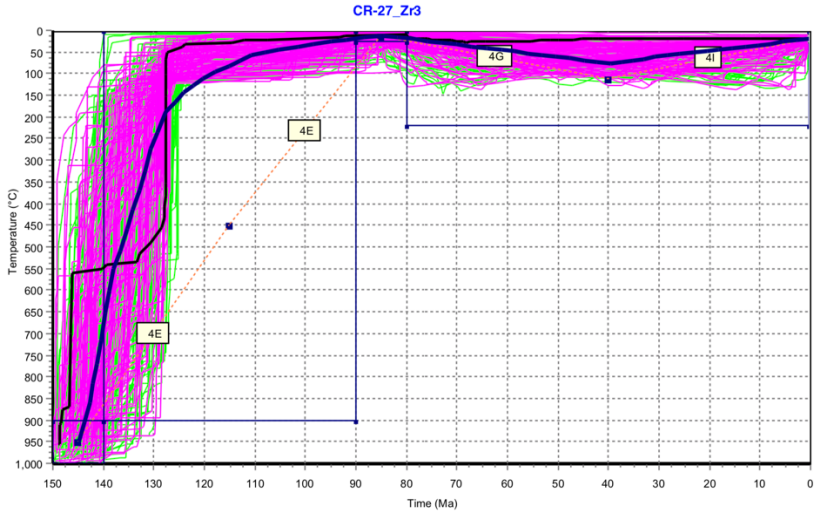
Temperature (°C)
Time (Ma)
4G
4I
4E
4E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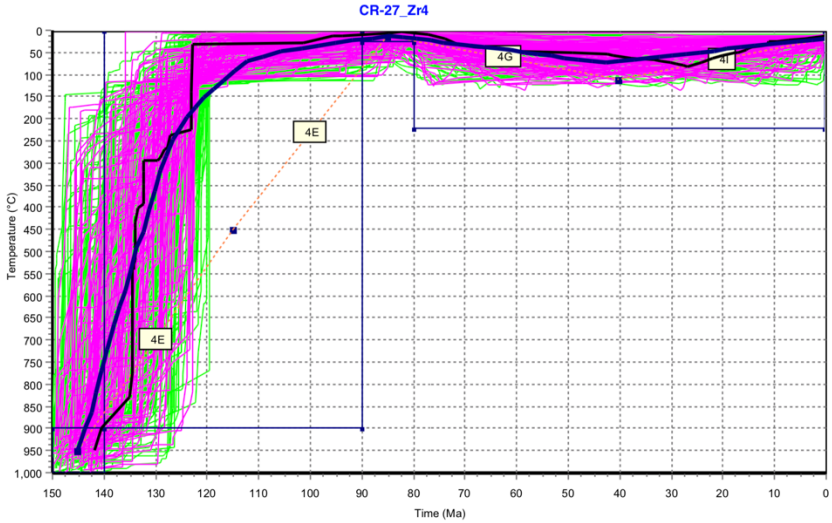
Temperature (°C)
Time (Ma)
4G
4I
4E
4E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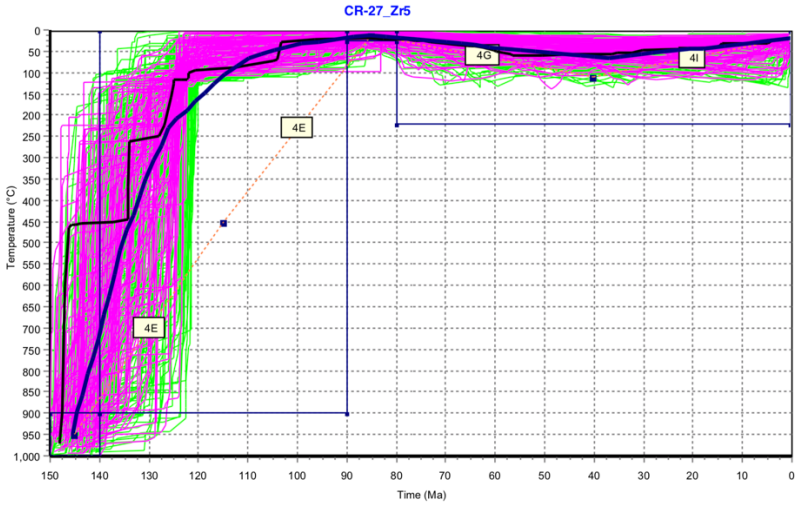
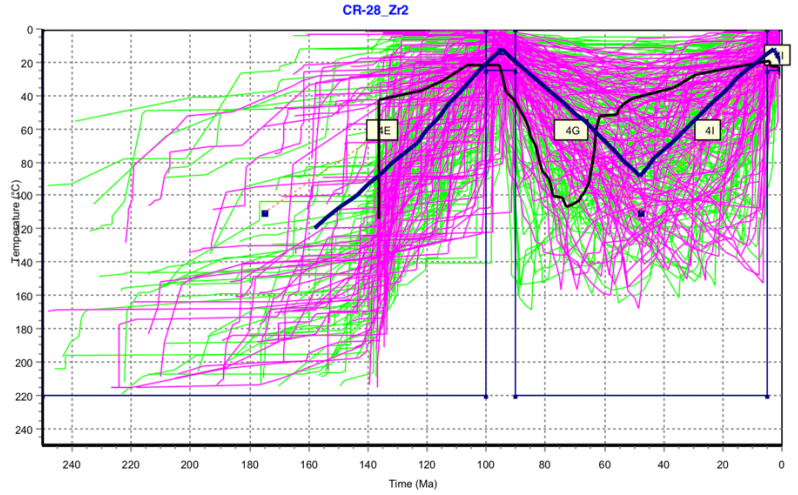
Temperature (°C)
Time (Ma)
4G
4I
4E
4E


