



Fusion LBL Release Notes V1.12.06 Release

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A copy of the Release Notes is automatically installed with the software and should be read before use. All major changes between versions and a current list of known problems / limitations are listed here.

The changes below are listed in reference number (PPR number) order and significant changes are marked with an asterisk (*) and shown in bold.

Version History

Version 1.12.06.2566 September 2018

- **14204** Log File clean-up improved to include log files from previous sessions.
- **18111** Comms Windows resizing and pausing improvements.
- **19454** Pitch and roll corrections can only be entered manually, and no longer measured.
- **22268** The system now prevents a user selecting the same signal, for a beacon's multi-user connections.
- **22782** WKT now used correctly to activate an inactive multi-user beacon connection.
- **23443** Exported calibration CSV files are now saved in a new job folder after creating a new job.
- **24077** Multi-user beacons are now updating correctly in the UI when the user sets a sub channel to none.
- **24205** Starfix.Acoustics is now using Fusion's EPSG geodesy.
- **24272** Mechanism to cancel a command has been improved, to make it more responsive.
- **24459** Changing the calibration type between 3D and 2D, should no longer lose an updated depth value.
- **24466** SI/MI tracking has been improved, to increase the RXW value to the max range specified for the transceiver or mobile beacon, when we have less than 4 successful ranges. When we have at least 4 good ranges, the highest estimate range value is used for the RXW value.
- **24654** EPSG database updated to version 9.2.
- **25323** Comms Window scrolling improved.
- **25609** A Compatt can now be removed when Environmental updates are running, providing that the Compatt is not being used as a source for the updates.
- **26001** User defined geodesy settings can now be correctly saved, retrieved and used by Fusion.
- **26457** Switching between Multi-User connections, will now correctly send a wakeup tone if required.
- **26627** NSH ports can now be selected for all instruments, and Fusion no longer restricts powered ports for just transceivers.
- **27111** The apply button in the Global Settings dialogs Constants page, is now correctly enabled when a constants value is changed.
- **27378** An application crash, experienced when planning a baseline calibration has been fixed.
- **27602** The Arrays dialog now shows whether a Compatt is enabled or disabled.
- **27603** Arrays dialog displaying of Multi-User data has been improved.
- **27608** The Report Manager no longer resends or logs a PSONMEAS report from a previous session.
- **27609** Changing a Multi-User connection to CIS, will now correctly set the common interrogate to the correct CIS value.

- **27610** The Report Manager now correctly includes a measured heading value in the PSONMEAS report after reloading the job.
- **27670** Improved handling of high update rate instruments, to prevent an application crash.
- **27679** When starting the application, the Windows registry settings can be recreated should they be suspected of being corrupted, by holding down the Ctrl+Shift+A keys.
- **27960** Script Tool now allows the user to stop the scripts execution.
- **27962** The Script Tool will now successfully measure depth or SV when Environmental updates are running.
- **27978** The range gate mechanism has been improved, so if the range gate is opened, then the tracker is reset to allow it to calculate a new position without any historic estimates. This allows the software to use the new range gate value, should a significant position change have occurred.
- **28000** The tidal update mechanism has been improved, to handle incorrect readings, by taking into account the time difference between tidal update measurements, The software now checks that tidal update hasn't changed more than 10 metres per hour, before accepting the measurement.
- **28253** The Fusion Security Tool's ability to generate and use a remote dongle update string has been fixed.
- **28432** The measurement display didn't always show all new measured ranges, which has been fixed.
- **28570** A vehicle tracked using only GNSS or INS GGA positions, and not using a kalman filter, has no metrics to allow a vehicle position error to be calculated. This resulted in the value of 2.447 for the Major and Minor axis, which has been corrected to show N/A.
- **28756** A crash experienced when removing a vehicles selected references, using the Select References dialog launched from the status toolbar vehicles context sensitive menu, has now been fixed.
- **28846** Support for using an NTP server to synchronise the application time, has been added to Fusion.
- **28846** Starfix.Acoustics no longer uses Message Manager's heart beat to synchronise clocks.
- **29007** A calibration's added manual measurement position, no longer defaults to the timestamp '01/01/2000 00:00:00', but uses the current time when the measurement is added.
- **29264** A system hang, experienced when performing log file housekeeping on a group of log files with a log file missing in the sequence, has now been fixed.
- **29444** The heading correction value for a Lodestar Gyro Compatt 6, is now being correctly persisted and retrieved from the job.

Version 1.12.05.2558 May 2017

- **26379** Manual command tool can now be resized to see the commands and replies.
- **26896** Transceiver correctly authenticates when only sending telemetry.
- **27552** Activity Timeout AT0 and higher now supported.
- **27555** A mobile beacon's advanced properties, now includes a new check box called 'Use diagnostics in Simultaneous Interrogation' which can be deselected to improve battery usage in extended deployments.
- **27570** Support time synchronisation of the application, using the Windows clock of an NTP synchronised PC.
- **27613** Now using the International formula for gravity, as used in the UNESCO pressure to depth formula, to calculate a gravity value in the Global Settings window's Constants tab.
- **27673** When configuring the Logging settings, in the Advanced page, we now allow the user to set the number of log files the system keeps when automatic housekeeping is selected.
- **27679** When starting the application, the Windows registry settings can be recreated should they be suspected of being corrupted, by holding down the Ctrl+Shift+A keys.

