



## CSPG Short Education Course

# Clastic Facies, Depositional Environments and Sequence Stratigraphy in Core: Examples from the WCSB

**Instructor:** Brian A. Zaitlin, Ph.D., P. Geol., ZGL (Zaitlin Geoconsulting Ltd.)

**Location:** AER Core Research Centre, 3545 Research Way NW. Calgary AB

**Cost:** Member Price - \$2,400.00

Non-Member Price - \$2,800.00

**Date:** November 23-25, 2022 | 8:30am-4:00pm

**Prerequisites:** An introductory knowledge of clastic facies and depositional environments, in addition to basic log interpretation skills, are required.

**Materials Needed:** Hand lens, grain size chart, colored pencils, straight edge, unconformity ruler, tape measure and graph paper.

**Materials Provided:** Course handbook, core description templates and all relevant supportive material (petrophysical logs, core analyses, exercises etc....) will be provided.

**Course Overview:** This 3-day course will provide the skills necessary to make critical observations of physical and biogenic sedimentary structures and textures of clastic facies in core and construct logical process-sedimentologic based interpretations of their depositional environments. Emphasis will be placed on the inherent relationship between processes of sedimentation and the products of their deposition as the fundamental building blocks of the hydrocarbon reservoir. Hands on training will be provided in the logging of clastic facies in core providing a logical and objective means of summarizing observations in a graphic form and communicating this information to colleagues. Concepts will be reinforced through examples in selected cores demonstrating the variability and contrast observed in nature among a spectrum of different environments of deposition including fluvial, deltaic estuarine and shoreline settings. Students will learn to appreciate that lateral and vertical variability are the norm in depositional systems, not the exception, as displayed in clastic sedimentary facies. However, and most importantly, emphasis will be placed on the fact that such variability is highly predictable and can become a very powerful tool in unraveling reservoir architecture and compositional heterogeneity. Core exercises will provide students with the opportunity to test their newly learned skills and share learnings with others in the class. The instructor will provide ample information to place all core examples into a reservoir and regional sequence stratigraphic context. Emphasis will be placed on the practical applications of core-based insights to hydrocarbon exploration and development.



## Course Outline

### Day 1:

- Introduction
- Textural Attributes, Sedimentary Structures, Ichnology
  - o Core Viewing: Primary and Biogenic Sedimentary Structures
- Sequence Stratigraphy and Clastic Facies
- Non-marine Depositional Systems (Alluvial Fan, Braided, Meandering, Lacustrine, Aeolian)
  - o Core Viewing: Non-marine deposits (Basal Quartz, Cadomin, Gething)
- Correlation Exercise: Lithostratigraphy vs Chronostratigraphy

### Day 2:

- Incised Valley Systems and Estuarine
  - o Core Viewing: Glauconitic (Lake Newell, Lathom)
  - o Core & Correlation Exercise: Viking (Crystal)
- Nearshore Depositional Systems (Delta, Shoreline (Dissipative, Intermediate, and Reflective Shorelines; Barrier Island)
  - o Core Viewing: Montney, Lower Banff, Fernie, Niton, Glauconitic, Viking, Belly River
- Exercise: Stratigraphic Surfaces

### Day 3

- o Core & Correlation Exercises: Viking Joffre; Falher (Spirit River)
- Shelf Break and Deepwater Depositional Systems: Slope, Canyon and Deepwater (Fan) Environments
  - o Core Viewing (Montney)
- Course Summary

## Biography



Zaitlin Geoconsulting Ltd. (ZGL) was established in 2014 to provide geological consulting and applied training seminars to the petroleum industry. ZGL specializes in proprietary/exclusive regional exploration evaluation, prospect generation, basin analysis, production/reservoir geology, pool studies, reservoir characterization, acquisition & divestiture evaluations, and geological training, focusing on clastic reservoirs and depositional systems.

Brian has >40 years of front-line exploration/exploitation, R&D and A&D experience, and has progressively worked as a Geologist, Explorationist, Technical Specialist, Technical and Exploration Advisor and Chief Geologist with a variety of E&P companies (e.g., Gulf, Esso, PanCanadian, Encana, Suncor, Enerplus Resources Fund, and EOG Resources) and in Corporate Banking/Private Equity with the BMO A&D Advisory Group and Native American Resource Partners. He was appointed to the Alberta Energy Regulator by an Order in Council as a Hearing Commissioner (part-time) in 2016 and reappointed in 2019.

Brian's focus is on conventional and unconventional new play development throughout the Western Canada Sedimentary Basin, Rocky Mountain Basins, Appalachia, and



various international basins. His research interests lie in the understanding of siliciclastic fluvial, coastal, and shallow-marine depositional systems and their preserved stratigraphy, and in applying this knowledge to reservoir characterization and modeling. He has taught >60 inhouse and public training courses, core workshops and field trips and is the author of more than 100 peer-reviewed technical papers and authored/co-authored oral presentations. Brian is the recipient of numerous awards including the CSUR Sproule Innovation and Achievement Award, CSPG Medal of Merit (best published paper), CSPG Tracks Award for Education, CSPG Ph.D. Thesis award, and co-authored AAPG, SEPM and CSPG Best Paper/Oral Paper Awards, and was an AAPG Distinguished Lecturer.

Brian holds a B.Sc. (Geology) from Concordia (Loyola) University (1979), a M.Sc. (Geology) from University of Ottawa (1981), and a Ph.D. (Geology) from Queen's (Kingston) University (1987). Brian is a registered Professional Geologist (APEGA), Certified Petroleum Geologist (AAPG-DPA) and a member of the AAPG, CSPG, CSUR, RMAG and SEPM.



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