CR-27_Zr5
Temperature (°C)
Time (Ma)
4E
4G
4I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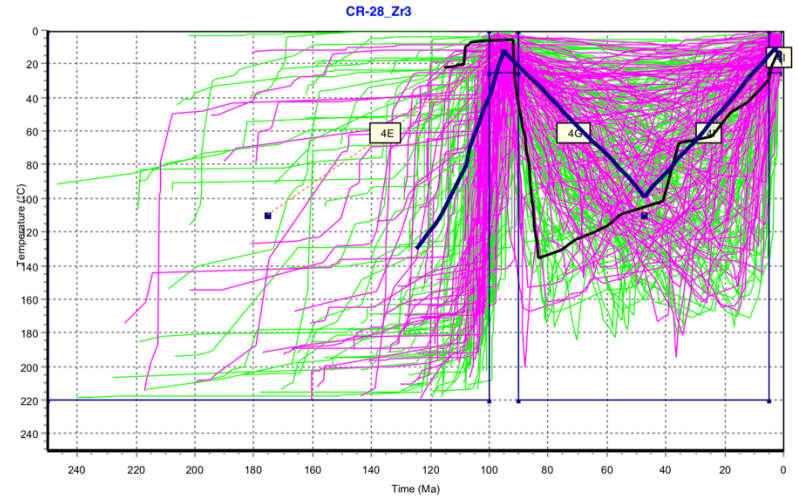
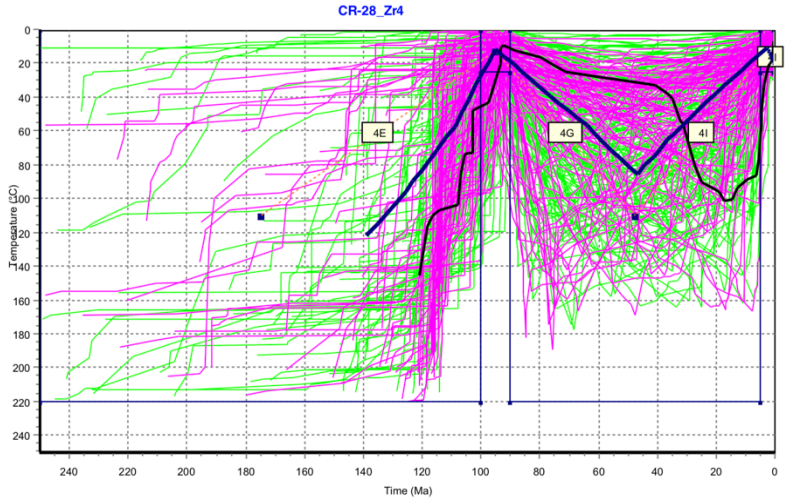
Temperature (°C)
Time (Ma)
4E
4G
4I


CR-28_Zr3
Temperature (°C)
Time (Ma)
4E
4G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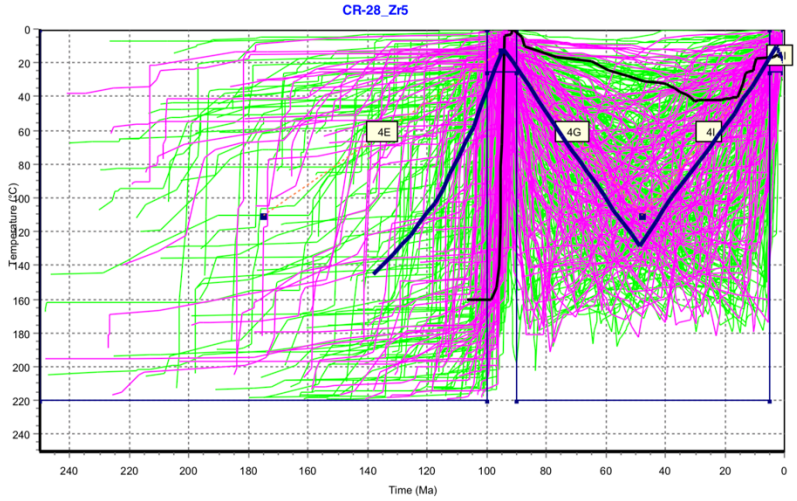
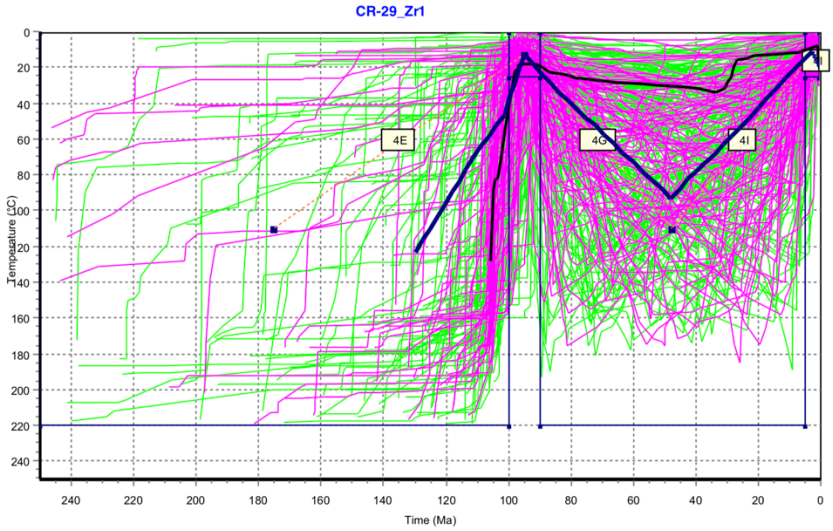
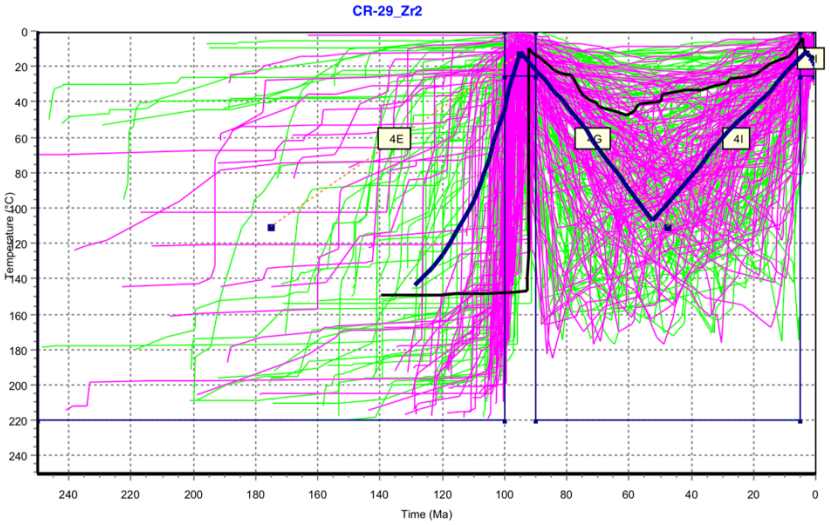
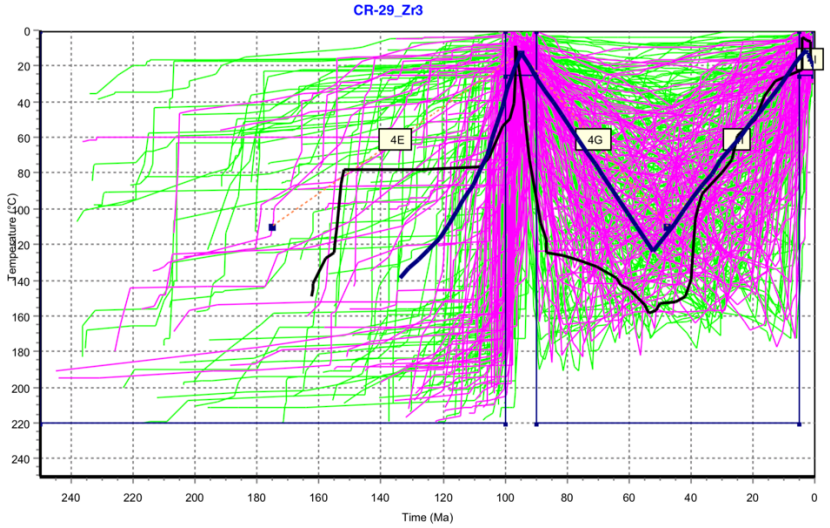
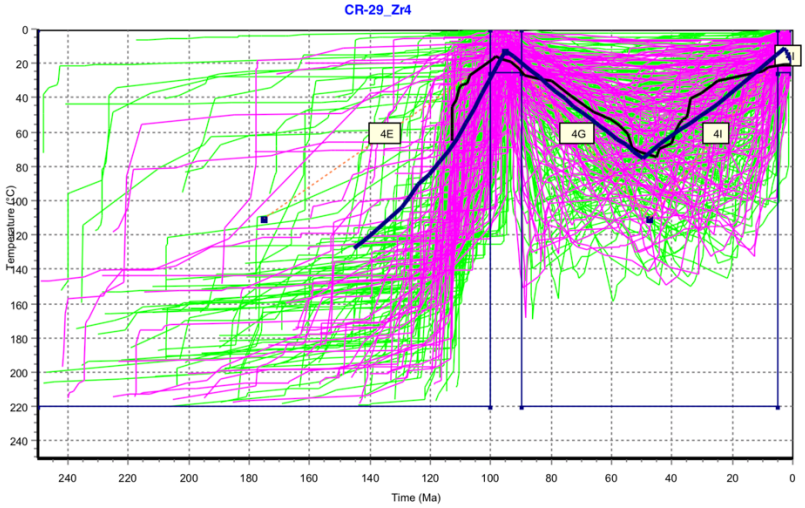
4G
4I
Temperature (C)
Time (Ma)

