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Geological Characterization of the Uteland Butte Member of the Eocene Green River Formation: An Emerging Unconventional Carbonate Tight Oil Play in the Uinta Basin, Utah

Michael D. Vanden Berg, Rebekah E. Wood, Stephanie M. Carney, and Craig D. Morgan
Utah Geological Survey, Salt Lake City, Utah

The Uteland Butte Member of the Green River Formation records the first major transgression of Eocene Lake Uinta after the deposition of the alluvial Colton Formation. The Uteland Butte ranges in thickness from less than 60 ft to more than 200 ft and consists of limestone, dolomite, organic-rich calcareous mudstone, siltstone, and rare sandstone. This unit has historically been a secondary oil target of vertical wells tapping shallower overlying reservoirs and/or deeper fluvial-lacustrine sandstone units. Recently, companies have targeted the relatively thin, porous, dolomite beds of the Uteland Butte via horizontal drilling.

Several companies have targeted the Uteland Butte in the southwestern part of the basin with only limited success due to the normal, or only slightly overpressured, nature of the reservoir. However, in the central, overpressured portion of the basin, just south of the Altamont field, companies have had more success. The main horizontal drilling objective, as analyzed in several cores, is a 4- to 12-foot-thick interval of fractured dolomite, with porosities between 14 and 26%, interbedded with organic-rich limestone. TOC values in the adjacent rocks range between 2 and 5%, while Ro values range between 0.7 and 1.1, indicating the reservoir is most likely self-sourcing. Exploration has also commenced on the eastern side of the basin in which the shallower Uteland Butte records a more proximal, fresher water facies.

A refined geological and reservoir characterization study of the Uteland Butte Member using newly acquired core, cuttings, and geophysical logs is currently underway to help delineate play boundaries, guide resource estimations, and inform recovery methods.