Seismic Acquisition and Processing Quality Control Training Course

30 May – 3 June 2027
Muscat

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Training Center

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Ref: 868_165609 **Date:** 30 May – 3 June 2027 **Location:** Muscat **Fees:** 6500 Euro

Overview

Seismic Acquisition and Processing Quality Control Training Course is a one-week course for geoscientists, geophysicists, acquisition teams, and processing specialists who leave with a Seismic Acquisition-to-Image Decision Pack. Participants connect survey objectives, geometry, sampling, field records, noise diagnosis, processing parameters, and image quality. The course addresses handoff errors by tracing decisions from source and receiver design through migration and final quality review. Agile Leaders Training Center develops seismic workflow quality practice.

Who Should Attend

- Exploration functions responsible for subsurface imaging requirements and survey objectives
- Acquisition functions responsible for geometry, recording parameters, and field quality
- Processing functions responsible for sequence design, parameters, and diagnostic gathers
- Interpretation functions responsible for judging image fitness and processing consequences
- Technical management functions responsible for seismic scope, acceptance, and contractor review

The course assumes participants use seismic sections and basic reflection terminology; it leaves out acquisition equipment maintenance, advanced inversion, reservoir interpretation, and software administration.

Departments and Industries

The course supports departments and industries that acquire, process, review, or use seismic reflection data.

- Exploration geophysics, seismic acquisition, processing, and interpretation
- Oil and gas operators, geophysical contractors, and subsurface consultancies
- Marine surveys, land surveys, and energy-service organizations
- Research institutions, technical assurance, and data management functions

Learning Objectives

By the end of this course, participants will be able to:

- Build survey objectives and geometry checks around imaging needs.
- Analyze sampling, aliasing, fold, offset, azimuth, and field noise.
- Evaluate geometry assignment, statics, deconvolution, and velocity evidence.
- Compare stack and migration results through processing quality controls.
- Prioritize acquisition and processing actions in an image decision pack.

Course Agenda

Day 1: Define Survey Decisions

- Imaging Objective and Target Resolution Matrix
- 2D and 3D Survey Design Comparison
- Source, Receiver, Offset, and Azimuth Geometry Map
- Fold, Bin, and Migration Aperture Review
- Acquisition Constraint and Tradeoff Register

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Day 2: Control Sampling and Field Quality

- Temporal Sampling and Nyquist Check
- Spatial Sampling and Aliasing Diagnostic
- Source Signature and Receiver Response Record
- Field Record Noise and Signal Window Review
- Acquisition Quality Control Dashboard

Day 3: Build the Processing Sequence

- SEG-Y Header and Geometry Assignment Audit
- Amplitude Recovery and Filtering Decision Sheet
- Deconvolution Operator and Wavelet Review
- Elevation and Residual Statics Diagnosis
- Noise Attenuation and Signal Preservation Matrix

Day 4: Evaluate Imaging Quality

- Velocity Spectrum and Picking Evidence
- Normal Moveout and Stretch Quality Check
- Common Midpoint Stack Comparison Panel
- Prestack and Poststack Migration Decision Map
- Processing Sequence and Image Acceptance Review

Day 5: Practice Acquisition-to-Image QC

- Exercise: Diagnose Geometry and Header Errors
- Exercise: Resolve Sampling and Aliasing Risks
- Exercise: Compare Deconvolution and Statics Results
- Exercise: Review Velocity, Stack, and Migration Panels
- Capstone: Seismic Acquisition-to-Image Decision Pack

Practical Exercises

The course uses suggested activities based on land and marine seismic acquisition and processing cases.

- Suggested activity: compare geometry alternatives against target resolution, fold, offset, and aperture needs.
- Suggested activity: identify sampling and noise problems in field records and document corrective actions.
- Suggested activity: review geometry, statics, deconvolution, and velocity quality-control panels.
- Suggested activity: approve or revise a stack and migration sequence using traceable evidence.

FAQs

Who suits seismic acquisition and processing quality control training, and what does it assume?

Exploration, acquisition, processing, interpretation, and technical assurance functions suit the training. It assumes familiarity with seismic sections and reflection terminology.

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How does seismic acquisition and processing QC differ from seismic interpretation training?

Acquisition and processing QC focuses on how survey and processing decisions shape data and image quality, while interpretation training focuses on extracting geological meaning from the resulting sections and volumes.

Why is seismic geometry assignment important in processing?

Geometry assignment links every trace to source and receiver locations, offset, azimuth, and subsurface position, so errors can distort velocity analysis, moveout, stacking, and migration.

How do sampling and aliasing affect seismic image quality?

Sampling determines which temporal and spatial frequencies can be represented; inadequate sampling can create aliased energy that cannot be reliably separated from real events later.

What should a seismic processing quality review compare?

A quality review should compare diagnostic gathers, spectra, statics, velocities, moveout, stacks, migrations, amplitude behavior, noise removal, and the traceability of parameter decisions.

Conclusion

Participants take back a Seismic Acquisition-to-Image Decision Pack containing geometry checks, sampling diagnostics, field records, processing evidence, velocity reviews, and image acceptance records. It changes separate acquisition and processing reviews into one traceable quality workflow. The pack supports clearer handoffs, defensible parameters, preserved signal, and fit-for-purpose seismic images.