Version 1.12.04.2552 October 2016

- **13907** * **NSH now supported by the application.**
- **14229** The responsiveness of the system has been improved when stopping tracking.
- **16442** Baseline calibration stability improvements.
- **17484** When starting Fusion, the user is now prompted whether they want to start Sound speed / Tidal updates, should it have been running when they last closed Fusion.
- **20929** Measurement Only tracking can now use sensors regardless of whether they're attached to a vessel or an array beacon.
- **21118** A report which contains a geographic position such as the GGA report, may report a Latitude/Longitude value of 0.0 when the geodesy settings are incorrect and the conversion from a grid to geographic position fails. This is now identified by a new alarm, which can be resolved by correcting the geodesy settings.
- **21832** The available reports are now shown by the Report Manager, should the security key (dongle) be added after the software was started.

- **22052** The Array dialog now supports multiple beacon setup when Get/Set is selected (only the General tab when using a multi-user connection).
- **22476** NCU TOD instrument improved handling of TOD telegram and 1PPS trigger.
- **23547** Time Synch instruments 'NCU Time Synch' and 'Trigger In' have been removed as they're no longer supported.
- **24267** Improved the Range Gate mechanism by not opening the range gates, should a minimum of 4 successful ranges be received, or 1 successful range when using a Lodestar INS, needed to successfully position the vessel. Also restricted the range gate open time, by allowing the user to specify the maximum range possible for their tracking scenario. This is set in the Transceivers advanced properties, or the vehicles positioning properties dynamic settings.
- **24300** Several report timestamps are now correctly using adjusted timestamp values.
- **24349** IT command improved to prevent a parameter being sent twice which causes the command to fail.
- **24384** Reports which are dependant on values which have just been changed in the Arrays dialog were not updated until the Arrays dialog was closed, has been fixed so that the value is available once it has been set.
- **24425** * **NSH Time of Day instrument added to support synchronising the applications time (original 'Time of Day' instrument renamed 'NCU Time of Day' instrument).**
- **24457** In a Static Fix Tool report, the beacons results are now shown correctly, even if a beacons first expected range is not received.
- **24460** Report 'NMEA 0183 DP' now defaults to the LBL position report instead of the transponder position report.
- **24483** The GyroCompatt 6 Gyro/Inclinometer properties page, now correctly persists the Gyro Power On/Off status.
- **24500** Report timestamp differences seen when the output is not using serial comms has been corrected.
- **24596** Reports which were sent twice has been corrected.
- **24753** * **A training job template and basic simulator have been added to the application, allowing the user to create a training job to assist in refreshing themselves how to operate the software.**
- **24770** Intermittent timing differences between logged data and output reports of 1 second, has been identified and resolved.
- **24915** Calibrated reference beacons depth will not be updated following a depth measurement, unless the Option dialog References tick box 'Update the calibrated depth value after every manual depth measurement' is selected. Should this be selected, and a depth measurement is made for a reference beacon, then a dialog will be shown offering to update the beacons depth.
- **24924** A HPR enabled Compatt 6 can now be used to track with on a CIS channel.
- **25001** Tracking performance improvements have been added when using SPRINT INS.
- **25271** GyroCompatt 6 controls have been improved.
- **25672** Heading measurements no longer have convergence value applied during Measurement only tracking, following a tracking session.
- **25734** Fusion Security Tool has been updated to show the correct expiry details of the new dongle format.
- **25827** Sonardyne proprietary Depth instrument \$SONDEP now also support \$PSONDEP telegram.
- **26024** The depth offset value used for a GyroCompatt 6 has been correct to -0.155m from -0.125m. This value is now used in new jobs, however will need correcting in existing jobs created by v1.12.03 and earlier.

Version 1.12.03.2518 October 2015

- **20347** Position was incorrectly converted when using EPSG code 1612, transforming from WGS 84 to ED50.
- **23398** * **New EPSG Geodetic library implemented into Fusion, and the Blue Marble library has been removed.**
- **23894** Corrected ability to Apply geodesy parameters without first needing to save the settings.
- **24014** The Survey Demo job has been updated to use the new geodesy library.
- **24023** A new Sonardyne copyright notice can be viewed from the 'Help/About Fusion 6G' menu.
- **24111** 6G DASCAL utility added to the Fusion CDs '6G Utilities' folder.

Version 1.12.02.2506 July 2015

- **17234** * **Multi-User beacon array setup added to the Arrays dialog.**
- **11227** Box-in Calibration measurements status is now 'Collected' rather than 'Excluded', and the range lines are shown in green.
- **14171** Improved status reporting when activating a Compatt 6 release mechanism.

