

RadExPro Ver. 2023.3
Technical Specification

	Professional	Real-Time
I/O		
Input data from SEG-Y, SEG-2, SEG-B, SEG-1, SCS-3 files, with optional header remapping	X	X
Input data from SEG-D, SEG-D (rev.3) and FairFieldNodal Receiver Gather files, with optional header remapping	X	X
Input GPR data from LOGIS, Zond, RAMAC/GPR, GSSI, Pulse EKKO formats	X	X
Input trace from ASCII file	X	X
Input DAS data from Terra15, Fotech, PRODML (Sintela) HDF5, ASN and Silixa files	X	X
Reading data from tapes	X	X
Data output to SEG-Y files	X	X
Data input/output via replicas system	X	X
Integration Python project into RadExPro processing flows	X	X
Continuous recording data slicing	X	X
Geometry assignment		
Import from SPS and UKOOA P1-90 files	X	X
Import from ASCII	X	X
Import from OGP P1/11	X	X
Calculation using built-in equation calculator	X	X
Display and editing using built-in spreadsheet editor	X	X
Dedicated module for near-surface geometry assignment	X	X
Dedicated module for marine geometry assignment	X	X
Dedicated module for VSP geometry assignment	X	X
Crooked line 2D/3D binning	X	X
Trace editing		
Resample	X	X
Kill trace	X	X
Zero-padding	X	X
Inverse	X	X
Muting (top, bottom, surgical)	X	X
Trace length change	X	X
Header fields manipulations		
Mathematical operations	X	X
Spreadsheet editor	X	X
Import from ASCII files, export to ASCII	X	X
Smoothing average	X	X
Shift of header values to specified number of traces	X	X
Header Enumerator	X	X
Header NMO/NMI	X	X
Graphs	X	X
Cross-plots and histograms	X	X
Header 2D spatial interpolation	X	X
Dataset combining		
Trace-by-trace subtraction/addition of 2 datasets	X	X
Vertical merge of 2 datasets along a horizon	X	X
Adaptive Wavefield Subtraction	X	X
Amplitudes		
Amplitude corrections: time raised to power, exponential, automatic gain control (AGC), trace equalization, time-variant gain	X	X
Spherical Divergence Correction	X	X
Time Variant Amplitude Gain	X	X
AGC removal	X	X
Ensemble Equalization	X	X
DC removal	X	X



Surface-consistent amplitude corrections for source and receiver	X	X
Statics		
Refraction statics calculation	X	X
Interactive refraction statics calculation (trial 100 launches)	X	X
Elevation statics calculation	X	X
Residual statics calculation	X	X
Maximum Power Autostatics	X	X
Correlation Stack Enhancement	X	X
Trim statics	X	X
Apply Statics	X	X
Denoising		
Burst Noise Removal	X	X
Frequency filtering (common and time-variant):		
- simple bandpass		
- Ormsby bandpass	X	X
- Butterworth high-pass/low-pass/bandpass		
- notch		
2D average/median/alpha-trimmed filtering	X	X
F-K filtering	X	X
Time frequency domain (TFD) noise attenuation (auto/manual)	X	X
2D F-X predictive filtering	X	X
3D F-X-Y predictive filtering	X	X
Sparse F-K Filtering	X	X
Sparse Radon Filtering	X	X
F-K Amplitude Power	X	X
Structural Smoothing	X	X
Deblending	X	X
Deconvolutions and Wavelet Shaping		
Signature/Phase/Predictive/Spiking Deconvolution	X	X
Surface-consistent Deconvolution	X	X
Nonstationary predictive Deconvolution	X	X
Automatic Wavelet Extraction	X	X
Kolmogoroff Spectral Factorization	X	X
Derive Match Filter	X	X
Filter application	X	X
Spectral Whitening	X	X
Spectral Shaping	X	X
Wavelet Processor	X	X
Geophone -> DAS Conversion	X	X
Q Filtering	X	X
Multicomponent processing		
Hodogram analysis	X	X
2C/3C Rotation	X	X
Rotation of FairFieldNodal multicomponent data	X	X
Interpolation		
Trace interpolation along the line	X	X
Interpolation of set of 2D lines into a 3D volume	X	X
3D linear interpolation	X	X
3D F-Kx-Ky Regularization	X	X
Sparse F-K Interpolation	X	X
Trace transforms and trace math		
Linear and Parabolic Radon transforms	X	X
Amplitude spectrum calculation	X	X
Phase spectrum calculation	X	X
Autocorrelation and crosscorrelation functions	X	X
Logarithm and exponent of trace	X	X

