



Version 5.0 Release Notes

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Improvements and Resolved Issues By Release

Version 5.01

Release Date: April 25, 2016

New Instruments Supported:

- SonarMite DFX Depth Sounder
- Topomap T500 GNSS Receiver

New Features and Improvements SurvCE:

- The Points / Layer by codes=Descriptions(codes) feature now works by enabling option “Use Layerized Points by Feature Codes” in the configure dialog.

New Features and Improvements SurvPC:

**Note that SurvPC also includes all SurvCE improvements*

- SurvPC now supports multi-Z reading in GIS Data Input. This feature allows the user to store data in Carlson SurvPC Esri, within specific (defined) end user fields for multiple Z (measurements).
- Users of Carlson SurvPC with Esri will now need a new Carlson-Esri serial number specific to their Esri version. The new method of registration requires two serial numbers, but allows more flexibility in upgrading options.
- SurvPC now supports Esri version 10.4.
- SurvPC now allows one step Save&Exit for "Edit GIS" features within the Esri Map.
- SurvPC with Esri OEM Engine now detects pure topologies assigned to the Feature Classes; in this way the software can alert the end user that the Advanced Esri OEM Engine will be required.
- SurvPC now supports repairing data sets using Carlson SurvPC with Esri OEM Engine, in cases when the end user added to the MAP Document, same name Feature Class and same Data Source.
- SurvPC with Esri OEM Engine now supports an automatic prompt per EQ2 (equations which could contain multiple measurements), for x/y measurement and Z for the Shape (Geometry), or for additional measurements (Zs).
- SurvPC with Esri OEM Engine now supports Re-Measure per same information read from the EQ2 (equations which could contain multiple measurements), for x/y measurement and Z for the Shape (Geometry), or for additional measurements (Zs).
- SurvPC now allows the "tolerance" to be used when using Esri OEM Engine (Feature Classes, which have topologies), and therefore allows the creation of Carlson CSCRD and the "linear" entity, when using Feature Carlson CODE and "Start" action code.

Bug Fixes in SurvCE:

- SurvCE no longer has the potential to fail when loading a user defined projection file.
- The TLV Level file will now update the CRD with the adjusted elevation.
- Resection results will now be properly displayed before storing.
- Navigation no longer has the potential to fail when using the World Magnetic Model to

automatically calculate Magnetic Declination.

- The appearance of the Manual Transfer tool on portrait devices now displays correctly.
- The continue button in the new grid-scan routine will now be hidden once the scan is complete.
- SurvCE now correctly auto-increments when the new *.crdb job type is in use.
- SurvCE now correctly displays point IDs in the Raw Editor screen when the new *.crdb file type is in use.
- The new ctrl/crt radio buttons in the list points selector will now display correctly in portraitview.
- Pressing Keys (chars) within TEXT modes views or One Button Click now have the same behavior as the hgt/desc screen.
- In the hgt/desc screen, the user-defined targets will now be reduced to show a list of targets only with the same prism type as the current reading.
- PC Demo SurvCE now uses the correct resource orientation for non-English languages.

Bug Fixes in SurvPC:

- When switching from ArcMap Doc MXD Esri usage/Carlson SurvPC to CRDB, the software will now show all MAP points.
- SurvCE has been improved to make it easier to select the control points in the MAP screen. The control points will now only be available from the current layer, and the option to choose control points will turn off automatically when exiting the MAP screen.

Version 5.0

Release Date: March 31, 2016

New Instruments Supported:

- Altus APS3G GNSS
- Carlson BRx6 GNSS
- Carlson Rx6 GNSS
- Carlson CR2+ Total Station (Onboard installation also supported)
- Champion TK2 GNSS
- Champion WR1 GNSS
- CHC i80 GNSS
- EFT M2 GNSS
- EFT GH1 GNSS
- Fennel GNSS
- Foif A30 GNSS
- Geomax Zoom90 Total Station (Onboard installation also supported)
- Geomax Zipp20 Total Station (from data collector)
- Geomax Zoom35 Pro Total Station
- Geomax Zenith35 GNSS
- Hemisphere S321 GNSS
- HiTarget V100 GNSS
- Leica TS50/TS60 Total Station
- Leica MS50/MS60 Total Station
- Leo-M8T UBlox GPS
- Leo-M8T RTCM UBlox GPS
- Satlab SLD100 Depth Sounder
- Sokkia GCX2 GNSS
- South Galaxy G1 GNSS
- Spectra Precision SP60 GNSS
- Surveyor2 with Internal UBlox GPS

New Data Collectors Supported:

- Bluebird M3
- Hemisphere XF3

The following total stations, receivers, and data collectors are no longer supported:

**these models are still available on older versions of software*

- Ashtech ZMax
- BHC Nav Gisa Data Collector
- Bluebird Pidion
- GRS-1 Data Collector
- Topcon 8000/9000 Onboard
- Some retired Topcon and Trimble GPS receivers and total stations have been moved to the "Legacy" manufacturer. These models are no longer actively updated, but are still available in

the software for existing users.