- **15625** Supported manually disconnecting ROVNav 6 battery.
- **16085** The measurement display, will now show measurements in grey when the data is older than the set update interval.
- **16361** 'Comms reset' can now be set to 'None' for a USBL transceiver.
- **16435** Selecting apply in the Compatt 5 properties Roll / Pitch tab after getting the values, no longer resets these values to zero.
- **17617** Measurement display now shows Cross-Correlation, Signal Level and SNR.
- **17905** Improved the Arrays dialog to show whether a beacon is HPR enabled or disabled.
- **20249** Measurement display uses sensor data age instead of time since collection,
- **20283** The Array dialog's wakeup tone field is now correctly disabled for a Compatt 5 beacon.
- **20345** Diagnostic Info button added to the "Show Comms" window, which shows additional information to aid diagnosing communication issues.
- **20349** Prevented adding a Heading and INS device to the same vehicle.
- **20599** Transceiver Summary / Comms page now offers a Connection Type field. This offers a "Via MUX" connection type, to default to the correct setting and actions when using a fixed Baud rate MUX channel. Other connection types available include "Direct", and "Via Ranger2 / Marksman".
- **20604** Calibration Scale Factor now persisted and retrieved correctly from the calibration log files, and used in the calibration report files.
- **20612** Beacon properties Test button, now measures and reports the range when testing a beacon.
- **20678** Updated geodesy to use the latest Blue Marble GeoCalc library, which supports using the EPSG dataset. A warning is shown when loading an old job configuration file, to ask the user to check and verify that the settings are correct.
- **20746** Improved Average Fix Tool report to only show fixes used to calculate the average fix, after a collection of fix points have been cleared.
- **20916** Prevent removal or deletion of instrument(s) / vehicle(s) / array(s) whilst environmental updates, sound speed or tidal, are running.
- **20991** A warning is now displayed, should the user select to use HPR channel and the activity time is not set to forever.
- **21197** Calibration wizard Get Depths now works correctly on a dual monitor computer.
- **21342** Corrected the use of units in the Static Fix Analysis Tool report.
- **21552** Improved Fusion's use of a Ranger2 / Marksman PAN port controlled HPT transceiver.
- **21627** Online histogram now shows all measured ranges.
- **21628** Reporting Lodestar power status improved for the GyroCompatt 6.
- **21629** Starfix subscriptions are now reloaded correctly from the job file.
- **21630** Starfix WGS84 report values have been corrected.
- **21729** Report Manager now correctly shows a PSONMEAS report in an output window.
- **21816** \$PSINLBP telegram re-introduced into Fusion.
- **22039** Report Manager now correctly saves a PSONMEAS report in a text file.
- **22098** Corrected saving current position to a Compatt 6.
- **22099** Improved Range Tool selection of From / To / Relay options.
- **22107** When turning OFF a Compatt 6 in the Arrays dialog, ECO is now sent to disable common interrogations.
- **22250** Noise Plot Tool is not available for selection when tracking.
- **22293** Installer sets Fusion's compatibility privilege level to 'Run this program as an administrator'.
- **22308** Modified pressure to depth conversions to use the UNESCO equation.
- **22527** Average fix point report now includes the number of fixes used in the calculation.
- **22542** Corrected decode of NAVSTAR UTC string in TOD instrument.
- **22544** * **Support added for Mini-ROVNav 6.**
- **22577** Least Squares Observation Persistence enabled for slow moving ROVs.
- **22874** Installer modified to fix a problem which prevented a job configuration file from being automatically loaded on startup.
- **23218** Added to the installation and CD, a batch file to help manually uninstall Fusion, if the original installation media is no longer available.

- **13903 * Windows 7 support.**
- **7558** Supported Starfix Suite Geodesy projection 'Albers Conical Equal Area'.
- **7559** Supported Starfix Suite Geodesy projection 'Krovak Conformal Oblique Conic'.
- **12923** System no longer extrapolates a sound speed value outside of the Sound speed profile.
- **15018** Environmental Sound Speed measured updates, no longer waits for the interval period before taking the first reading.
- **15297** Improved Compatt 6 command wakeup handling.
- **15325** Vessel depth correctly updating when using an attached depth sensor from a Compatt 6.
- **15339** Improved tracking in a mixed 5G/6G set-up.
- **15364** System now supports a non-acoustic direct read sound speed instrument, to be selected and used for a local vehicle sound speed.
- **15386** Script tool corrected to repeat for the specified REPEAT value.
- **15412** Range Tool no longer offers fast sim option when using a 6G transceiver with a 5G array.
- **15485** Suggested gain displayed in the transceiver noise plot window has been removed to prevent confusion.
- **16153** Improvements to LBL aiding for SPRINT systems.
- **16437** Gyro inclinometer heading correction is now applied to the gyro heading.
- **16464** Periodic depth measurement whilst tracking corrected for a mixed 5G/6G set-up.
- **16503** Displayed and reported positions are now using the Kalman / LSQ position selected for the vessel.
- **17868** Serial interface to a Compatt has been removed.
- **18107** Implemented use of 'Last Folder' as default for saving / opening.
- **18350** Range gates used in tracking have been improved.
- **18356** Average Fix collected points using selected display positions for the vessel instead of always using the Kalman positions.
- **18477** PSONMEAS report now offers both True Heading and Corrected Heading.
- **18575** Report Manager no longer resets the selected output filename to the default, when viewing the report properties.
- **18761** The arrays dialog, now shows the CIF and IIF Enabled tick boxes as read-only information.
- **18846** Maximum number of arrays supported by a single job, increased to 20.
- **18855** Average Fix Tool improved to create fixes from position estimates, generated only from acoustic or GPS-only updates.
- **18861** Ranger2 / Marksman PAN port use improvements.
- **18863** Prevented beacons from being removed from a calibrated array, when a beacon is found in the array with an unknown frequency band, when opening the array properties window.
- **18866** Average Fix Tool updated to show the number of ranges used per average fix.
- **18892** blocking period reset, when max power is set using the CPA4 command to a with firmware version 10.09C.
- **18918** Gyro inclinometer pitch and roll corrections measured for a second time, has been improved.
- **18926** Ability to edit the heading correction in the Gyro/Inclinometer tab has been removed.
- **18941** USBL specific telegrams removed from the Report Manager.
- **17079** Eiva report now correctly using index value.
- **18495** Default depth sensor offset corrected for a Lodestar GyroCompatt 6.
- **18760** Disable / Enable option implemented in the Array Properties dialog for a Compatt 6.
- **19205** 6G command's wake-up 1 and 2 is used, until the VS reply from the Compatt informs Fusion which wake-up is used which is then used from then on.
- **19536** Environmental dialog improved, to calculate the water column's average sound speed value, using the selected averaging method when a profile sound speed is selected.
- **19831** 'GPS' instrument has been renamed to 'GNSS' (Global Navigation Satellite System) as this is now a more generic description.
- **19836** Corrected the Box-In Calibration Wizard page ordering when the Back button is selected.
- **20100** Improvements made to stopping setup in a baseline calibration.
- **20129** Compatt 5 available telemetry power levels corrected.
- **20140** Unnecessary command no longer sent after setting beacon changes in the arrays properties window.
- **20199** Vehicles Dynamics page updated to show the correct settings, whether it is launched from the vehicles properties positioning page or from the chart display.

