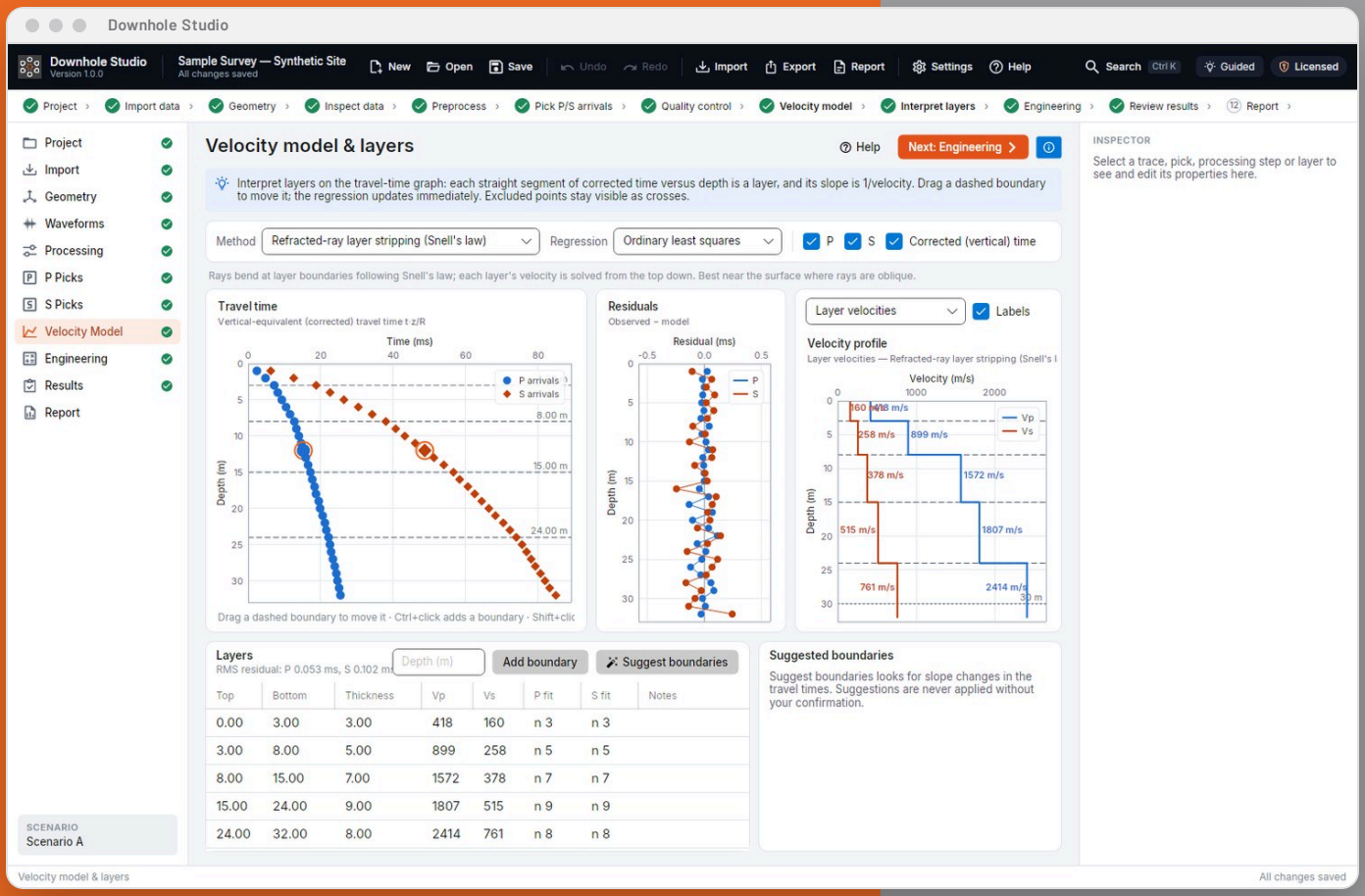
QUAKELOGIC

QUAKELOGIC

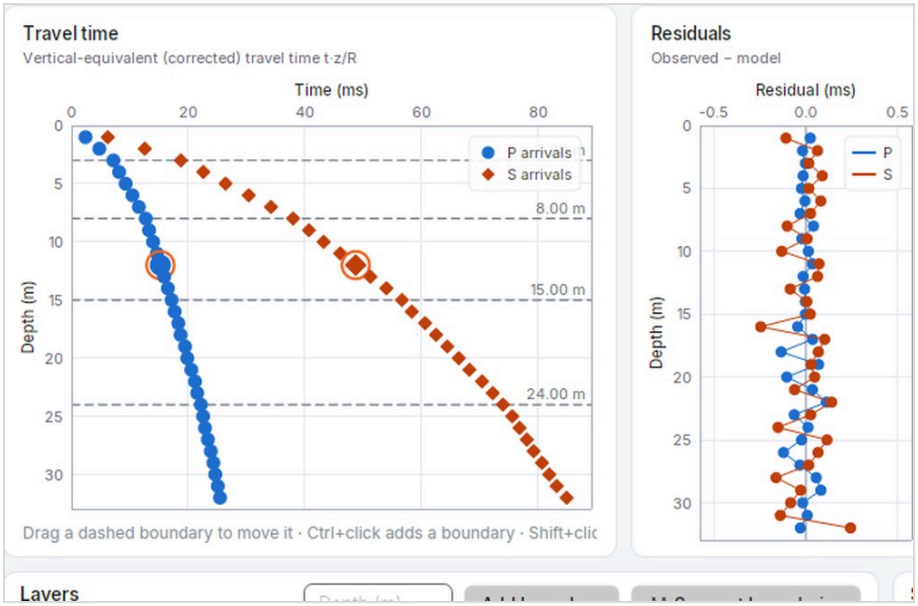
DOWNHOLE SEISMIC SOFTWARE

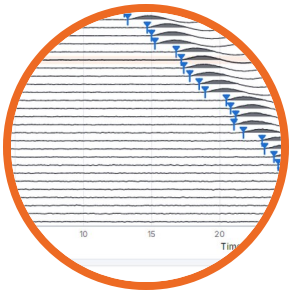
DOWNHOLE STUDIO

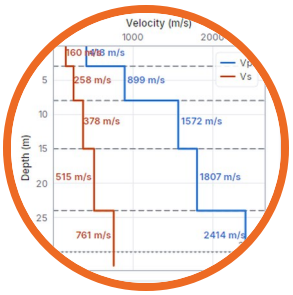


DOWNHOLE STUDIO

DOWNHOLE SEISMIC ANALYSIS SOFTWARE







FROM FIELD RECORDS TO A DEFENSIBLE VS PROFILE

Downhole Studio is QuakeLogic's Windows software for downhole seismic testing. It takes SEG-2 records from a borehole survey through validated import, non-destructive processing and trigger correction, explained P and S picking, layer interpretation with four velocity methods, elastic moduli and Vs30 to a branded report. Raw data are never modified and every step is recorded.

- Validated import: every file is inspected before it is accepted, and corrections are applied only when the analyst approves them.
- Picks you can explain: each automatic pick carries a confidence score built from signal quality, sharpness and agreement.
- Honest results: density is never assumed, Vs30 is never silently extrapolated and invalid moduli are withheld and flagged.
- Client-ready output: branded PDF reports, full-precision Excel tables, figures and an audit record from one project file.

