N240: Using Seismic Data from Acreage Capture to Early Field Development

Instructor(s): Fred Schroeder

4 Days	Competence Level: Foundation
Classroom Course	

Summary

In this workshop styled course, seismic interpreters take an actual field from acreage acquisition, through locating a discovery well, and into field development. Through hands-on exercises, participants learn about bidding on blocks, locating a wildcat well, tying a well to seismic data, mapping reservoir structure and quality from 2D and 3D seismic data, estimating recoverable reserves and selecting the location for a production platform.

Learning Outcomes

Participants will learn to:

1. Tie well data to seismic sections.
2. Interpret horizons and faults on 2D and 3D seismic data (paper).
3. Conduct a regional evaluation to identify high-potential blocks.
4. Generate time structure and isochron maps.
5. Design and cost a 3D seismic survey.
6. Use seismic attributes to understand reservoir facies.
7. Build a reservoir quality map.
8. Map the extent of a field using a DHI.
9. Estimate in-place reserves.
10. Plan a platform for initial field development.

Duration and Training Method

This is a 4-day learn-by-doing workshop with 60% of the time spent interpreting paper seismic data and constructing maps. Training is conducted by emphasizing hands-on activities with practical interpretation exercises. Lectures introduce each topic and prepare the attendees to work realistic exercises. Each exercise is designed to reinforce the learning objectives. Questions and discussions are encouraged throughout the workshop. Attendees work individually and in teams and have opportunities to review their work.

Who Should Attend

Early career seismic interpreters, geoscientists, or engineers who have a basic understanding of the seismic method and also need to build their basic seismic interpretation skills will benefit from this course. Students taking this course should have completed an introductory course in reflection seismic technology or have at least one year of equivalent work experience. Working through the class dataset, attendees will gain practical interpretation and prospect evaluation skills that can immediately be applied to opportunity identification, exploration and early field development tasks at their respective companies.

Prerequisites and Linking Courses

The prerequisite for this course is a basic understanding of reflection seismology, such as can be obtained in N085 (Introduction to Seismic Interpretation), or N080 (Geophysics for Subsurface Professionals).

Course Content

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Seismic data will be worked at four different scales:

- Regional scale for block evaluation/bidding
- 2D data at a block scale to locate an exploration well
- 3D data at a prospect scale to plan development wells
- 3D data at a field scale to determine reservoir architecture

Day 1

- Regional geology of the study area
- Basics of the seismic method
- Generate a time-structure map (2D seismic) for acreage evaluation
- Bid on available blocks
- Locate a wildcat well on a newly-acquired block

Day 2

- Tie the wildcat well to the seismic data
- Design and cost a 3D seismic survey
- Basics of 2D and 3D seismic interpretation
- Map a major fault using 3D seismic data
- Map the top and base of the reservoir using 3D seismic data
- Generate a detailed time structure map for the top of the reservoir

Day 3

- Generate a reservoir isochron map
- Use seismic attributes to predict depositional environments
- Develop a reservoir quality map
- Use a DHI to map the extent of the field
- Estimate recoverable reserves

Day 4

- Select development well locations
- Tie production wells to the seismic data
- Interpret horizons at a production scale
- Plan and position a platform
- Present the development plan (by teams)