

P1Tools

P1Tools is a Windows based program used to perform Quality Control of navigation data for seismic surveys recorded in the industry standard UKOOA / OGP P1 format, and which also provides an extensive set of utilities relating to P1 and Shell Processing Support (SPS) datasets. Multiple file and zipfile input is supported.

Quality Control Modules

QC Module

This module enables P1 batch processing to simultaneously perform any combination of the following QC operations:

- **Format and Integrity Check**
 - Record integrity checking:
 - Number of vessels, streamers, receiver groups
 - Source firing sequence
 - Shotpoint interval
 - Comprehensive format checking
 - EPSG DB cross-checks

- **Offsets**
 - Computes ranges between pairs of nodes as configured by the user.
 - The following components are computed for each pair configured:
 - Radial, cross line and along line distance
 - Azimuth
 - Azimuth for along and across line components is selectable from course made good and line heading (first to last shot)

- **Nodes**
 - Computes shot to shot movement and depth of nodes configured by the user. The following components are computed for each node configured:
 - Radial, cross line and along line distance
 - Delta cross line and 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 header – the waypoints defined in the P2 header – allowing analysis of vessel steering and offset
 - User defined

- **Streamer Depths**
 - Comparison with nominal Streamer Depth Profile (.sdp file)

- Plots and statistics for each streamer
- Plots and statistics for each receiver
- Tests against acceptance criteria

- **Receiver Interval Analysis**
 - For each consecutive receiver pair, Mean, minimum and maximum interval
 - Overall Minimum and maximum interval

- **Feather**
 - Mean, minimum and maximum for each streamer.

For all modules, where applicable, the following outputs are available:

- Tabulated summary
- Interactive time series plots
- Log file
- Text reports
- Csv file summary file

Compare Module

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

Trend Analysis

- Line-by-line time series plots of:
 - Node offsets
 - Node movement
 - P1 Comparison
 - Streamer Depth

Statistical Testing

- Application of user defined acceptance criteria to:
 - Node offsets
 - Node movement
 - P1 Comparison
 - Streamer Depth
- Statistics available:
 - Average
 - Standard deviation
 - Percentile
- Tests – for a given min/max spec:
 - Total out of spec

- Percent out of spec
- No. consecutive out of spec
- No. out of spec in specified sample sliding window
- No. out of spec in specified distance sliding window
- Absolute average out of spec in specified sliding sample window
- Absolute average out of spec in specified sliding distance window
- Absolute average out of spec in whole dataset

Replay

- Interactive graphical replay of P1, one file or two files overlaid.
- Displays:
 - Vessel, sources, receiver groups, tailbuoys, near CMPs
 - Streamer depths by colour
 - Survey line
 - Waypoints (from SeisPos generated header)
- DXF and ESRI Shape file overlay
- Coastline display
- Zooming and scaling functions
- Supports onscreen measurements
- The waypoints for line azimuth are selectable from:
 - First and last shotpoints
 - SeisPos generated P1 header – the waypoints defined in the P1 header, allowing analysis of vessel steering and offset
 - P1/11 preplot records
 - User defined

Streamer Shape Plot

- Plot user specifiable selection of Vessels, Source, Streamers and Tailbuoys
- Specifiable receiver group interval
- Specifiable shot range
- Supports application of streamer rotation to improve clarity of display
- Plot to screen and printer/plotter

Utilities

Extract

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

Coordinate Conversions

- Geodetic definitions from:
 - File header
 - EPSG database
 - Manually specified

- Batch processing

Postplot

- Output to DXF, Shapefile, KML formats
- Flexible record attribute specification

Concatenation

- Concatenate all input files with header from first file

Intersection

- SPS supported
- Compute reverse intersections option
- Output format options:
 - Native
 - Omega

Bathymetry

- Tidal reductions from flexible format text file
- Datum and propagation velocity corrections

Split File

- Splits P1 and P2 lines based on shot-by-shot geographical location
- Typical application to separate whole survey dataset by block boundary

Header Update

- Attach/replace headers for P1 file
- Batch processing

Merge

- Automatic merge files based on closest common shot
- Manual selection
- Batch processing