December 9, 2011

An Introduction to Hydraulic Fracturing Technology: Facts and Challenges
Arash Dahi, LSU

Abstract: Hydraulic fracturing has made a significant contribution to the oil and gas industry as a primary means of improving hydrocarbon production from unconventional reservoirs. At the present time, hydraulic fracturing is extensively used to improve oil and gas wells' productivity. Of the production wells drilled in North America since the 1950s, about 70% of gas wells and 50% of oil wells have been hydraulically fractured. Thousands of treatments are implemented each year in a wide range of geological formations which may vary from low permeability gas fields, weakly consolidated offshore sediments such as those in the Gulf of Mexico, soft coal beds for methane extraction, naturally fractured reservoirs, and geometrically complex structures such as lenticular formations. However, some issues such as water aquifers contamination in the vicinity of hydraulically fractured wells have raised some concerns about this technology in public media and among legislators. In this talk, we will have a review of the current practice in design, implementation and assessment of hydraulic fracturing treatments in the oil and gas industry and discuss some of the challenges involving in each of these components.
Biography: Arash Dahi Taleghani is an assistant professor in the department of petroleum engineering at Louisiana State University in Baton Rouge. He holds BS and MS degree in Civil Engineering from Sharif University of Technology and PhD in Petroleum Engineering from UT Austin. He also has some work experience in industry. His research is mainly focused on mechanistic modeling of hydraulic fractures propagation especially in naturally fractured reservoirs. He is also conducting research projects on underground blowout, reliability of water injectors, and microseismics. At LSU, Arash teaches Petroleum Geomechanics, Unconventional Gas Reservoirs, Well logging and numerical methods. He has several publications in engineering and geophysics journals as well as SPE, AAPG and SEG.

November 11, 2011

Burial and Thermal History of the Haynesville Shale: Implications for Gas Generation, Overpressure, and Natural Hydrofracture
Prof. Jeffrey Nunn, LSU

Abstract: The Haynesville Shale is a thin organic rich sedimentary rock found in Northwest Louisiana, Eastern Texas, and Southwest Arkansas. It was deposited during the Late Jurassic in a shallow marine environment. The Haynesville Shale is typically found at depths of 3 km (10,000 ft) or more and is characterized by ultra low permeability. It is an area of active exploration and development for natural gas especially in Northwest Louisiana. Results from an earlier thermal-mechanical model suggest that Jurassic temperature gradients were more than twice the current regional value of (25 to 35 °C/km). Thus, Jurassic age sediments have been close to their current temperatures for the last 100 m.y. Using subsurface data, a simple model of heat transport by advection and conduction and fluid flow by compaction was used to estimate temperature, maturation, and fluid pressure versus time for the

Haynesville Shale. High heat flow in the Early Cretaceous contributed to high temperature gradients and early maturation of hydrocarbons. Rapid Sedimentation in the Early Cretaceous contributed to generation of significant overpressure within the Haynesville Shale. This overpressure cannot be maintained over geologic time because the unit is too thin. Hydrocarbon generation produces additional overpressure in the Late to mid-Cretaceous and the Late Paleogene. However, overpressures do not exceed the fracture gradient. Special circumstances are required to exceed the fracture gradient.
Biography: Dr. Nunn is Ernest and Alice Neal Professor of Geology. He has taught at LSU since 1981. Research interests include: subsurface fluid flow and associated heat and mass transport, fluid flow on faults and fracture networks, thermal and fluid pressure evolution of sedimentary basins, and geothermal resources.

October 14, 2011

Basement Controls on Subsurface Geologic Patterns and Coastal Geomorphology Across the Northern Gulf of Mexico: Implications for Subsidence Studies and Coastal Restoration
Bryan p. Stephens, United States Department of the Interior - BOEMRE

Abstract: Of all the processes that have contributed to the depositional architecture and ongoing subsidence of the Mississippi Delta, tectonic subsidence is probably the least understood. Localized vertical movements in southeast Louisiana are, in part, manifestations of ordered, basin-scale structural patterns that have exercised a profound level of control on all subsequent geological processes, including recent coastal environments and ongoing subsidence patterns. The arrangement of structural elements across the northern Gulf of Mexico suggests the continental margin is segmented by northwest-southeast trending transfer fault zones related to Mesozoic rifting. Observations from a diverse collection of studies are used to document a framework of fourteen major transfer-fault delimited structural corridors, 25 to 40 miles in width, thought to be characterized by varying degrees of extension, crustal attenuation and tectonic subsidence. The corridors are more finely segmented by minor transfer fault trends which also exhibit regular and predictable lateral and vertical offsets that are reflected in the overlying Tertiary cover. This study incorporates a seismic traverse from a recent proprietary offshore 3-D survey which images offsets in the basement surface corresponding to the transfer faults that trend into southeast Louisiana. Offshore examples illustrate the structural patterns resulting from the interaction of the basement structure, salt systems and Tertiary faults and can be used as analogs for the subsurface of South Louisiana. Several examples along the northern Gulf Coast from Florida to southwest Louisiana are used to examine the apparent relationship between the transfer-fault delimited structural corridors and coastal geomorphology. Vertical movements related to these subsurface geologic patterns appear to influence the spatial arrangement of Holocene coastal environments. Recognition of the ordered arrangement of basement structures, faults and salt systems may provide new insights into the depositional architecture of the Mississippi Delta. Subsurface geologic templates can serve as useful analogs for understanding subsidence patterns and the emerging body of detailed subsidence measurements. Identification of areas of relative geologic stability may influence coastal restoration efforts.
Biography: Bryan Stephens is a native of the New Orleans area. He holds Bachelor's and Master's

