

# **Stratigraphy and Provenance of Super-Mature Middle Ordovician Quartz Arenites of the Simpson Group and St. Peter Formation (Ansell Group), Oklahoma and Arkansas**

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Super-mature quartz arenites of the Middle Ordovician Simpson Group and St. Peter Formation (Ansell Group) of the US midcontinent are often described as massively bedded, with high-order sequence boundaries absent or unrecognizable. Sedimentary structures indicative of relative sea level and depositional environment are visible in outcrop. Correlation will be attempted between measured section in outcrop, and core and wire-line logs to determine 3<sup>rd</sup> and 4<sup>th</sup> order sequence boundaries in Simpson Group sandstones in Oklahoma, and St. Peter Formation sandstones in Arkansas. Similar sequence stratigraphic studies of super-mature Cambro-Ordovician quartz arenites in North America and Australia, resulted in an enhanced understanding of the stratigraphy of shallow, siliciclastic-dominated epeiric seas.

U-Pb dating of detrital zircons contained within the sandstones will be used to constrain the age of the sands and determine provenance. Possible sediment sources include the Transcontinental Arch, Canadian Shield, and Ozark Dome. The Ozark Dome is proximal to the area of deposition in the Southern US Midcontinent epeiric sea, and detrital zircons matching the age of the granitic basement are expected if the basement rock of the Ozark Dome was indeed uplifted and subaerially exposed prior to the Middle Ordovician.