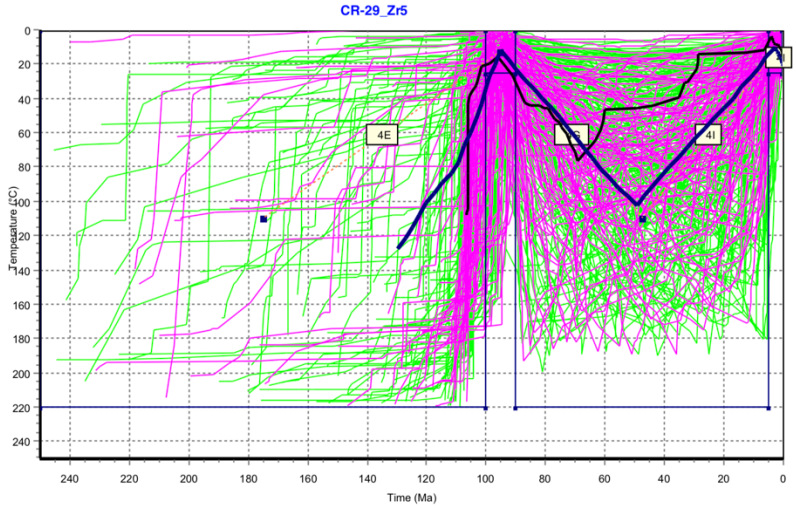

CR-28_Zr5
4E
4G
4I
Temperature (C)
Time (Ma)

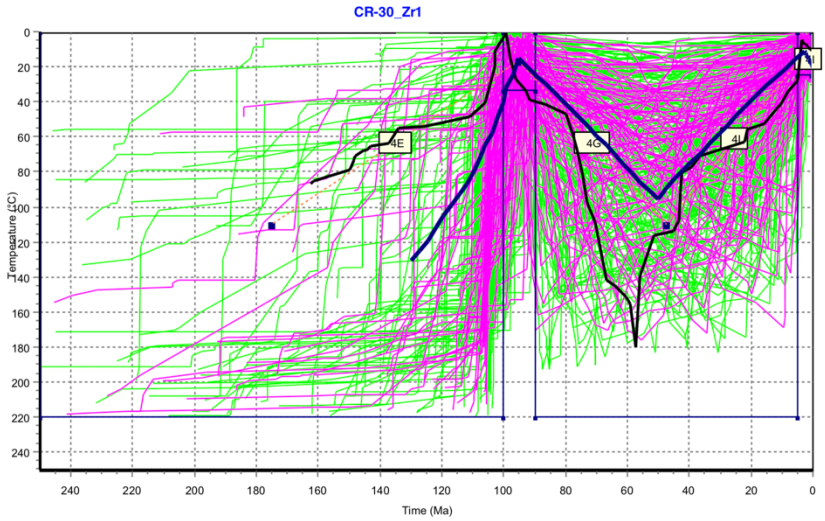

CR-29_Zr1
4E
4G
4I
Temperature (C)
Time (Ma)


