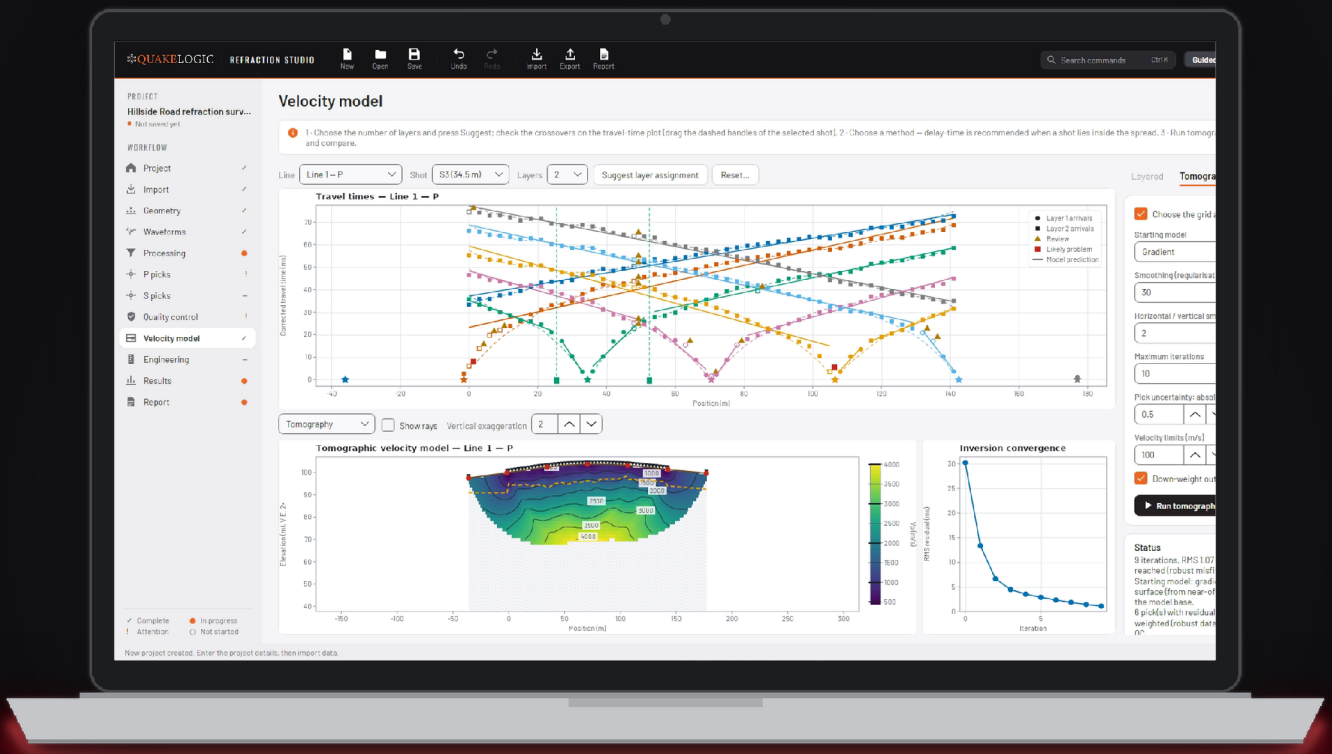
QUAKELOGIC

DATASHEET

QUAKEX · SEISMIC REFRACTION SOFTWARE

Refraction Studio

Windows desktop software for seismic refraction: from P- and SH-wave shot records through first-arrival picking, layered models and travel-time tomography to Vs30, quality control and a technical PDF report.