New Features and Improvements SurvCE:

- SurvCE now supports alternate job file *.crdb which allow long point IDs.
- SurvCE now supports point layers. This new feature can be enabled under equip->Configure.
- SurvCE now offers a one-touch feature coding option in live survey screens.
- SurvCE now includes a new auto scan/auto topo feature.
- SurvCE now offers GNSS Mission Planning.
- SurvCE can now export lines from SurvCE to the KML file.
- The MAP view now supports MTEXT use from drawings imported in SurvCE/SurvPC.
- The Antenna database has been fully updated to match NGS for all models. SurvCE now defaults to use absolute antenna calibration if available from NGS. Dialogs have been refreshed and updated for ease of use.
- SurvCE registration is improved to allow easy QR code registration, as well as registration directly from the data collector.
- The SurvCE About screen now allows the user to see his registered user information, and modify it if necessary.
- Control points are now available in the map screen.
- SurvCE now allows tilted-pole correction on some receivers.
- SurvCE now allows an easy one-point-test in GPS Utilities to allow the user to test and understand the sensors on his GNSS receiver, as well as tilted-pole measurement.
- SurvCE now supports auto-store when level for receivers with tilt functionality. This new feature inside of the auto-by-interval routine allows storing points automatically when the receiver is level.
- SurvCE now offers a multi-target feature in the bottom bar for all survey routines. This feature allows the user to quickly switch between targets and antenna heights. For total station, the feature displays an icon representing the type of prism/target in use.
- SurvCE now allows use of the data collector internal compass for stakeout navigation. This feature is limited to the Carlson Surveyor2 for this release but will soon include others.
- SurvCE now includes the new "Carlson Connect" feature for easy base/rover connection using modems.
- PRO Edit routine now reports the the High/Low of critical points.
- Internal GSM modems now display IMEI and ISDN information when possible.
- SurvCE now allows the end user to assign linkage between 3D elements. One Example: PIPE = 3D element, text added aligned, NP-18, (diameter of a pipe 18"). The extra info will be included in the STK, Point Projection, etc. NP-18.
- SurvCE now offers "manual transfer" in the data transfer utility. This allows user to move files easily from one location to another.
- The radio list for total stations and GPS has been reduced for ease of use.
- SurvCE now offers a "Store to Job" button in base setup to store the base point to the job.
- SurvCE has been improved to show units on values whenever possible.
- Windows Mobile data collectors-- SurvCE can now load significantly larger geoid/grid files without running out of memory.
- Windows Mobile data collectors-- SurvCE can now load significantly larger TIN files without running out of memory. TIN files are also loaded and used more efficiently.
- SurvCE now allows the user more flexibility in determining the tracking state of their instrument after a reading. The "Track after reading" checkbox has been replaced with a

combo box with more options.

