

**AAPG International Conference  
Barcelona, Spain  
September 21-24, 2003**

Martin Olson Traugott<sup>1</sup> (1) University of Durham, Durham, United Kingdom

**Definition of Gating Depth and Application to Pore Pressure Prediction**

The gating depth is the depth of burial below which the transport properties in mudstones are controlled by surface effects rather than by bulk effects. The depth varies from 2500 to 3500 meters depending on reduction of iron in the clays, beidellization, and other factors that cause surface charge to increase with increasing compaction. The sharpness of the gating transition zone is due to an avalanche effect.

Acoustic-derived pressure prediction methods are problematic below the gating depth and can grossly underestimate pore pressure. Resistivity-derived methods, controlled more by surface charge at all depths, are less problematic. Ample examples from about 100 wells from several basins worldwide demonstrate how the gating depth is identified.

The gating depth concept is a new notion borrowed from recent work in the bio-medical literature where gating is defined as the control of fluid transport by surface charge. The surface charge of the reported bio-samples and the non-ordinary nature of the associated bound water are similar to that of compacted clays.