

N578: Practical Seismic Interpretation

Instructor(s): Rebecca Bell

Format and Duration

Classroom - 3 Days

Virtual - 5 Sessions

Summary

Business impact: This course will give participants knowledge and confidence to conduct **pragmatic seismic interpretations** and provide them with a **toolkit to produce high-quality, geologically viable interpretations** of the subsurface. These skills are vital for **prospect identification, site-survey analysis pre-drilling, and geological model development.**

This course will provide participants with a complete introduction to modern seismic reflection data analysis with practical application to the conventional, unconventional, and energy transition sectors. We will explore fundamental seismic reflection principles, considerations in seismic data acquisition, and the key steps involved in seismic data processing. This knowledge is essential to utilise modern seismic attribute methods and avoid common pitfalls in seismic interpretation. We will cover both conventional seismic-stratigraphic interpretation as well as quantitative interpretation methods. We will also consider the future of seismic interpretation, including the use of machine learning and artificial intelligence.

Learning Outcomes

Participants will learn to:

1. Understand the basic physics involved in seismic imaging and the limitations.
2. Develop the skills and confidence to conduct pragmatic seismic-stratigraphic interpretations to produce geologically viable models.
3. Appreciate the wide variety of seismic attributes available and when and where to apply them.
4. Develop an awareness of the key deliverables of the modern seismic data interpreter.

Training Method

This is a classroom or virtual classroom course comprising a mixture of lectures, discussion, case studies, and practical exercises.

Who Should Attend

This course is aimed at geoscientists who are new to the petroleum industry and who require tools and techniques for the practical interpretation of seismic data. Petrophysicists, engineers, and managers who would like to learn more about seismic interpretation would also benefit from attending this course.

Course Content

- Seismic reflection principals: wave propagation, reflection coefficients, seismic resolution
- Field equipment and survey design: land and marine surveys, 2D and 3D
- Seismic data processing: CMP gathers, NMO corrections and stacking, static corrections, filtering, deconvolution, semblance analysis, pre and post stack migration
- Introduction to seismic interpretation: synthetic seismic traces and seismic-well ties, strategies for producing geologically viable interpretations

N578: Practical Seismic Interpretation

Instructor(s): Rebecca Bell

Format and Duration

Classroom - 3 Days

Virtual - 5 Sessions

- Seismic stratigraphy and structural analysis: reflection terminations, seismic facies analysis, fault interpretation
- 3D Seismic data: benefits of 3D vs 2D seismic data, mapping strategies for 2D and 3D data
- Seismic attribute analysis: post-stack and pre-stack seismic attributes and multi-attributes
- Time is not depth: methods to convert seismic reflection data from two-way travel time to depth
- The key deliverables of the modern seismic data interpreter
- The future of seismic interpretation: the application of machine learning in seismic interpretation