

Ilex Computing Ltd.



Marine Survey and Construction Software

About Ilex Computing ...

Ilex Computing Ltd. is an established software company providing software development primarily for the offshore survey, exploration and construction industry. The company provides bespoke development services for PC based systems, whether they are networked or stand-alone systems. We assist the client in all phases of the development cycle of a product, from initial concept through development to delivery, installation and training. Rapid response are key words in the Offshore Exploration Industry and Ilex carries this through to industry in general and tries to provide solutions ON-TIME and IN-BUDGET plus lifetime support of a product

QCcalc 32 – Offline Utilities ... Geodetic Conversions, Sun shots, Network Adjustment, Velocity Profiles, SSBL Calibration

The package provides Geodetic conversions, Velocity of sound profiles, Quick traverses, Sun-shots for azimuth determination, Multi-range/bearing least squares adjustment, DXF import for multiple user definable graphics and information screens. Graphics screens can be scaled, centred, scrolled etc. and can show waypoints, vessels, run-lines. Several chart views can be defined using different parameters for each chart. Each can be centred on a different vessel, waypoint or line. A batch processing facility is provided to import or convert multiple coordinates contained in ASCII files. The latest additions are SSBL calibration routines and a Network Adjustment which will adjust up to 50 nodes

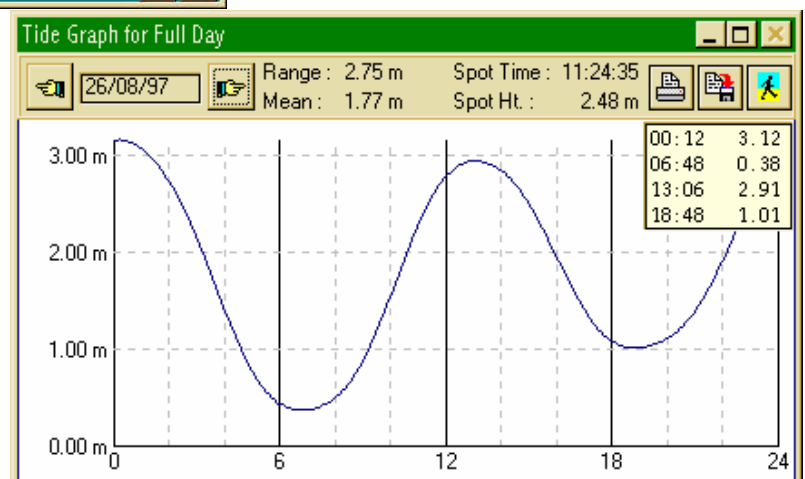
Field	Value	Unit
Spheroid	International	
Projection	UTM Zone 31 (3° E)	
Latitude	52°30'0.0000"N	
Longitude	1°36'0.0000"E	
Height	0.000	Metres
Easting	404961.553	Metres
Northing	5817695.114	Metres
X	3889640.569	
Y	108647.499	
Z	5036964.376	

Geodetic Calculator showing Lat/Lon conversion and Datum Shifted points.

The **Geodetic Calculator** uses user defined Spheroids, Projections and Datum Shifts to compute positions which can then be applied to a vessel offset or added as a waypoint to the database. If a chart view is displayed then the vessel will move to the new position and heading. SSBL transponders can be added and relative distances computed between them. Projections can be defined in TM /UTM, Lambert, Hotine, Rectified Skew Orthomorphic or Mercator formats and Datum shifts can be defined by 7 parameters. The Norwegian polynomial solution is supplied as standard as will the OS ETRS 97 format.

The graph shows the tidal curve plus the highs and lows for the day, spot heights can be obtained by moving the cursor across the graph. The graph can be saved as a bitmap or printed, clicking the left/right buttons you can step through tide graphs for adjacent days.

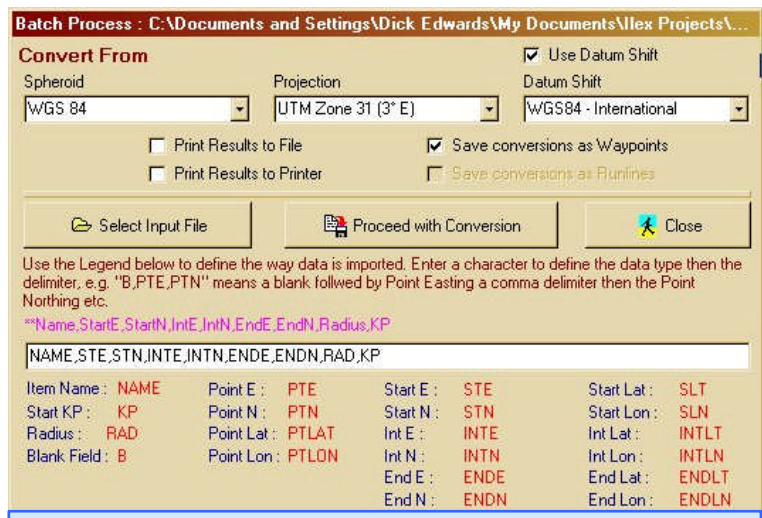
The predicted **Tide Height** is computed every 15 seconds while the program is running and displayed on the main button bar. By clicking the button a graph for a complete day can be obtained as shown here



