

## **Cyclic Hermosa Prograding Deltas and Fan Deltas during the Pennsylvanian and Early Permian in the Paradox Basin, Colorado and Utah**

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The oldest Hermosa arkosic strata occur in the subsurface of the Deep Fold and Fault Belt (DFFB) along the SW Uncompahgre Uplift (UU) between Nucla and Ridgway, CO and are Morrowan in age by correlation to Millerella- and Eschubertella-bearing strata (Welsh, 1958) near Bluff, UT. These cyclic siliciclastic deposits were carried to the basin through a trough along the north side of the Sneffel's Horst (Baars, 1966) in SW Colorado and can be traced far northwest to the vicinity of the Colorado River near Dewey Bridge in Utah. Source was from the southeast where Precambrian basement rocks were exposed in the San Luis Uplift and early UU. Cyclic arkosic strata continued to be deposited during the Atokan and most of the Desmoinesian in areas proximal to the uplifts in SW Colorado but failed to extend very far into the Paradox depocenter.

During late Desmoinesian (latest Akah deposition), thick, coarse, siliciclastic wedges prograded out into the evaporite basin in the Norwood-to-Uravan area and probably initiated the first massive salt flowage in the basin. Deposition accelerated in the later Pennsylvanian and Early Permian during the concurrent rise and erosion of the adjacent UU, and multiple wedges of siliciclastics prograded distally westward and southwestward into the basin during the cyclic (eustatic) lowstands. Coarse siliciclastics also interbedded with contemporaneous marine transgressive and highstand sediments in the more proximal areas, and fine prodeltaic sediments extended far into the basin and to the distal shelf areas. The youngest Hermosa fluvial strata are Virgilian-Wolfcampian and are distally interbedded with cyclic marine, evaporitic and eolian strata. During Permian Leonardian, unconformably overlying Organ Rock non-marine sedimentation reached a peak during highest erosion of the UU, causing additional massive salt flowage and the current basic geometry for most of the salt structures in and adjacent to the DFFB.