

## **Depositional Controls on the Organic-Rich Juana Lopez Member of the Mancos Shale, Southeastern Uinta Basin, Utah**

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The early Late Turonian Juana Lopez Member of the Mancos Shale is an anomalously organic-rich mudrock-dominated interval in the southeastern Uinta basin. In a study area encompassing a portion of the Book Cliffs of Utah, the southern and eastern Uinta basin, and the western flank of the Douglas Creek Arch of Colorado, distal Juana Lopez facies are of entirely marine origin and were deposited under dysoxic to anoxic conditions.

Palynological studies near a distal outcrop succession at Westwater, Utah show that the microfauna in the Juana Lopez are highly restricted (low-diversity) compared to older and younger Mancos units. In addition, Juana Lopez mudrocks typically have TOC >3 wt% and hydrogen index values between 350 and 450, which are much higher than those of under- and overlying marine mudrock units.

Depositional controls on the Juana Lopez across the study area reflect interplay of tectonics and eustasy. First, the Juana Lopez was deposited across an embayment on the western side of the WICS, related to the Sevier foreland region. Coalesced coeval deltas to the west, northwest and north that filled the deepening forebulge, created the landward margin of the embayment. The seaward margin may have been formed by forebulge uplift to the east-northeast that created a low-relief submarine sill that, in turn, restricted circulation in the embayment, leading to and/or enhancing dysoxia. Second, the Juana Lopez interval was deposited during a 2nd to 3rd-order transgression of the Tethyan seaway into the WICS. Third, an early late Turonian global oceanic anoxic event (OAE) in the Tethyan seaway, termed the "Hitch Wood" event, accompanied the eustatic rise. Local paleobathymetric and global eustatic/chemical conditions may have combined to enhance the conditions necessary to deposit and preserve significant amounts of organic carbon in Juana Lopez mudrocks.