high-resolution geophysical surveys of the project's three theme sites: Pigmy Basin, Alaminos Canyon, and Vaca Basin using the TAMU Deep-Tow system. To date, the Pigmy Basin and Alaminos Canyon surveys have been completed, while the third survey (Vaca Basin) is scheduled for spring, 1997.

TAMU Deep Tow system, a refurbished version of the EDO Deep Tow donated to Texas A&M by Shell Offshore Inc., includes a DYNACON traction winch system, the topside electronics, and an ocean-depth instrument package (a 3.5 or 7 kHz subbottom profiler, a 100 kHz side-scan sonar, a depth sensor, and a direction-locating pinger) housed in a 5m, bottom-tracking tow vehicle. The high resolution records obtained in both surveys are outstanding in their clarity, resolution, and consistency. The records presented here are representative of the preliminary results of the surveys, and include examples of the seafloor and subbottom features characteristic of the two sites. In addition, the highly variable nature of the slope with respect to the types of processes and their degree of activity is clearly evident in a side-by-side comparison of the data from the two sites.

# Integrated Use of Multiple Remedial Technologies to Address DNAPL Contaminated Aquifers at Paxon Polymer Company, Baton Rouge, La.

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Pre-RCRA disposal practices caused the release of chlorinated hydrocarbons (CHCs) into the shallow ground water at the Paxon facility. This impact was reported to the Louisiana Department of Environmental Quality after a due diligence survey discovered the contamination. A phased investigative approach determined that the upper three water bearing units are affected by multiple contaminants forming a DNAPL plume.

Remedial actions proposed to the Agency and implemented during 1994-95 includes soil vapor extraction and air sparging for uppermost zone and pump and treat for contaminated water removal in all three zones. During the past 2 1/2 years of operation, the system efficiency has been evaluated and continuous adjustments have been made to enhance contaminant recovery.

Of primary concern to the facility is the control of downward movement of contaminants. Efforts to optimize recovery included manipulation of recovery rates and installation of additional equipment. Data assimilated during system operation suggests the effective recovery of CHCs in the upper two zones, however, it is apparent that zone three contaminant migrations may have been exacerbated by pumping the second zone. Contaminant levels rose dramatically in zone three after the startup of recovery of zone two. Conversion of the observation well in zone three to a recovery well has shown effective removal of CHCs.

This paper will focus on system reaction to changing vadose zone conditions, efforts to improve contaminant recovery, and the problems of managing downward movement of DNAPLs.

# Delta-Front Turbidites: A Poorly Understood but Productive Play Type in the Gulf Coast

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Although turbidites are typically associated with deep-water environments, they also can be preserved in shallow shelf settings. Sandy turbidites originating as density underflow currents or from sediment failure events are common in the delta-front region of most fluvial-deltaic systems. This is particularly true of shelf-edge deltas characterized by high sedimentation rates, a common condition in Gulf Coast reservoirs.

Like basinal turbidites, delta-front turbidites are deposited from suspension in a downslope-directed gravity flow. Internally, the sandy reservoir beds exhibit stratification typical of waning flow energy and are commonly normally graded. Core and outcrop examples tend to show a higher percentage of clasts and dispersed organic grains than most deep-water turbidites.

Unlike basinal turbidites, delta-front turbidites are typically nonchannelized. Although individual flows may be directed down gullies or other bathymetric depressions, the resulting deposits tend to be lobate and suggest that reservoir geometry and character is determined mainly be sheet-flow processes. Lateral continuity of delta-front turbidites probably is somewhere between deep-water sheet sands and deltaic channel mouth bar deposits.

Production histories from several Gulf Coast fields show prolific production from vertically stacked delta-front turbidite packages. Although intermixed mass movement deposits can complicate the reservoir succession, they can also improve vertical connectivity. An improved understanding of delta-front turbidites requires development of reservoir models that integrate geological, geophysical, engineering, and production data.