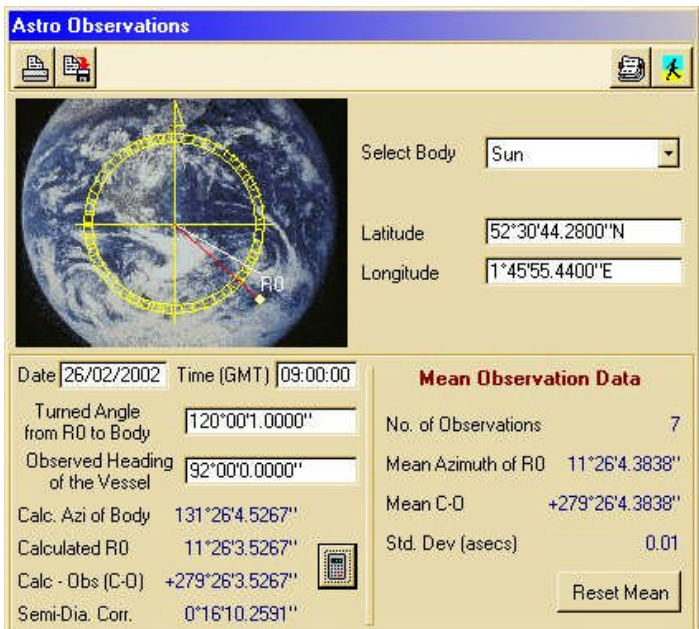
A database or **Fieldbook** is maintained which contains the Spheroids, Projections, Datum Shifts, Runlines, Waypoints, Tidal Data and DXF imports to be used or displayed. This forms the core for all the computations carried out by the program.

A **Batch Processing** facility is incorporated which allows the import of a series of data points in an ASCII file as Waypoints or Runlines. During the import the points can be converted from Grid to Geog or Datum Shifted using any of the user defined conversions from the database.

A **Quick Traverse** facility is included to allow offsets or setting out to be quickly and easily computed or multiple range/bearing calcs. from a single point to be made. Range and bearings or X,Y inputs are provided and computations can be True or Relative.



Batch Process importing WGS84 runlines and converting to International



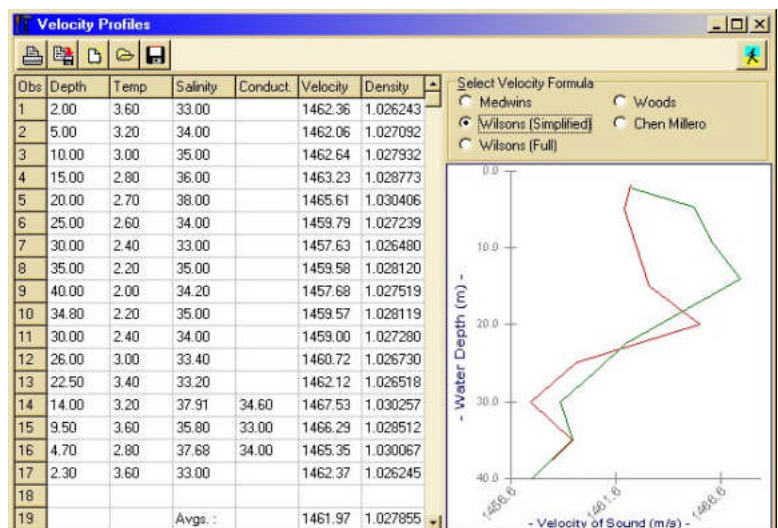
Sun shot showing a mean of 7 observations

Sun-shots can be carried out using the polynomial routines from the HMSO star almanac. Multiple shots can be taken to Sun, Moon or Venus and standard deviation, mean azimuth and comparisons with a baseline computed.

The star almanacs are published on our web site every year or they can be entered manually using a utility provided.

