



N650: Geology for Non-Geologists (2 Day)

Tutor(s): Andy Burnett

2 Days

Competence Level:
Basic Application



Classroom Course

Summary

This two day course provides an introduction to geology and is intended for individuals with little or no prior exposure to geology. Attendees will be introduced to the basic principles and vocabulary used by geoscientists in the petroleum industry. They will learn about the various tools used by petroleum geologists, the basic principles involved in the use of each tool and how knowledge gained from the use of each tool is consolidated into an overall geologic interpretation.

For an expanded version of the topic, we recommend the 4 day "N644 - Geology for Non-Geologists" course.

Learning Outcomes

Participants will learn

- Fundamentals of geology such as geologic time, the rock cycle, stratigraphy and the principles of geologic interpretation.
- Basics tools a petroleum geologist uses such as well logs, drill cutting descriptions, drill stem tests, 2D and 3D seismic, seismic modeling and how seismic relates to geology.
- How geologists consolidate information gained using the tools of their trade to construct cross sections and maps to define a prospect.
- About environments of deposition and how they relate to the preservation of reservoir rocks and the generation of hydrocarbons.
- How macro geological events such as plate tectonics relate to the generation and preservation of hydrocarbons.
- About the petroleum system and how it relates to petroleum accumulations and their preservation within the various styles of hydrocarbon traps.
- About creating detailed geologic models using concepts such as facies and sequence stratigraphy and the tools used to interpret them.
- Concepts use to evaluate the economics of a prospect and some of the common metrics used to quantify the values of prospects and compare them.
- Being introduced to the concepts of risk and risk evaluation in the economic evaluation process and how geology affects economics.

Duration and Training Method

Two classroom days providing 1.6 CEU (Continuing Education Credits) or 16 PDH (Professional Development Hours)

Who Should Attend

Employees with no Geological background at all levels who communicate with geoscientists or who wish to better understand the exploration process should consider attending this class. Attendees have included support staff, accountants, engineers, field personnel, marketers, economists and corporate planners. They come away with enough knowledge to “know what they don’t know” and to better determine if more advanced training is required and what that training should include.



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Course Content

Agenda:

Day One

1. Geology as a Science – external influences and the evolution of the science
2. Principles in Geology – concepts used to understand the history of the rocks
3. The Origin of the Universe the Solar System and the Earth
4. Geologic Time and Age Dating – including changes to our concept of time as the science evolved
5. Plate Tectonics and the Evolution of the Continents
 - a. Important evolutionary milestones through geologic time
 - b. Changes to the environment (oceans, atmosphere and land)
6. Unconformities – what they are and what they mean
7. Rocks and Minerals / the Rock Cycle – the raw materials of geology
8. Classification of Rocks and why it's important to the Petroleum Geologist
9. Stratigraphy, Facies Depositional Environments – what they are and their significance in exploration
10. Sequence Stratigraphy

Day Two

1. Origin of Hydrocarbon
2. The Petroleum System – definition and significance in exploration
3. Hydrocarbon Pool Components – traps, reservoirs and seals
 - a. What they are and their significance
 - b. How different depositional environments affect the characteristics of pools
4. Petroleum Exploration Tools of the Trade with a couple of practical exercises
5. Evaluating a Prospect – reserves, risk, economics and ranking one against another
6. North America through Geologic Time
 - a. Major geographic features and their influences on hydrocarbon occurrences
 - b. Many major North American plays will be identified in terms of their current geographic locations, their geologic age and the macro depositional environments in which they were deposited
7. Major North American Resource Plays with a summary of selected local plays
8. World Hydrocarbon Reserves
 - a. A brief and very general discussion on major world hydrocarbon reserves covering such topics as supply and demand, significant theoretical models such as Hubbert's Peak Oil Curve and the relationship between technological advancements and increases in hydrocarbon reserves