- **20370** Job setup improvement to ensure an instrument's parents are updated should the parent device be deleted.
- **20439** Corrected the ability to select the positioning option of a computed depth, when using a 6G transceiver.
- **20452** For rare occasions where field of operations crosses the equator, a Southern hemisphere Transverse Mercator can be selected and used for tracking in the Northern hemisphere, up to a maximum of 5,000Km north of the equator.
- **20457** INS Depth measurement now shown in the measurement display.
- **20744** Static Fix Tool now shows the correct options in the combo boxes, when using a 6G transceiver.
- **20768** Corrected the use of 6G transceivers in Vehicles Instruments and Offsets page, and the Travel Time Display Editor.
- **20799** When a transceiver linked with a Lodestar INS, is deleted from the job, Fusion will now correctly clean up its linked settings and warn the user that the INS no longer has an assigned transceiver.
- **20803** Fixed the issue where a 6G transceiver set with a 9600 Baud, will occasionally operate at 38400 after the job is re-opened, even though it reported it was working at 9600.
- **20841** Corrected use of setting wake up tone for a Compatt 5 beacon, when setting the Interrogate Channel in the Array Properties dialog.
- **20844** Improved setting up multiple beacons in a mixed 5G/6G array, in the Array Properties dialog.

Version 1.11.05.2432 June 2013

- **17427** Reporting Lodestar power status improved for the GyroCompatt 6.
- **17697** Improved use of the 6G PORT command.
- **17424** RovNav5 EHF and LF transducer noise plots are now displayed.
- **17425** Online histogram now shows all measured ranges.
- **17428** Starfix subscriptions are now reloaded correctly from the job file.
- **17429** Starfix WGS84 report values have been corrected.

Version 1.11.04.2430 October 2012

- **10556** * **GyroCompatt 6 added.**
- **11626** Measured depth tracking using a RovNav5 improved.
- **13793** Range Test report corrected to show edited position in report.
- **14339** A Beacon Command is now resent after a Transceiver Authentication failure.
- **14418** IIS Calibration is now available for selection in the Calibration Setup Wizard.
- **14530** The Option to 'Show Noise' when right clicking on the Get option in Transceiver Properties has been removed.
- **14556** Battery Count information for a Compatt 6 beacon is now correctly shown in the Arrays Dialog and Array Calibration Report.
- **14901** Vehicles with an INS attached can now use a depth sensor in acoustic tracking.
- **15374** Compatt 5 lock option is not valid when used with a 6G Transceiver, therefore this was removed.
- **15399** New alarm added to report when the quality of a GPS instrument degrades.
- **15416** Noise plot corrected to show the average noise for a 6G transceiver.
- **15427** TOD Instrument CTS trigger option has been removed.
- **15436** INS Report PSNBCN correctly reporting depth for all supported Geodetic configurations.
- **15446** Manual option is now the default option within the Environmental windows sound speed properties.
- **15528** INS Report PSNLOBS now publishes additional QC metric(s).
- **15626** Sensor data can now be retrieved from a RovNav6 when a low battery is detected.
- **15873** HPR check box has been removed from the Arrays properties window.
- **15889** RovNav5 depth sensor update value will not reset to 10 seconds, unless it has not been set.
- **16122** Job setting from an earlier version, was found to prevent VRU data being used in a tracking solution, which has been corrected.
- **16330** Correct units now displayed for sound speed in a Static Fix report when using units ft or USft.
- **16339** Improved setting of Compatt 6 telemetry power levels.
- **16445** Corrected Lodestar PSNBCN message timestamp.
- **16455** Limited setting of the 6G address range.

- **16484** Range gating max default modified to improve tracking.