WAVES

P and SH

both lines in one project

PICKING

4 automatic pickers

confidence with reasons

MODELS

Layered models

4 methods + travel-time tomography

OUTPUT

Vs30 · PDF · XLSX

audit record of every step

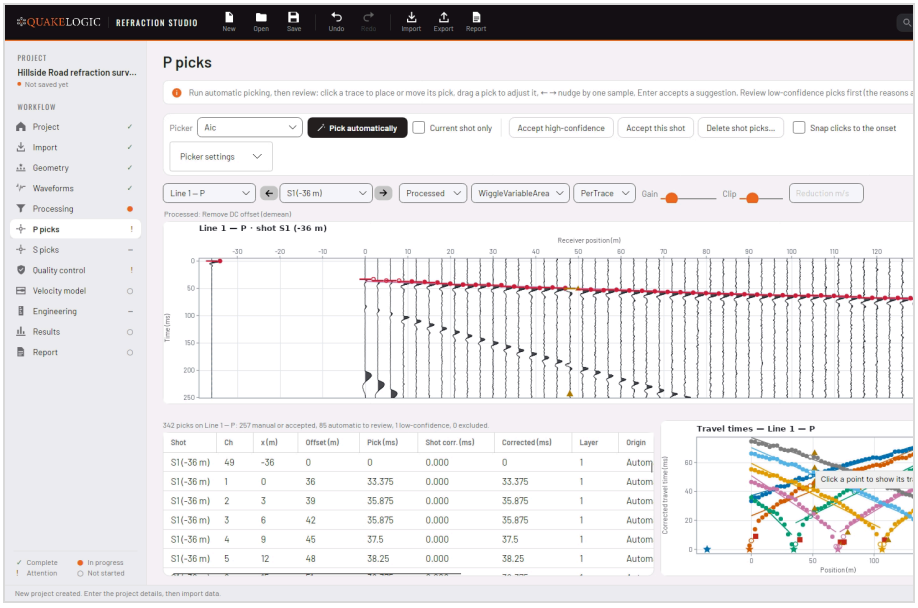
CUSTOMER SATISFACTION 100% GUARANTEED

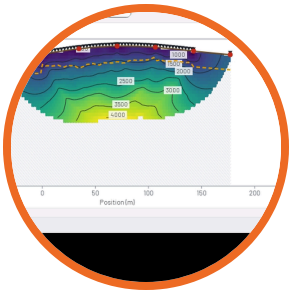
Software developed in the USA by QuakeLogic Inc.

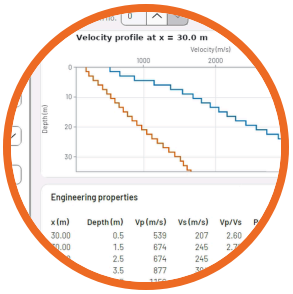
Roseville, California · sales@quakelogic.net · products.quakelogic.net

Refraction Studio

SEISMIC REFRACTION ANALYSIS · P AND SH WAVES · WINDOWS DESKTOP







SEISMIC REFRACTION ANALYSIS, STEP BY STEP

Refraction Studio is Windows software for seismic refraction surveys, developed in the USA by QuakeLogic Inc. It takes P- and SH-wave shot records from import to a technical PDF report: inspected import, geometry from the headers, non-destructive processing, automatic and manual first-arrival picking, layered interpretation and tomography, Vs30 and moduli, and quality control that explains what to check before results are reported. Every step is recorded and reversible, and raw data are never modified.

- Import with inspection: SEG-2 and SEG-Y records are checked before import, findings come with proposed corrections, and nothing is repaired silently.
- Picks with reasons: AIC, STA/LTA, modified energy ratio and an SH polarity-divergence picker, each pick carrying a confidence and its explanation.
- Two routes to a model: layered interpretation with draggable crossovers, and regularised, robust travel-time tomography with ray coverage and depth of investigation.
- Reproducible by design: one project file holds the raw records, every step and pick, snapshots, scenarios and the complete history with user and software version.

STANDARD FEATURES »

- SEG-2 and SEG-Y import
- Import inspection and corrections
- Header geometry and spread profiles
- Surveyed ground profile
- Non-destructive processing
- Butterworth, notch, AGC
- Shot-time correction
- AIC, STA/LTA, MER pickers
- SH polarity-divergence picker
- Pick confidence with reasons
- Manual review and propagation
- Automatic layer assignment
- Intercept-time and plus–minus
- GRM and delay-time methods
- Travel-time tomography
- Vs30, Poisson's ratio, moduli
- Quality-control findings
- XLSX, CSV, PNG, SVG export
- Branded PDF report
- Snapshots and scenarios

