A \textsuperscript{40}Ar/\textsuperscript{39}Ar SINGLE-CRYSTAL SANIDINE AGE FOR AN ALTERED VOLCANIC ASH BED FROM THE PALEOCENE NACIMIENTO FORMATION IN THE SOUTHERN SAN JUAN BASIN SHEDS NEW LIGHT ON THIS FORMATION’S SRATIGRAPHIC AND BIOCHRONOLOGIC ESSENCE

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The first \textsuperscript{40}Ar/\textsuperscript{39}Ar single-crystal age for Paleocene strata in the San Juan Basin was obtained from sanidine crystals recovered from an altered volcanic ash bed in the Nacimiento Formation at Mesa de Cuba in the southeast part of the basin. This age is 64.49 ± 0.38 Ma (2 sigma) and is based on single crystal sanidine results relative to Fish Canyon Sanidine at 28.28 Ma and a total 40K decay constant of 5.53E-10/a. Due to significant contamination by older Kfeldspar crystals, this date is considered a maximum depositional age. The dated ash bed is 119 m above the Cretaceous-Tertiary interface and is 76 m above the base of the Nacimiento/top of the Ojo Alamo Sandstone. This age places the dated ash bed near the top of magnetochron C29n. The lower part of chron C29n was identified within the underlying Ojo Alamo Sandstone at Mesa Portales, about 12 km south of Mesa de Cuba; the base of this chron is 98 m below the dated ash bed. This age determination allowed a calculation of the rate of sedimentation for underlying Paleocene strata of 173 m/m.y (not corrected for compaction). Extrapolating this rate of deposition to overlying Nacimiento Formation strata to the base of the Eocene San Jose Formation places this contact at 63.40 Ma. Because the Paleocene-Eocene contact is 55.8 Ma, an enormous unconformity of about 7.6 m.y. must be present at the Paleocene-Eocene contact at Mesa de Cuba (assuming there are no significant, intervening unconformities present in Nacimiento strata overlying the dated ash bed). Puercan and (or) Torrejonian mammal fossils have been found at numerous localities in the southern San Juan Basin, including at Mesa de Cuba. Because this dated ash bed is slightly above the boundary between these two landmammal zones, it is estimated that the Puercan-Torrejonian boundary has an age of about 64.6 Ma thus making the duration of the Puercan land-mammal age 0.9 m.y. in the San Juan Basin.