- The Send Command utility in GPS Utilities will now translate “\” followed by two hex characters as a single hex byte. For example “\FF” becomes byte 0xFF. This is useful for sending commands to binary drivers.
- Input-Edit CL now allows more user control when an element is removed if the segments in/out are tangents and they are line segments; specific to: curve, and spiral-curve-spiral. (example: user can now use Fit curve, remove it, and the original PI will be restored).
- SurvCE now allows binary *.grd geoids in addition to the *.gsf format.
- SurvCE now checks the integrity of centerline files from external sources against the centerline file in use. This check happens in input/edit centerline, and finds probable causes of error. The user will have the opportunity to verify the data if errors are detected.
- Restore occupation is now available from the instrument setup screen, under the new button "From Job". As part of this change, the "Configure" button has been relocated to an icon in the topbar.
- For HDPI data collectors, the symbols have been increased to a higher resolution.
- SurvCE now allows on CLIP->CL conversion and usage of the "smaller" elements, below than ≤ 0.001 (approx 1mm), when Spiral Only side by side followed by another Spiral Only, different Radius for the Curves used.
- The Set Collection routine now allows GIS storing and F2F (runs linework creation).
- SurvCE now warns the user if a reading exactly matches a backsight reading or the previous reading measured (Total station only). This new filter is an option under Equip->Configure.
- If the driver does not specify the type (ARP/ACP) of the reference elevation when provided by the rover, SurvCE will make the assumption that if the correction type is RTCM3, the elevation is ARP.
- GPS Search routine for total stations is now much faster. If SurvCE detects a bad localization, the user will now be asked if he wants to reset it.
- DynDNSS now supported for some receivers.
- Set Collection's Set Report now displays BS/FS V.Ang. and BS/FS V.Dist. details.
- SurvCE now allows fast scale/magnification option in MAP.
- Set Collection option "Review Individual reading Data" has been expanded into two options: "Review Readings" and "Review Sets".
- SurvCE now supports import of SHP Esri basic files, including measure type, to the Feature Class Definition. (POINTM, POLYGONM, ARCM).
- Hinged area calculation has been improved.
- Satellite view is now more dependable. Dialogs have been updated for a cleaner display.
- SurvCE now allows the option to show large-icons vs. tables for all feature code screens (including the new one-touch feature).
- Name of last instrument used is now displayed in the Connect or Continue dialog shown on startup.
- SurvCE will now ask the user if he wants to open a log file if he chooses to tag all gps points in Equip->Configure Rover->Receiver->Advanced, and he does not have a log file open.
- SurvCE now allows the user to choose site duration in Equip->Configure Rover->Receiver->Advanced if they have selected to tag all gps points. SurvCE interface has been enhanced to show a countdown in store points during tagging.
- RW5 post processing TS/RTS closure using BR/BD now works correctly. The routine now allows the user to type the point ID for closure, and the coordinates will be updated automatically.
- Draw Traverse Lines in the map screen will now draw the surveyed points from the file (it is

useful, when reviewing the data from the RW5 file).

- SurvCE now includes an RTK Device button in the Send Commands dialog that will send commands to directly to current RTK device.
- SurvCE will now refresh the model information when the user presses the "I" button during instrument configure.
- SurvCE now offers output of the NMEA LLQ message for all robotic total stations. Feature can be found in the peripherals menu under new tab "outputs".
- SurvCE now includes in the APN list "AT&T Broadband" for all GPS.
- Onboard versions of SurvCE will attempt to reconnect to instrument without user having to respond to prompt.
- Automatic DXF save/export will automatically detect if the data loaded or created in the current job will not be acceptable by AutoDesk R12. If not acceptable, an Autodesk 2000 DXF file be created.
- SurvCE now defaults auto-turn and auto-read to true.
- If the port connecting to the instrument cannot be opened, the user will be warned but not prevented from entering GPS Utilities and Monitor/Skyplot routines. Previously, the user could not enter these routines in this case.
- SurvCE will now present and allow the use of a tolerance for stations recorded in LandXML by other software and allow the end user to decide to accept data or not during import LandXML/Centerline Conversion.
- SurvCE now shows a warning when the port fails to open in the Equip->Information icon, or under the tools icon in Bluetooth connection.
- Main Menu will use "GPS" for English versions. "GNSS" will be used for non-English versions.
- SurvCE will now show the RTX network type only when supported by the receiver.
- SurvCE now offers the user the chance to make a note of their current level values in the RW5 file from the Check Level dialog.
- Geoid files will now be backed up in the backup folder. If geoid file is lost it is automatically restored from backup.
- SurvCE now has an easy and intuitive method of returning to the graphics view from the stakeout view.
- The specialized option to log real time to a COM file in STK Line/Arc has been moved to Job Settings/Options where it is less distracting for the majority of users.
- SurvCE now offers a soft-button version of the arrow keys when the virtual keyboard is selected in the robotics screen. This allows some tablets and data collectors without arrows to use the total station joystick feature.
- If the user enters a rod height or instrument height in the TS setup screen, and then presses cancel, he will now be offered the option to save his entered heights.
- SurvCE now offers the reconnect icon inside of the resection results dialog.
- The option "attach photographs to points/lines" has been removed. SurvCE will now always offer this option when "prompt for height and description" is enabled.
- The "Enter Grid System Coordinates" dialog has been improved for better display.
- SurvCE now supports linear distance sub-units decimeters, chains, and links.
- SurvCE now allows the user to define an offset between the prism and the GPS in order to get more accurate elevations in GPS Assisted Search.
- GeoPDF is now supported.
- Indiana DOT County projections have now been added to the list of predefined systems.
- Bogota, Columbia, projection has now been added to the list of predefined systems.
- New versions of Carlson XPort will contain the newly updated Href2015B geoid grid for

Norway.

