



**Fast
Geophysical
Positioning
Solutions**

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P1Tools

P1Tools is a Windows NT/95/98/2000/XP program to perform Quality Control of final navigation data for seismic streamer surveys recorded in the industry standard UKOOA P1/90 format.

The program comprises several modules which run in a multi-tasking environment. Interactive analysis is emphasised throughout, allowing the user to focus on specific problem areas.

Format checking and data integrity checks are implemented. The program provides the means to examine in detail source and streamer geometry and node movement.

The program provides for the output of comma separated value (csv) summary files, readable by most spreadsheets, to enable ongoing analysis of survey wide trends. When combined with the appropriate spreadsheet programming this provides a fast, efficient and accurate means of highlighting potential problems.

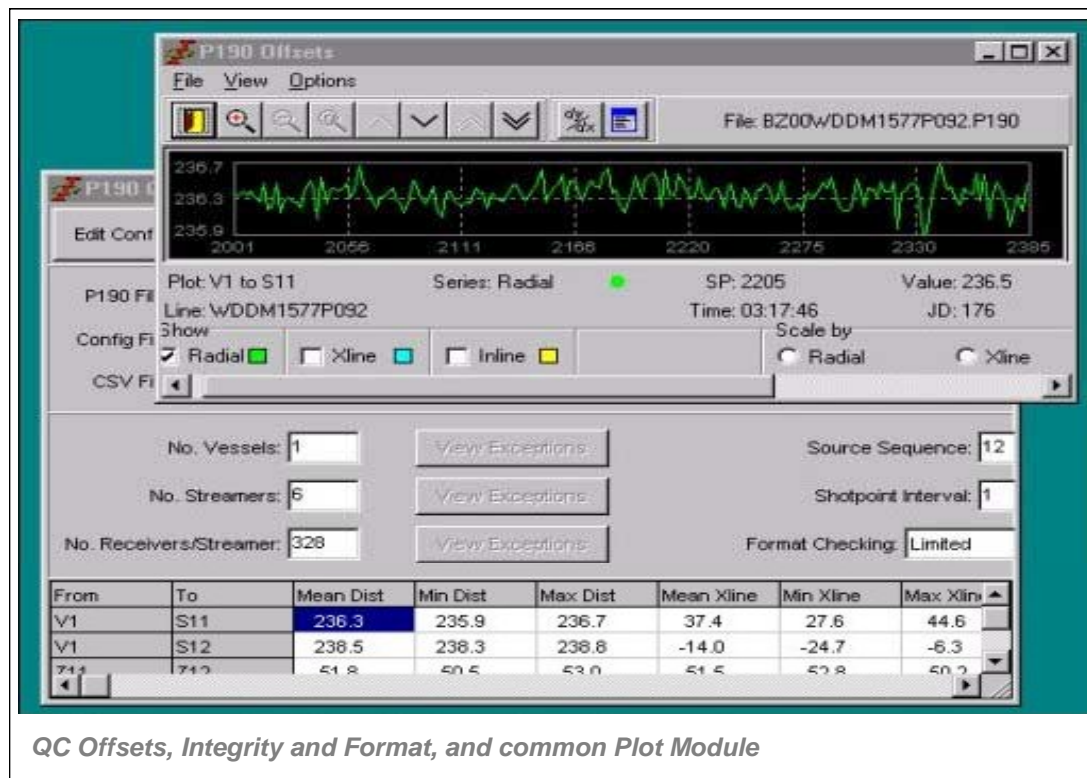
P1/90 decimation and data extraction supports the frequent desire to transmit a representative portion of data from the field to base to support client's needs whether they be further QC, post-plotting for survey progress monitoring or production of bathymetry maps etc.

The P1/90 comparison module would typically be used to compare a contractor's dataset to that produced by FGPS's SeisPos processing system (or any other system) to aid in verifying the final positioning data quality.

Modules

QC Offsets and Integrity

- Computes ranges between pairs of nodes as configured by the user. The following components are computed for each pair configured:
 - Radial distance
 - Cross line distance
 - Along line distance
 - Azimuth
- Azimuth for along and across line components is selectable from course made good and line heading (first to last shot).
- Output to csv file summary results: mean, minimum and maximum values.
- Interactive time series plots of the computed components.
- Record integrity checking:
 - Number of vessels
 - Number of streamers
 - Number of receiver groups
 - Source firing sequence
 - Shotpoint interval
- Comprehensive format checking.



QC Nodes

- Computes shot to shot movement and depth of nodes configured by the user. The following components are computed for each node configured:
 - Radial distance
 - Cross line distance
 - Along line distance
 - Delta cross line distance
 - Delta along line distance
 - Depth
- The waypoints for line azimuth for computing the along and cross line components are selectable from:
 - First and last shotpoints
 - SeisPos generated P1/90 header – the waypoints defined in the P2 header – allowing analysis of vessel steering and offset.
 - User defined
- Output to csv file summary results: mean, minimum and maximum values.
- Interactive time series plots of the computed components.