CR-29_Zr2
4E
4G
4I
Temperature (°C)
Time (Ma)


CR-29_Zr3
4E
4G
4I
Temperature (°C)
Time (Ma)


CR-29_Zr4
4E
4G
4I
Temperature (°C)
Time (Ma)


CR-29_Zr5
4E
4G
4I
Temperature (°C)
Time (Ma)


CR-30_Zr1
4E
4G
4I
Temperature (°C)
Time (Ma)

APPENDIX G

GPS SAMPLE LOCATIONS FOR GVF BASEMENT ROCKS

GPS Sample Locations for GVF Basement Rocks					
SAMPLE	LITHOLOGY	UNIT	REGIONAL LOCATION	LATITUDE (°N)	LONGITUDE (°W)
0619-MR-06	Gabbro	Coast Range Ophiolite	Eagle Point	39.92591	-122.64223
0619-MR-07	Gabbro	Coast Range Ophiolite	Eagle Point	39.9267	-122.64236
CR-27	Granodiorite	Sierra Nevada	Sutter Buttes	39.25152969	-121.7991638

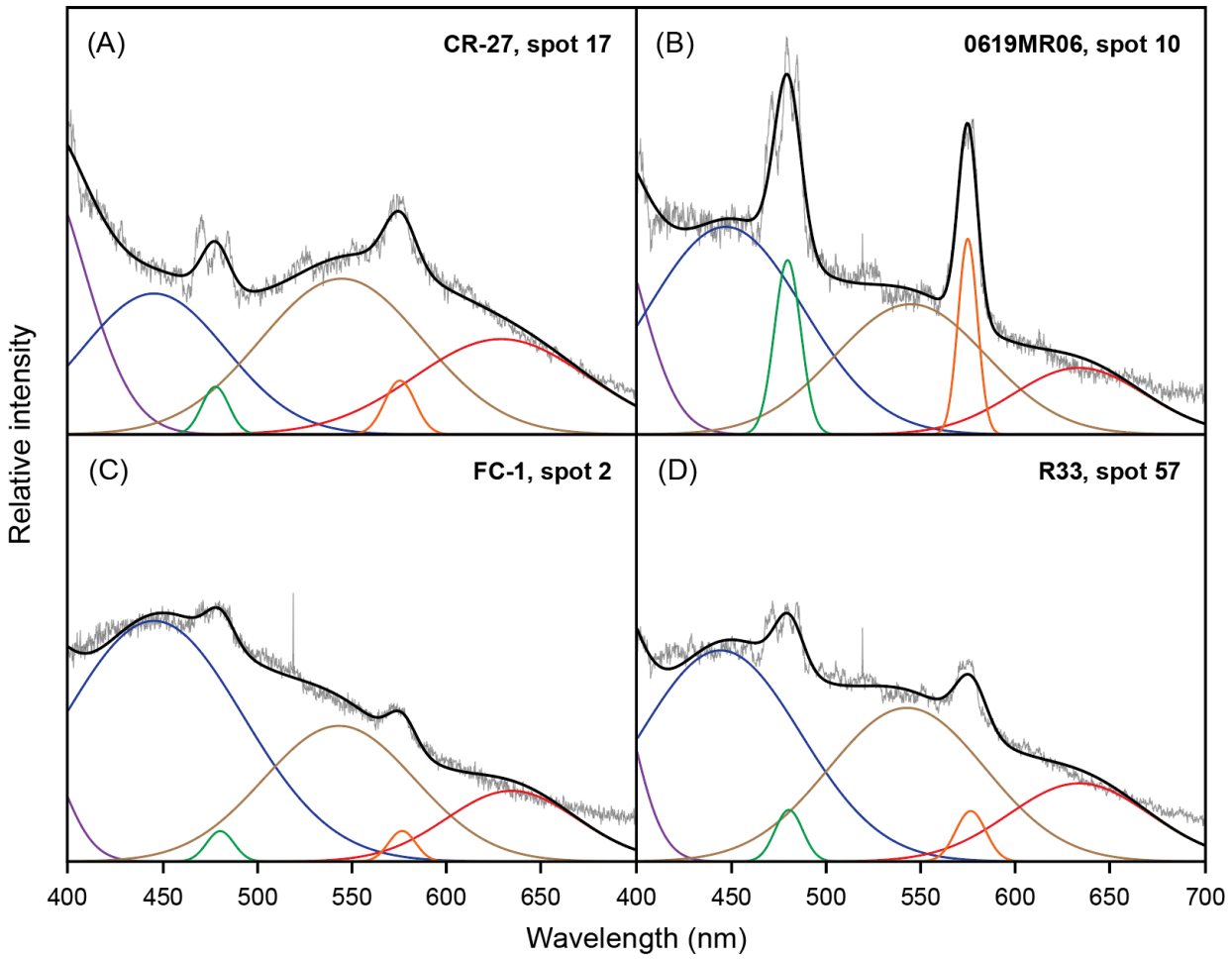
APPENDIX H

ZIRCON U-PB DATA

	U (ppm)	206Pb 204Pb	U/Th	206Pb* 207Pb*	± (%)	207Pb* 235U*	± (%)	206Pb* 238U	± (%)	error corr.	206Pb* 238U*	± (Ma)	207Pb* 235U	± (Ma)	206Pb* 207Pb*	± (Ma)	Best age (Ma)	± (Ma)	Conc (%)
Sample 0619-MR-06																			
0619-MR-06 Spot 20	1132.01	28214.25	1.03	20.49	0.79	0.17	1.19	0.03	0.89	0.75	162.90	1.44	161.25	1.78	137.06	18.53	162.90	1.44	NA
0619-MR-06 Spot 19	1059.35	114751.29	1.08	20.28	0.74	0.17	1.19	0.03	0.93	0.78	163.04	1.50	162.95	1.80	161.62	17.41	163.04	1.50	NA
0619-MR-06 Spot 13	1602.97	131161.93	1.64	20.33	0.74	0.17	1.13	0.03	0.85	0.76	163.11	1.37	162.63	1.69	155.60	17.28	163.11	1.37	NA
0619-MR-06 Spot 14	1130.96	190100.10	1.60	20.45	0.67	0.17	1.36	0.03	1.18	0.87	163.55	1.90	162.13	2.03	141.50	15.78	163.55	1.90	NA
0619-MR-06 Spot 12	408.61	21067.78	1.06	20.33	1.34	0.17	1.57	0.03	0.82	0.52	164.11	1.32	163.53	2.37	155.23	31.30	164.11	1.32	NA
0619-MR-06 Spot 21	897.52	52223.12	1.72	20.38	0.83	0.17	1.44	0.03	1.18	0.82	164.23	1.91	163.31	2.18	150.08	19.46	164.23	1.91	NA
0619-MR-06 Spot 1	1102.20	518189.69	1.09	20.18	0.67	0.18	1.24	0.03	1.05	0.84	165.80	1.72	166.30	1.91	173.46	15.52	165.80	1.72	NA
0619-MR-06 Spot 6	606.17	100483.88	0.99	20.03	1.05	0.18	1.43	0.03	0.97	0.68	166.42	1.60	168.05	2.22	191.05	24.42	166.42	1.60	NA
0619-MR-06 Spot 7	799.47	50477.63	0.94	20.46	0.86	0.18	1.38	0.03	1.08	0.78	166.48	1.77	164.80	2.09	140.72	20.17	166.48	1.77	NA
0619-MR-06 Spot 17	812.17	53250.72	1.01	20.28	1.02	0.18	1.50	0.03	1.10	0.73	166.49	1.81	166.20	2.30	162.05	23.91	166.49	1.81	NA
0619-MR-06 Spot 31	618.25	143160.49	0.94	20.55	1.09	0.18	1.57	0.03	1.13	0.72	166.62	1.85	164.30	2.38	131.07	25.72	166.62	1.85	NA
0619-MR-06 Spot 33	818.88	87653.93	0.93	20.43	0.81	0.18	1.44	0.03	1.19	0.83	166.65	1.96	165.22	2.19	144.66	18.97	166.65	1.96	NA
0619-MR-06 Spot 5	1116.88	157034.34	2.03	20.47	0.91	0.18	1.41	0.03	1.08	0.77	166.82	1.78	165.05	2.15	139.80	21.28	166.82	1.78	NA
0619-MR-06 Spot 11	683.78	33698.09	0.89	20.09	0.78	0.18	1.54	0.03	1.33	0.86	166.97	2.20	168.07	2.39	183.64	18.22	166.97	2.20	NA
0619-MR-06 Spot 23	778.76	27204.70	1.07	20.46	0.77	0.18	1.29	0.03	1.03	0.80	167.18	1.70	165.47	1.97	141.04	18.14	167.18	1.70	NA
0619-MR-06 Spot 34	705.13	21951.21	0.98	20.44	0.98	0.18	1.56	0.03	1.21	0.77	167.32	1.99	165.72	2.38	142.86	23.09	167.32	1.99	NA
0619-MR-06 Spot 16	629.61	60163.11	0.89	20.29	0.89	0.18	1.54	0.03	1.26	0.82	167.35	2.08	166.88	2.37	160.29	20.79	167.35	2.08	NA