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KEY FEATURES

- **Import with inspection.** SEG-2 and SEG-Y records are inspected before import; findings come with proposed corrections and nothing is repaired silently.
- **Geometry from the headers.** Positions from the file headers, channel roles with a reference geophone, reusable spread profiles and a surveyed ground profile.
- **Non-destructive processing.** Filters, AGC, trace balance and more run on copies; advice flags filters that would shift first breaks. Trigger delays are corrected from a reference geophone or entered per shot.
- **Automatic picking.** AIC, STA/LTA, modified energy ratio and an SH polarity-divergence picker, each pick with a confidence and its reasons.
- **Manual review.** Click, drag and nudge picks and propagate a reviewed pick along the line; manual picks are never overwritten.
- **Layered interpretation.** Automatic layer assignment with draggable crossovers; intercept-time, plus–minus, generalised reciprocal and delay-time methods with a forward-model check.
- **Tomography.** Regularised, robust travel-time inversion with shortest-path ray tracing, ray coverage, convergence history and the depth of investigation.
- **Reporting.** A complete technical PDF report with your branding, in A4 or Letter and SI or US customary units, plus XLSX, CSV and figure exports.

PRODUCT FEATURES

Data import
SEG-2 (.sg2, .seg2, .dat) · SEG-Y (.sgy, .segy; also recognised by content) · recording delays and header positions applied

Wave types
P (compressional) and SH (horizontal shear) lines in one project · opposite SH impacts combined as (left – right)/2

Processing
Demean · detrend · taper · Butterworth (causal or zero-phase) · notch · normalisation · trace balance · AGC · polarity · time shift · resampling · amplitude spectrum

Picking
AIC · STA/LTA · modified energy ratio · SH polarity-divergence · confidence High / Medium / Low · neighbour guidance · cross-correlation propagation

Layered methods
Intercept-time · plus–minus · generalised reciprocal method (with XY analysis) · delay-time least squares · forward-model check

Tomography
Shortest-path ray tracing · regularised, robust inversion · gradient starting model · ray coverage · depth of investigation

Engineering & output
Vs30 and averages over chosen intervals · v, G, E, K · measured or estimated density, labelled · PDF, XLSX, CSV, PNG, SVG, JSON audit

For more information about the features, specifications and licensing of REFRACTION STUDIO, please contact QuakeLogic.

SOFTWARE CONFIGURATION

COMPONENT	CONFIGURATION
Application	Native Windows desktop application (64-bit)
Interface modes	Guided mode explains each step; Expert mode keeps the screen compact
Workflow	Project → Import → Geometry → Waveforms → Processing → Picks → QC → Velocity model → Engineering → Results → Report
Project file	One .rfsx file with the raw data, every step and pick, and the full history
Raw data	Never modified; processing runs on copies
Editing model	Undo and redo, snapshots, analysis scenarios
Saving	Autosave and crash recovery
Audit record	Methods, settings and history with user and software version
Report	PDF, A4 or Letter, SI or US customary units, with your branding
Licence	Full version on every installation: no trial, no activation
Internet	Not required
Support	support@quakelogic.net · reply within 3 business days

SYSTEM REQUIREMENTS & DATA

SPECIFICATION	VALUE
Operating system	Windows 10 (1809 or later) or Windows 11, 64-bit
Disk space	About 250 MB plus projects
Screen	1024 × 660 pixels or larger
Seismic input	SEG-2 (.sg2, .seg2, .dat) and SEG-Y (.sgy, .segy)
Wave types	P and SH lines in one project
Geometry	Positions and recording delays from the file headers; spread profiles
Tables	XLSX and CSV
Figures	PNG, SVG and PDF
Audit record	JSON: methods, settings and history

INCLUDED WITH EVERY LICENCE

DELIVERY & INSTALLATION

Digital delivery of the Windows installer with SHA-256 checksums, a START HERE guide and example P-wave and SH-wave field records.

TRAINING

Narrated training video with chapters and captions, and a field guide covering spread layout, sources, reference geophone and checklists.

LICENCE & SUPPORT

Written licence agreement (EULA) issued by QuakeLogic Inc. Email support at support@quakelogic.net, answered within three business days.

DOCUMENTATION

User guide PDF, built-in step explanations in Guided mode, third-party notices and example field records with a README.

