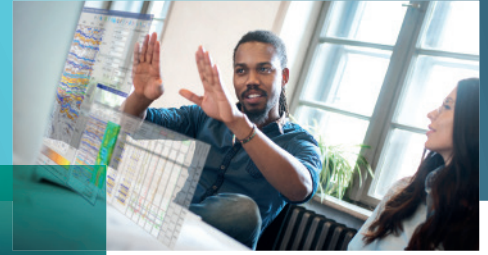# AZI

Azimuthal

Quantify anisotropy and improve understanding of azimuthal illumination effects

Rich-azimuth acquisition methods improve seismic image quality by increasing target illumination, boosting signal-to-noise, and accounting for strata-parallel velocity effects. Interpretation is commonly carried out on full-azimuth partial angle stacks, which average traces in all azimuth directions. However, splitting the resulting gathers and stacks into partial-azimuth sectors can help to quality-assure the amplitude information, identify azimuthal anisotropy, and select the best azimuth combinations for structural interpretation.

The Sharp Reflections **AZI** toolkit provides all the tools needed to leverage today's rich-azimuth datasets. Our multidimensional seismic data model preserves all offsets, angles and azimuths, and allows optimal data conditioning, including azimuth-dependent residual moveout corrections. AZI data visualization helps you to minimize uncertainty in your structural interpretations, develop deeper, purer views of your reservoir, and avoid shallow drilling hazards.

Our amplitude analysis tools are also azimuth aware, and automatically generate maps for all angles and azimuth sectors. Users can quickly identify anisotropic velocity and amplitude effects that can be used to predict mechanical stability of overburden layers, and fracture distribution in tight, unconventional reservoirs.

Key capabilities

→ Common-offset, common-azimuth sectoring
- Create sectored gathers on the fly, with full control over density of azimuth and offset bins
- Optional 5D trace interpolation can be switched on and off to fill all sector bins
- Intuitive data density plots to guide choice of parameters and show population of common offset vector (COV) traces for any sector selection

→ Interactively stack COV/common offset, common azimuth (COCA)/common incident, common azimuth (CICA) gathers by selecting any set of gather traces

→ Azimuthal velocity estimation
- The residual moveout (RMO) analysis tool now automatically loops over all azimuths and outputs a velocity ellipse containing Vfast, Vslow, and direction of Vfast
- Results can be fed directly to the velocity-versus-azimuth (VVAZ) analysis modules

>>

PRO   QAI   INV   AZI   4D

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→ Amplitude vs azimuth (AVAZ)

- – Extract amplitudes at all angles and azimuths
- – Compute azimuthally dependent and azimuthally averaged amplitude versus offset (AVO) attributes
- – Display maps of intercept, averaged gradient, azimuth gradient, and anisotropic direction
- – Interrogate and assess confidence with misfit analysis

→ Velocity vs azimuth (VVAZ)

- – Determine azimuthal RMS velocity ellipse parameters from horizon travel times or azimuthal RMO
- – Invert to Vint between two layers using anisotropic Dix method
- – Results reported as Vfast, Vslow, and azimuth of Vfast
- – Display maps showing magnitude and direction of Vfast and Vslow

All the data for the best decisions

Sharp Reflections is the industry's only software platform built on a powerful compute and display engine designed specifically for HPC, for use on your premises or in the cloud.

Our integrated platform enables you to start analyzing and interpreting seismic data as soon as post-migration processing begins. No information is wasted as you reduce uncertainty and fine tune your reservoir characterization to help achieve trustable exploration, drilling and production decisions.

PRO
Prestack data enhancement

QAI
Quantitative amplitude interpretation

INV
Inversion

AZI
Azimuthal

4D
4D time-lapse

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