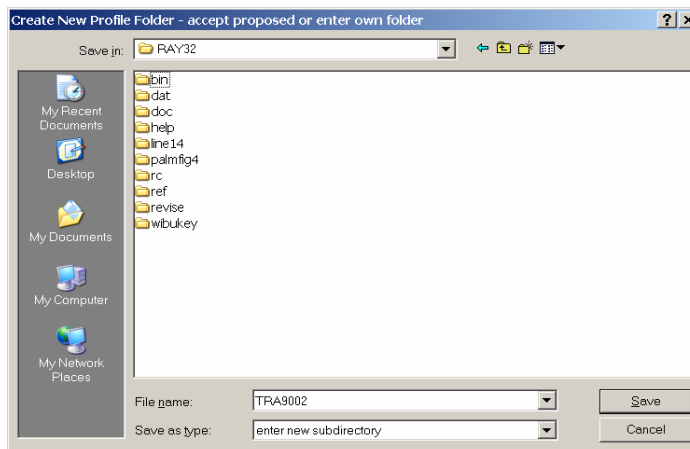# RAYFRACT® Tutorial     for Seismic Refraction Tomography

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# Create new profile



1 Start up Rayfract software with *desktop icon* or *Start menu*
2 Select *File|New Profile…*
3 Set *File name* to TRA9002 and click *Save*

# Fill in profile header



1. Select *Header|Profile…*
2. Set *Line ID* to TRA9002 and *Job ID* to Tutorial
3. Set *Instrument* to Bison-2 9000 and *Station spacing* to 5m
4. Hit ENTER, and confirm the prompt

# Seismic data import



1. Copy files from \RAY32\TUTORIAL with Windows Explorer, or unzip http://rayfract.com/tutorials/TRA9002.ZIP to \RAY32\TRA9002\INPUT
2. Select *File|Import Data…* for *Import shots dialog*, see above
3. Set *Import data type* to Bison-2 9000 Series
4. Click *Select button*, select file TRAV0201 in \RAY32\TRA9002\INPUT
5. Click on *Open*, *Import shots*, and confirm the prompt

# Import each shot



Click on *Read* for all shots shown in *Import Shot dialog*, see above.
Don't change *Layout start* and *Shot pos.*, these are correct already

# Update geometry and first breaks



1   Select *File|Update header data|Update Station Coordinates…*
2   Click on *Select* and \RAY32\TRA9002\INPUT\TRA9002.COR
3   Click on *Open*, *Import File* and confirm the prompt
4   Select *File|Update header data|Update First Breaks* and
    \RAY32\TRA9002\INPUT\TRA9002.LST and click *Open*

# View and repick traces, display traveltime curves
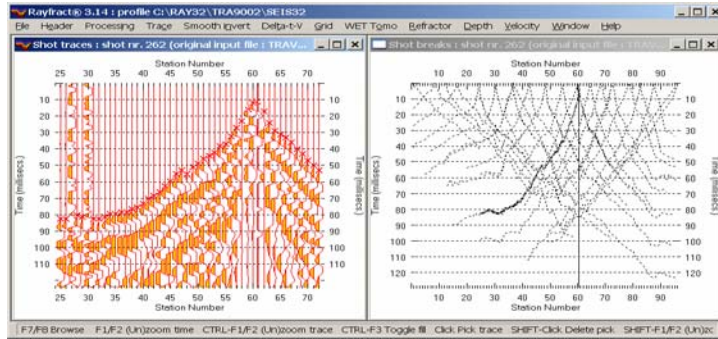


1. Select *Trace|Shot gather* and *Window|Tile.* Browse shots with F7/F8
2. Click on *Shot breaks window* and press ALT-P
3. Set *Maximum time* to 130 msecs. and hit ENTER
4. Click on *Shot traces window* and press F1 twice to zoom time
5. CTRL-F1 twice to zoom amplitude, CTRL-F3 twice to toggle trace fill mode
6. Select *Processing|Color traces* and *Processing|Color trace outline*
7. Use up/down/left/right arrow keys to navigate along and between traces
8. Zoom spread with SHIFT-F1. Pan zoomed sections with SHIFT-PgDn/PgUp
9. Optionally repick trace with left mouse key or space bar, delete first break with ALT-DEL or SHIFT-left mouse key. Press ALT-Y to redisplay traveltime curves

# Smooth inversion of first breaks
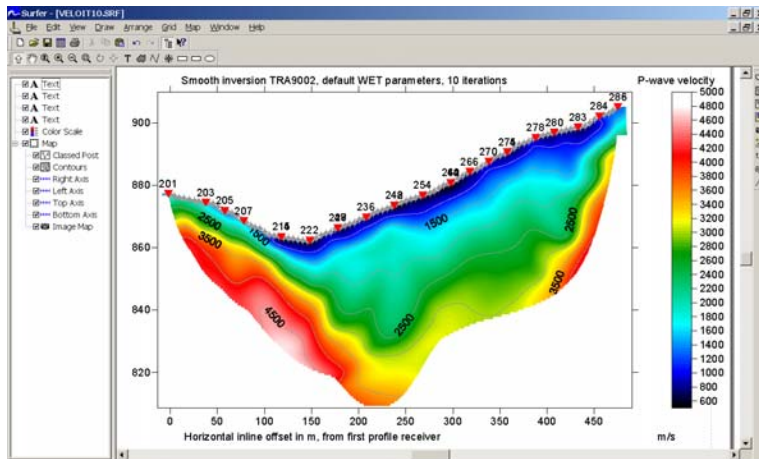


1. Select *Smooth invert|WET with 1D gradient initial model*
2. Once the 1D gradient model is shown in Surfer™, click on *Rayfract icon* at bottom of screen, to continue. Confirm following prompts
3. Click on *Surfer icon* and add text legends with Surfer *Draw|Text*

# Display modeled picks and traveltime curves



1. Click on *Rayfract icon* at bottom of screen
2. Select *Refractor|Shot breaks* to view picked and modeled (blue) times
3. Press F7/F8 keys to browse through shot-sorted traveltime curve
4. Use *Mapping|Gray picked traveltime curves* to toggle curve pen style

# Display WET wavepath coverage



1. Click on *Surfer icon* at bottom of screen
2. Use CTRL-TAB to cycle between WET tomogram, wavepath coverage plot and 1D gradient initial model
3. Add text legends as shown above, with Surfer *Draw|Text* command