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Donald L. Rasmussen¹, Dalton L. Rasmussen² (1) Paradox Basin Data, Denver, CO (2) Platte River Associates Inc, Boulder, CO

Lithofacies and Sequence Stratigraphy from Well Logs for the Cyclic Morrowan to Wolfcampian Hermosa Group Strata, Paradox Basin, Utah and Colorado

Multiple fourth-order depositional sequences have long been recognized in the Hermosa Group in the subsurface of the Paradox Basin with several of the Atokan(?) and Desmoinesian to Wolfcampian sequences also present at outcrops along deeply incised rivers at various positions in the basin. Lithofacies seen at the outcrop for various successive tracts of each depositional sequence are repeated in the outcrop cycles and are also repeated in the identical successive tracts for correlative and non-correlative sequences throughout the entire basin. Outcrops permit finer examination of lithofacies and confident recognition of internal fifth-order subdivisions compared with well logs where critical associated sample data may be absent or impractical to obtain, but well log data scattered over a much larger area reveal lithofacies and other relationships absent at the outcrop (e.g. evaporites, thick siliciclastic wedges, unconformities, oil and gas production, etc.). Recognition of lowstand, transgressive, and highstand systems tracts and their respective, sometimes unique, lithofacies variations in a regional context has facilitated the subdivision of the Hermosa Group in the subsurface and outcrop into at least 75 fourth-order sequences.