

PETROLEUM GEOSCIENCE FOR NON-SPECIALISTS

3 - 6 November 2014, Jakarta

Duration: 4 days



ABOUT THE TRAINER

PRESENTER:

Dr Michael Ala

(Imperial College London)

PREREQUISITES:

This is a course for non-specialists and no prior knowledge of Earth sciences is necessary.

AIMS:

To cover the fundamentals of the Earth sciences, examine their role in controlling the occurrence, distribution and quantification of 'conventional' oil and gas reserves; review the 'non-conventional' hydrocarbon resources; provide an introduction to the 'peak oil' debate.

OUTCOMES:

The course presents the principles and practices underpinning the Earth sciences and demonstrates how they can be applied to hydrocarbon exploration and production. The participants will gain an understanding of the factors and processes involved in the formation of oil and gas fields and their worldwide distribution.

WHO SHOULD ATTEND?

Non-Earth scientists with little or no background in geology, geophysics or the processes that control the formation and distribution of oil and oil and gas resources.

FEE	1 PAX	3 PAX OR MORE
Per Person	USD 2795.00	USD 2695.00

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Dr Michael Ala

(Imperial College London)

Dr Michael Ala has been closely associated with the oil industry for more than 35 years both as an exploration geologist with an independent oil company and as a consultant. He has a BSc in Oil Technology and an MSc, PhD and DIC in Petroleum Geology from Imperial College.

In 1972 he joined Seagull Exploration International and was involved in exploration studies and prospect evaluation in many parts of the world including Africa, northwest Europe, eastern Mediterranean, the Caribbean, South America and the Middle East. In 1976 he became the company's General Manager in London, responsible for its north European and Middle Eastern operations.

Since 1981 he has been a member of the academic staff in the Earth Science Department of Imperial College, rising to the post of Director of the internationally recognized MSc Petroleum Geoscience Course in 1994. Dr Ala has published more than 60 research and review articles covering the Middle East and West Africa, focusing on the petroleum geology and oil industry of Iran and is on the Editorial Board of the international Journal of Petroleum Geology. He was also Editor in Chief of *Seventy-Five Years of Progress in Oil Field Science and Technology*, published in 1990. Since 1982 he has been involved in organizing and presenting numerous industrial training programs in Europe, north Africa, west Africa, South Africa, Middle East and southeast Asia. Currently, Dr Ala is completing a textbook entitled *The Acquisition and Interpretation of Openhole Logs*.

In 2007 he joined the board of Dominion Energy PLC as a non-Executive Director. Dominion's principal activity is the exploration and development of oil and gas fields worldwide.



FOR ENQUIRIES

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COURSE SCHEDULE

DAY 1

- **The Earth: its properties, internal structure and age**
- **Earth sciences: definition and overview**
- **Various types of rocks, their origins and examples**
- **Rocks associated with oil and gas:**
 - Sedimentary rocks: their origin, key features and associated terminology
 - Depositional environments, processes and the concept of facies
- **Introduction to geological time, principles of stratigraphy and stratigraphic relations:**
 - The concepts of relative and absolute time
 - Measurement of geological time
 - The Uniformitarian Principle
 - The Law of Superposition
 - Unconformities
 - Sequence stratigraphy
 - Establishing lithostratigraphic and biostratigraphic units
 - Correlation
- **Principles of structural geology: various types of geological structures (folds, faults and thrusts) and their relationship to oil and gas occurrence**
- **Practical session**

DAY 2

- **Definition of oil and gas fields**
- **Habitat of oil and gas and factors that control their occurrence**
- **Processes that control the occurrence of oil and gas fields**
- **Geological controls on oil and gas occurrence**
- **Sedimentary basins:**
 - Definition
 - Formation and development
 - Global distribution
 - Exploration status
 - Production status
- **Association between sedimentary basins and oil and gas occurrence**
- **Overview of plate tectonics**
- **Plate tectonics control on the formation, evolution and characteristics of sedimentary basins**
- **Petroleum substances –chemical composition of oil and gas**
- **Petroleum systems analysis in terms of elements and processes:**
 - Source rocks: origin, burial history and maturation
 - Generation of petroleum
 - Migration of petroleum
 - Petroleum reservoir rocks and their properties
 - Oil and gas traps
 - Seals
 - Timing of events and processes

DAY 3

- **Play concept**
- **Exploring for oil and gas –sources of data**
- **Acquisition and interpretation of geological and geophysical data**
 - Seismic sequence stratigraphy
- **Subsurface mapping**
 - Various types of contour maps
- **Reserves:**
 - Definition and classification
- **Reserves estimation:**
 - Volumetric (the deterministic and probabilistic methods)
 - Performance analysis
- **Leads and prospects**
- **Risk and risk analysis**
- **Practical session**

DAY 4

- **Acquisition and interpretation of open hole logs**
 - Various types of well logs
 - Acquisition of well log data
 - Principles of well log data interpretation
 - Practical session
- **The global petroleum industry**
 - Some recent trends in the petroleum industry
 - Importance of oil in modern societies
 - Overview of prices and politics of oil and gas –historical review of the price of oil over the
 - past 150 years (since 1861)
 - The main events of the last decade
 - Review of the major players in the past 25 years –private oil company rankings in terms of
 - turnover and market capitalization
 - State oil company rankings
 - Biofuels –a panacea?
 - Organisation of Petroleum Exporting Countries (OPEC)
 - Definitions of reserves
 - Global distribution of oil and gas reserves
 - Sources of information
 - Giant fields –definition and significance
 - The world's top 25 oil fields –locations and reserves
 - Regions of high potential for future discoveries
 - Global oil and gas production
 - Oil and gas reserves/production ratios
 - Global oil and gas trade and consumption
 - Non-conventional hydrocarbon resources –tar sands, oil shales and heavy oil
 - Future world energy supplies:
 - Concept of 'peak oil and gas'
 - Review of various 'peak oil and gas' scenarios
 - Selected recent publications

COURSE MATERIAL

Full text and all the illustrations used in the presentation