The common cost analysis on MWD wireline replacement is usually a simple comparison of invoice costs and anticipated rig time savings. While this type of method may yield useful information regarding cost benefits, it can be misleading as it does not take into account all of the risks and diverse factors that need be considered to evaluate the economic benefits of running MWD.

Decision analysis (DA) programs are capable of incorporating variable costs, risks, and diverse factors in evaluating the possible economic benefits of running MWD. They accomplish this by performing a Monte-Carlo simulation on a range of possible outcomes and their associated costs. Comparison of one set of outcomes and associated costs (wireline logging) to another set of outcomes and costs (MWD replacement) is then possible. Since risk is incorporated into this type of analysis, a more accurate picture can be obtained regarding the possible economic benefits of MWD wireline replacement.

Videomicroscopy: Linking Wellsite Geology and the Corporate Exploration Team

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Videomicroscopy is a relatively user friendly, computerized process that generates video images from well bore cuttings viewed with a microscope. While drilling a well, cuttings from the well bore are collected at the shale shaker every 10-30 feet. This ‘sample’ of the well bore cuttings is washed, sieved, drained, and placed on the well-lighted stage of a microscope for identification and description. Utilizing videomicroscopy, the image acquisition process is accomplished by positioning the sample under a microscope equipped with a video camera and the appropriate lens(es), focusing the microscope, and capturing still images from the live video signal. The resolution of the image depends or the hardware capability and software settings, the magnification of the image depending on the microscope and lenses.

Using videomicroscopy at the wellsite, cuttings are imaged at both low and high magnification, then saved onto disk. Images from the cuttings may be transmitted directly from the wellsite via modem to a remote location within 20 minutes from the time the cuttings are first collected at the shaker, or a digital “morning report” may be prepared and transmitted daily, which contains images of the previous day’s cuttings. As a result of videomicroscopy, drilling information, microfossils and other lithologic information from the wellsite, important to engineers and explorationists, may be easily examined and influence decisions which have in the past required much more time, effort and money to resolve.

Prolific Upper Pleistocene Gas Sands: Southeastern High Island and Southern West Cameron Additions, Offshore Northern Gulf of Mexico

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Recent discoveries by Burlington Resources in the Southeastern High Island and the Southern West Cameron Additions, offshore Texas and Louisiana, have confirmed the presence of thick, stacked Upper Pleistocene gas sand reservoirs. These new fields are located in High Island block A371 and West Cameron block 635, in water depths ranging from 380 to 400 feet. Production from the two largest reservoirs at High Island block A371 has been sustained at rates exceeding 45 million cubic feet of gas per day per completion.

Lowstand shelf-edge deltas deposited sands from 850,000 to 400,000 years ago with an east-west oriented graben system near the present-day shelf edge. Syndepositional salt movement resulted in the accumulation of thick, high quality Upper Pleistocene reservoirs within the graben and the development of the hydrocarbon traps via structural uplifts and associated faulting.

Three-dimensional seismic interpretation was a key factor in the successful drilling of both gas fields. All known gas reservoirs in the study area exhibit strong amplitude response on three-dimensional seismic data sets. These amplitudes commonly conform to the areal extents of the gas reservoirs. Gas/water contacts are often identifiable from flat spots on the seismic data. Deltaic channel axes are also recognizable with the implementation of coherency technology.

Geoscience and engineering teamwork allowed quick development of the High Island A371 field. The high percentage of drilling success combined with high volume gas completions have resulted in a project with superior economic value.

Stable-Isotopic Comparison of a Late Eocene Archaeocete Whale, *Basilosaurus cetoides*, to a Modern Cetacean, *Tursiops truncatus*

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Analysis of the stable isotopic composition of a Late Eocene whale, *Basilosaurus cetoides*, from Wayne County, Mississippi, provided oxygen isotopic values for cetacean bone phosphate, carbonate cement, and structural carbonate. The least-squares regression comparing cetacean phosphate to seawater oxygen isotopic composition (Yoshida and Miyazaki, 1991) suggests either that Gulf

Coastal waters of the Late Eocene were isotopically 'heavier' than Pleistocene glacial maxima, or that *B. cetoides* incorporated 'heavier' body water than modern cetaceans.