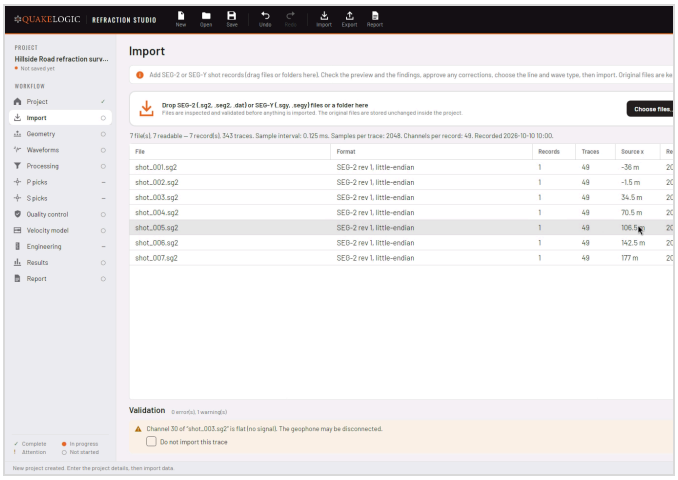
TECHNICAL SPECIFICATIONS

SPECIFICATION	DESCRIPTION
Platform	Windows 10 (1809+) or 11, 64-bit desktop
Disk / screen	About 250 MB; 1024 × 660 or larger
Input formats	SEG-2, SEG-Y; recognised by content
Header handling	Recording delays and positions applied
Wave types	P and SH in one project
SH combination	Opposite impacts as (left – right)/2
Geometry	Header positions, channel roles, reference geophone
Spread profiles	Reusable; surveyed ground profile
Processing	Demean, detrend, taper, normalisation, balance, AGC
Filters	Butterworth HP / LP / BP, causal or zero-phase; notch
Other steps	Polarity, time shift, resampling; amplitude spectrum
Shot-time correction	Reference geophone or per-shot entry; raw times kept
Pickers	AIC, STA/LTA, modified energy ratio, SH polarity-divergence
Pick confidence	High / Medium / Low with reasons
Pick review	Drag, nudge, propagate; manual picks kept

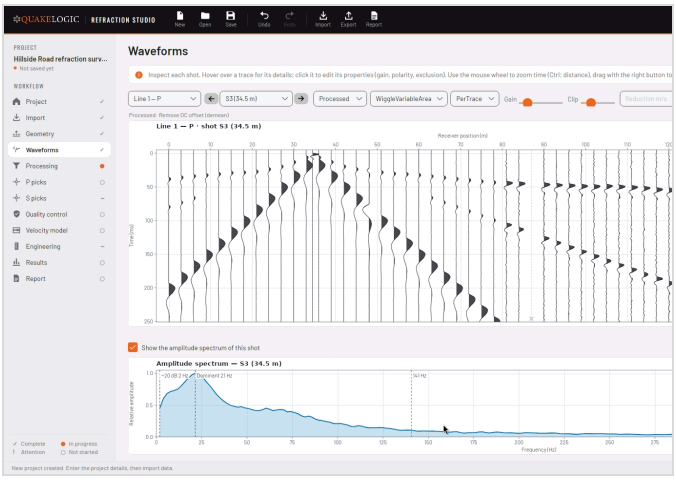
SPECIFICATION	DESCRIPTION
Layer assignment	Automatic with draggable crossovers
Layered methods	Intercept-time, plus–minus, GRM with XY analysis, delay-time
Forward check	Model travel times against picks
Tomography	Shortest-path rays; regularised, robust inversion
Starting model	Gradient; ray coverage; depth of investigation
Engineering	Vs30 and chosen intervals; ν, G, E, K
Density	Measured, or Gardner / Brocher estimates, labelled
Quality control	SNR, onset sharpness, reciprocal times, trigger, dead or clipped traces, residuals
Report	PDF, A4 or Letter; SI or US customary; branded
Exports	XLSX, CSV, PNG, SVG, PDF, JSON audit
Project file	.rfsx with raw data, history, snapshots, scenarios
Safety	Undo / redo, autosave, crash recovery
Licensing	Full version on every installation; no activation
Validation	37 of 37 cases against hand calculations, closed-form and synthetic models

Images are representative. Specifications describe the standard Refraction Studio configuration, version 1.0.0.

