

Short Course: Facies architecture and Sequence Stratigraphy of Delta Systems: From Exploration to Reservoir performance

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Purpose:

This 1 1/2 to 2 day short course will provide both a theoretical framework for understanding how deltas originate as well as be a practical guide for interpreting and mapping ancient delta systems in subsurface. The course will cover basic definitions, theory of delta forming process and the significance for recognizing these processes in ancient systems, a description of the essential facies components of a delta and the implications for subsurface facies architecture, and finally a survey of the different types of delta systems. Emphasis will be on recognizing river-, tide-, wave- and mixed-influence delta systems.

Several case histories, emphasizing both exploration and production scale characteristics will be covered including; The Dunvegan

Delta (Alberta) and Prudhoe Bay Field (Alaska). In addition, several outcrop examples will be discussed to give participants an idea of the lateral heterogeneity in delta systems and its effect on reservoir flow behaviour.

The course will include a series of powerpoint lectures, followed by several well-log correlation and core interpretation exercises (if core is available at site). The course is designed as an up-to-date review of the last 15 years of new ideas in deltaic sedimentology and will appeal to geologists needing a review and update as well as to reservoir engineers and geoscientists working on reservoir modeling and production in fluvial reservoirs.



List of Topics:

- Basic definitions and classification.
- Theory of delta forming process.
- Delta Environments.
- Facies components of a delta.
- Facies architecture.
- Sequence and Allostratigraphic concepts.
- Case studies of different ancient and modern deltas.
- Application to subsurface problems.
- Reservoir Characterization

Exercises:

- Outcrop correlation
- Well Log correlation
- Core description (if cores available)
- Seismic interpretation (using affiliate examples)

**Instructor Biography:**

Janok P. Bhattacharya is the Robert E. Sheriff Professor of Sequence Stratigraphy at the University of Houston. His research interests include fluvial and deltaic sequence stratigraphy and facies architecture, and the local control of structure on stratigraphy. He received his B.Sc. in 1981 from Memorial University of Newfoundland, and Ph.D. in 1989 from McMaster University, Hamilton, Ontario, both in Canada. Bhattacharya worked for ARCO and then the Bureau of Economic Geology at Austin before becoming a professor at the University of Texas at Dallas in 1998. He joined UH in the Fall of 2005. He has worked on a number of major fluvio-deltaic reservoirs, including the Supergiant Prudhoe Bay field in Alaska, for which he was awarded the ARCO Exploration Research and Technical Services Award of Excellence for Major Impact on

Operations in 1993. He has won best speaker awards for talks on his deltaic outcrop analog work, presented to the AAPG, CSPG and Houston Geological Society and was the technical program, coordinator for the 2004 Annual AAPG conference in Dallas. He was a 2005-2006 AAPG distinguished Lecturer, and in 2005 was awarded an AAPG SW Section Distinguished educator award.