TECHNICAL
EDUCATION
ACADEMY

School of Engineering

COURSE PROGRAMME

000590

GEOP007 - Analysis of Structural Traps in Extensional Settings



Learn from the Best in the Business!

Course overview

Advanced level

Why take this course

The "Analysis of Structural Traps in Extensional Settings" training program is an intensive course designed to equip participants with the essential principles, techniques, and real-world applications related to structural traps in extensional settings. Extensional terranes, being one of the most common structural styles, form the foundation of many continental and deepwater margins and host some of the world's largest oil provinces. The advent of 3D seismic technologies has revolutionized structural mapping, making this course vital for professionals and students in the oil and gas industry.

The training program covers a range of topics, including extensional structural styles and their development, elements of extensional systems in 2D and 3D views, and the impact of structural relief on depositional systems. Participants will learn about restoration and validation techniques, fracture mechanics in extensional environments, and the factors affecting fault sealing in hydrocarbon exploration.

Throughout the course, delegates will engage in hands-on exercises such as seismic interpretation tasks and field studies to reinforce the concepts learned. By the end of the training program, participants will be well-equipped to make informed decisions and enhance their skills in hydrocarbon exploration and development projects in extensional terranes, staying up-to-date with the latest advances and techniques in this critical area of the oil and gas industry.

Who it is for and how it helps

This course is designed for professionals and students involved in the oil and gas industry, particularly those who are interested in the exploration and development of hydrocarbon resources in extensional settings. The target audience includes:

• Geoscientists: Geologists, Geophysicists, and Petrophysicists who are involved in the exploration, appraisal, and development of hydrocarbon resources in extensional basins.

• Reservoir Engineers: Professionals responsible for understanding reservoir architecture, dynamics, and performance in extensional settings.

• Structural Geologists: Researchers and professionals focused on the analysis and interpretation of structural geology in extensional terranes.

• Geoscience students: Undergraduate and graduate students pursuing degrees in geology, geophysics, or related disciplines who are interested in specializing in structural geology or hydrocarbon exploration in extensional settings.

• Exploration Managers and Team Leads: Decision-makers responsible for guiding exploration strategies and managing exploration projects in extensional basins.

• Academics and Researchers: Professionals working in academic or research institutions who are interested in understanding the fundamental processes and techniques involved in the analysis of

Course overview — continued

structural traps in extensional settings.

• Service Company Professionals: Technical experts from service companies providing specialized services, such as seismic data acquisition, processing, or interpretation, in extensional settings.

By attending this course, participants will gain a comprehensive understanding of the fundamental principles, techniques, and real-world applications related to the analysis of structural traps in extensional settings. This knowledge will enable them to make informed decisions and enhance their skills in hydrocarbon exploration and development projects in these terranes.

What you will learn

- Understand the fundamental principles and processes governing the formation and evolution of extensional terranes and their associated structural traps
- Recognize and classify various types of extensional structural styles and their relationship with other structural styles
- Analyze and interpret structural elements in extensional systems, including fault linkage, relay ramps, intrabasinal geometries, and full and half grabens
- Apply 3D seismic interpretation techniques to better understand the structural architecture and development of extensional basins
- Utilize kinematic and restorative thinking to validate structural interpretations and predict basin evolution in extensional settings
- Evaluate the impact of depositional systems on reservoir quality and trapping mechanisms in extensional terranes
- Comprehend the basics of fracture mechanics and fault sealing processes in extensional environments, and their implications for hydrocarbon exploration and production
- Identify and assess the potential of structural traps in extensional settings using real-world examples and case studies
- Apply the knowledge gained from the course to make informed decisions and enhance exploration strategies in extensional basins
- Effectively communicate and collaborate with multidisciplinary teams involved in hydrocarbon exploration and development projects in extensional settings

Curriculum

Modules 01–06

01 Introduction

- Course objectives and overview
- Importance of extensional terranes in hydrocarbon exploration
- Overview of structural traps in extensional settings

02 Extensional Structural Styles

- Different types of extensional terranes and their development
- Relationships between extensional and other structural styles

03 Evolution of Extensional Systems

- Rift initiation and development
- Transition from rift basin to passive margin
- Influence of salt and strike-slip tectonics on basin development

04 Elements of Extensional Systems

- Fault linkage and relay ramps
- Intrabasinal structural geometries
- Full and half grabens and their associated features

05 3D Seismic Interpretation

- Seismic data acquisition and processing in extensional settings
- Use of 3D seismic data for structural interpretation
- Integration of outcrop, subsurface, and seismic data

06 Restoration and Validation

- Principles of kinematic and restorative thinking
- Restoration algorithms for extensional systems
- Validation of structural interpretations

Curriculum

Modules 07–11

07 Depositional Systems in Extensional Settings

- Influence of structural relief on depositional systems
- Terrestrial and marine depositional environments
- Impact of depositional systems on reservoir quality

08 Fracture Mechanics and Fault Sealing

- Fundamentals of fracture dynamics in extensional settings
- Evolution of extensional faults and fracture systems
- Factors affecting fault sealing and implications for hydrocarbon exploration

09 Structural Traps in Extensional Settings

- Types of traps associated with extensional geometries
- Case studies of successful hydrocarbon exploration in extensional terranes
- Deformational effects on reservoir quality and trapping mechanisms

10 Practical Exercises

- Seismic interpretation exercises
- Field studies and outcrop analysis
- Restoration and validation exercises

11 Course Summary and Wrap-up

- Key takeaways from the course
- Future trends and challenges in extensional settings exploration
- Closing remarks and Q&A session

Participation and contacts

Joining the programme

Contact the Academy and quote course code 000590 to confirm dates, delivery format, prices and enrolment terms.

Training for your team

Tell us your business goals, the roles and number of participants, and your preferred dates and location. This will help us discuss the right training option.

Preparing for the programme

The published programme does not specify any prerequisites. Contact us before enrolling to confirm how to prepare.

Discuss your training needs

mail@tecedu.org
www.tecedu.academy

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