Sequence Stratigraphic Framework of Big Lime Reservoirs, West Virginia

Leave Morgantown: September 16 - afternoon
Return Morgantown: September 18 - by noon

Fee: to be announced
Provided: van transportation, lunches, guidebook
Limit: 20

Leaders: Thomas C. Wynn, (Lock Haven University), Aus Al-Tawil (Saudi Aramco), and J. Fred Read (Virginia Tech)

This two-day field trip will provide a sequence stratigraphic overview of the Mississippian Big Lime (Greenbrier Group) of West Virginia, a 30 to 500 m (100 to 1600 feet) thick succession of mixed carbonate-siliciclastic sediments that formed on the Appalachian foreland. The trip will examine a south-to-north (basin margin-to-shoreline) transect starting near Lewisburg, West Virginia and finishing at Canaan Valley, West Virginia. The principal theme for the field trip will be the facies, sequence stratigraphy and paleogeography of these oolitic carbonate reservoirs. In the past the Big Lime was lumped into large litho-stratigraphic units that were heterogeneous and difficult to trace regionally. This rock-stratigraphic approach did not allow the facies distribution, stacking patterns, reservoir trends, and effects of tectonics to be clearly elucidated, because there was no obvious way to time-slice the succession.

High resolution sequence analysis throughout the state allowed the interval to be subdivided into fifteen 4th order depositional sequences (20 to 150 ft thick, few hundred thousand year duration) that are traceable throughout the subsurface. This allowed time slice maps to be made that show the complex regional facies trends and geometries, and regional cross-sections to be constructed that define the stacking of facies and reservoirs. The field trip will examine the role played by 4th order eustasy driven by waxing and waning of Gondwanan ice-sheets, coupled with subtle foreland basin tectonics in developing the high frequency sequences. It will integrate the outcrop data with the subsurface framework generated using well-cuttings, outcrops, core and wire-line logs from 200 shallow wells throughout West Virginia.
Devonian Hydrocarbon Stratigraphy near U.S. Route 250 in Virginia and West Virginia

Leave Morgantown: September 20 - late afternoon
Return Morgantown: September 22 - mid-afternoon

Fee: to be announced
Provided: van transportation, lunches, guidebook
Limit: 30
Pre-Registration: Required.

Trip Coordinator: John M. Dennison

This field trip generally follows U.S Route 250 northwestward from near Churchville, VA across 6 major Devonian outcrop belts from the eastern most outcrop belt to the west flank of the Elkins Valley anticline, where Upper Devonian strata are exposed in a new road cut within 3 miles of wells producing hydrocarbons from the same strata. The guidebook explains the development of Devonian stratigraphic nomenclature along the route from the time of W.B Rogers in 1835 to 1841 to the present. It will include stratigraphic descriptions and interpretations at 11 localities, with multiple stops at some. We will examine the lithology, facies patterns, and sequence stratigraphy of all of the zones which have produced hydrocarbons in the region, some paleontologic evidence on ages and depositional environments, structural geology related to exploration, and also a bit of military geology of several Civil War battles and fortifications en route. Fossil collecting opportunities will be available at several stops.