STANDARD FEATURES »

- SEG-2 import with validation
- Byte-exact raw data archive
- Channel profiles & geometry
- Live borehole diagram
- Non-destructive processing
- Butterworth & notch filters
- Reference trigger correction
- AIC, STA/LTA & MER pickers
- Explained pick confidence
- S+ / S− difference traces
- Polarization & rotation
- Four velocity methods
- Robust Huber regression
- Suggested layer boundaries
- Moduli with explicit density
- Vs30 & custom intervals
- Automatic quality control
- Branded PDF report
- Excel, CSV, PNG, SVG export
- Undo, snapshots, scenarios

QUAKELOGIC

KEY FEATURES

- Inspects every SEG-2 file before import — sample rates, missing channels, duplicates and depth order — and never repairs questionable data silently.
- Keeps the original records byte-for-byte with SHA-256 checksums; every processing step works on a copy and can be switched off, edited or undone.
- Corrects trigger delay and shot-to-shot jitter from reference-geophone onsets, keeping raw and corrected times side by side.
- Picks P and S arrivals with AIC, STA/LTA or modified energy ratio, and explains each confidence score: SNR, sharpness, agreement and consistency.
- Confirms shear arrivals with opposite-direction shots, (S+ – S–)/2 difference traces, polarization analysis and per-depth rotation, applied only on request.
- Builds the layer model with regression, pseudo-interval, true-interval or Snell's-law refracted-ray layer stripping, with draggable boundaries.
- Reports Poisson's ratio and moduli only with explicit density, and Vs30 from measured depth only — extrapolation is labelled everywhere.
- Produces a QuakeLogic-branded PDF report with methodology, QC, figures, tables and the full processing history, ready for review.

PRODUCT FEATURES

Data import
SEG-2 rev. 1, 16/32-bit integer and 32/64-bit float, either byte order; files or whole folders.

Geometry
Ground or collar depth reference; independent P and S offsets; depth assignment by order or file; channel profiles.

Processing & trigger
Mean/trend removal, taper, Butterworth and notch filters, AGC, balance, polarity, shifts, resampling; trigger correction.

Picking
AIC, STA/LTA, MER; confidence scores; keyboard-driven review; S+ / S– comparison; cross-correlation checks.

Velocity model
OLS or Huber layer regression, pseudo- and true-interval, refracted-ray stripping; BIC boundary suggestions.

Engineering
Vp/Vs, ν, G, E, K; measured, constant or labelled empirical density; Vs30 and custom intervals.

Outputs
Branded PDF report, Excel and CSV tables, PNG / SVG / PDF figures, JSON audit record, .dhsx project.

For more information about the features, specifications, and licensing of Downhole Studio, please contact QuakeLogic.

SOFTWARE CONFIGURATION

COMPONENT	CONFIGURATION
Application	Native Windows desktop application (64-bit)
Analysis engine	Built in; runs locally, no cloud service
Project file	.dhsx: original records, interpretation, history
Raw data	Kept byte-for-byte with SHA-256 checksums
Editing model	Undo / redo, snapshots and scenarios
Saving	Atomic save with backup copy; recovery copies
Instrument profiles	QuakeLogic 3C Borehole and custom profiles
Interface modes	Guided and Expert; light and dark themes
Help	Built-in user guide (F1) and command palette
Sample project	Complete synthetic survey with a known answer
Updates	Signed, verified in-app updates
Licensing	Per computer; offline activation key

SYSTEM REQUIREMENTS & DATA

SPECIFICATION	VALUE
Operating system	Windows 10 (21H2 or later) or Windows 11, 64-bit
Memory	8 GB RAM recommended
Disk space	About 200 MB plus projects
Administrator rights	Not required (per-user installation)
Internet	Not needed (activation and use are offline)
Seismic input	SEG-2 rev. 1; 16/32-bit integer, 32/64-bit float
Report and tables	PDF; Excel (.xlsx) and CSV at full precision
Figures	PNG (any pixel size), SVG, PDF; clipboard
Audit record	JSON: files, processing, picks, methods, version

INCLUDED WITH DOWNHOLE STUDIO

FIELD GUIDE

Step-by-step borehole, source and recording procedure, with checklists and a printable field log sheet.

TRAINING VIDEO

A narrated, captioned walkthrough of the complete workflow, from import to the finished report.

LICENCE TRANSFER

Deactivate on one computer and activate on another; projects are never locked to a licence.

