

## Abstracts of Papers

is non-ferroan calcite formed in an active, freshwater phreatic environment. Porosity is secondary, formed by the dissolution of framework grains and early cement. The diagenetic sequence is summarized as follows: (1) ductile grain deformation, (2) pyrite formation, (3) precipitation of grain-coating clays, (4) calcite cementation and partial dissolution of unstable framework grains, and (5) dissolution of carbonate cement and the formation of secondary porosity.

Some of the petrologic variations appear to be environmentally controlled. The finer grained, lithic rich Parkman sands were deposited in a destructive deltaic environment. The coarser Teapot sands were deposited in a barrier bar association. This higher energy situation for the Teapot promoted winnowing of fine materials and mechanical destruction of labile components.

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**Sedimentary Petrology of Mesaverde Sandstones, Northeast Flank, Bighorn Mountains, Wyoming**

The Mesaverde Formation contains two major lithologic units in the study area: the Parkman Sandstone Member and the Teapot Sandstone Member-unnamed member (undivided). The lower Parkman contains a basal cyclic unit of interbedded sandstone and shale, massive sandstones, and resistant crossbedded calcareous sandstone ledges. The middle Parkman consists of several shale layers separated by a massive sandstone. The upper Parkman contains massive sandstones with interbedded sandstone and shale units. The Teapot contains massive sandstones, interbedded sandstone and claystone, and interbedded claystone, shale, coal, and bentonite.

The Mesaverde sandstones are predominantly litharenites and lithic wackes. The Parkman sands are finer grained and have a higher lithic component than the associated Teapot sands. Sedimentary rock fragments dominate the lithic component; approximately 60% of the rock fragments are chert. Volcanic fragments are the dominant labile component. Most of this detritus was derived from the Sevier Orogenic Belt to the west.

Illite is present in the Parkman as pore linings or clay coatings on the grains. The Teapot sandstones and claystones contain a mixture of smectite, chlorite, and illite. The cement is dominantly calcite of several morphologies. It