Version 1.11.02.2358 November 2011

- **10005** * **A Tidal Updates feature is now available for use in tracking.**
- **11594** A problem with Power Settings for a RovNav on NCU Transceiver slots 2 and 3 has been fixed.
- **11791** 6G Transceivers power levels are now correctly supported.
- **11838** A problem with a shape file being associated with more than one waypoint has been fixed.
- **12001** Depth and sound speed measurements are now supported for a GyroCompatt.
- **12197** Inversion of Pitch and Roll is now offered for a TSS2 string.
- **12221** Added Transceiver Reset option of 'None' to 6G transceivers, to allow use through a Marksman / Ranger2 PAN Port.
- **12247** A problem when processing the first collection of ranges if it contained more than 10 has now been fixed.
- **12453** Baseline Calibration algorithm has been improved to not reject valid data due to a low Standard Deviation value.
- **12470** Connection to a RS485 LPT Dunker is now supported.
- **12530** Baseline Calibration summary now correctly reports the used Sound Speed source.
- **12531** The user is now able to create a new device when environmental updates are running.
- **12880** Geodesy will now only auto set to the UTM zone if the Projection type is UTM.
- **12964** HPR channel of a Compatt 5 Beacon can now be updated using a 6G Transceiver.
- **12978** Environmental Sound Speed updates no longer stop after stopping a baseline calibration.
- **12990** A command failure during a Baseline Calibration now offers a retry.
- **13292** Added a Checkbox on the beacons properties 'Position / Environmental' tab, to Enable or Disable use of a beacon when INS tracking.
- **13362** PSONPOS Telegram improved to support a depth up to 9999.9.

Version 1.11.01.2319 November 2010

- **10015** * **Added support for Sonardyne 6G transceivers and beacons, Wideband 2 ranging (Manual section 7.4).**
- **9330** * **Added the Scripting Tool for use on metrology jobs, structure settlement monitoring, environmental monitoring and many other tasks (Manual section 17.1).**
- * **Added online sound speed measurements on a vehicle during tracking (Manual section 11.3)**
- * **Added online sound speed measurements by beacons during baseline calibration (Manual section 10.2.2)**
- * **Added support for simultaneous ranging during baseline data collection (Manual section 10.5.3)**
- Added the ability to set the order in which beacons are interrogated during baseline calibration (manual section 10.4.2)
- Added quality metrics and diagnostics to measurements and telemetry
- Simplified Instrument, Reference and Vehicle property pages
- Simplified the Tracking and Calibration Wizards
- Simplified environmental updates (manual section 6.6)
- Removed real time processing for box-in and array box-in calibrations
- Improved operating speed and response times
- Simplified the Manual Command Tool (manual section 17.8)
- User Manual updated with 1.11.01 changes.
- **11594** NCU power setting for a RovNav on Tranceiver slots 2 and 3 needs correcting.
- **11372** Crash experienced opening a Compatt 5 properties after its transceiver has been deleted from the job.
- **11241** Manual Commands recent reply not being displayed.
- **11232** \$PSONMEAS and \$PSONRNG reports need to be able to select a PC comms port for a 6G set up.
- **11212** Environmental update mechanism has been changed to use beacon measured and direct sound speed instrument.
- **11058** Zero heading value should be reported as 0 and not 360 in the measurement display.
- **11021** Baseline calibration fails reading the first new measurement, after the operator chooses to skip to the next baseline, even though a valid reply is received.

- **10790** When tracking with sound speed measured from a ROV's Compatt 5, the measurements view shows the data to be 'Not Used'.
- **10248** Bubble display added to the GyroCompatt 5 UI.
- **10247** Starfix multiple message not successfully sent.
- **10016** Baseline Calibration - Add ability to set the order the beacons are interrogated.
- **9889** Application updated to use the new dongle security scheme (used by Marksman), as well as supporting the existing format.
- **9848** Multiple system sync to TOD not functioning correctly.
- **9818** Demo job fails to run on first start.
- **9652** Boxin calibration - Switch off online processing.
- **9607** Calibration Processing reloaded initial beacon conditions when switching from 3D to 2D calculation.
- **8834** Boxin Data from Demo Data cannot be imported.
- **8271** Compatt 5 Simultaneous Tracking, unrequested measurements made during batch SI command.

Version 1.10.04.2253 October 2009

- **9414** Simultaneous tracking of a mobile beacon with HRP updates seems to result in regular transceiver resets
- **9405** Stop button becomes disabled when measurement-only tracking is running if the track wizard is entered but cancelled.
- **9400** Heading Input - Float display does not update for HDT or HDM input..
- **9364** Fusion crashes when asked to generate a Static Fix reportd.
- **9343** Average Fix Tool - Does not update for a mobile beacon.
- **9258** * **Addition of GyroCompatt instrument (Feature request).**
- **9256** Mk4 EHF Compatt - when configuring a digiquartz with an inclinometer, the depth sensor is seen to switch to 'none'.
- **9248** Added inclinometer and depth readings to PSONMEAS messages (feature request).
- **9247** Measurement only stops when tracking starts.
- **9246** PSONRNG Report - Zero ranges reported as -50msd.
- **9210** Range Calculator Tool Report reporting initial position incorrectly
- **9184** Remove text regarding CASIUS export of box-in data (feature request).
- **9144** Static Fix Analysis tool ignores all replies when one beacon fails to reply.
- **9133** Vehicle - Warn user if Auto Set initial position is turned off (feature request) .
- **9131** Baseline Calibration - Histogram sliders are drawn out of window.
- **8991** Stop button becomes disabled when measurement-only tracking is running if the track wizard is entered but cancelled.
- **8911** Measurement Only Wizard - beacon status not updating.
- **8910** Fusion LBL - RMS reads zeros in displays.
- **8905** Fusion LBL - Measurement Only Wizard confusing when switching from WFS tracking mode.
- **8809** ZDA Comms - once synchronised to the 1PPS trigger ZDA comms can no longer be viewed.
- **8747** CFH command to change HPR channel does not update beacon properties page.
- **8428** Manual Commands - CDT command is not sent and error message appears.
- **8422** Baseline Cal Histogram - Fixed problems manually rejecting measurements.
- **8381** Fusion hangs at startup when attempting to load a deleted job (as specified in the registry).
- **8380** Static Fix Tool Warning Dialog should not be modal (feature request).
- **8379** Array Dialog - Common interrogate frequency not set correctly for tone beacons.
- **8378** Range Calculator Tool - Report panel does not resize with Report Window (feature request).
- **8364** Array & All Beacons Dialog - Reply frequency is not correctly displayed for tone beacons.
- **8363** Baseline Calibration Wizard - Array Dialog sets beacons to Common Interrogate after TAT change.
- **8270** Baseline Calibration - Valid baseline measurements rejected/failed during calibration.
- **8169** Baseline Calibration - 'n of n' count in progress indicator does not keep in synch with manual rejections.

