

## **Terrestrial Sequence Stratigraphy and Paleogeographic Analysis of the Twist Gulch Formation Using the First Radiometric Zircon (U/Pb) Age Dates, Central-Utah Overthrust Belt**

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Using detrital zircon (U-Pb) dating, the first radiometric ages were obtained for the Twist Gulch Formation, which is located within the central-Utah Overthrust Belt. Strata of the Twist Gulch Formation in Pigeon Creek Canyon (PCC) near Levan, Utah, consists primarily of fluvial deposits, while in Salina Canyon (SC), the Twist Gulch Formation is comprised of a mix of alluvial and marginalmarine deposits associated with the Jurassic Western Interior Seaway. Previous workers used palynomorphs to date the Twist Gulch Formation as Callovian to Oxfordian, undifferentiated. The J3 unconformity that marks the boundary of the Callovian and Oxfordian (161 Ma) is bracketed by the U-Pb ages in the PCC section. It is expressed lithologically as a facies change from high accommodation system (HAS) mudstones to low accommodation system (LAS) multi-storied channel sandstones. The approximate location of the J3 unconformity in SC was identified by one sample. Other samples in this section did not produce statistically viable ages.

These new ages confirm that the Twist Gulch Formation is time-equivalent to the Entrada Sandstone and Curtis, and Summerville formations and that the J3 unconformity is located within the Twist Gulch Formation. This study illustrates the utility and limitations of combining detrital zircon (U-Pb) geochronology and fluvial sequence stratigraphy to identify regional unconformities, locate fluvial depocenters, and infer sediment supply/accommodation space ratios. This study also sheds new light on Middle to Late Jurassic paleogeography and sedimentation patterns in central Utah.