

Complex Land-Ocean Interplay in Marginal-Marine Deposits: Transitions of Shallow-Marine Star Point to Coastal-Plain Blackhawk, Wasatch Plateau, Utah

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This outcrop study investigates the complex interaction of depositional environments in shoreline successions, where fully-marine strata transition stratigraphically upward into fully-continental strata. The marine Star Point and coastal-plain Blackhawk Formations, Cretaceous in age, crop out in the eastern Wasatch Plateau of central Utah. The transition of Star Point strata to Blackhawk strata was documented in detail at two outcrops along the Wasatch Plateau: Wattis Road and Cottonwood Canyon sections. The Spring Canyon Member, the youngest sandbody (i.e. parasequence) of Star Point Formation, constitutes a wave-dominated, shoreface environment with hummocky to swaley crossstratification, dune cross-bedding, and marine trace-fossils (*Thalassinoides*, *Ophiomorpha*, *Asterosoma*, etc.). The lower Blackhawk Formation constitute an overall coastal-fluvial environment, which contains a number of facies belonging to various sub-environments, including: (1) thin to thick coal beds with *Teredolites* burrows, (2) small-scale fluvial channel deposits with dune crossbedding and lateral-accretion surfaces, (3) tidal channel deposits with inclinedheterolithic- stratification, (4) coastal to bay mudstones.

Outcrops at Cottonwood Canyon show a gradual upward-transition from shallow-marine strata to coastal-plain strata. However, this transition is complex at the Wattis Road section with inter-tonguing of marine and coastalplain strata. Here, a depositional dip-oriented section shows up-dip pinch-outs of shallow-marine sandstones (Aberdeen Member?) in coastal-plain Blackhawk deposits. A prominent incised valley (~10m thick) was also observed that eroded the upper part of this shallow-marine sandstone. GPR data were collected from a fluvial channel deposit of Blackhawk Formation, just above the Star Point, to identify bedding characteristics. Our results illustrate a complex land-ocean interaction in the marginal-marine setting.