Version 1.10.03.2234 August 2008

- **8325 * Added support for ultra low power (ULP) ranging and telemetry in the Compatt 5 beacon. See section 7.5.6 in the Fusion LBL Operators Manual**
- **8167** Removed a problem with manual rejection of baseline measurements during calibration data collection
- **8323** Fixed a problem with the use of the Starfix geodesy in Starfix.Acoustics
- **8322** PSONARRAY reports now only output on change, not by interval
- **8282** Corrected a problem with the standard deviation values in the Static Fix Tool report

Version 1.10.02.2228 May 2008

- **7137** Fixed display problems in the Array Dialog
- **7501** Support for a raw depth measurement and correction have been added to the PSSIROV instrument
- **7508** The BP command is now supported by the Manual Command tool
- **7534** The Beacons Display no longer alters the interrogation channel for an array.
- **7579 * Transmit time synchronisation is now implemented for GDT transceivers. Transceiver interrogations can now be synchronised to GPS time.**
- **7630** All possible ranging methods and signals can now be used in the Range Tool
- **7705** Newer Valeport sound speed profiles now import correctly
- **7707** Added support for Compatt 5 with integral SS sensor and external Gyro
- **7728** All combinations of tracking method, interrogation signal and family are now set up correctly by the Tracking Wizard
- **7809** The correct Compatt 5 power level options are now available, see ITB-07-001
- **7937** Starfix.Acoustics no longer crashes during shutdown
- **7970/7971 * Can select and deselect ranges to be used during tracking. When deselected the measurements from a beacon are attempted but are not used in the position solution.**
- **7972 * Added batched baseline calibration**
- **7973 * Box-in report has been simplified**
- **7975 * Allows access to the Array Dialog from the Tracking Wizard**
- **7976 * Can constrain the bearing of a baseline during baseline calibration processing**
- **7977** Shows measurement age on the Measurements Display
- **7989** Only Starfix applications will now output the PSONARRAY sentence
- **8020 * The use of local gravity in depth calculations has now been fixed**
- **8025** Histogram defaults to 0.02m bin size for wideband during baseline data collection
- **8026 * Manually filter baseline measurements using the histogram display during data collection**
- **8027** Raw inclinometer values are no longer reset to zero by their property page
- **8028** In the Array Dialog the telemetry uplink and downlink options are now set before any other commands are attempted
- **8029 * Measured depths are now used as initial depths in calibration processing**
- **8030 * Exported positions now report 1 sigma position error in calibration export file**
- **8031** The 14 month and 20 year dongle types now no longer expire
- **8038 * Moved Simultaneous/FastSim tracking control from Transducer page to Vehicle Positioning page**
- **8044** During baseline calibration the measurement failure dialog is no longer hidden by other windows
- **8049** Box-in is now completed using wideband signals by default where possible
- **8057** This version can be installed alongside previous versions of Fusion USBL
- **8094** The long-standing problem of serial ports being listed but unusable has now been fixed
- **8113** The current scale factor is now saved correctly and applied to the horizontal component of a range
- **8156 * Compatt sensor measurement selection has now been simplified. The Measure check box has been removed.**
- All USBL functionality and controls have been removed
- Support for legacy application versions has been removed
- Removed transducer page from all acoustic instruments
- Support for legacy instruments and sensors has been removed:
 - Dual band Compatt
 - C4 Riser angle Compatt

- C4 Mini Compatt
- Directional transducers
- 3 parameter DigiQuartz depth sensor
- Current meter sensor
- Unused unsolicited instruments
- APS3 instrument
- ROVTrak transceiver
- LRT command unit
- Disabled support for one-way wideband in Compatt 5
- Support for parallel processing of APS3 data has been removed
- The Array Dialog now remembers its last size and position
- Fewer events are now raised when the sound speed value is updated
- P1, PG, LW and RS commands now supported properly in the Manual Command tool
- Auto linear gain option has been added for Compatt 5 V10.07
- The problem with removing a gyro sensor from a Compatt has been fixed
- The toolbars have been simplified
- Fixed online data collection from a Valeport sound speed instrument
- The message presented when a baseline calibration measurement fails has been made clearer