- Predefined coordinate systems are no longer editable. When making a user defined system, SurvCE will now protect the user from overwriting one that already exists. SurvCE now shows the source of each coordinate system (Carlson, or user defined).
- SurvCE now allows more options for choosing UTM and Nad83 coordinate systems, including "from current location" and "select by zone".
- Four Greece new grid projection systems were added that split the large projection grid into 4 areas. These projections include. StereaSouthIono_Hepos_GGRS87/TM87, Creta_Hepos_GGRS87/TM87,Central North_Hepos_GGRS87/TM87,Aegean_Hepos_GGRS87/TM87.
- SurvCE now supports SWEREF 99 TM projections for Sweden.
- Hungarian projection EOY-VITEL update for 2014.
- SurvCE now includes coordinate system Borneo Map Grid, BRSO for Western Borneo.
- SurvCE now includes coordinate system for the country of Moldova.
- SurvCE now includes coordinate system Sri Lanka/SLD99.
- SurvCE will now show status "setting zero" when setting the angle to zero in resection. This improves user experience for some total stations that take a few seconds to do this.
- SurvCE will now show status "returning to foresight" when returning from F2 reading in resection. This improves user experience when waiting for the turn to complete.
- JXL Export is now supported.
- The Monitor/Ref tab will now request an update of all base station data every 60 seconds.
- A predefined feature code list for Tennessee DOT is now included.
- Onboard versions of SurvCE will no longer show unusable GPS items such as buttons on Equip tab, GPS-specific configuration options, GPS-specific Instrument menu items.
- The process of adding new ntrip broadcasters and related bases has been clarified with the addition of a "New" button.

New Features and Improvements SurvPC:

**Note that SurvPC also includes all SurvCE improvements*

- The user-interface has been improved with updated higher-resolution icons. The feature code symbols are now higher resolution.
- Drawing Import in CAD Basic now orders the 3D elements to be drawn first and allows the user to choose the elevations of the 3D. elements.
- Drawing Import in CAD Basic now imports POLYMESH elements. Example: prismatic, cylinder, etc. Simple 3D elements.
- Drawing Import in CAD Basic now creates "handle" elements. 3D models will have extra single polylines made of one segment, flat elevation; the elevation will be from the "bottom" of the 3D model (structure, 3D vertical line, etc), and the second element will use the elevation from the "top" of the 3D model (structure, 3D vertical line, etc).
- BLOCKs in CAD Basic now allow HATCH/SOLID elements, represented as "trace" elements.
- SurvPC now runs processes such as cadconvfile.exe and cadconvfile2.exe as designed.
- OEM Esri Alternate CAD Engine now supports Triangulate and Contour in MAP, 3D Pline to PRO, and Pline to CL. Multipoint basic support has been added to the CAD Alternate Engine.
- Carlson SurvPC using Esri ArcGIS Engine now works using "Map" subcommand "LAST"="L" for selection of the last element created for the current layer. This feature was only present in the MAP CAD Basic.
- Carlson SurvPC using Esri ArcGIS Engine now works using "Map" command HINGED Area. This feature was only present in the MAP CAD Basic.

- Esri used inside Carlson SurvPC for POINTs features, and the usage of alias of Point Names, will now manage the order in the features similar with the Carlson Coordinate file.
- The user can now choose the software orientation.
- SurvPC will now automatically pass any preinstalled FCL information (such as vehicle database) into the correct location for use.
- SurvCE now allows station edit boxes to use “+” and filtering the station using imperial, decimal, or metric stationing styles.
- Carlson SurvPC using OEM Esri ArcGIS Engine now supports Subtypes defined per Feature Classes. It allows the powerful feature of a relational database, when a field set with a subtype will trigger the use of other fields which contain/have assigned Domains to them.
- SurvPC/Esri -- SurvPC will offer the command under helmet in About screen to download and install the ArcGIS engine (if SurvPC serial number allows this option). The dialog informing user he/she is entitled to Esri now includes a "Do not remind me again" option for the user who does not wish to come forward to the newest Esri version to which he/she is entitled.

Bug Fixes in SurvCE:

- Remote Elevation will now record vertical angle offset correctly in raw file.
- Paths for TPL, PRO, Template Grade are now correct when transferring data from Data Collector to PC (through Job's inf file). When opening the Job on PC. There is no longer a chance to see empty drives when using an x64 machine.
- Free memory available for Log Static will now correctly report the number of Megabytes or Gigabytes.
- The RawProcessor has been improved and is now in sync with the office routine for processing RW5. The process has been improved to use less memory.
- SurvCE will no longer fail to read distances when entering slope stake in reflectorless mode.
- The "apply geoid" option in the conversion calculator will now be grayed out if no geoid is loaded.
- The RTK tab in equip->Configure Rover has been updated to remove unnecessary options.
- For the NGS monument query, if no point in list is highlighted to import, the user will be warned.
- For the NGS Monument query, if there is a valid GPS reading, that point will be used as the starting point for the search. Otherwise the routine will use the center of the map as was previous design.
- Drawings from REVIT software (BIM) imported in Carlson SurvCE/SurvPC are now displayed correctly. Space entities will be skipped and only model entities will be displayed. This method improves zoom, selection, and other map operations. SurvCE now allows rotated TEXT/MTEXT using origin plus point direction.
- COGO/Inverse will no longer present a warning to the user if the position used in the calculation is outside the coordinate grid or geoid, unless the user has chosen to display a "Ground" inverse with "Auto Scale" enabled.
- JSR Analysis now shows/reports delay, even if the duration of the measurements of analysis cross a year boundary (starts in one year and continues for a duration of more than one year).
- SurvCE will no longer use the FS target after user goes to the robotics tab in the helmet during backsight setup for total station.
- Norway LCC, RW5 report of JSR points analyzed. When reporting all the points Survce will filter the ones with/or without the JSR Analysis.
- SurvCE can now modify the timezone on a tablet through the software.

- KML export points for "Grid" now works correctly. Also, Geocentric (from RW5) is now supported.
- SurvCE now supports automatic DPI scaling from Windows.
- SurvCE now saves and recalls values fully and completely in the Stk Points/Point By Direction and Stk Line Arc/TwoPoints dialogs.
- Input Edit CL now works correctly when used with a series of Curves=Arcs. Previously in this situation, when using edit/add or new/existing Curve= ARC, and the option "RR" was enabled, it was possible that the stationing would not update correctly.
- SurvCE no longer has the potential to give an incorrect answer when adding a Curve=Arc using the option tangent and delta.
- Adding New Elements, Curves=Arcs, and Compound Spiral Elements=Spiral(Clothoid)-Arc=Curve-Spiral(Clothoid), with "Angular" Elements part of a Centerline, using Fit procedure now works correctly.
- Import of drawing dxf (from Microstation) containing 2D Inserts and 3D Inserts now works correctly.
- There is no longer a potential for horizontal and vertical search range to get overwritten by very small values.
- SurvCE will now correctly load grid files when changing jobs.
- List Controls on Windows Mobile now use the correct optimal highlight text.
- Set Collection now stores points correctly if the prompt overwrite is present and the end user picks: use new ID for storing.
- Surveyor2/Mini2 -- There is no longer a potential for the enter-key to be disabled by the JSHome program.
- SurvCE no longer has the potential to fail when there is a known backsight, and unknown occupied point.
- SurvCE will no longer fill out a default GSM pin of 0000 but will leave the field blank.
- SurvCE now uses the flattening parameter and ellipsoid name setting from the broadcast RTM3.1 projection.
- SurvCE now restores the datum name when reverting back from broadcast RTCM3.1 projection.
- RTCM3 projection changes are now applied automatically after first time instead of popping RTCM3 dialog.
- The "reverse vertical" option has been removed for the RTCM3 projections feature.
- When using RTCM3 projection messages and projections messages are lost for 3 minutes, user is notified that old projection will be used.
- Carlson SurvCE/SurvPC in demo mode now allows easy exit when Re-Processing RW5 points (GPS, etc); limits the usage of the Points number to 15 (Demo number of points you can use).
- Export ASCII now works correctly when using justification (for columns) when exporting Point ID, Desc, Northing, etc (Custom option).
- SurvCE will now show a status message to the user when checking the base position during base setup.
- Any NMEA based depth sounder will ignore unwanted \$YXMTW messages which cause a "no depth" message to display.
- Post Processing RW5 TS/RTS data, using Balance Foresight-Backsight Option now works as designed.