QUAKELOGIC SUPPORT

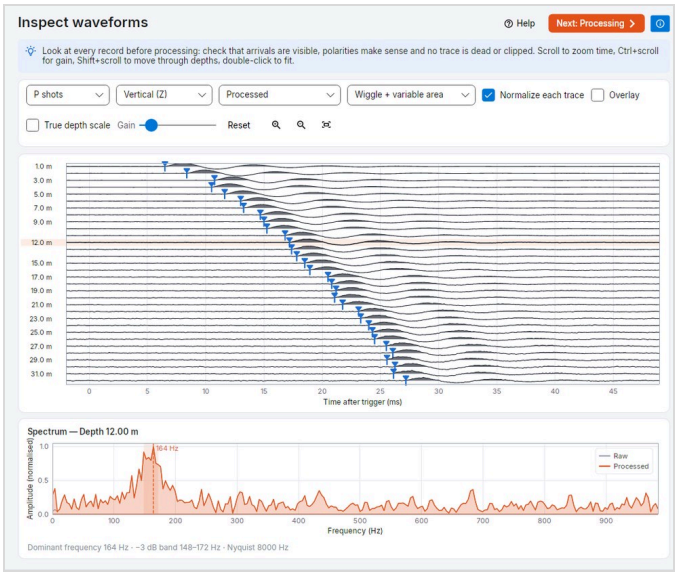
Email support@quakelogic.net with the diagnostic package. Email response time: 3 business days.

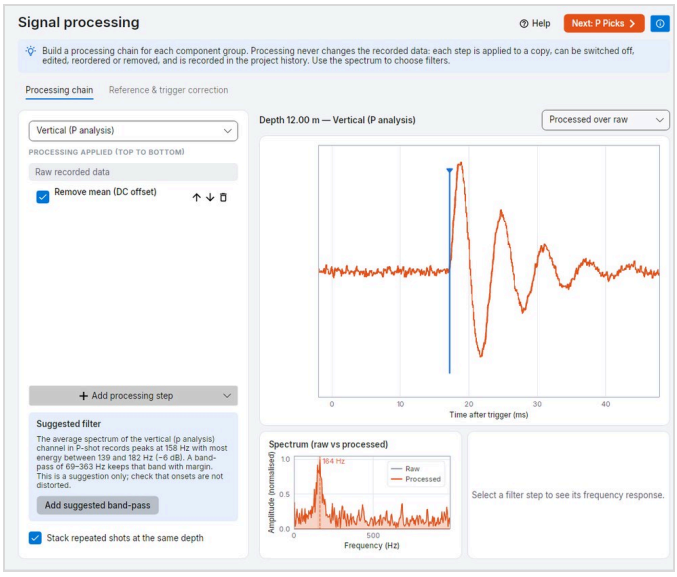
TECHNICAL SPECIFICATIONS

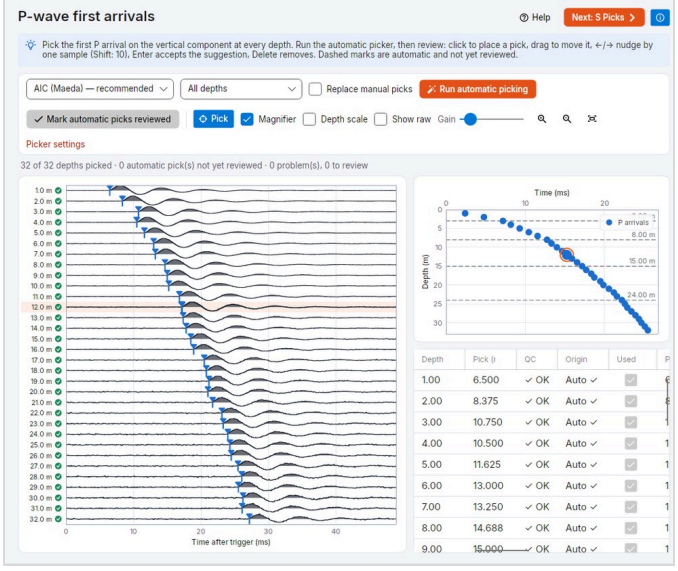
SPECIFICATION	DESCRIPTION
Platform	Windows 10 (21H2+) or 11, 64-bit desktop
Memory / disk	8 GB RAM recommended; about 200 MB
Installation	Per-user setup, no administrator rights
Seismic format	SEG-2 revision 1, either byte order
Sample types	16/32-bit integer, 32/64-bit float
Not supported	20-bit packed (code 3), reported
Channel layout	Vertical, X, Y, reference; saved profiles
Depth reference	Ground surface or collar with stick-up
Filters	Butterworth HP / LP / BP, notch; causal or zero-phase
Other steps	Detrend, taper, AGC, balance, shift, resample
Trigger	Subtract reference onset or align to median
Pickers	AIC, STA/LTA, modified energy ratio
S-wave tools	S+ / S– difference, stacking, rotation
Correlation	Opposite shots and adjacent depths

