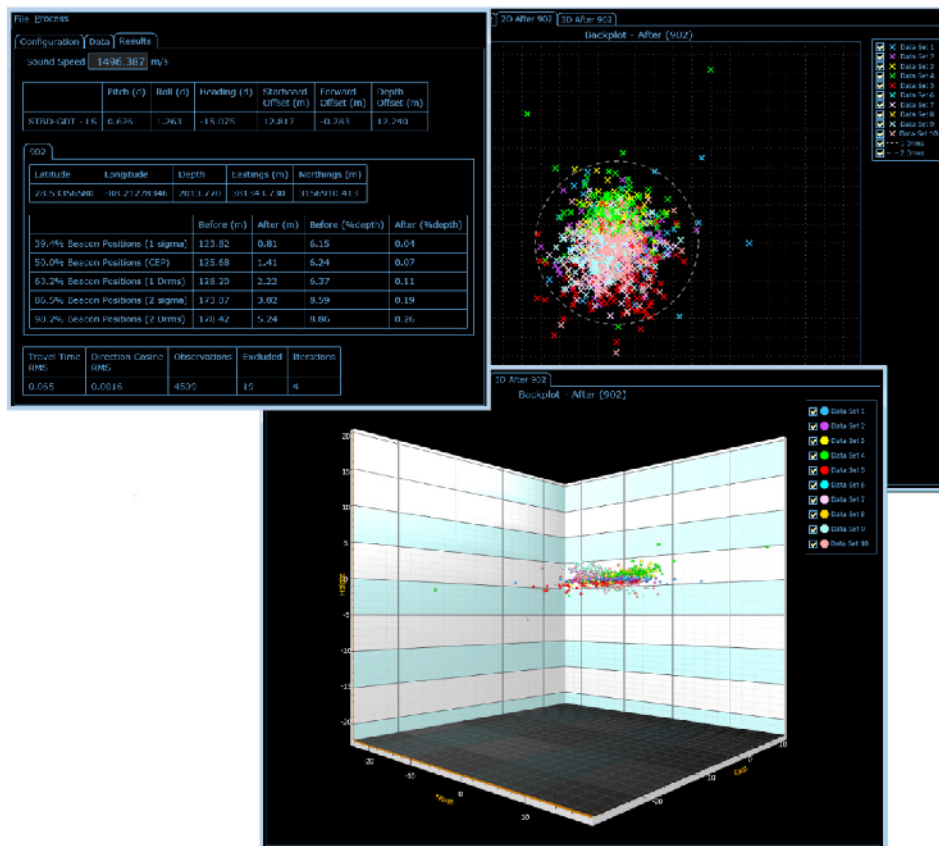


Datasheet

CASIUS 6 – USBL System Calibration Software

Description

CASIUS 6 is a new and improved USBL calibration and verification tool integrated into V6.00 of Ranger 2 and Marksman, which optimises the performance and accuracy of Ultra-Short BaseLine (USBL) acoustic positioning systems by accurately calibrating the biases between the USBL transceiver(s) and the vessel's attitude and heading sensors. The tool uses the location and time of that the data is collected at to automatically model, and correct for changes in tide and refraction.



Key Features

Estimates Pitch, Roll and Heading corrections between USBL transceivers and vessel's attitude and heading sensors.

Less vessel time spent calibrating by verifying existing calibration and generating Verification Report.

Faster calibrations: collect data from all USBL transceivers and GNSS receivers connected to a single system at the same time.

Apply user's sound speed profile, or estimate sound speed based on location.

Correction for refraction to provide accurate calibration in shallow water.

Correction for tidal variation during data collection

3D visualisation of result

Generates Calibration, and Verification reports in PDF format for inclusion in survey reports.

Integrated into V6.00 of Ranger 2 and Marksman

Verification Procedure

The verification tool can be used to confirm that an existing USBL system calibration is still valid, and so avoid the need to spend valuable time re-calibrating the system unnecessarily. The tool allows a report of current system settings, and performance to be produced, which when compared to the result of the previous CASIUS calibration can be used to decide whether a new calibration is required.

A transponder is placed on the seabed, either at an arbitrary position, or a known location co-ordinate, and the vessel carries out some basic manoeuvres, such as spins, or figures of eight above the transponder, before sailing a short distance away. The tool produces an estimate of the position of the transponder with respect to the GNSS, and the spread. A report can be generated that provides the installation settings that were used, and the achieved position performance. This report can be either used as evidence of the performance of the system following a fresh calibration, or as evidence that the existing calibration achieves the required survey performance, and so a new calibration was not necessary.

Calibration Procedure

CASIUS 6 achieves improved accuracy and precision by working directly from the Sonardyne Wideband signals, modelling tidal variation during the data collection, and compensating for refraction to estimate misalignments between the USBL transceivers and other reference sensors.

Data that may have already been collected for verifying the existing calibration can be supplemented with additional data either from fixed locations spread around a transponder that has been placed on the seabed, or by carrying out recommended manoeuvres while collecting GNSS, AHRS and USBL data. The modelling of tidal changes, means that data collected at different stages of the tide can be accurately processed.

CASIUS 6 then computes an unbiased estimate of the position of the seabed transponder, the lever arm between the USBL and the GNSS antenna, and the pitch, roll and heading misalignments between the USBL transceiver and the reference sensors. A report can be generated that summarises the performance of the system before, and after the calibration. This report is commonly included within a survey report.