

Tuesday, January 14, 2014

Hyatt North Houston (former Crowne Plaza Hotel - Greenspoint)  
425 North Sam Houston Pkwy E  
Social 11:15 AM, Luncheon 11:30 AM

Cost: \$31 pre-registered members; \$35 for non-members/walk-ups

To guarantee a seat, pre-register on the HGS website & pre-pay by credit card.

Pre-registration without payment will not be accepted.

Walk-ups may pay at the door if extra seats are available.

## HGS Northsiders Luncheon Meeting

*Heather A. McGarity*  
*Murphy Exploration and Production*  
*Janok P. Bhattacharya and*  
*Robert E. Lamond*

# An Interpretation of the Depositional Environment and Facies of the Eagle Ford Shale from Karnes-Maverick County, Texas

Development of shale reservoirs can be problematic due to internal heterogeneity. Areas or zones of higher clay content (such as swelling clays), variable lithology, total organic content variations, and changes in porosity and permeability, can all affect hydrocarbon recovery. These low porosity and low permeability reservoirs are now significant hydrocarbon producers so it is crucial to understand their architectural elements and reservoir properties in order to maximize hydrocarbon production.

Phase one of this study included six wells with whole core across the Upper Cretaceous Eagle Ford Shale in South and East Texas from Karnes to Maverick County. These cores were analyzed and interpreted to determine lithology, sedimentary structures, and parasequences. Eight separate facies, along with their depositional environments, were interpreted to have been deposited above storm-wave base along the inner and outer shelf in a moderate energy environment episodically interrupted by higher energy events, as opposed to a deeper-water setting. Identification of gently-inclined lamina and ripple cross laminations provide evidence of significant bedload transport in the form of floccule ripple migration, indicating a depositional environment above storm wave base.

Bioturbated marl and laminated marl facies were used to identify flooding surfaces. These flooding surfaces separate upward-coarsening facies from bioturbated and laminated marl facies, leading to the identification of parasequences. From this, we built a detailed sequence stratigraphic framework of the Eagle Ford Shale using the identification and correlation of parasequences and parasequences sets. From this work, a basin-wide cross section correlating these eight facies was constructed using private and public data.

This new model is being used to target and geo-steer our wells into the best quality rock, thereby reducing drill time, increasing completions effectiveness, and maximizing production. ■

### Biographical Sketch

HEATHER MCGARITY is a geologist with Murphy Exploration and Production and is currently involved in operations and field development. Ms. McGarity received her bachelor's degree in geology from Texas Tech University in 2010, and a masters degree from the University of Houston in 2013. Her thesis work involved building a stratigraphic framework of the Eagle Ford Shale.

## Imperial Barrel Award Committee

### Looking for Volunteers

The HGS Imperial Barrel Award Committee is looking for people interested in becoming involved with the HGS IBA Committee. Whether you're an IBA Alum or just interested in learning more about the IBA program and HGS's involvement, please contact us at [HGS.IBACommittee@gmail.com](mailto:HGS.IBACommittee@gmail.com) to find out more.

