January 25-29, 2021

November 8-12, 2021

"Structural Validation and Cross-section Balancing"

by Catalina Luneburg, PhD

This workshop is conducted online with 3.5 - hr sessions over 5 days

This workshop combines seismic interpretation and structural validation techniques in order to create a balanced interpretation from the start. Seismic interpretation pitfalls are discussed and the seismic expression of main structural features is studied in different examples. Methods are demonstrated that validate the seismic interpretation of faults and folds by predicting a valid fault trace and hangingwall shape using manual tools.

We introduce the underlying concepts and practical techniques to recognize and interpret structural geometries, analyze their validity and correct compatibility problems through the balancing and restoration process. The course uses seismic examples from rift basins and passive margins, salt-dominated basins and Fold- and Thrust Belts to introduce hands-on techniques which are also demonstrated using Lithotect structural restoration software.

Catalina Luneburg, PhD

Catalina Luneburg is the owner and director of TerraEx Group LLC and responsible for developing and promoting the new services model as well as daily operations. She is a recognized Structural Geology on geologic interpretation and validation, Structural Geology modeling, cross section balancing and 2D/3D time-step restorations as well as HC reserve estimates, 3D framework building and fracture predict ion analyses. Previously, Luneburg was a Product Manager and Senior Scientist at Landmark/Halliburton developing geomodelling workflows and managing/designing software applications such as LithoTect and DecisionSpace. For several years she worked with the original LithoTect designer team at GeoLogic Systems as well as with MOVE software at Midland Valley.
Luneburg holds a doctorate in Natural Sciences from the Swiss Federal Institute of Technology in Zurich, Switzerland, and a master's degree (Diploma) in Geology/Paleontology from the Ludwig-Maximilian University in Munich, Germany. She has published extensively in her field including several books, and has authored a number of patents. She is fluent in English, German, and Spanish, and proficient in French and Italian.

This workshop will adjust to participants experience level and interest as much as possible. Therefore, we will ask you beforehand to provide some information why you are taking this course, what your experience level is with the subject matter and the type of work you want to apply the learned content. In addition, we are offering free follow-up consultation via email or phone to discuss and advise on your specific challenges and projects.

This course is available for single participants as well as small groups (multi-client) and large groups (inhouse) – see below.

Main Topics

- Recognizing stratigraphic and structural features in seismic section
- Seismic interpretation of different structural styles
- Interpretation validation concepts
- Cross-section Balancing introduction and techniques
- Method of fault prediction and depth to detachment
- Structural characterization of tectonic assemblages and associated HC traps
- Predict and interpret trap geometries in areas of poor and subseismic scale data

Workshop Outline

Session 1 (3.5 hrs)

Introduction and Basics

- The economic value of validating and balancing your structural interpretation
- Recognizing stratigraphic and structural features in seismic section
- Pitfalls, common mistakes and challenges
- How do we know our section interpretation is valid?
- Structural styles and traps in HC basins

Session 2 (3.5 hrs)

Validation concepts and Balancing techniques

- The concept of Cross section Balancing
- Principles of section balancing: line length and area balancing
- Kinematic models and restoration algorithms: flexural slip, vertical/oblique shear, rigid block rotation, area balancing, trishear
- Restoration methods: time-step restorations, backstripping, forward modeling
- Method of fault prediction and depth to detachment
- Forward modeling techniques to model shape of hanging wall

Session 3 (3.5 hrs)

Compressional Focus

- Fold- and Thrust Belts, features and geometries
- Faults and Folds, fault-related folding (fault propagation, fault bend, trishear)
- Compressional restoration techniques

Session 4 (3.5 hrs)

Extensional Focus

- Extensional tectonic basins
- Rift Basins
- Passive Margins
- Normal faults and growth faults
- Extensional restoration techniques

Session 5 (3.5 hrs)

Applications and case studies – chose your topics

- Deepwater Fold- and Thrust Belts (gravity-driven mechanisms)
- Strike-slip Systems
- Salt-dominate Basins: autochthonous and allochthonous salt system
- Salt tectonics and restoration techniques

COURSE LOGISTICS AND REGISTRATION

Time: Monday, Jan 25 – Friday, Jan 29, 2021 at 8 – 11:30 am Central Time US (Houston) or per agreed time
Monday, Nov 08 – Friday, Nov 12, 2021 at 8 – 11:30 am Central Time US (Houston) or per agreed time

Venue: ZOOM Meeting Platform. If you require a different online meeting platform, we can arrange for that.

Included: Manual pdf, certificates on request follow-up support

Price: Single participant USD 975/900*; Multi-client USD 3,250, Inhouse USD 4,250

Register: Follow link to register

CONTACT TerraEx Group at info@terraexgroup.com or ++ 303 319 3043

Single participant - regular price for 1 participant (public schedule)

Single participant - discount price for 1 participant unemployed, academics and > 1 course booked (public schedule)*

Multi-client price for group up to 5 participants from the same company (public or custom schedule)

Inhouse price for group up to 25 participants from the same company (custom schedule)