Installation Notes

General

- Fusion LBL should only be installed on a dedicated Sonardyne supplied Navigation Computer.
- Prior to installation, all applications should be closed and any antivirus software should be temporarily disabled.
- Before this version can be installed, any previous versions of the application must be uninstalled from the target computer. The installer used to install the previous version, should be used to remove this previous installations. When trying to uninstall Fusion 1.12 release and onwards, if you do not have the original installation media CD/DVD ROM, then a uninstall batch file can be found on the CD/DVD Utilities Support folder. When running this batch file on a Windows 7 and onwards, make sure you run it with administration rights, by right clicking on the batch file and selecting 'Run as administrator'.
- Fusion software requires Windows XP Service Pack 2 (SP2) as a minimum prerequisite on Windows XP. This is not automatically installed by the installer as this may contravene your local IT policy; however details of where it can be downloaded from are contained in a ReadMe.txt on the CD under the folder 'Utilities\WindowsXPSP2English'. To install Windows XP SP2, please download the service pack, and run the installer 'WindowsXP-KB835935-SP2-ENU.exe'.
- If this version is being installed for the first time on a computer without .NET V4.0, then the .NET V4.0 Install Wizard will run. If a subsequent menu pops up with a choice to close the Fusion Installer during the .NET V4.0 install, the user must select IGNORE.
- If updating Fusion LBL from a build earlier than V1.11, a new job file will need to be created.
- Fusion LBL can be installed in conjunction with a previous installation of Fusion version 1.09.03. If the installed version of Fusion is lower than 1.09.03, it must be upgraded to 1.09.03 prior to installation of Fusion LBL. If the previous installation of Fusion is uninstalled following installation of Fusion LBL, Fusion LBL 1.12 must be re-installed.
- A 1.09 and earlier installation of Fusion will be installed in folder 'C:\Program Files\Sonardyne\Pharos' whilst Fusion LBL 1.10+ will be installed in 'C:\Program Files\Sonardyne\FusionLBL'.
- The Fusion parallel port security key should always be used on its own and not in parallel with any other application security key type or manufacturer.
- Fusion now uses a new EPSG Geodesy library. When opening existing Fusion job configuration files, please verify that your Geodesy settings are correct before using the job. A warning is shown each time the job is loaded, until the settings have been checked by opening the Geodesy settings, and checking each page.
- Geodesy coordinate operation parameters are now defined using the EPSG convention, from local to WGS 84, therefore are inverted to how they were defined in versions 1.12.01 and earlier. These settings are stored in the original convention in the job file, allowing jobs to be transferred between 1.12.01 and 1.12.03, and vice versa.

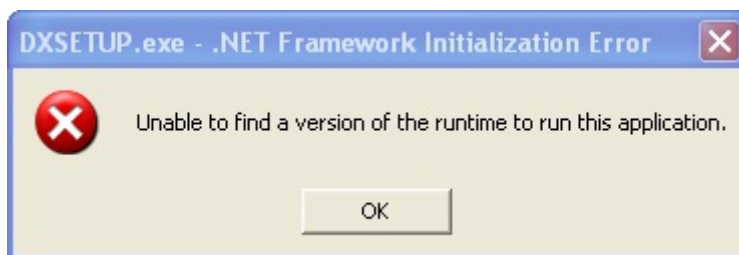
Known Problems and Limitations

General

- Fusion V1.12 is a long baseline only version, the current version of USBL application is 1.09
- Fusion LBL can be used with LBL dongles but can also be used with Navigation dongles
- Please disable PC Screen savers and power saving modes
- It is recommended that only standard Windows display settings be used. Problems have been experienced with small font sizes on certain screen resolutions when Fusion is installed on laptops.
- Changes to some Chart properties are not retained when the application is closed then restarted.
- With Fusion being an established system, existing areas of proven functionality are only tested as part of a full system test. Whereas new functionality will be tested in detail, there maybe areas which haven't been fully tested as part of the system test, for example EHF beacons.
- Please be aware there are potential issues when using a job configuration file (JCF), from another system, or an earlier installed version. These may include the following:
 - When using a NadCon Datum, the Las and Los files referenced by the JCF may be in a different folder. Please reselect your geodesy settings, after moving a JCF.
 - Sound speed profiles are stored differently between Fusion v1.12 and v1.11, plus maybe in a different folder, therefore it's recommended to re-import a profile after moving the JCF.
 - Logged data folder location maybe different, therefore please use the Logging dialog to create a new log file in the correct folder.
 - Please reselect any shape files or backdrop files, to ensure they are referenced correctly in the moved JCF.
- Fusion uses the Windows Registry to persist system settings. Should these settings become corrupted, this can make the software unstable. Should this occur, it is possible to delete and recreate these settings by holding the keys Ctrl+Shift+A down, when starting the application.

Installation

- It is recommended that users DO NOT connect a parallel printer to the parallel port if a Fusion parallel Security Key is fitted.
- Before running Fusion it is highly recommended that the current operating system login account has administration access rights.
- Fusion LBL v1.12 can be installed alongside V1.09 on the same computer.
- When installing Fusion v1.12 onto a clean Windows XP computer, where .Net Framework 2.0 has not been installed before an error will be reported:



If this error is observed select OK - this will allow the installation to continue successfully.

Following completion of the installation navigate to '<CDROM>:\Utilities\DotNetFramework2.0\' and run the dotnetfx.exe installer found in the folder, then re-run the installer '<CDROM>:\ISSetupPrerequisites\Microsoft DirectX9\DXSETUP.exe'.

