

New Horizontal Play Targeting Fluvial Sandstones in a Basin-Centered Gas System around Jonah Field, WY

John C. Hoopes¹, Cory Christie², William R. Drake³, and Greg Gromadzki⁴

¹Jonah Energy LLC

²Geophysicist, Jonah Energy LLC

³Geological Advisor, Jonah Energy LLC

⁴G&G Manager, Jonah Energy LLC

Abstract

New horizontal wells around Jonah Field of the northern Greater Green River Basin support the presence of a prolific basin-centered gas system outside of the historical field extents. Jonah Field is located along the deepest point between the Pinedale Anticline and the LaBarge Platform and produces primarily from vertical wells in Upper Cretaceous Lance Formation sandstones. Braided and stacked fluvial sandstone channels generally range in thicknesses from 10 to 150 ft. and in width from 100 to 1500 ft. Silt, mudstone, shale, overbank, floodplain, and lacustrine facies, however, interweave throughout the sandstone intervals and are typically considered unproductive and potential stratigraphic hazards. Historical development of the Jonah Field has been most successful in structural highs of fault blocks. These structural features further act as discontinuities that truncate the already complex geometry of the sandstone reservoirs. Earlier development has generally avoided down-dip and east of these faults, due to several factors: 1) diminished vertical well productivity, 2) lower net to gross reservoirs and thicker shales, 3) higher risk of structural hazards, and 4) increased drilling depths in the syncline between Jonah Field and the Pinedale Anticline. Importantly, lower EURs of vertical wells drilled in this down-dip portion of the field are mainly due to lesser net sand footages rather than unfavorable gas saturations. Today, a new horizontal drilling program tests the viability of the synclinal margin of Jonah Field as well areas outside the classic field-defining faults. Despite challenging stratigraphic and structural complexities in these areas, long-reach horizontal wells have yielded excellent results. We attribute the early success of this new Rockies horizontal play to careful well-planning and targeting, stratigraphic traps, and widespread basin-centered gas saturation.

Stratigraphy & Sedimentology Tuesday, July 26 3:40 PM