0619-MR-06 Spot 35	435.52	137085.06	1.82	20.00	1.22	0.18	1.47	0.03	0.83	0.56	167.44	1.37	169.23	2.30	194.38	28.35	167.44	1.37	NA
0619-MR-06 Spot 18	762.84	153448.24	0.82	20.14	0.86	0.18	1.38	0.03	1.08	0.78	167.45	1.78	168.12	2.14	177.52	20.06	167.45	1.78	NA
0619-MR-06 Spot 2	664.49	76638.13	0.88	20.17	0.82	0.18	1.42	0.03	1.16	0.82	167.55	1.91	167.99	2.19	174.18	19.08	167.55	1.91	NA
0619-MR-06 Spot 32	736.07	283269.06	0.93	20.22	1.08	0.18	1.59	0.03	1.17	0.74	167.58	1.94	167.60	2.46	167.93	25.20	167.58	1.94	NA
0619-MR-06 Spot 28	840.25	56241.38	1.55	20.12	0.79	0.18	1.28	0.03	1.01	0.79	167.58	1.66	168.42	1.98	180.23	18.33	167.58	1.66	NA
0619-MR-06 Spot 29	662.88	64090.48	1.21	20.36	0.83	0.18	1.44	0.03	1.17	0.82	167.67	1.94	166.69	2.21	152.88	19.45	167.67	1.94	NA
0619-MR-06 Spot 3	849.91	198304.42	0.94	20.19	0.82	0.18	1.28	0.03	0.98	0.77	167.73	1.62	167.98	1.98	171.47	19.15	167.73	1.62	NA
0619-MR-06 Spot 22	882.04	125209.27	1.61	20.27	0.98	0.18	1.48	0.03	1.10	0.75	168.06	1.83	167.70	2.28	162.68	23.00	168.06	1.83	NA
0619-MR-06 Spot 10	700.95	48232.46	0.95	20.13	1.08	0.18	1.47	0.03	1.01	0.68	168.10	1.67	168.80	2.29	178.56	25.07	168.10	1.67	NA
0619-MR-06 Spot 25	594.34	22077.80	0.87	20.75	0.96	0.18	1.44	0.03	1.07	0.74	168.36	1.78	164.39	2.18	107.53	22.75	168.36	1.78	NA
0619-MR-06 Spot 8	521.53	37241.17	1.37	20.15	0.97	0.18	1.30	0.03	0.86	0.66	168.40	1.42	168.96	2.02	176.79	22.70	168.40	1.42	NA
0619-MR-06 Spot 30	696.30	55333.04	1.68	20.15	0.77	0.18	1.16	0.03	0.86	0.75	168.54	1.44	169.10	1.80	176.89	17.97	168.54	1.44	NA
0619-MR-06 Spot 27	781.16	34619.26	1.38	20.44	0.86	0.18	1.38	0.03	1.08	0.78	168.94	1.80	167.23	2.13	143.13	20.12	168.94	1.80	NA
0619-MR-06 Spot 9	547.03	64329.33	1.18	20.16	0.98	0.18	1.29	0.03	0.83	0.64	169.95	1.39	170.32	2.02	175.48	22.95	169.95	1.39	NA
0619-MR-06 Spot 4	495.93	161542.03	1.33	20.18	1.01	0.18	1.32	0.03	0.85	0.64	170.12	1.42	170.36	2.07	173.62	23.65	170.12	1.42	NA
0619-MR-06 Spot 15	532.59	60494.00	1.24	20.13	1.24	0.18	1.50	0.03	0.83	0.56	170.23	1.40	170.80	2.35	178.68	28.98	170.23	1.40	NA
0619-MR-06 Spot 26	568.21	186405.04	1.62	20.24	0.87	0.18	1.42	0.03	1.13	0.79	171.42	1.91	171.08	2.24	166.38	20.32	171.42	1.91	NA
Sample 0619-MR-07																			
0619-MR-07 Spot 26	41.24	629.42	1.84	36.84	13.08	0.10	13.14	0.03	1.26	0.10	162.05	2.02	92.37	11.60	NA	NA	162.05	2.02	NA
0619-MR-07 Spot 29	171.31	7522.52	1.64	21.57	2.01	0.16	2.44	0.03	1.38	0.57	162.38	2.22	153.35	3.48	15.92	48.39	162.38	2.22	NA
0619-MR-07 Spot 32	267.15	8760.54	1.20	21.15	1.46	0.17	1.82	0.03	1.08	0.59	163.31	1.74	156.99	2.65	62.62	34.89	163.31	1.74	NA
0619-MR-07 Spot 11	358.53	685987.40	1.17	19.94	1.02	0.18	1.37	0.03	0.92	0.67	163.37	1.48	165.81	2.10	200.83	23.65	163.37	1.48	NA
0619-MR-07 Spot 10	1189.50	16209.10	0.78	20.58	0.68	0.17	1.13	0.03	0.90	0.80	163.39	1.45	161.09	1.68	127.42	16.06	163.39	1.45	NA
0619-MR-07 Spot 21	277.95	4525.33	1.61	21.98	1.55	0.16	1.98	0.03	1.24	0.63	163.41	2.00	151.53	2.79	NA	NA	163.41	2.00	NA
0619-MR-07 Spot 3	413.76	9064.58	1.25	20.99	1.75	0.17	1.97	0.03	0.91	0.46	163.43	1.47	158.22	2.89	80.79	41.47	163.43	1.47	NA