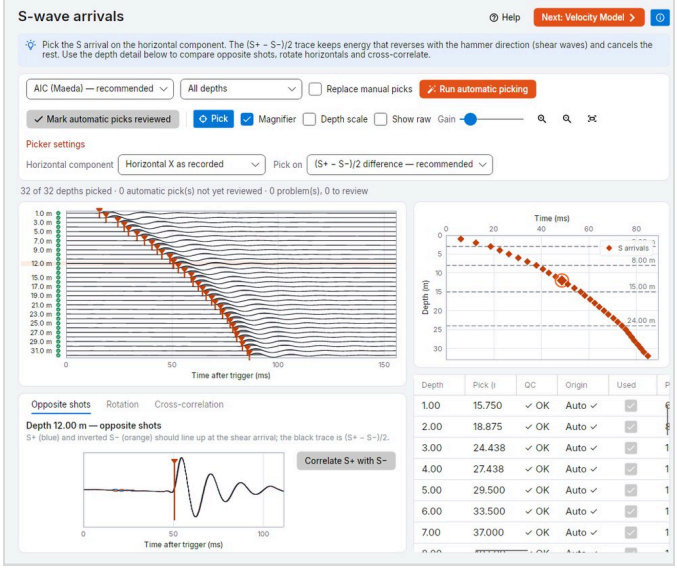
SPECIFICATION	DESCRIPTION
Ray geometry	Straight-ray correction or Snell's law
Velocity methods	Layer regression, pseudo- and true-interval, refracted-ray
Regression	Ordinary least squares or Huber (robust)
Layer suggestion	Piecewise-linear segmentation, BIC
Elastic properties	Vp/Vs, ν, G, E, K per layer
Density	Measured, constant, Gardner or Brocher
Vs30	Measured depth only; extrapolation labelled
Quality control	Automatic checks; Good / Review / Incomplete
Report	Branded PDF with processing history
Exports	XLSX, CSV, PNG, SVG, PDF, JSON audit
Editing	Undo / redo, snapshots, scenarios
Safety	Atomic save, backup copy, recovery
Licensing	Per computer; offline activation key, no internet needed
Validation	87 / 87 checks; Vs30 within 0.2–1.2 %

