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**TITLE:** DEPOSITIONAL HISTORY OF THE BROOKIAN SEQUENCE,  
SADLEROCHIT MOUNTAINS AREA, ARCTIC NATIONAL WILDLIFE  
REFUGE

## **ABSTRACT**

Detailed stratigraphic and sedimentologic analyses of Brookian sequence strata in the Sadlerochit Mountain area is important for reconstructing the depositional and tectonic history of this region. These data can be used to help evaluate the hydrocarbon potential in the Arctic National Wildlife Refuge coastal plain (1002 area).

The Brookian sequence in the Sadlerochit Mountain area was deposited during three distinct phases. During Phase I the organic rich Hue Shale accumulated in a deep marine environment. The initial deposition of coarse terrigenous clastic sediments in this area of the basin is recorded in Phase II. Phase II can be divided into five lithofacies which consist of varying amounts of interbedded sandstone, siltstone, minor amounts of conglomerate, and shale and are assigned to the Canning Formation. These sediments represent deposition by turbidity currents in submarine channel, channel levee, and interchannel environments. This association of environments is indicative of a mid-fan region on a submarine fan. In Phase III, deltaic deposits of the Sagavanirktok Formation prograded across the area. Phase III sediments consist of poorly consolidated sandstones, carbonaceous material, and shale.

These three phases record; 1) onset of Brookian deposition in the area of the Sadlerochit Mountains, 2) progradation of coarse clastics into this portion of the basin from the southwest, and 3) subsequent filling of the basin by a progradational succession of marine to nonmarine environments.