- SurvCE no longer has the potential to hide action codes off the screen on portaitview devices. The display issue is resolved.
- SurvCE no longer has the potential to have invalid angles when doing BD/BR readings.
- When using the CRT LOC to ALIGN/Transform points and lines, SurvCE now offers the option to use or discard(no longer use) the CRT LOC.
- SurvCE will now adjust the target height when the target type is changed in set collection.
- SurvCE will now remember the stakeout method when Bearing & Distance is selected.
- Using FCL codes e.g. C, CL, CLF etc, now works using Keyboard presses when in FCL dialogs.
- SurvCE no longer has the potential to fail with the “Monitor” button is pressed during Configure Base->Read GPS.
- Surveyor2 -- SurvCE now gets the PIN status of the Surveyor2 more reliably.
- Mini2 -- The user will now longer have to select the port in DCI configuration.
- The entire S/N ratio string now fits on the sat info screen.
- Save Centerline and Export Centerline from LandXML now stores values at higher precision.
- Edit CL, on Windows Mobile, when adding a Line, a Curve, or a Spiral, no longer has the potential to report “invalid” when a user types data into an edit box and then moves directly to the OK button.
- Surveyor2 -- SurvCE will now perform auto-complete correctly when input is typed in in all dialogs.
- SurvCE will now restart the position stream after an averaged read.
- The “Carlson FLD Import” and “Single Carlson GIS File” options have been removed. These features are now permanently available.
- Import MTEXT skips the unwanted "codification" used by MTEXT, in this case, underline, bold/font type, alignment of special characters.
- The connect/disconnect buttons in Monitor/Skyplot are now more reliable.
- Reconnect button in helmet is now more reliable when using data collector internet.
- Set antenna will only retry 3 times now to avoid the "no position" errors.
- If the prism at angle reading is turned off in offsets->Distance/Angle, SurvCE will not attempt to lock, or prompt to lock, after the distance reading. If it is ON, and the previous state of the instrument was locked or tracking, SurvCE will lock automatically after the distance reading, without prompting.
- If in resection user chooses not to lock on and follow prism after the first reading, the total station will be forced to standby.
- JXL export routine will now use the correct name and path of the source RW5 file. Previously, the conversion assumed the path and name of the target and source files were the same.
- SurvCE will now default the Equip->Config->View "Move Relative to" setting to rod, for robotics, and ref object, for non-robotics.
- Elev Diff, using Proximity Stk for a selected PT now works correctly.
- SurvCE will now upload and download files in Carlson Cloud with special characters (\$, etc.) characters in their names.
- Default file name when saving command history for the "Send Command to Receiver" feature will be blank and file type will be *.txt file. Previously the default file name was invalid.
- GPS Offset by two points now handles warning correctly when Stored point, and trying to exit the GPS Offset property sheet.
- When saving localization changes, SurvCE/PC will now only count points held for horizontal

control when validating grid to ground use. Previously, if the user had more than 2 localization points, a grid to ground scale factor was not allowed even if only 1 pt was held for horizontal or 2 pts for horizontal with "Rotate Only" enabled.

- SurvCE will now show the wait icon when launching the GPS Utilities screen.
- All GPS -- World file data now works correctly when "-" is used in the X and Y resolutions.
- Panasonic Fz-M1 -- Live Stream for Carlson SurvPC works with Panasonic Fz-M1 (used for capture photos).
- Position out of bounds warning for current geoid will no longer be displayed before there are valid GPS readings.
- SurvCE will now show grid file warning messages appropriately when grid file fails to load, or position is not on grid.
- SurvCE no longer has the potential to fail when the user chooses "Bluetooth Generic" as a port setup method in GPS Search Settings.
- The top bar of the Survey/Stakeout screen now updates properly to the correct title after you have selected a point from the MAP view.
- The Geoid Failed to load warning message will now show correctly in monitor skyplot view.
- SurvCE will no longer throw an error about a bad interval value when tagging a point on receivers that do not support interval.
- SurvCE will no longer switch to the backsight rod height after the user enters the instrument setup dialog and presses OK.
- SurvCE will now use the entered broadcast ID as the base position in the BP record when the user configures base using entered grid coordinate.
- Usage of distance units for decimal feet and inches has been improved under Job Settings/System.
- SurvCE no longer has the potential to return a false positive to get base position.
- SurvCE will now clear all vector information if it fails to get the base position. This will prevent invalid vectors from being written and improve SPSO import.
- SurvCE will no longer allow a user to attempt to register a data collector that does not return a valid hardware Id.
- SurvCE will now allow changing the base ID using the virtual keyboard. SurvCE will now validate the base ID as soon as the user exits the field.
- Export GPS will now properly reset when a customer format with geodetic items is used.
- SurvCE will no longer unnecessarily warn that grid files are not available when running TS and auto-scale-factor is not applied.
- SurvCE will no longer warn "no depth" on products in which the depth sounder is not supported.
- SurvCE will now change mount points correctly when the point is changed inside the base setup dialog.
- The automatic refresh now works correctly in all cases when the "erase all" command is used.
- If the the view of the eLevel is turned off for Survey/Stakeout display, the eLevel tolerance will not be checked. This is for GPS Simulation only. For live GPS, the user should turn off the output of eLevel data from the GPS Rover screen to bypass eLevel tolerance checks.
- The rod height will now be updated correctly when the target type is changed in point projection using the helmet in the upper left hand corner, or inside of the Robotics button.
- If Grid to Ground is checked on with a scale factor value set to 1.0 and the user chooses to 'Read GPS' to calculate a scale factor after clicking OK to the localization screen, the base

scale point will correctly be set to the first localization point.