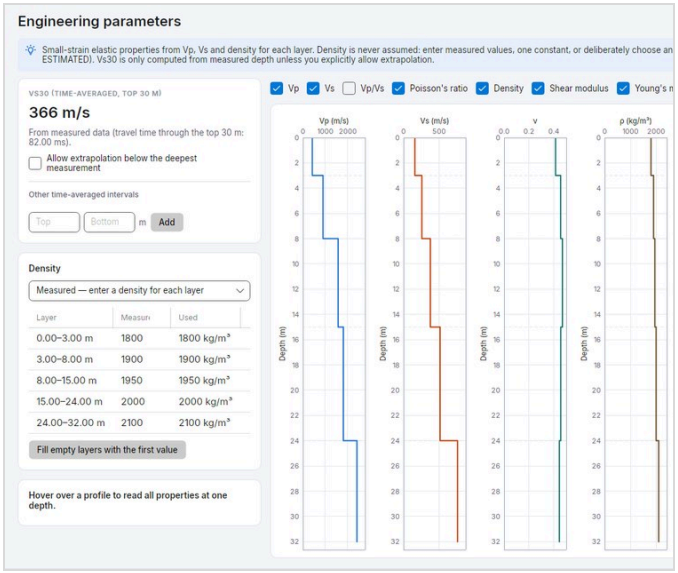
PRODUCT GALLERY

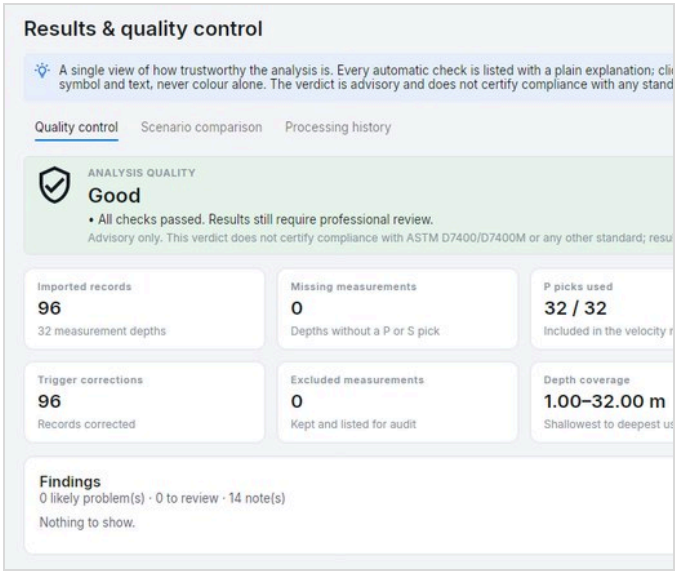






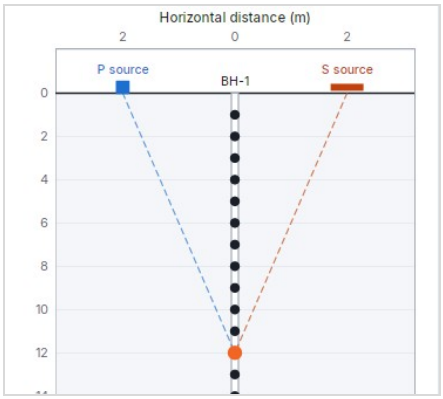




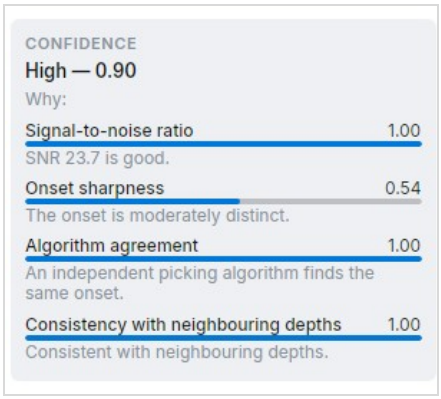


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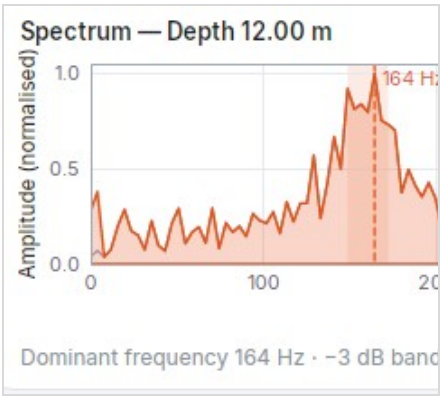
INTERFACE CLOSE-UPS