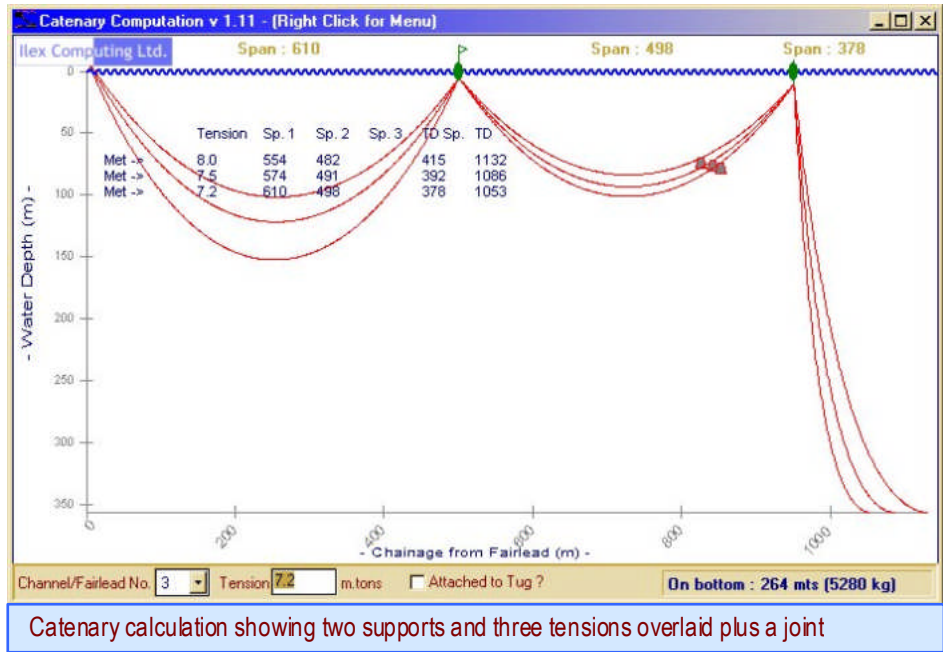
A **Velocity Profile** can be computed using a selection of 5 of the most common formulae. Enter the data in a spreadsheet like form and as the data is entered the velocity is computed and the new points added to the graphic display.

The program will compute velocity and density using conductivity if salinity is not know, The mean velocity and salinity is then computed for use in acoustic systems or ROV operations.



Velocity Profile showing the Down and the Up profile in different colours

Catenary Calculations can be carried out using multiple supports and multiple tensions, the end of the wire/chain can also be attached to a tug to monitor clearance during anchor running operations. The setup supports 12 independent channels in which up to 3 supports can be configured and two types of wire/chain. A joint weight can be configured where the joint is relevant in the computation and wire out entered.



Catenary calculation showing two supports and three tensions overlaid plus a joint

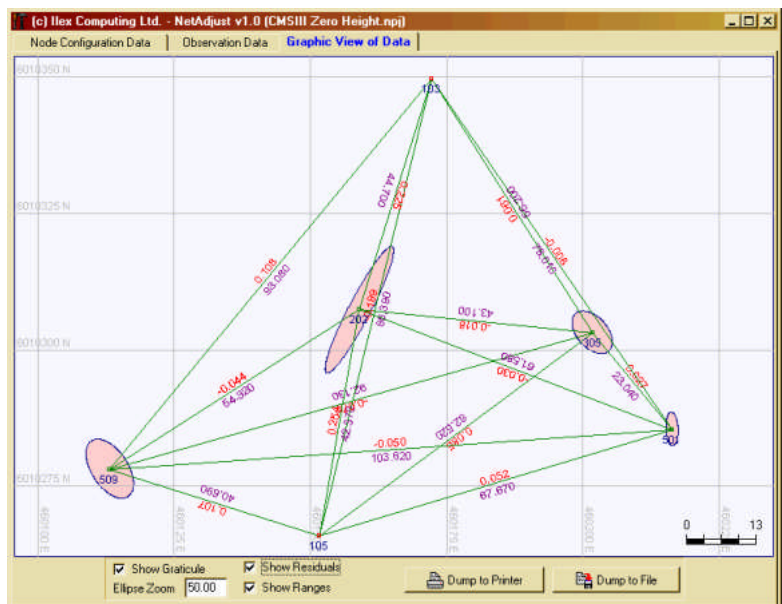
A **Network Adjustment** routine is included which allows up to 50 nodes to be entered and configured as floating or fixed stations. This allows a maximum of 2300 LOPs to be entered for the adjustment. Each LOP can be enabled/disabled individually and a 3D solution is computed with residuals and graphically displayed.

