

Campion, Kirt, Anthony Sprague (ExxonMobil Upstream Research Company, Houston, TX), Morgan Sullivan (California State University, Chico)

## **ARCHITECTURE AND LITHOFACIES OF DEEP-WATER CHANNELS IN THE CAPISTRANO FORMATION, SAN CLEMENTE, CALIFORNIA**

The Capistrano Formation exposed in sea cliffs near San Clemente, California is well suited for architectural and lithofacies analysis of channels typical of the deep-water slope environment. Significant architectural elements include storeys, channels, and channel complexes. Storeys are architectural elements less than 5m thick and up to 700m wide confined within a channel and bounded by erosional surfaces. Storeys exhibit facies change from channel axis to margin and a vertical succession of beds and bedsets that record erosion, bypass and channel plugging. Usually, an erosional surface at the storey base is overlain by a by-pass facies such as mud drapes in the channel-margin and tractional deposits in the channel axis. Massive sandstone and low-concentration turbidites, interpreted as the deposits from suspension deposition, overlie this by-pass facies and represent a plugging phase within the channel. Unless the system is abandoned, the upper boundary of a storey is marked by an erosional surface associated with development of an overlying storey.

Capistrano channels consist of multiple storeys and are bounded by high-relief, erosional surfaces (>15-20m). Most of the channels represent remnants because of erosion between channels. The best-preserved channel fill is at least 20m thick and 700m wide. Lithofacies distribution includes thin-bedded low-concentration turbidites in the channel margins and high-concentration sandy and gravely turbidites in the channel axis. Genetically linked channels form channel complexes in the Capistrano. These channel complexes are at least 20m thick and about 200-1000m wide and made of two or more laterally amalgamated channels. Within each complex the channels exhibit a lateral change of lithofacies from thin-bedded sandstone and mudstone in the channel-complex margin to thick-bedded sandstone and pebbly sandstone in the channel-complex axis.