Convolution	X	X
Trace/trace and trace/scalar arithmetic	X	X
Power of trace	X	X
Radial trace transform (direct and inverse)	X	X
Stockwell transform	X	X
Time-depth conversion		
Conversion between time and depth domain using different types of velocity functions	X	X
Migrations and DMO		
Pre-/Post-stack 2D/3D Kirchhoff time migration (on CPU and GPU)	X	X
2D/3D F-K Stolt migration	X	X
3D F-K Stolt migration with variable velocity	X	X
T-K migration	X	X
2D F-K DMO	X	X
Velocities and CDP stacking		
3D CDP binning	X	X
Crooked line 2D CDP binning	X	X
CDP gathers	X	X
Super gathers	X	X
Velocity manipulation	X	X
Trace<->Velocity Table Transfer	X	X
Interactive analysis of stacking velocities	X	X
Horizon-based velocity analysis	X	X
Automatic horizon-based velocity analysis	X	X
NMO/NMI-correction	X	X
LMO/LMI-correction	X	X
Stacking	X	X
Angle Stack	X	X
Angle Muting	X	X
Offshore data processing		
Marine geometry assignment	X	X
Import geometry from UKOOA P1-90 files	X	X
Dropped/missed shots correction	X	X
Import tidal statics	X	X
2D/3D HiRes marine statics calculation	X	X
De-bubbling	X	X
Radon demultiple	X	X
2D SRME	X	X
Zero-offset demultiple (for near-offset data)	X	X
SharpSeis™ adaptive deghosting/broadband processing	X	X
Adaptive wavefield subtraction	X	X
PZ Calibration	X	X
QC and attribute analysis		
Pre-stack shot/receiver gather QC: estimation of mean, 2D RMS and mean 1D RMS amplitude, signal-to-noise ratio, resolution and apparent frequency pre-stack within an arbitrary polygon or a rectangular window	X	X
Fold and offset sampling calculation	X	X
Survey, fold and offset sampling maps	X	X
Analysis of attribute dependency on linked cross-plots and histograms	X	X
Mapping attributes on top of topography background	X	X
Estimate of average, RMS, minimum, maximum, absolute maximum amplitude post-stack within a window along a horizon	X	X
Determination of time of maximum, minimum, and absolute maximum amplitude post-stack within a window along a horizon	X	X
Estimate of peak frequency, apparent frequency, visible frequency, centroid frequency, and frequency	X	X



Estimation of signal-to-noise ratio post-stack along a horizon	X	X
Computation of auto-correlation and cross-correlation functions	X	X
Interactive estimate of velocities of all types of waves	X	X
Reflection strength, instantaneous frequency, instantaneous phase	X	X
Interactive QC maps and cross plots	X	X
Interactive data display from QC maps (shot/receiver/CMP gather)	X	X
Ensemble header statistics (min, max, average, number of values above threshold – total of max consecutive)	X	X
QC stats: total shot count, bad shot count, CMP coverage	X	X
Real-time QC		
Real-time SEG-D/SEG-D rev.3/SEG-Y input		X
Real-time DAS data input: Terra15/Fotech/PRODML (Sintela)/Silixa		X
Real-time on-land QC (all attribute calculation, interactive maps and stats)		X
Real-time offshore QC:		X
Parallel execution of QC flows		X
Shot QC		X
Automated first-break picking		X
Near-trace gather QC		X
Real-time 2D CDP stack		X
RMS amplitude map		X
Frequency map		X
SNR map		X
Attribute and header plots		X
Source QC: NFH records/stacks, bubble peak time/amplitude and bubble period maps, pressure and towing depth plots		X
Towing depths control based on spectrum notches		X
Saving all QC results to project DB		X
Export and import of QC polygons	X	X
Refraction		
Processing time-curves of refracted waves (plus-minus and GRM)	X	X
First-break travel-time tomography	X	X
Vibroseis		
Correlation	X	X
Synthetic vibroseis sweep generation	X	X
Harmonic distortion analysis (time-frequency plots)	X	X
Surface Wave Analysis		
Multichannel Analysis of Surface Wave (MASW)	X	X
VSP		
VSP geometry assignment for vertical or inclined wells	X	X
Hodogram analysis, 2C and 3C rotation	X	X
Generation of synthetic seismograms for different wave types	X	X
Separation of wavefields of different wave types	X	X
Calculation of arrival time of direct wave or reflected wave from a specified reflector for horizontal layered model	X	X
Layer velocity modeling	X	X
Estimation of Q	X	X
Far-offset VSP NMO-correction	X	X
Import of well-log data, import and export of velocity models	X	X
Joint interpretation of VSP, logging, and seismic data	X	X
VSP Kirchhoff migration	X	X
VSP-CDP transformation	X	X
Display and printing		
Various modes of data display	X	X
Display of WT/VA traces on top of color-coded velocity or seismic data	X	X
Support of several data displays at a time, several datasets in one display	X	X
Synchronized scale, scroll and gain in several display windows for data comparison	X	X

Interactive calculation of frequency spectrum and F-K spectrum of arbitrary data fragment	X	X
Display of several spectrum graphs in one window	X	X
Display of trace header fields	X	X
Display of profile crossing point marks	X	X
Display of lines, attributes, horizons, on the interactive map	X	X
Interactive display of data along an arbitrary line selected on the Map	X	X
Display of attributes on linked cross-plots and histograms	X	X
Printing and export of cross-plots and histograms to a bitmap	X	X
Printing of processing results with print preview	X	X
3D Volume Display / Time Slice generation		
3D volume display	X	X
3D Time slice generation	X	X
Data and processing management		
Processing within projects. A project can be easily moved to a new location together with all associated data and processing parameters	X	X
Work with several projects at a time	X	X
Processing flows can be combined into several queues and run in parallel	X	X
Processing flows can be copied with all procedures and parameters	X	X
Project and flows can be protected by password in admin mode	X	X
Export/import of processing flows	X	X
Export/import of datasets in RadExPro data exchange format	X	X
Processing history	X	X
Data run-time resorting on input into the flow	X	X
Fast resorting of big data volumes	X	X
Flow Replication	X	X
Combining several flows into processing queue, parallel execution of several queues	X	X
Batch processing of several files with the same flow	X	X
Horizon interpolation/extrapolation, transfer from pick to trace headers and back	X	X
Interpretation		
Horizon picking, manual and automatic	X	X
Gridding of horizons and attributes	X	X
Attribute calculation along horizons	X	X
3D Autopicker	X	X
Acoustic inversion (genetic algorithm)	X	X

*Technical specification is for information only and is subject to change without prior notice.

Recommended Minimal System Requirements: Intel Core i-5 CPU, 8 Gb RAM, OS Windows 7/8/10 64-bit