

GULF INSTITUTE



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Petroleum Geology for Non-Geologists

INTRODUCTION

- This Petroleum Geology for Non-Geologists training course is a 5-day interactive course that consists of classroom presentations, case studies, and practical exercises exploring the main concepts and workflows of commercial Petroleum Geology. The petroleum industry, from upstream to downstream, encompasses some of the World's most extensive and most complex infrastructure, commercial, and trade networks. But where does it all begin? Where do the oil and gas come from? How are hydrocarbons found?
- This course is developed to provide petroleum industry professionals with a working knowledge of the Geology elements and processes relevant to Hydrocarbon Exploration and Production. The main concepts and terms used in Petroleum Geology will be addressed as well as the exploration and production tools, types of data and software, and how geoscientists identify and evaluate drill-worthy prospects.

This training course will highlight:

- Introduction to Geology
- The elements and processes of the petroleum system
- Exploration and production tools
- Exploration from basin-scale to drill-worthy prospect
- Discovery through to appraisal and field development
- Volumetric and Risk Assessment

OBJECTIVES

- Understand the geological cycle and the basic concepts of sedimentary geology
- Recognize the principal elements and processes of a petroleum system
- Understand basin analysis concepts, regional geology, and exploration technique
- Understand how seismic, well and outcrop data can be used for exploration and production
- Able to define a prospect, calculate volumes and assess risks conceptually
- Assess how Petroleum Geology allows discovery to be evaluated and developed

TRAINING METHODOLOGY

- This Petroleum Geology for Non-Geologists training course will be based around interactive presentations and videos for each module and by interactive and participative individual and team exercises. There will also be workshop sessions based on real exploration and development examples to get participants to actively become aware of the critical role of Petroleum Geology in the oil industry.

ORGANISATIONAL IMPACT

The organisational impact for participants attending this Petroleum Geology for Non-Geologists training course includes the following benefits:

- Understand the process of how to explore for oil and gas, in a cost-efficient organization
- Exploration and production workflows are understood by everyone
- Comprehend the E&P workflows impacts on engineering, management, HSE, IT, financial and commercial sides of the company
- Understanding geological volumetric and risk assessments of a prospect and how it can be translated into economic evaluations
- The whole organization can communicate using a common terminology
- Minimize risk and cost while maximizing the potential for the reward

PERSONAL IMPACT

This training course will personally benefit the participants to gain or enhance their understanding and knowledge by the following:

- Understand Petroleum Geology concepts and process and the meaning of geological jargon used among geoscientists
- Comprehend the natural variability of petroleum systems and the uncertainty associated with geological evaluations
- Understand the impact of subsurface and surface geology in the development of a project – engineering, HSE, Management, IT, financial, etc.
- Better communication through technical understanding allows support staff to be recognized and appreciated within an organization
- An appreciation of the value of information – seismic and well data – allows staff from various teams to comprehend cost versus benefit and to positively participate in the decision process
- Value the importance of specialist software packages, and how these are used in the search for hydrocarbons allows an alignment in their use and optimization of license numbers with potential for cost savings

WHO SHOULD ATTEND?

This training course is suitable for a wide range of professionals but will significantly benefit:

- Petroleum Engineers (Reservoir, Drilling, Facilities, etc.)
- Geophysicists with experience or training in Petroleum Geology
- Petrophysicists with experience or training in Petroleum Geology
- Technical Support Professionals
- HSE Professionals
- Economist
- Law Professional
- Finance and Accountants
- Human Resources Professionals
- Data Management and IT
- Administrative Professionals

Course Outline

Introduction to Petroleum Geology and Sedimentary Basins

- Introduction to Geology
- Sedimentary Basins
- Basin Analysis and Regional Geology
- Different Types of Basins
- The Fundamental Elements of the Petroleum System

Elements and Processes of the Petroleum System

- Source Rocks, Hydrocarbon Generation and Migration
- Conventional Hydrocarbons Reservoirs - Clastic and Carbonate
- Non-conventional Hydrocarbon Reservoirs
- Seal Rocks and Seal Capacity
- Plays and Play-based Exploration
- Structural and Stratigraphic Traps, Examples
- Outcrop Mapping and the Beginning of the Oil Industry

Exploration Methods

- Indications of An Oil System, Oil Spills, Outcrop Geology
- Seismic Techniques and the Use of Seismic in Geological Mapping
- Exploration Wells and Downhole Data Acquisition
- Sedimentology and Biostratigraphy
- Other Exploration Techniques, Aeromagnetic Gravity, CSEM
- Mapping Plays and Defining An Area of Interest

From the Area of Interest to the Drill-worthy Prospect

- The Use of Analogs in Exploration Geology
- Types of Data and Software Used
- Definition of Lead / Prospect
- Geological and Technological Factors of a Lead / Prospect
- Geological Risk and Volumetry

From Discovery to Development

- Volumetric Assessment of a Discovery
- Definition of Phase of Hydrocarbons and Contacts (Gas - Oil and Oil - Water)
- Definition of Geological Uncertainties and the Need for Oil Field Assessment
- The Financial Investment Decision (FID) for the Development of An Oil Field

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