0619-MR-07 Spot 31	231.42	6970.79	1.38	21.33	1.23	0.17	1.50	0.03	0.86	0.57	163.61	1.39	156.00	2.17	41.83	29.34	163.61	1.39	NA
0619-MR-07 Spot 27	197.11	2744.58	1.39	22.49	1.35	0.16	1.66	0.03	0.97	0.58	163.66	1.57	148.61	2.30	NA	NA	163.66	1.57	NA
0619-MR-07 Spot 15	628.19	39191.30	0.84	20.12	0.95	0.18	1.35	0.03	0.96	0.71	163.77	1.56	164.83	2.06	180.07	22.09	163.77	1.56	NA
0619-MR-07 Spot 13	889.79	11160.77	0.67	20.50	0.73	0.17	1.18	0.03	0.93	0.79	163.99	1.50	162.22	1.77	136.48	17.16	163.99	1.50	NA
0619-MR-07 Spot 7	706.47	8564.61	1.20	20.69	1.06	0.17	1.56	0.03	1.14	0.73	164.00	1.85	160.88	2.32	115.14	25.07	164.00	1.85	NA
0619-MR-07 Spot 34	220.53	379491.85	1.13	20.16	1.27	0.18	2.66	0.03	2.34	0.88	164.70	3.80	165.36	4.06	174.92	29.71	164.70	3.80	NA
0619-MR-07 Spot 20	438.93	3918.41	1.19	21.96	1.06	0.16	1.67	0.03	1.29	0.77	164.72	2.10	152.85	2.37	NA	NA	164.72	2.10	NA
0619-MR-07 Spot 23	292.23	3245.26	1.08	22.32	1.28	0.16	1.57	0.03	0.91	0.58	164.97	1.48	150.74	2.19	NA	NA	164.97	1.48	NA
0619-MR-07 Spot 22	549.76	6254.51	1.00	21.04	1.09	0.17	1.51	0.03	1.04	0.69	165.37	1.70	159.61	2.22	75.01	25.89	165.37	1.70	NA
0619-MR-07 Spot 8	366.31	5630.48	0.86	21.55	1.41	0.17	1.64	0.03	0.83	0.51	165.59	1.36	156.29	2.38	17.59	33.91	165.59	1.36	NA
0619-MR-07 Spot 9	209.78	2077.46	1.13	23.09	1.34	0.16	1.66	0.03	0.97	0.59	165.76	1.59	146.72	2.27	NA	NA	165.76	1.59	NA
0619-MR-07 Spot 30	279.12	5029.74	0.64	21.79	1.42	0.16	1.60	0.03	0.74	0.46	165.79	1.21	154.86	2.29	NA	NA	165.79	1.21	NA
0619-MR-07 Spot 12	68.42	2199.56	2.01	21.43	3.68	0.17	3.84	0.03	1.06	0.28	165.87	1.74	157.35	5.59	30.83	88.32	165.87	1.74	NA
0619-MR-07 Spot 16	710.13	17409.73	0.90	20.42	1.06	0.18	1.48	0.03	1.03	0.70	165.97	1.69	164.62	2.25	145.24	24.94	165.97	1.69	NA
0619-MR-07 Spot 2	225.21	2838.56	0.94	22.71	6.04	0.16	6.08	0.03	0.70	0.12	166.16	1.15	149.33	8.45	NA	NA	166.16	1.15	NA
0619-MR-07 Spot 6	283.15	8945.52	1.24	21.28	1.31	0.17	1.54	0.03	0.82	0.53	166.64	1.35	159.10	2.27	48.29	31.23	166.64	1.35	NA
0619-MR-07 Spot 33	559.20	6753.18	1.34	21.12	0.99	0.17	1.44	0.03	1.05	0.73	166.86	1.72	160.38	2.13	65.76	23.50	166.86	1.72	NA
0619-MR-07 Spot 35	373.10	20383.97	0.88	19.97	1.19	0.18	1.41	0.03	0.76	0.54	166.92	1.25	168.93	2.19	197.21	27.55	166.92	1.25	NA
0619-MR-07 Spot 5	740.48	31377.33	1.15	20.35	0.96	0.18	1.49	0.03	1.14	0.77	167.09	1.89	166.17	2.28	153.03	22.38	167.09	1.89	NA
0619-MR-07 Spot 24	392.86	6213.88	0.95	21.42	1.31	0.17	1.53	0.03	0.77	0.51	167.47	1.28	158.82	2.24	31.69	31.48	167.47	1.28	NA
0619-MR-07 Spot 28	114.03	4779.26	1.67	21.02	1.66	0.17	1.95	0.03	1.02	0.52	167.50	1.68	161.67	2.91	76.99	39.48	167.50	1.68	NA
0619-MR-07 Spot 25	453.68	35373.85	1.19	19.94	0.74	0.18	1.01	0.03	0.69	0.69	168.03	1.15	170.20	1.58	200.45	17.08	168.03	1.15	NA
0619-MR-07 Spot 1	1821.67	60216.52	1.71	20.30	0.47	0.18	1.06	0.03	0.95	0.90	168.86	1.59	168.24	1.65	159.46	11.02	168.86	1.59	NA
0619-MR-07 Spot 14	1123.12	76867.12	1.29	20.41	0.59	0.18	1.23	0.03	1.08	0.88	168.99	1.81	167.52	1.90	146.83	13.79	168.99	1.81	NA
0619-MR-07 Spot 17	249.57	5301.61	1.11	21.77	1.13	0.17	1.40	0.03	0.82	0.59	169.29	1.37	158.08	2.05	NA	NA	169.29	1.37	NA
