Michael R. Shultz, Stanford University, Stanford, CA

Stratigraphic Architecture of Upper Miocene Stevens Sandstone Turbidite Reservoir, San Joaquin Basin, California

Three cores from Upper Miocene Stevens sandstones at Elk Hills field, Kern county, California are subdivided into a hierarchy of architectural elements from subdivisions of turbidites to major reservoir intervals. Both fining-upward successions and coarsening and then fining-upward trends are observed. The central (apical) portions of the symmetrical coarsening- and then fining-upward cycles are coarse-grained, show evidence of scour and sediment bypass, contain abundant siltstone and sandstone intraclasts, and features typical of deposition by both low-density and high-density turbidity currents. These portions are interpreted as channelized, and fining-upward and coarsening- and then fining-upward cycles are interpreted to represent channel-fill and channelized lobe deposits, respectively. Major lobe development occurs in the stratigraphically lowest portion of the core; deposits showing much poorer organization overlie these deposits. As a whole, the cores are sand-rich, with fine-grained deposits consisting primarily of debris flow and reworked debris flow deposits with outsized, extra-basinal clasts. The close vertical relationship among amalgamated, very coarse-grained to pebbly sandstone deposits, packages of primarily fine-grained turbidite sandstone, stacks of debris flows up to 10 feet thick, seismic response, e-log correlation, tectono-stratigraphic setting, and comparison with modern turbidite systems provide the database used to interpret this portion of Stevens sandstone as the deposits of channelized lobes overlain by a heterogeneous (braided?) turbidite system.