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Controls on deposition and preservation of Cretaceous Mowry Shale and Frontier Formation and equivalents, Rocky Mountain Region, Colorado, Utah, and Wyoming

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Regional variations in thickness and facies of clastic sediments of the Cretaceous Mowry Shale and Frontier Formation and equivalents are controlled by geographic location within a foreland basin. Preservation of facies is dependent on the original accommodation space available during deposition and ultimately by tectonic modification of the foreland in its post-thrusting stages.

Biostratigraphically constrained isopach maps of three intervals within these formations provide a control on eustatic variations in sea level that allow depositional patterns across dip and along strike to be interpreted in terms of relationship to thrust progression and depositional topography. Paleogeographic reconstructions are used to show exploration fairways of the different play types present in the Laramide-modified, Cretaceous foreland basin. Existing oil and gas fields from these plays show a relatively consistent volume of hydrocarbons, which results from the partitioning of facies within different parts of the foreland basin. The preservation of facies within the foreland basin and during the modification stage affects the kinds of hydrocarbon reservoirs that are present.

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