Node	Mean dR	Min dR	Max dR	Mean Xline	Min Xline	Max Xline	Mean Inline	Min Inline
V1	25.0	22.9	30.8	16.6	-1.1	32.2	6949.7	0.0
S11	50.2	47.5	83.5	34.0	-47.2	47.8	6744.4	-179.9
S12	50.2	47.0	100.5	-13.8	-58.9	-1.3	6745.8	-203.7
R0001S1	25.1	22.6	55.9	257.0	187.7	270.0	6561.9	-388.5
R0100S1	25.1	5.2	50.3	194.6	152.5	204.3	5326.0	-1630.4
R0199S1	25.1	14.1	42.2	136.8	115.3	174.2	4089.9	-2872.7
R0298S1	25.2	12.5	46.7	87.4	55.9	174.1	2857.1	-4109.1
R0397S1	25.3	11.9	49.5	43.4	-3.0	178.3	1624.9	-5344.0

Node QC

Compare

- Performs shot by shot comparison of positions and depths between two P1/90 files for nodes configured by the user. The following components are computed for each node:
 - Radial distance
 - Cross line distance
 - Along line distance
 - Depth
- Output to csv file summary results: mean, minimum and maximum values.
- Interactive time series plots of the computed components.

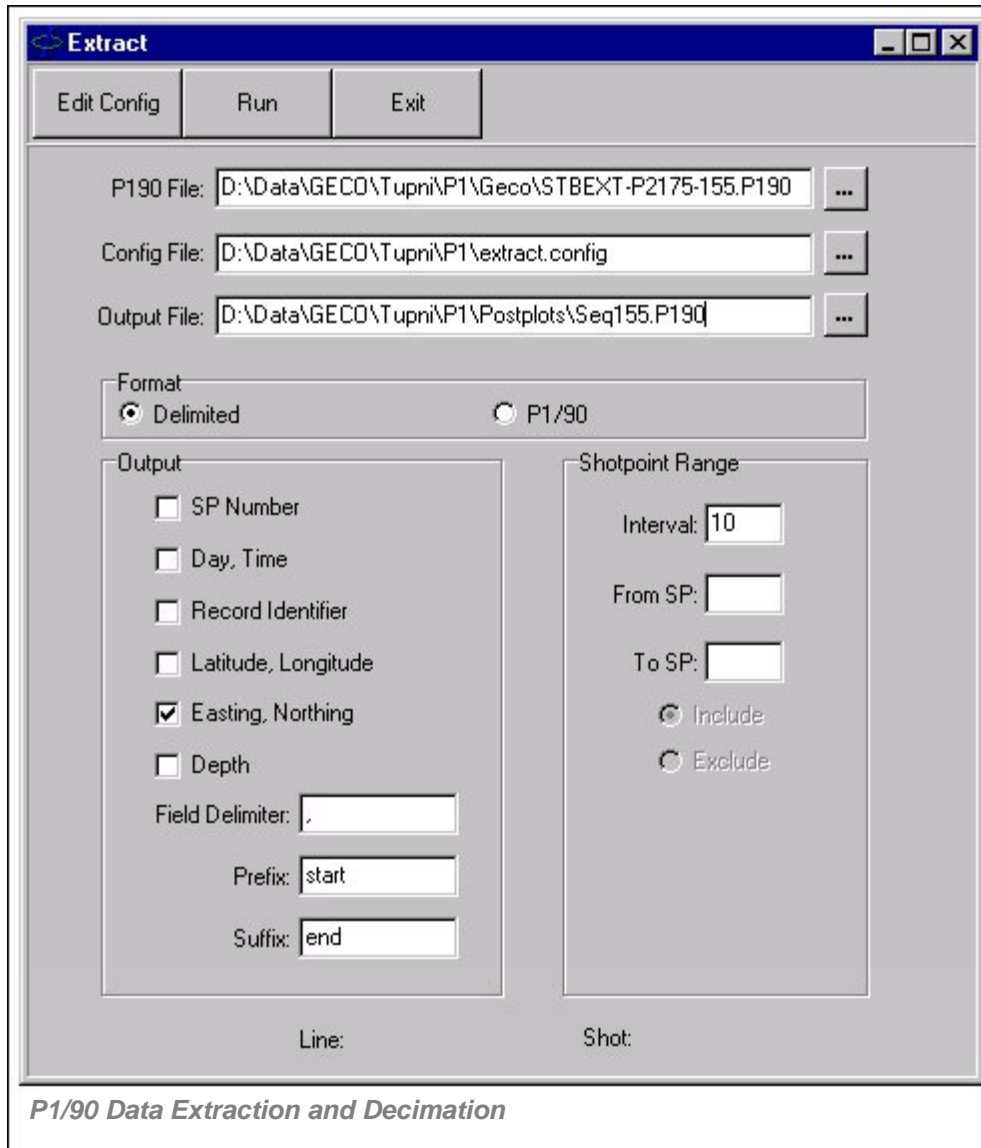
File 1 positions minus File 2 positions. Mean direction: 90.2°