- SurvCE now works correctly in Survey/Map when user is creating points and prompted to store GIS data; If user is prompted to save yes/no after pressing cancel, SurvCE will obey the rule YES= Save, and store the point. No = do not save, and point is deleted.
- SurvCE no longer has the potential to fail when a grid error is posted while connecting to the RTK Network.
- The Set Collection now forces the user to do a set angle and read during setup for that routine. This prevents turning errors.
- The Resection routine no longer has the potential to store a false backsight record before storing the correct one.
- SurvCE now hides the "Use 1021-1023" option when the RTK correction type is also hidden.
- Auto By Interval will now pause while displaying a message to the user, and resume after it's acknowledged.
- Auto By Interval RTS now attempts to track after searching. Failed points are no longer counted in the maximum.
- The Leveling routine no longer has the potential to fail when using more than one B+/- measurements, on Unicode (Data Collector, or SurvPC versions).
- SurvCE will return to typical demo mode behaviors following De-register.
- SurvCE/PC no longer permit the Restore Occupation feature to complete when in DEMO mode.
- GPS Search can be accessed directly with Alt-U.

Bug Fixes in SurvPC:

- Zoom extents for Carlson SurvPC + OEM Esri ArcGIS Engine skips the invalid geometry features. ArcGIS Esri Desktop does not offer this fix.
- The SurvPC install will no longer deliver the CUT symbols. IMPORTANT: It is necessary to uninstall any older SurvPC before installing 5.0 or later. Failure to uninstall will potentially result in incomplete installation.
- When using Carlson SurvPC + Esri, on Windows 8, 8.1 and using GPS Sim, the MAP was not refreshing showing the current most recent GPS simulated position. Now there is a fix added to make sure the current GPS is shown no matter the Esri ArcMAP Document (MXD) used (regarding its complexity).
- Carlson SurvPC + Esri: sliding area using closed Polylines and using the option remove existing entity after sliding, now works correctly, against Esri ArcMAP Document (MXD).
- Carlson SurvPC + Esri: Area routines: sliding or hinged, when creating new entities, now also sets the current LAYER=Feature Class; in this way, Last option for "Select Entities" now works correctly, against Esri ArcMAP Document (MXD).
- Carlson SurvPC using Esri ArcGIS Engine now correctly reports the Feature containing Circular Arcs when List Polyline Data command is used. SurvCE now uses Esri's CCW/CW to get rotation when a feature comes from a feature class in a Geodatabase.
- SurvPC will now auto-detect Esri Desktop License versus the Engine License based on Carlson SurvPC Serial Number (<=10.2).
- Carlson SurvPC now allows Esri OEM ArcGIS Engines (Basic or Advanced) for another vendor.
- SurvPC running on Win8 and 8.1 no longer has the potential to lose its flat wide scroll bars.
- Carlson SurvPC with OEM Esri ArcGIS Engine, supports names for Feature Classes/Layers

coming from Esri ArcGIS SDE Servers: Microsoft SQL Server, Oracle, MySQL, etc.

- When repairing Esri/Carlson SurvPC Data Sources, SurvCE will cycle and fix each one of them, if from a Personal/File Geodatabase. In previous versions, the software would skip the repair if any of the feature class was missing from the new selected Personal/File Geodatabase.

Improvements And Resolved Issues By Manufacturer

GNSS Receivers

Altus/Septentrio

Version 5.01

- All Models -- SurvCE raw data logging now supports up to 20Hz APS3, and 10Hz for NR2. The same rates apply to NMEA out.
- All Models -- Receiver port NMEA output is now supported.
- All Models -- RTCM3 corrections from DCI now work correctly.
- All Models -- SurvCE now has improved reliability of tagging gps log files.
- NR2 -- Log file tagging now supported in latest version of firmware.
- NR2 -- Base Direct Dial now working.
- NR2 -- Logging now correctly gets current logging status.
- NR2 -- Switching between Internal GSM Direct Dial and Direct TCP/IP or NTRIP has been improved.
- NR2 -- Base setup now supports DynDNS in the network options for Internal GSM.
- NR2 -- The Internal ARWest radio is now supported.
- NR2 -- SurvCE now displays a Remote Control toggle button in GPS Utilities.
- APS3 -- Internal modem base setup now retrieves local IP address when connecting and saving as a rover Direct TCP/IP base configuration.
- APS3 -- The H24 modem can now be configured to accept incoming Direct TCP/IP connections when APS3 is configured as a base.
-

