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The Middle Member contains several depositional cycles approaching 30 to 35 feet in individual thickness that can be recognized in outcrop, core, and downhole logs. These cycles represent 100,000-1,000,000 years of cycle thickness, including possible precipitation events. The cycles include a range of depositional environments, from shallow marine to lacustrine, with varying degrees of energy and sediment supply. The cycles are characterized by changes in facies, sedimentary structures, and petrophysical properties.

The best reservoir quality is found within the laminated to cross-bedded sandstones, especially those found near the base of the cycles. These sandstones are typically fine to very fine-grained, with intergranular porosity (up to 20%) largely responsible for the reservoir properties. The sandstones are typically cemented by early, iron-poor calcite, which can be subsequently leached. Intense compaction, and/or detrital clays. Diagenesis also exerts a major control on reservoir quality. Certain sandstone beds were cemented by an early, iron-poor calcite climbing ripple phase which usually possesses more deleterious micas and minor detrital quartz, feldspar, and micas. The cycles are characterized by changes in facies, sedimentary structures, and petrophysical properties.

The worst reservoir quality is found in the coarse-grained, poorly sorted sandstones with intergranular porosity (up to 10%), which are typically cemented by early, iron-poor calcite, which can be subsequently leached. Intense compaction, and/or detrital clays. Diagenesis also exerts a major control on reservoir quality. Certain sandstone beds were cemented by an early, iron-poor calcite climbing ripple phase which usually possesses more deleterious micas and minor detrital quartz, feldspar, and micas. The cycles are characterized by changes in facies, sedimentary structures, and petrophysical properties.

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