



Fundamentals of Petroleum Geology

A two-day intensive short course:

THIS COURSE WILL EQUIP PARTICIPANTS WITH:

- “ A clear understanding of the terminology and jargon used by petroleum geologists
- “ An understanding of the sources and reliability of various types of geological information
- “ Knowledge of what geological questions to ask in order to gain an understanding of the cost and analyse risk critical elements of a petroleum project
- “ Confidence to carry on a basic technical conversation with a petroleum geologist
- “ Hints about where to look to continue to increase their geological understanding
- “ Ability to critically read press releases and simple geological reports

WHO SHOULD ATTEND?

- “ Petroleum engineers who work with geological input data
- “ Geophysicists with little geological background
- “ Project managers whose teams include petroleum geologists
- “ Investment managers, brokers, analysts wanting to better interpret oil company press releases and other public documents
- “ Government data managers who handle petroleum geological data and need to understand the sources of different types of data
- “ Small-Company Directors who have picked up a large amount of geological information over the years but need a bit of time out to put it all together in a systematic format

“Most impressed with presenter’s ability to effectively communicate knowledge and experience. Answers questions with patience” – Head, Joint Operated Block, Petronas

Brought to you by:



Adrian Williams is an Exploration Consultant with more than 30 years experience in the oil and gas exploration industry, working for a variety of companies, large and small, local and international, including Shell Australia, Bond Energy, Delhi Petroleum, Apache Energy, Petroleum GeoServices, various E&P subsidiaries of Mitsubishi Corporation, Kufpec Australia and Woodside Energy. He has extensive experience gained through a variety of career functions ranging from wellsite geologist to seismic interpreter, and Chief Geophysicist to Exploration Supervisor, he has worked on virtually all of the basins in Australia, as well as New Zealand, Indonesia, Malaysia, India, Cambodia, Philippines, China, Vietnam and the Gulf of Mexico. Prior to that, Adrian spent a number of years in research and teaching at the University of Newcastle (NSW, Australia) and as a Mine Geologist in an underground nickel mining operation. He was also an honorary member of staff at the Department of Geology & Geophysics, Curtin University (Western Australia) where he spent a number of years part-time teaching post-graduate students. Over the past 16 years, through his private company PetroSearch, he now presents a range of oil and gas training courses and consulting services throughout Australia, Southeast Asia, and the Middle East.

Adrian has an Honours degree in geology (BSc(Hons)), a Masters degree in Business Administration (MBA), and a Post-Graduate teaching qualification (Dip Ed). He has published a number of technical papers in Australian and international journals and is the founding editor of the Petroleum Exploration Society of Australia’s (PESA’s) national newsletter.

COURSE OUTLINE

DAY ONE

Basic rock forming processes

- ~ Classification and origin of rocks
- ~ Burial, lithification and diagenesis

Geological time and dating geological events

- ~ How rocks are dated (absolute and relative time)
- ~ Importance of time in rock formation and deformation
- ~ Significance of unconformities
- ~ Lithostratigraphy and chronostratigraphy



EXERCISE: Dating and sequencing structural and stratigraphic events
EXERCISE: Understanding a stratigraphic column

Fundamentals of maps and sections

- ~ Concepts of strike and dip
- ~ Isochores and isopachs
- ~ Key characteristics of maps and sections
- ~ Mapping structure and stratigraphy



EXERCISE: Construction of simple maps and sections

Characteristics of petroleum accumulations

- ~ Nature and origin of traps, sources, seals and reservoirs
- ~ Structural and stratigraphic traps
- ~ Petroleum systems



EXERCISE: Generating leads and prospects

Sedimentary depositional environments

- ~ Types and origins of sedimentary rocks (clastics and carbonates)
- ~ Major depositional environments and their importance to exploration
- ~ Characteristics and distribution of source rocks, reservoirs and seals
- ~ Facies mapping and palaeogeography



EXERCISE: Application of palaeogeographic principles to exploration

DAY TWO

The process of petroleum exploration

- ~ Basin, play and prospect analysis
- ~ Remote sensing and the basics of seismology
- ~ Geology from seismic
- ~ Generating and evaluating prospects

Geological information from wells

- ~ Brief overview of drilling and well completion procedures
- ~ Video – drilling procedures
- ~ Sources and reliability of well data (mud logging, well logging, testing)
- ~ Coring and core analysis
- ~ Working with well logs



EXERCISE: Simple well log analysis
EXERCISE: Reading and understanding geological reports

Fundamentals of production geology

- ~ Role of the production geologist
- ~ Sources and reliability of information
- ~ Reservoir geology and approaches to reservoir modeling



CASE STUDY: Multiple map manipulation

Managing geological uncertainty

- ~ Prospect risking and ranking
- ~ Deterministic versus probabilistic approaches to volumetrics



CASE STUDY: Interpreting press releases

Concepts of reserves

- ~ Sourcing and quantifying uncertainty
- ~ Definitions of reserves
- ~ Approaches to reserves estimation



EXERCISE: Beans, beans and more beans
An exercise in uncertainty!

“Became more confident about previously acquired knowledge. Systematised prior knowledge” – Director, Lion Energy