Node	Mean dist	Min dist	Max dist	Mean Xline	Min Xline	Max Xline	Mean Inline	Min Inline
V1	0.7	0.0	1.8	0.0	-1.7	1.7	0.0	-1.1
S11	0.8	0.0	2.1	-0.1	-2.1	1.6	0.1	-1.0
S12	0.9	0.1	2.3	-0.2	-2.2	1.5	0.2	-1.0
R0001S1	0.9	0.0	2.4	-0.4	-2.3	1.4	-0.3	-1.5
R0100S1	1.5	0.4	3.0	-1.2	-3.0	0.7	0.6	-0.5
R0199S1	2.0	0.1	4.1	-1.9	-4.1	0.6	0.0	-1.4
R0209S1	1.5	0.3	3.0	1.1	3.0	1.5	0.7	0.9

P1/90 Comparison

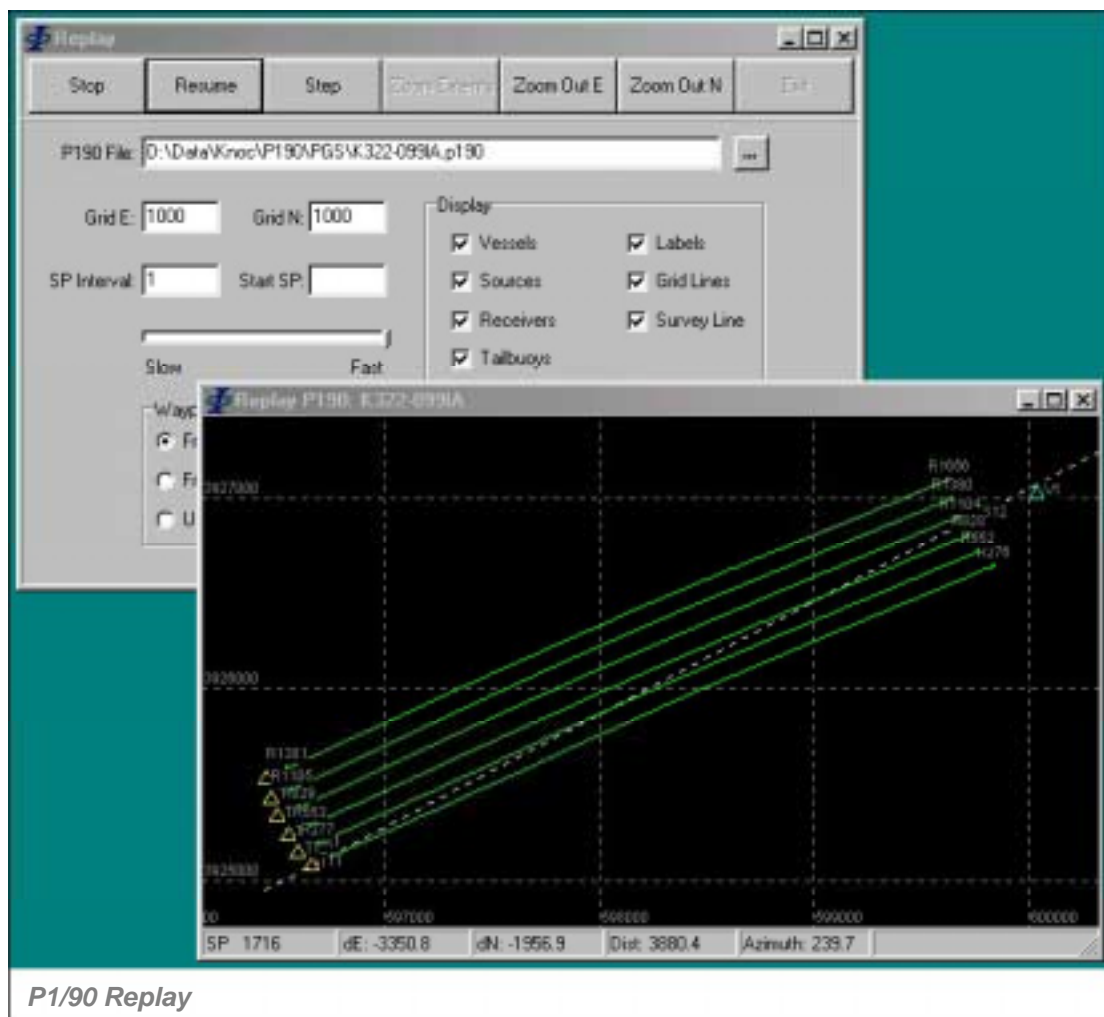
Extract

- Extracts data from P1/90 file in field delimited or P1/90 format.
- User specifiable record and record attribute configuration.
- Supports P1/90 decimation.
- Specifiable inclusive or exclusive shot range and interval.



Replay

- Interactive graphical replay of P1/90.
- Displays:
 - Vessel, sources, receiver groups, tailbuoys.
 - Survey line.
 - Waypoints (from SeisPos generated header).
- Highlights anomalous receiver group intervals.
- Zooming and scaling functions.
- Supports onscreen measurements.
- The waypoints for line azimuth are selectable from:
 - First and last shotpoints.
 - SeisPos generated P1/90 header – the waypoints defined in the P1 header, allowing analysis of vessel steering and offset.
 - User defined.



P1/90 Replay