degrees in Geology from the University of New Orleans and the University of Kansas, respectively. From 1985 to 1988 he worked in the Petroleum Research Section of the Kansas Geological Survey. From 1988 to 1999 he worked for Texaco in New Orleans on a variety of exploration and production assignments across the Gulf Coast and offshore Gulf of Mexico. He joined the Minerals Management Service (now the Bureau of Ocean Energy Management) in 1999, where his primary responsibilities include Fair Market Value Determination of lease sale tracts in the deepwater Gulf of Mexico. Bryan's geologic interests are centered around the interactions of basement tectonics, salt tectonics, and depositional systems. He is a member of AAPG and NOGS.

September 9, 2011

Assessing fault interaction in segmented normal fault systems: Implications of self-similar versus non-self-similar fault displacement patterns
Nancye Dawers, Tulane University

Abstract: Faults evolve by accumulating both length and displacement, and eventually develop predictable patterns of along-strike displacement variation, especially if the faults form in relative isolation. Neighboring faults, however, are restricted by patterns of local stress change and tend to have less predictable displacement gradients. Since the 1990's these observations have been extensively documented in many extensional fault systems. This talk will review patterns of displacement variation, en echelon overlap geometries and deformation within fault relays; it aims to develop simple criteria for determining whether faults located along-strike from one another are linked or remain unlinked.
Biography: Nancye Dawers is a structural geologist with interests in fault evolution, rift basin stratigraphy and active tectonics. She obtained a BS in Geology from University of Kentucky in 1984, an MS from University of Illinois at Urbana-Champaign in 1987, and a PhD from Columbia University's Lamont-Doherty Earth Observatory in 1997. From 1996 through 1999 she worked as a Research Associate at the University of Edinburgh. Since 2000 she has been on the faculty of Tulane University, where she teaches Physical Geology, Structural Geology, Subsurface Geology, and graduate courses in tectonics.

May 13, 2011

Safe, Sustainable Drinking Water in Rural Kenya.
Dr. Bruce K. Darling, Southwest Groundwater Consulting, LLC

April 8, 2011

Updates on the DEQ Drinking Water Protection Program (DWP) and the Aquifer Sampling and Assessment Program (ASSET)
Jesse Means and John Jennings, LDEQ

March 11, 2011

Update on Office of Conservation Environmental Rules and Policies for Groundwater, Water Well Construction, Exploration and Production Waste Management and Legacy Site Evaluation/Remediation
John Adams, LDNR

February 11, 2011

Effect of the Deepwater Horizon disaster on fishing in the gulf and coastal areas
Joe Macaluso, Baton Rouge Advocate

Biography: Joe Macaluso is the writing for Capital City Press - The State-Times, then The Advocate since 1970. He began Baton Rouge's first weekly fishing report column in March 1976, was named The Advocate Outdoors writer in Dec. 1991. He has more than 70 state, regional & national writing awards, including a Governor's Conservation Awards communication winner, and is the recipient of Van Pelt Award for lifetime achievement in outdoors & conservation communication. He is a recent inductee into the American Italian Sports Hall of Fame as a writer/reporter

January 14, 2011

Perspective on tropical activity in recent years and the outlook to come.
Jay Grymes, WAFB

Biography: Chief Meteorologist WAFB. He was born in Arlington, VA but grew up in Wilmington, DE. Jay came to Baton Rouge to study at LSU in August 1985. Joined WAFB in August 1996, named WAFB Chief Meteorologist in May 2003. He holds a B.A. (1979) and M.S. (1986) from Univ. of Delaware, plus an additional 30+ graduate hours at LSU. He has a Faculty appointments in the LSU Dept. of Geography & Anthropology (teaching 'Earth Atmosphere') and LSU Dept. of Biological & Agricultural Engineering (Extension Climatologist for the LSU AgCenter), also an Associate with the LSU Hurricane Center. Jay was the Louisiana State Climatologist, 1991-2003, and the President of the American Association of State Climatologists (2001-2002). He holds the AMS Television Seal of Approval, member of the LA Academy of Sciences, the American Meteorological Society, and the National Weather Association. Jay is the Editor/Publisher of the Louisiana Monthly Climate Review (1988-2003), has published more than a dozen professional and academic papers and book chapters dealing with aspects of Gulf Coast weather and climate. More than 60 presentations at national and regional professional and academic conferences. He is a weather consultant for the Louisiana State Police, EBR Homeland Security & Emergency Preparedness, and the Louisiana Dept. of Justice. He is the past national and regional committee memberships: U.S. National Extremes Committee, U.S. Drought Monitor Committee, LA

Drought Task Force - Chair of Monitoring Committee, LA Prescribed Burning Advisory Committee, Amite River Basin Commission Technical Committee, Atchafalaya Basin Commission Technical Committee, and Barataria-Terrebonne Nat'l Estuary Program Technical Committee. Past service includes Contributor/Consultant for Baton Rouge Air Quality Task Force, Governor's Brown Marsh Task Force and Governor's Groundwater Task Force. Jay received the Louisiana Association of Broadcaster's "Weathercast of the Year" (2004).