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Whale Prospect: Exploration of the Westernmost Marine Lithofacies within the Almond, Northwestern Green River Basin, Sweetwater County, Wyoming

The discovery of the Stagecoach Draw field in 1994 established the westernmost transgression of the Lewis seaway during Campanian time. Kovach, et. al. (2001) described the marginal marine facies comprised of washover fans, tidal flats and tidally influenced channels.

Since the discovery of Stagecoach Draw, there have been several attempts to extend this normally-pressured shoreline lithofacies, northward into the over-pressured part of the Green River basin. BP's Whale Prospect, 15 miles north of Stagecoach Draw, was intended to test a seismically-defined pressure compartment within the Lance and Almond intervals.

The Whale 13-16 (16-25N-106W), drilled in late 2001, encountered significantly increased in formation pressures within the Almond at a depth of 9850'. This boundary was marked by a sharp increase in sustained mud gas, an indication of over-pressure. Petrophysical analyses show an increase in gas saturation within the poorly developed sandstones in the upper Almond interval. Porosities ranged from 7 to 12%, with permeabilities estimated at 0.1 to 0.5 md. Two thin zones (5' and 6') were stimulated, resulting in a stabilized rate of 400 MCF/D. The abundance of coals within the upper Almond, suggests a lower coastal plain depositional environment, proximal to the marginal marine, shoreface facies. The sandstones encountered are probably storm or tidally influenced, landward of the shoreface or barrier bar environment. Following the drilling of the 13-16, the Almond interval was re-examined on two 3-D surveys. Profiles through the data show several down-lap features, consistent with progradational events. Associated with these down-laps are seismic features that may represent sandstones deposited in a distributary mouth-bar environment.