0619-MR-07 Spot 4	1467.17	65618.29	1.00	20.19	0.60	0.18	1.19	0.03	1.03	0.86	171.34	1.74	171.40	1.88	172.23	14.10	171.34	1.74	NA
0619-MR-07 Spot 18	81.80	3238.07	1.78	21.22	2.70	0.18	2.89	0.03	1.03	0.36	174.73	1.78	166.70	4.45	54.18	64.51	174.73	1.78	NA
Sample CR-27																			
CR-27-Spot 21	196.67	8745.37	3.94	19.28	1.76	0.15	2.67	0.02	1.11	0.41	137.22	1.50	140.55	3.51	197.24	56.48	137.22	1.50	69.57
CR-27-Spot 29	395.67	21994.62	2.04	20.26	1.03	0.15	1.35	0.02	0.86	0.64	138.57	1.18	137.95	1.74	127.19	24.50	138.57	1.18	108.95
CR-27-Spot 27	109.16	7113.46	2.51	19.95	2.00	0.15	2.64	0.02	1.18	0.45	140.21	1.63	137.83	3.40	96.90	55.84	140.21	1.63	144.70
CR-27-Spot 13	264.90	19923.82	2.17	20.35	1.42	0.15	1.82	0.02	1.05	0.58	140.39	1.46	138.73	2.36	110.51	34.97	140.39	1.46	127.03
CR-27-Spot 23	145.83	62361.45	1.85	20.30	1.96	0.15	2.23	0.02	1.07	0.48	141.33	1.49	141.39	2.94	142.51	45.93	141.33	1.49	99.17
CR-27-Spot 44	173.46	12367.66	1.73	17.78	1.63	0.17	2.02	0.02	1.18	0.58	141.38	1.65	157.81	2.95	412.22	36.69	141.38	1.65	34.30
CR-27-Spot 36	82.35	100351.41	3.58	20.19	2.67	0.15	3.02	0.02	1.40	0.46	141.55	1.95	142.65	4.02	161.02	62.62	141.55	1.95	87.90
CR-27-Spot 32	205.95	51422.67	2.90	19.94	1.54	0.15	1.97	0.02	1.22	0.62	141.66	1.71	144.11	2.64	184.49	35.94	141.66	1.71	76.79
CR-27-Spot 20	550.94	50522.28	20.27	19.98	1.01	0.15	1.68	0.02	1.34	0.80	141.77	1.88	143.86	2.25	178.38	23.48	141.77	1.88	79.48
CR-27-Spot 6	159.99	74299.40	2.29	20.24	1.69	0.15	2.19	0.02	1.38	0.63	141.78	1.93	142.34	2.90	151.58	39.78	141.78	1.93	93.54
CR-27-Spot 42	106.12	151395.52	3.00	19.87	2.22	0.15	2.56	0.02	1.27	0.50	142.17	1.78	145.63	3.47	202.47	51.63	142.17	1.78	70.21
CR-27-Spot 28	218.88	27763.65	4.61	20.65	1.46	0.15	1.70	0.02	0.84	0.49	142.27	1.18	139.34	2.21	89.76	35.02	142.27	1.18	158.49
CR-27-Spot 17	157.79	13929.17	2.66	20.65	1.58	0.15	2.09	0.02	1.31	0.63	142.93	1.86	138.33	2.71	60.10	38.86	142.93	1.86	237.81
CR-27-Spot 10	350.66	45244.08	1.40	20.40	1.43	0.15	1.84	0.02	1.14	0.62	143.04	1.62	142.01	2.44	124.88	33.95	143.04	1.62	114.54
CR-27-Spot 4	219.73	44794.01	1.44	21.05	1.55	0.15	1.81	0.02	0.94	0.52	143.11	1.32	138.05	2.34	51.92	37.07	143.11	1.32	275.65
CR-27-Spot 35	58.92	18134.70	3.32	18.53	2.65	0.16	2.97	0.02	1.33	0.45	143.57	1.89	154.88	4.26	331.62	60.20	143.57	1.89	43.29
CR-27-Spot 26	97.00	247267.44	2.55	20.10	2.23	0.15	2.52	0.02	1.17	0.47	143.68	1.67	145.50	3.42	175.34	52.10	143.68	1.67	81.94
CR-27-Spot 45	110.65	8953.36	3.89	19.24	2.77	0.16	3.16	0.02	1.51	0.48	143.89	2.15	147.61	4.34	207.83	64.41	143.89	2.15	69.23
CR-27-Spot 43	86.46	68372.28	1.96	19.67	2.44	0.16	2.80	0.02	1.38	0.49	143.91	1.96	148.42	3.86	220.97	56.38	143.91	1.96	65.13
CR-27-Spot 31	180.78	38252.21	1.79	20.49	1.66	0.15	2.02	0.02	1.15	0.57	144.05	1.64	142.43	2.69	115.46	39.24	144.05	1.64	124.76
CR-27-Spot 49	78.05	19257.16	2.47	20.28	2.31	0.15	2.56	0.02	1.07	0.42	144.31	1.53	143.18	3.41	124.46	54.69	144.31	1.53	115.95
CR-27-Spot 22	111.71	12171.44	2.89	19.42	2.38	0.16	2.96	0.02	1.28	0.43	144.36	1.83	147.71	4.07	201.86	61.92	144.36	1.83	71.52