Node ID	Use Fix XY	Trial X	Trial Y	Trial Z	Calc X	Calc Y	Calc Z	SD
505	<input checked="" type="checkbox"/>	419740.2550	6622744.0940	1.0000	419740.2550	6622744.0940	1.0000	0.00
407	<input checked="" type="checkbox"/>	419756.6719	6622705.2223	1.0000	419756.6719	6622705.2223	1.0000	0.00
311	<input checked="" type="checkbox"/>	419758.0716	6622731.3469	1.0000	419758.0716	6622731.3469	1.0000	0.00
301	<input checked="" type="checkbox"/>	419717.2420	6622706.9823	1.0000	419717.2420	6622706.9823	1.0000	0.00
308	<input checked="" type="checkbox"/>	419748.4200	6622742.9000	1.0000	419748.4200	6622742.9000	1.0000	0.00
312	<input checked="" type="checkbox"/>	419733.3500	6622740.3100	1.0000	419733.3500	6622740.3100	1.0000	0.00
403	<input type="checkbox"/>	419738.3000	6622732.0700	1.0000	419738.2760	6622732.0454	1.0000	0.20

Network Nodes showing 403 as floating.

A typical node setup is shown left with tick boxes to enable individual nodes and set their status as floating or fixed, the columns showing green are results of the computation with the SD for each node shown in red.

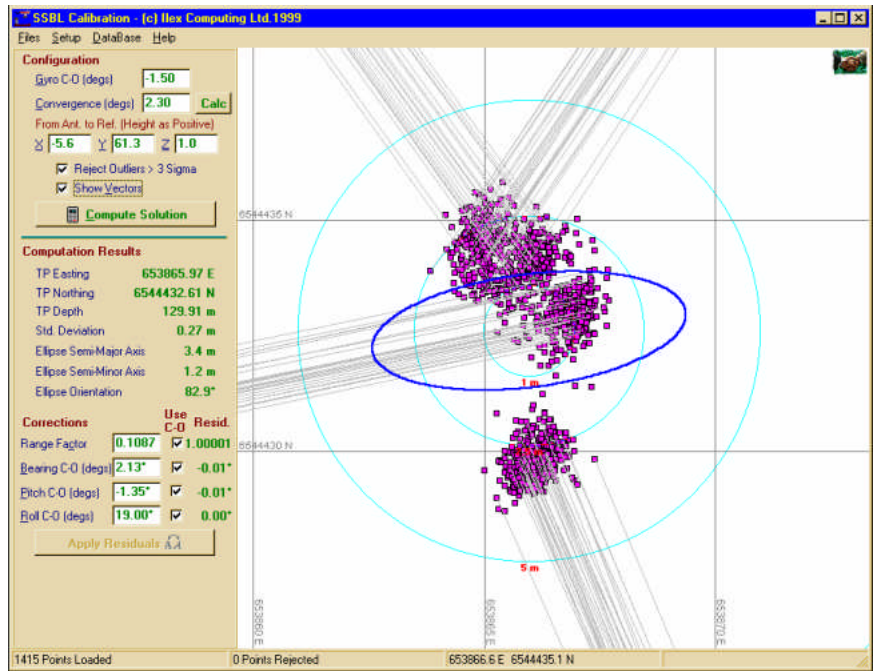
The display at the right here shows the legs of the adjustment with the residuals placed alongside the relevant LOP's. You can also display the LOP itself and the Easting/Northing graticule.



Network after adjustment showing nodes, LOP's and residuals.

For acoustic work an **SSBL Calibration** routine is included, this is an offline version of our very successful online version. Data must be imported from ASCII files supplied by third parties, there is a flexible import routine and data can be selected/rejected using the cursor on the graphics display. The graph shown here illustrates the computed transponder positions and the error ellipse. The grey lines indicate the vectors to the ship position for the relevant observation.

A full set of statistics is produced and can be printed or captured for inclusion in a report.



Typical SSBL calibration with results in the left panel.

Specifications ...

- Primary Routines**
- ✓ Geog – Grid - Cartesian
 - ✓ Grid – Geog – Cartesian
 - ✓ Datum Shifts
 - ✓ Batch Conversion
 - ✓ SSBL Calibration
 - ✓ Network Adjustment
 - ✓ Tidal Predictions
 - ✓ Quick Traverse
 - ✓ Velocity Profiles
 - ✓ Sun shot for Azimuth
 - ✓ Graphic Plots of data
 - ✓ Intersection/Resection
 - ✓ Catenary computations

- Database Capacities**
- 20 Spheroid definitions
 - 20 Projection definitions
 - 20 Datum Shift definitions
 - 20 Standard Ports
 - Runlines (subject to memory)
 - Waypoints (subject to memory)
 - DXF Entities (subject to memory)
 - 35 days of Tidal Angles & Factors
 - 20 vessel transponders
 - Multiple vessels
 - 255 Chart displays
 - 50 Nodes for Network Adjustment
 - 2300 LOP's for Network Adjust.
 - SSBL LOPs (subject to memory)

- Secondary Routines**
- Relative Transponder calcs
 - Auto Run-line generation by block
 - Auto cross line generation
 - Auto Parallel line generation
 - Night & Day colour schemes
 - KP to Alongtrack
 - Position to KP & Cross-Track

Contact Details ...

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