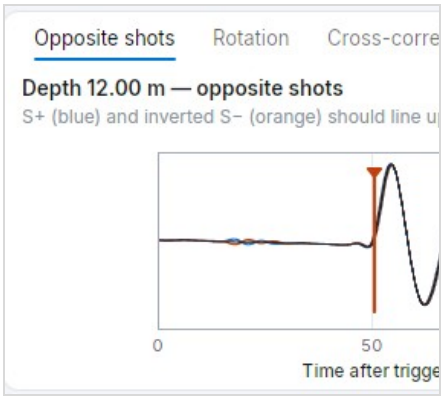
LIVE BOREHOLE DIAGRAM



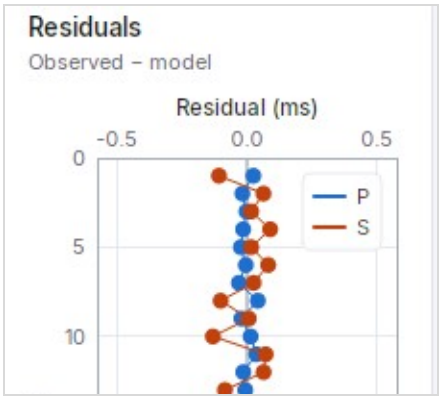
EXPLAINED PICK CONFIDENCE



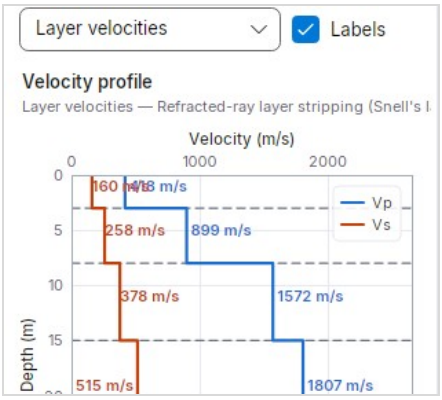
RAW VS PROCESSED SPECTRUM



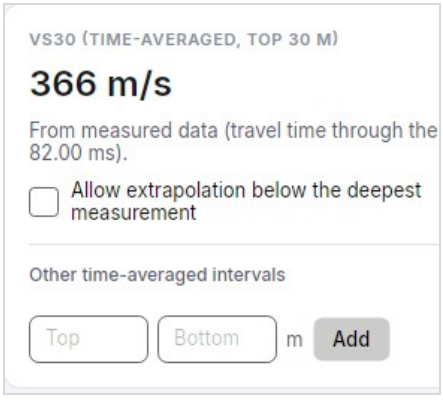
S+ / S- COMPARISON



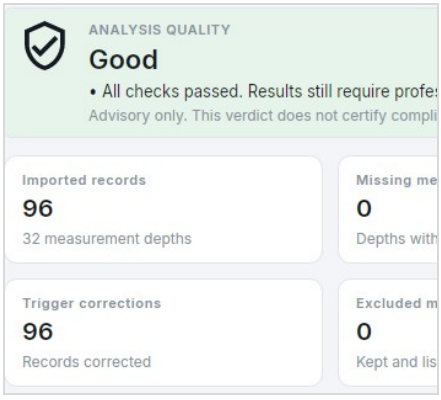
TRAVEL-TIME RESIDUALS



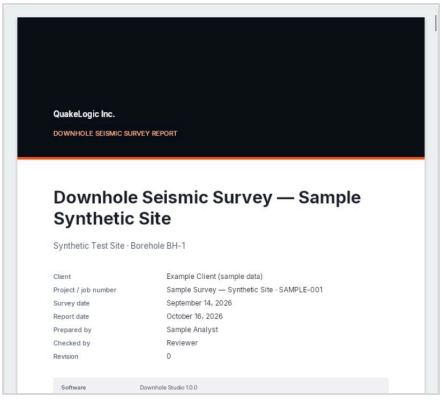
LAYER VELOCITY PROFILE



VS30 FROM MEASURED DATA



QUALITY VERDICT



LIVE REPORT PREVIEW

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Corporate Headquarters:

QUAKELOGIC INC.
2008 Opportunity Dr., Suite 130
Roseville, CA 95678, USA

Monday – Friday
9:00 AM – 5:00 PM (PST/PDT)

Contact Us:

Phone: +1 (916) 899-0391
Email: sales@quakelogic.net
Web: products.quakelogic.net

About QuakeLogic:

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Our Commitment

We are committed to quality, innovation, and customer satisfaction — building lasting partnerships through reliable solutions and dependable support.

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