CR-27-Spot 5	252.34	31274.68	3.99	19.96	1.29	0.15	1.86	0.02	1.29	0.69	144.37	1.84	145.96	2.52	171.93	31.24	144.37	1.84	83.97
CR-27-Spot 8	100.19	8975.82	2.66	20.07	2.31	0.15	2.76	0.02	1.48	0.54	144.53	2.11	141.89	3.65	98.10	55.04	144.53	2.11	147.32
CR-27-Spot 16	96.70	18881.43	2.21	19.10	3.08	0.16	3.44	0.02	1.43	0.42	144.55	2.04	151.41	4.84	260.18	71.88	144.55	2.04	55.56
CR-27-Spot 11	112.54	10782.83	2.22	19.22	1.69	0.16	2.07	0.02	1.14	0.55	144.63	1.63	148.90	2.87	217.31	40.01	144.63	1.63	66.56
CR-27-Spot 9	274.56	52284.68	2.01	20.37	1.12	0.15	1.92	0.02	1.56	0.81	145.13	2.23	144.22	2.59	129.28	26.62	145.13	2.23	112.26
CR-27-Spot 37	68.09	14140.56	4.62	19.98	3.05	0.15	3.24	0.02	1.07	0.33	145.21	1.54	145.06	4.38	142.63	71.80	145.21	1.54	101.81
CR-27-Spot 47	148.93	24168.39	2.46	20.07	1.73	0.15	2.01	0.02	1.00	0.50	145.47	1.44	146.11	2.73	156.62	40.72	145.47	1.44	92.88
CR-27-Spot 30	145.51	9410.62	3.04	20.54	1.73	0.15	2.36	0.02	1.47	0.62	145.51	2.11	140.15	3.09	50.27	44.05	145.51	2.11	289.45
CR-27-Spot 24	113.67	26219.85	1.88	20.71	1.96	0.15	2.18	0.02	0.94	0.43	145.53	1.36	141.82	2.89	80.18	46.65	145.53	1.36	181.51
CR-27-Spot 15	70.19	11779.97	2.19	19.73	2.37	0.16	2.73	0.02	1.29	0.47	145.57	1.86	146.50	3.72	161.56	56.20	145.57	1.86	90.10
CR-27-Spot 33	68.71	16816.56	2.69	20.23	2.89	0.15	3.16	0.02	1.28	0.40	146.23	1.85	144.83	4.26	121.94	68.08	146.23	1.85	119.92
CR-27-Spot 50	168.26	42718.25	1.61	20.45	1.75	0.15	2.20	0.02	1.34	0.61	146.25	1.93	145.00	2.97	124.54	41.15	146.25	1.93	117.43
CR-27-Spot 48	146.59	11988.76	3.51	20.20	1.70	0.15	2.40	0.02	1.12	0.47	146.39	1.62	144.35	3.23	110.92	50.11	146.39	1.62	131.99
CR-27-Spot 12	150.22	37270.56	1.76	19.89	1.96	0.16	2.41	0.02	1.34	0.56	146.85	1.95	148.83	3.34	180.43	46.66	146.85	1.95	81.39
CR-27-Spot 38	121.99	53084.96	4.15	19.52	2.31	0.16	2.64	0.02	1.25	0.47	146.88	1.82	152.09	3.72	234.06	53.56	146.88	1.82	62.75
CR-27-Spot 18	85.10	17701.32	2.25	20.89	2.82	0.15	3.02	0.02	1.06	0.35	147.09	1.54	141.26	3.98	44.49	NA	147.09	1.54	330.62
CR-27-Spot 7	51.86	6203.86	6.88	20.33	2.79	0.15	3.28	0.02	1.24	0.38	147.15	1.81	140.48	4.31	29.23	NA	147.15	1.81	503.47
CR-27-Spot 34	87.85	6768.32	2.99	19.80	2.74	0.15	3.03	0.02	1.13	0.37	147.21	1.65	145.14	4.10	111.43	66.36	147.21	1.65	132.12
CR-27-Spot 40	144.87	42032.39	7.79	21.00	1.84	0.15	2.30	0.02	1.38	0.60	147.50	2.01	142.42	3.06	58.63	43.98	147.50	2.01	251.56
CR-27-Spot 39	100.38	7306.87	2.55	20.82	2.03	0.15	3.32	0.02	1.44	0.43	147.63	2.10	138.94	4.31	NA	NA	147.63	2.10	
CR-27-Spot 46	203.05	32677.24	2.14	21.39	1.59	0.15	2.01	0.02	1.22	0.60	147.77	1.78	140.12	2.64	12.36	NA	147.77	1.78	1195.15
CR-27-Spot 41	113.60	65301.12	2.49	16.27	2.68	0.20	2.89	0.02	1.09	0.38	151.45	1.63	185.41	4.90	643.47	57.55	151.45	1.63	23.54
CR-27-Spot 2	355.46	32137.02	1.83	20.51	1.27	0.16	1.68	0.02	1.09	0.65	152.38	1.64	149.72	2.34	107.85	30.29	152.38	1.64	141.29

APPENDIX I

CURVE FITTING


(A)
CR-27, spot 17
(B)
0619MR06, spot 10
(C)
FC-1, spot 2
(D)
R33, spot 57
Relative intensity
400
450
500
550
600
650
400
450
500
550
600
650
700
Wavelength (nm)