Stable-isotopic analysis of tooth enamel samples from two modern dolphins, *Tursiops truncatus*, from the Gulf of Mexico produced $\delta^{18}O$ values of 19.799 and 20.111 0/00, which are also 'heavier' than data for other modern whales and dolphins (Yoshida and Miyazaki, 1991).

Comparison of these modern dolphin data to oxygen-isotopic values for seawater from the modern Gulf of Mexico should allow us to determine if the anomalously heavy cetacean data are caused by some local fractionation effect in the northeastern Gulf, causing ^{18}O-enriched surface waters. Alternatively, comparison of these data to previously-published phosphate isotopic values of Miocene cetaceans (Barrick and others, 1993) may indicate a long-term shift in the isotopic composition of cetacean phosphates since the Late Eocene. This could have been caused by increased exchange of environmental water and body water, with modern cetaceans retaining isotopically 'lighter' metabolic water, whereas their Archaeocete ancestors had less exchange between environmental water and body water during phosphate formation, resulting in 'heavier' tooth enamel and phosphates.

Pore-Fluid Chemistry Reveal Processes Occurring in Hydrocarbon Seeps From Deepwater Gulf Of Mexico

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Hydrocarbon seeps are common over the upper bathyal depth range of the northern Gulf of Mexico. These seeps are associated with active deposition of carbonates, and host abundant chemosynthetic biota. Although extensive investigations of the seeps were conducted over the past decade, the processes linking degradation of the hydrocarbons with the chemical carbonates and the chemosynthetic fauna are poorly understood.

Sediment cores, about 50 cm in length, were obtained from thiotrophic *Beggiato* mats (TBM) and methanotrophic mussel beds (MMB) during recent submersible dives. Distribution of pore-fluid constituents including SO_4, H_2S, DIC (Dissolved Inorganic Carbon), alkalinity, Ca, Mg, Sr, and $\delta^{13}C$ of DIC were determined in order to shed light on the processes involving carbon tranfer in seeps.

The inverse relation observed between dissolved SO_4 and H_2S indicates that microbial degradation of hydorcarbons during sulfate reduction plays a dominant control on the pore-fluid chemistry. The $\delta^{13}C$ values of $\sum CO_2$ in TMB cores, ranging form -16 to -28 0/00 (PDB), indicate that carbon is derived primarily from crude oils through sulfate reduction. In contrast, sulfate exhaustion coupled with observed enrichment of ^{13}C in DIC (+2 to -16 0/00 PDB) in MMB cores suggest that DIC is derived there from both microbial sulfate reduction and fermentation. Thermodynamic and stolchiometric estimates indicate that authigenic carbonate precipitation and active consumption of carbon by chemosynthetic biota are the two major sinks for the hydrocarbon-derived carbon in the seeps.

Toward a Method and Theory for Restoring Coastal Louisiana

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A century-long transgression of the coastal Louisiana deltaic and chenier plains has resulted in the loss of more than one million acres (404,700 hectares) of coastal wetlands and threatens human presence and activity. During the more than twenty-five years since the problem was identified, more than 25 years ago, Louisiana and the U.S. Federal Government have been struggling to develop to plan and process which, when implemented, would allow for maintenance of an infrastructure for human activity and also provide a mechanism for dynamic continuity of the coastal ecosystems. These efforts include non-structural measures (research, public education, coastal management laws and regulations, permits, mitigation, etc.) and structural measures for coastal restoration (river diversions, barrier island sand nourishment, marsh building, etc.). This paper evaluates the evolving method and theory in search of: 1) the most effective course of action, 2) reduction in the need for trial and error, and 3) application of other areas.

Restoration to historic conditions as an unattainable goal, as processes and materials now available cannot sustain deltaic and chenier plain systems as large as those which historically existed. The present level of scientific understanding regarding natural systems, engineering capabilities and technological advances is sufficient to achieve satisfactory restructuring of Louisiana's coastal area. However, several remaining obstacles are: 1) a clear statement of objectives, 2) a proper institutional framework, and 3) state and national commitment.