



Fundamentals of Seismic for Non-Geophysicists

A two-day intensive short course:

COURSE CONTENT

Covers the entire seismic process from acquisition, through processing to interpretation and in doing so shows how each relates to and impacts the other

Presenter spent many years as a consultant to one of the world's largest seismic companies

Course is essentially non-mathematical and makes wide use of diagrams, pictures, demonstrations and short videos to explain complex concepts

Numerous hands-on exercises and case studies are used to clarify and reinforce learnings. As much as possible, students will learn by doing rather than just listening



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.

WHO SHOULD ATTEND?

This course will benefit anyone who needs to communicate effectively with geophysicists and understand geophysical maps, sections and analyses for exploration, development and reserves estimation:

- Geologists with limited geophysics training or background
- Supervisors and managers who need to communicate effectively with geophysicists
- Supply chain and support personnel who wants to more effectively support their seismic crews
- Management, technical and support personnel who want understand the jargon
- Reservoir engineers who liaise with geophysicists and/or work with seismic maps and other inputs
- Seismic interpreters with no processing background, processors with no acquisition background....

"Able to make things visual so it was understandable for everyone", U. Lindauer, Drilling Technical Assistant, Chevron

"Presenter was very good with lots of knowledge and experience. Always open to questions" C. Coffey, Environmental Adviser, Woodside

Brought to you by:



COURSE OUTLINE

DAY ONE

Introduction

- Role and value of seismic data in the E&P chain
- Overview of the seismic method
- A simple seismic experiment

Simplified Seismic Theory

- What causes reflections
- Where reflections come from - primaries and multiples
- Rock properties (especially velocities)
- Understanding bandwidth and phase
- How small can we see - resolution in time and space

Seismic Data Acquisition

- Common Midpoint Stacking Technique
- Field layout for 2-D, 3-D & 4-D surveys
- Seismic sources and sound transmission
- Seismic receivers and other recording equipment
- Acquisition geometries and procedures

• Case study: Cost implications of program design parameters

DAY TWO

Seismic Processing Without the Mathematics

- Pre-processing “housekeeping”
- Filtering and scaling
- Statics and datum correction
- Deconvolution made easy
- Velocity analysis and velocity jargon
- Post-stack processing activities
- Migrating the data back where it came from

Seismic Interpretation

- What can we see: character, stratigraphy, hydrocarbon indicators
- Simple structural interpretation exercise
- Simple stratigraphic interpretation exercise
- Simple depth conversion exercise
- Pitfalls – just when you thought you knew it all!

THIS COURSE WILL EQUIP PARTICIPANTS WITH:

- An understanding of the strengths and limitations of the seismic method, and the costs and risks involved, and how to reduce these
- An ability to communicate more effectively with petroleum geophysicists
- An understanding of the meaning of seismic maps and sections and knowledge of how to judge the quality and limitations of these important exploration tools.
- An overview of the latest developments in seismic technology.
- Application of new-found knowledge to a series of simple illustrative exercises to aid understanding and gain confidence in use
- Knowledge of what types of questions to ask in order to assess the quality of a seismic project