integrated geodetics toolkit
for well survey data

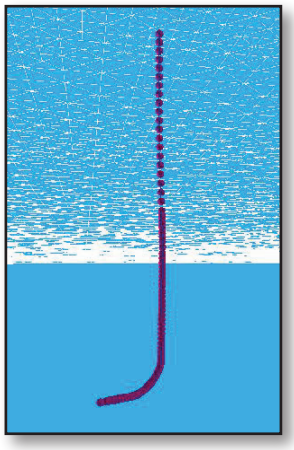
Streamlined Data Processing Workflow

Integrated Geodetics Toolkit is an add-in for ArcGIS containing 70+ tools that provide users with the ability to quickly read and load well survey and seismic navigation information into a common Esri GIS format for visualization and analysis.

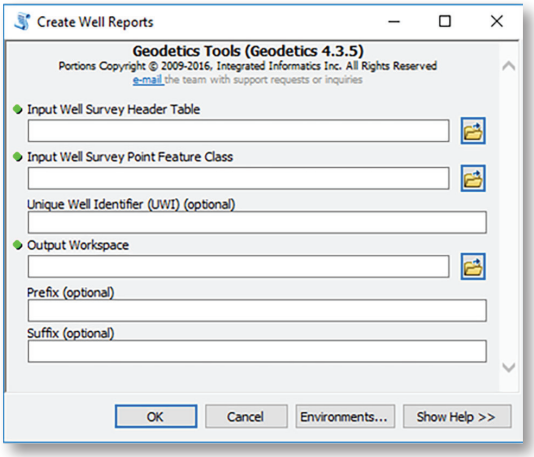
Well Loading Tools

Well data can be read from raw ASCII, delimited files, and Excel spreadsheets. The tools calculate the coordinates and delta values of a survey given azimuth, inclination and measured depth values, reference points and a coordinate system. The survey may be from the tophole to the bottomhole or a sidetrack. Well survey reports can also be output for all loaded wells.

- **Well Survey File to Geodatabase** tool extracts the header information from the survey file and writes it to its own geodatabase table, creating a point layer from the calculated coordinates, as well as the corresponding well path layer. The coordinates are calculated in three dimensions so the points and path can be viewed with ArcGIS Pro, 3D Analyst, ArcGlobe, or ArcScene.
- **Multiple Well Survey File to Geodatabase** tool performs the same functions as the **Well Survey File to Geodatabase** tool on an input file containing information for multiple wells. It requires an additional input comprised of an existing ArcGIS point layer containing the related well reference points.
- **Sidetrack Well Survey File to Geodatabase** tool calculates survey point coordinates and deltas, given the calculated survey points of an existing well path. The surveyed values in the existing well path are used to provide the initial coordinates and Total Vertical Depth of the tie-in point for the sidetrack.
- **Well Survey File to Geodatabase (Append)** tool combines the **Well Survey File to Geodatabase** tool functionality with the ability to write the extracted header information to a pre-existing table, and the new points and well path to pre-existing geodatabase layers.



- **Batch Well Loading** tool reads a file containing multiple well surveys and compiles them into a single point feature class. This tool has been optimized for use as a geoprocessing service or batch data loader.
- **Create Well Reports** tool produces an Excel spreadsheet for one or more wells from an existing well survey point layer. One Excel file is created per well, named with the UWI. If only one well report is needed from a layer that contains multiple wells, the user can enter the UWI into the optional UWI field and only the report for that well will be output. Each report contains identifying header information and data points for the well (see sample report below). The tool also provides the user with the ability to add a prefix and/or suffix to the output file name(s).



integrated informatics inc
process & technology. simplified.
www.integrated-informatics.com | gis@integrated-informatics.com

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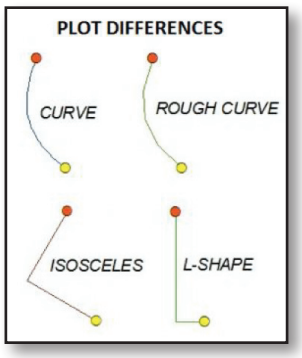
Seismic Data Conversion

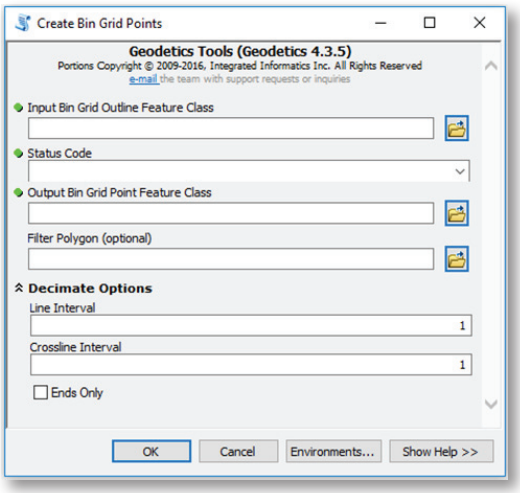
Seismic Loading tools load SEG P1, SEG Y, SPS, UKOOA (P1/84 & P1/90), IOGP P1/11, and columnar (fixed-width or delimited) text formatted surveys into point feature classes with optional user-specified line and/or point decimation and point-to-point azimuth calculations, including Line Azimuth, Azimuth Change, Bend, Interval, Seismic Point Gap, Nominal Interval, Seismic Point Orientation, Height/Depth Change and Seismic Point Number Interval. Header information from the input files is also extracted to its own table. In addition, there are tools for creating survey outline polygon feature classes using either the grid or lat/long coordinates and either a convex or concave algorithm.

The **Seismic Loading** toolset also includes tools to convert from Geodatabase to the SEG P1 seismic format. This allows users to create workflows that go full circle, both into and out of Geodatabase and seismic file formats. A **Plot Differences** tool is included to show the difference between pre- and post-plot feature classes. The **Plot Differences** tool draws lines between pre- and post-plot feature classes in the user defined shape (pictured at right). In addition, a group of tools specific to **Utilities** is featured within the toolkit, facilitating the creation of linear feature classes from loaded seismic point information.



Seismic Survey Toolsets

- **Seismic Bin Calculation** tools perform standard audit calculations/QC checks, create bin grid outline feature classes (with or without re-projection/transformation) and the corresponding bin grid points (optionally decimated at user-specified intervals). PDF reports of key grid parameters (including a diagram) and Quality Control Pages can be generated.



- **Reformat Seismic Survey** tools read standard and nonstandard UKOOA, SEG P1, SPS, feature classes, tables, and custom files and convert them to a standard file. At the same time, the survey spatial reference can be changed, and if a file has a projected coordinate system and either the grid or lat/long coordinates are missing, they will automatically be calculated during conversion. The Columnar to SEG P1 File tool will convert any delimited or fixed-width file to SEG P1. Custom delimited and fixed-width formats are captured in a format specification file and can be used repeatedly by one or many users. The SEG P1 to SEG P1 tool will reformat input SEG P1 files into a number of different outputs including: one file per line name, one file per inline header, or just one file.
- **Coordinate Data Writers** convert XY coordinate data from/to ASCII, Excel or dBase, ArcGIS table or feature class, using virtually any file delimiter.