with a slow rise in sea level followed by a rapid fall with periods ranging from 1 to 200 m.y. We have modeled these cycles in a similar way with a linear rise in sea level followed by an instantaneous drop. The resulting synthetic stratigraphy is characterized by extensive onlap in this case.

TURVILL, JOHN A., and GEORGE W. TROY, Exploration Logging, Inc., Sacramento, CA

Formation Evaluation: Benefits of Downhole Logging While Drilling

The development of new downhole measurement systems, coupled with mud-pulse telemetry techniques, allows real time surface evaluation of downhole parameters while drilling. Currently available systems, such as Exploration Logging's DLWD tool, combine formation resistivity and natural gamma ray sensors with directional survey and other measurements. These parameters aid formation evaluation, pressure evaluation, wellbore positioning, and drilling efficiency.

For real time applications, such as correlation and bed identification, a DLWD log can be treated as a conventional wireline log. For further evaluation, the interpretation of DLWD data requires an understanding of the differences in the design of MWD tools compared to conventional wireline tools, as well as the differences in logging environment. These differences, include physical size, logging speed, borehole effects, invasion, etc.

The benefits of real time subsurface data enhance other geologic and engineering data acquisition systems in formation evaluation, pressure evaluation, and well planning.

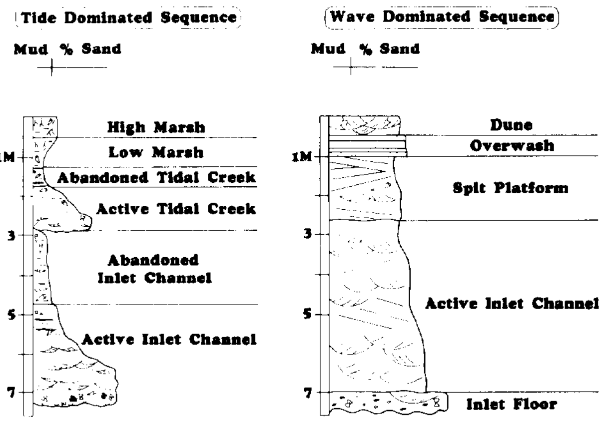
TYE, ROBERT S., and THOMAS F. MOSLOW, Cities Service Research, Tulsa, OK

Tidal Inlet: Dominant Facies of Clastic Barrier Shorelines

A synthesis of drill-hole data from wave- and tide-dominated coastal settings suggests that 40% or more of clastic shoreline deposits are tidal-inlet related. Inlet channels rework adjacent barrier islands, replacing "classic" coarsening-upward shoreface sequences with fining-upward tidal-inlet deposits.

An antipathetic relationship between wave height and tidal range along the South Carolina to North Carolina coast results in distinct tide-dominated versus wave-dominated inlet sequences. In addition to hydrographic regime, pre-Holocene topography and sediment supply modify tidal-inlet sequences, geometries, and lithologies. Ephemeral, rapidly migrating wave-dominated inlets, filled by landward and longshore sediment transport, deposit a fining-upward sequence of: (1) inlet floor of coarse shell and pebble lag; (2) channel deposits of planar and trough cross-bedded sand and shell; and (3) a spit platform, composed of planar cross-bedded and horizontally laminated fine-grained sand. Channel migration and abandonment results in preservation of isolated shore-parallel (strike) wedge to lenticular-shaped inlet-fill sand bodies occurring randomly along the shoreline. Measurements of cross-sectional profiles from 12 wave-dominated relict inlet sand bodies reveals a consistent (1:125, 250, 500...) thickness to width ratio.

Lower migration rates and bar-bypassing at tide-dominated inlet mouths concentrate inlet deposits in the updrift portion of a barrier island. Abandoned inlet channels exhibit symmetrical, U-shaped strike geometries and crescentic, concave-upward, dip geometries. The most seaward, tide-dominated inlet sequences become fine upward from basal trough and planar cross-bedded active inlet channel sand and shell to a trough cross-bedded and rippled ebb-tidal delta sand. Coarsening-upward foreshore sand and shell overlie abandoned inlet deposits. Landward, the overlying ebb-tidal delta and foreshore sands interfinger with wavy to lenticular-bedded silts and clays of the abandoned inlet fill and bioturbated salt marsh which form an impermeable updip seal over the inlet channel. Isolation of these wave or tidally influenced inlets by paleotopography confines inlet deposition to a small area, causing vertical stacking of abandoned inlet channels.



Modern tidal inlets compose 5% of North Carolina's wave-dominated coast and 20% of the tide-dominated South Carolina coast; however, Holocene barriers in North Carolina contain 35% inlet-fill whereas South Carolina barriers average 15% inlet fill. Extensive inlet formation, migration, and abandonment account for this 1:7 ratio of modern wave-dominated inlets to relict inlet deposits. Less extensive migration of more stable tide-dominated inlets accounts for an approximate 1:1 ratio of modern inlets to preserved inlet sequences. With a higher preservation potential for inlet deposits over shoreface or foreshore deposits, fining-upward sand and/or mud-rich inlet sequences will dominate ancient clastic shorelines. Porous, fining-upward, quartz-rich inlet sand bodies are the most preservable facies in barrier shoreline sequences and exhibit consistent thickness to width ratios and lateral geometries. These insights will serve as a valuable stratigraphic tool in the exploration of interdeltaic clastic reservoirs.

TYLER, NOEL, W. E. GALLOWAY, C. M. GARRETT, T. E. EWING, and J. S. POSEY, Bur. Econ. Geology, Univ. Texas, Austin, TX

Anatomy of Texas Oil

Approximately 153 billion bbl of in-place oil have been discovered in Texas oil reservoirs. Characterization of 500 of the largest of these reservoirs (those that have cumulative oil productions of more than 10 million bbl) on the basis of geologic and engineering parameters, facilitates the grouping of Texas oil reservoirs into families or "plays" of similar reservoir geology and common engineering and production attributes. Basic data for each reservoir were tabulated from information in the hearing files of the Texas Railroad Commission and other public sources. Thirty variables were examined for each reservoir. Oil plays were characterized in terms of: (a) reservoir genesis, (b) petrophysical properties of the reservoir, (c) trapping mechanism, (d) drive mechanism, (e) fluid properties, (f) volume of in-place oil, (g) recoverable reserves, (h) calculated oil recovery efficiency, and (i)