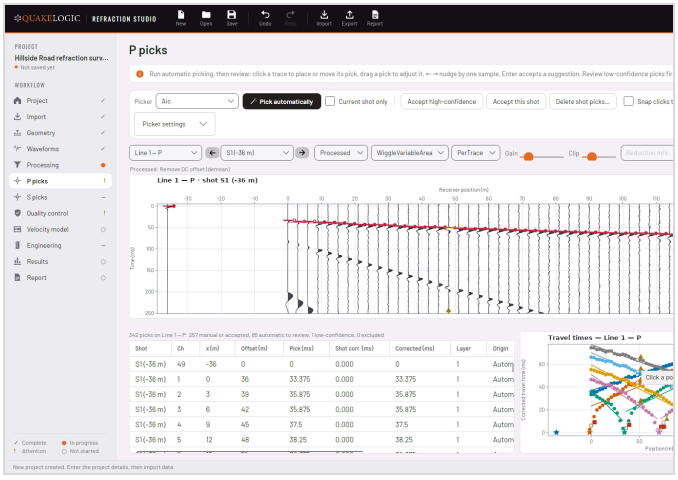
APPLICATION WORKSPACES



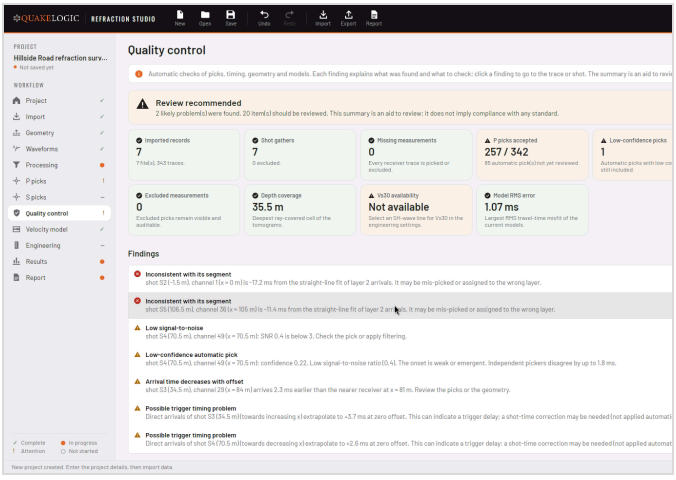
IMPORT WITH INSPECTION



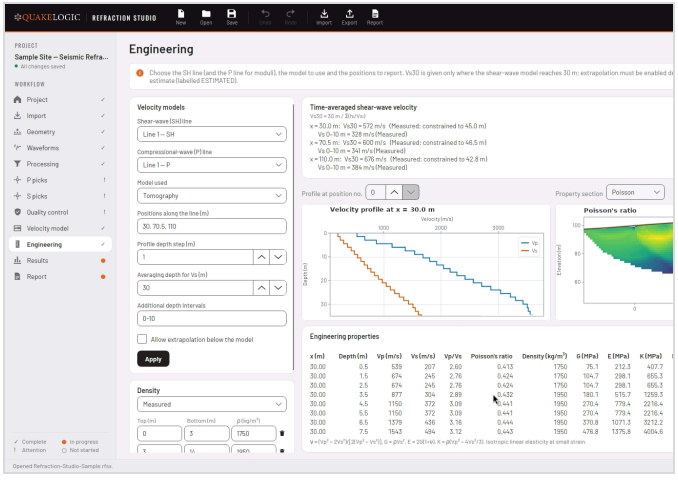
WAVEFORMS & PROCESSING



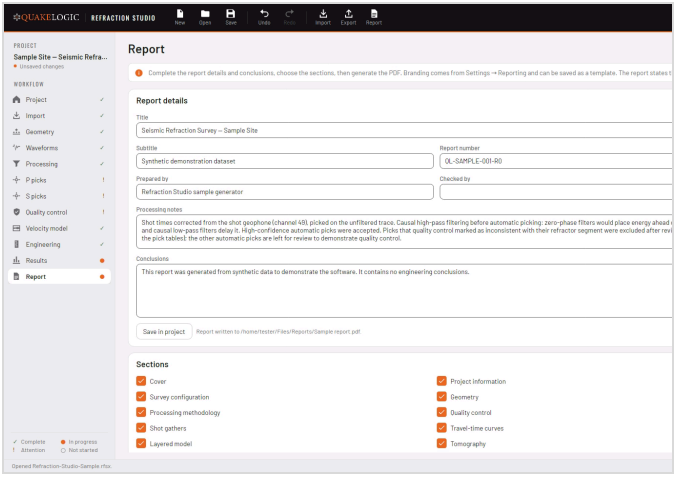
P AND SH PICKS



QUALITY CONTROL



ENGINEERING PARAMETERS



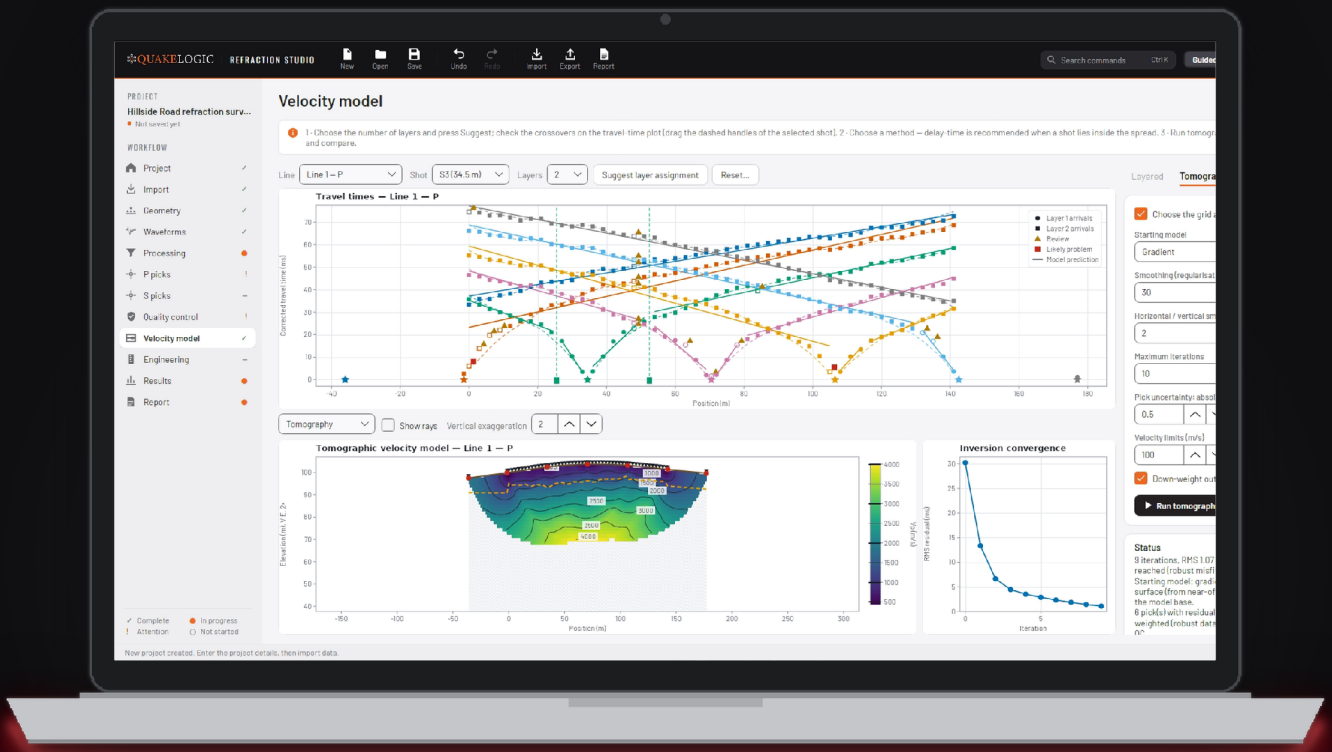
PDF REPORT

Screens are representative and show the example dataset supplied with Refraction Studio.

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VIEW PRODUCT

Scan for the Refraction Studio product page.

QuakeLogic Inc. is a California-based engineering and technology company. Refraction Studio is developed, published and supported in the USA by QuakeLogic Inc., committed to quality and customer satisfaction through reliable solutions and dependable support.

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