- During the installation of Fusion should the installer report the fatal error -1603, then please refer to following [web page](#) which identifies possible resolutions to the problem. If you currently do not have internet connectivity, then please view the copy of the [web page](#) which was downloaded in July 2016. Also, please verify the presence of the installation file 6GSimulator.msi in the root folder of the Fusion installation files.

Instrumentation and Comms

- Instruments cannot be renamed once they have been created. To rename an instrument you must first remove it, and then recreate it.
- The FSI CTD Sensor should be interfaced directly to a PC port and not via a NCU.

- Fusion V1.12 is not recommended for use with Environmental Updates using a Direct Sound Speed instrument. This problem is being investigated.
- A TOD instrument needs a 1PPS input into the system, which can only be accepted via an NCU / NSH.
- When starting Sound Speed Environmental updates, the first update may be rejected and the Sound Speed status panel may be highlighted as RED. Should this happen, please stop and then restart the Sound Speed environmental updates.
- The Sound Speed status panel, is highlighted in green when sound speed environmental updates are running successfully. It has been observed that the status panel may return to the Windows background colour, when Sound Speed updates are 'On' and it's updates are successful. This is being investigated, and can be ignored should this occur.

Tracking and Calibration

- Whilst tracking, it is recommended not to change an existing instruments comms port.
- Tracking a mobile Compatt 5 with measured depth, using either a 6G or 5G transceiver, the depth update rate selected needs to be 0 seconds.
- Fast Simultaneous (FS) Compatt Tracking using tone signals - The Tracking Wizard will identify when there is a clash between the Individual Interrogation Frequency (IIF) of the FS Compatt and the Individual Reply Frequency (IRF) of one of the reference transponders. The Tracking Wizard will not attempt to automatically resolve this problem and operator intervention is required.
- When tracking a structure with multiple mobile Compatts, the active depth sensor used for positioning must be associated with the first mobile Compatt attached to the structure in the Vehicle Properties dialog.
- For 'Extend an existing Array' baseline calibration, fixed Compatt depths are not used in the adjustment. A tidal update should be performed before the Extend array calibration is started to ensure the relative depths of the fixed and free beacons are correct.
- When tracking a structure with multiple mobile Compatts to derive heading, using the Kalman tracker, it is recommended that filter settings of 9 or 10 are used for position and heading, instead of the defaults. This improves tracking and data rejection on less dynamic vehicles.
- Please avoid clicking alternative options, if the application is unresponsive post starting or stopping tracking. Unnecessary selection of options, whilst the application is unresponsive has caused the software to crash. Improvements have been made to prevent some of the issues captured, however in case not all the issues have been seen, please follow this guidance.
- When using a local sound speed for a Vehicle, please ensure that Sound Speed updates in the Environmental window are running for that sound speed sensor. It has been experienced that when sound speed updates are not running, that the vehicles positioning update rate is slower.

Mixed Generation

As it's not feasible to test all mixed generation scenarios, due to the extensive testing which would be required, this section aims to highlight any known issues with this version of the software. It is recommended that prior to planning a mixed generation deployment, that you contact the Survey Support Group via support@sonardyne.com, to advise you of any issues since the publication of these release notes.

- It is recommended that in a mixed generation job, where Compatt 5 and Compatt 6's are being used, that a RovNav5 is available should settings within a Compatt 5 need to be verified.
- When tracking a mobile Compatt 5 with a 6G transceiver, the system will be limited to using 6 reference beacons. If any more than 6 beacons are chosen as positioning references, the additional beacons will not be reported in the range replies.

Loader Application

- Loader Application – When loading new firmware into a RovNav5 or USBL transceiver via a NCU, the baud rate should be set to 57.6 kbps. Intermittent problem occurs when the baud rate is set to 115.5 kbps.

Requirements

Hardware Requirements

The following hardware requirements should be used as a guideline if Fusion LBL is to be installed on a computer other than the Sonardyne supplied Navigation Computer:

Minimum	Recommended (Navigation Computer)
Intel Core 2 Duo	Intel Core i7
3 GB RAM	4 GB RAM

1024 x 768 capable monitor	17" Monitor (min 1024 x 768)
Graphics card 32-bit colour at 1024 x 768	Graphics Card 32-bit colour at 1024 x 768
CDROM	DVDROM (read / write)
100 GB hard disk	500 GB hard disk
Spare USB Port	Spare USB Port
Minimum 3 serial ports	Minimum 6 serial ports

Software Requirements

- Windows 7 / Windows XP SP3
- Microsoft Internet Explorer 6.0 (or higher)
- Microsoft Access (desirable)

Dependencies

The following instrument firmware versions have been tested with this software version. As a minimum, these firmware versions must be installed in each component when used with this version:

Instrument	Firmware Version
Navigation Controller Unit (NCU)	2.00.36.00
Navigation Sensor Hub (NSH)	2.03.00.107
6G HPT Transceiver	3.09.03.00
6G RovNav 6 Transceiver	3.05.06.12
Compatt 6 CPU	3.05.13.11
Compatt 6 SuperMaxi CPU	3.05.13.07
Compatt 6 DAS	2.06M
Digital USBL (type 8021 and 8023)	8.08.00.02
RovNav 5 Adv (Wideband functionality only)	8.07.02.07
Compatt 5 Wideband functionality)	10.12c
Compatt 5 DAS	3.08a

Contact Information

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