Version 5.0

- All Models -- SurvCE now retrieves the model information more reliably.
- All Models -- SurvCE no longer has intermittent failures during rover configuration.
- All Models -- Internal GSM Direct TCP/IP Rover now works correctly.
- All Models -- Tagging logged points is now more dependable.
- All Models -- The Reset RTK button in the monitor screen will now trigger an RTK reset instead of a regular reset.
- All Models -- USB is now supported for data and/or RTK. Use first USB virtual serial port for data, second for RTK.
- All Models -- The new corrections option “RTCM DIFF” is now supported for base output. This configuration enables RTCM messages 1,3, and 9 for differential (not RTK) corrections.
- NR2 -- This receiver can now be connected using a serial cable.
- NR2 -- The speed and reliability of the internal modem have been improved.
- NR2 -- The internal modem now supports direct TCP/IP connections.
- NR2 -- PIN codes on SIM cards now supported.
- NR2 -- It is now possible to cancel during an NTRIP connection.
- NR2 -- SurvCE now supports DCI using Bluetooth.
- NR2 -- SurvCE now retrieves the IP address from the modem correctly.
- NR2 -- COM1 is now supported for RTK Base and Rover.
- NR2 -- Wifi On/Off in GPS Utilities now works correctly.
- APS3 -- RTS/CTS now turned on for Internal UHF and off for external port.
- APS3 -- Modem use is now more reliable.

- APS3 -- Direct Dial using ISDN V.110 digital is now supported.
- APS3 -- Connections to NTRIP and other servers that require GGA are more dependable now.
- APS3 -- Connection reliability improved.
- APS3 -- The H24 Modem now supports direct dial.
- APS3 -- Direct Dial disconnect button no longer shows an error message even though disconnect was successful.
- APS3 -- The internal GSM now supports PIN code more reliably, and new support is added for PUK code.
- APS3 H24 -- Connect and disconnect now work more reliably.
- APS3 V1 -- SurvCE now includes an "APS3 V1" driver that does not turn on GSM modem when it is not in use.
- Battery message will now display with model name and power level.
- SurvCE will now set the antenna offset correctly when the user reconnects without resending the configuration.

Carlson

Version 5.0

- Surveyor2 - Models with NVS chips can now receive RTCM 2.3 corrections.
- Surveyor2/Mini2 -- The helmet key on Surveyor2 or the target key on Mini2 will not be reprogrammed to start SurvCE if already programmed to a non-Carlson application.
- Surveyor+GPS -- Surveyor+ Firmware now displayed as 6.600 instead of "OEM060600RN0000".
- Surveyor+GPS -- The internal antenna name is now NOV702GGL.
- BRx5 -- The GSM configuration dialog for BRx5 and S320 has been renamed for clarity to identify the particular receiver that is being used.
- BRx5 -- The "zero calibration" option will no longer be supported for sensor calibration.
- BRx5 -- Tilt calibration options will now display correctly and the errors will show non-zero values during calibration.
- BRx5 -- SurvCE will now display International Mobile Station Equipment Identity (IMEI) and Integrated Services for Digital Network (ISDN) in GSM modem configuration.

ComNav

Version 5.01

- T300 -- SurvCE will now set RTK dynamics to "foot", as is required by new firmware.

Version 5.0

- T300 -- ComNav GPS now supports direct dial mode at the rover.
- T300 -- The ComNav will only list COM1 and DATA as RTK ports when "cable and generic" is selected in the RTK tab.
- T300 -- Connect and Disconnect using Internal GSM now works without failure.
- T300 -- The source table will successfully download using Internal GSM.
- T300 -- External radio is now included for Base config.
- T300 -- Now streams more fluidly.
- T300 -- GSM modem now connects more reliably.
- T300 -- ComNav GPS will now retrieve the radio settings on the first attempt.
- T300 -- The ComNav UHF Radio now supports TT405S at the base.
- T300 -- The T300 will no longer fail when attempting to set the base two times in a row.

Geomax

Version 5.0

- Zenith 25/Zenith 25 Pro -- SurvCE will now properly retrieve the log files from the SD card of the receiver.
- Zenith 25/Zenith 25 Pro -- SurvCE now sets the correct logging interval based on the user selection.

Hemisphere

Version 5.0

- S320 -- SurvCE will now display International Mobile Station Equipment Identity (IMEI) and Integrated Services for Digital Network (ISDN) in GSM modem configuration.
- S320 -- The GSM configuration dialog for BRx5 and S320 has been renamed for clarity to identify the particular receiver that is being used.

HiTarget

Version 5.0

- V90 -- SurvCE now supports setting audio mode.
- V90 -- SurvCE now supports ebubble.
- V90 -- SurvCE now supports ebubble calibration.
- SurvCE now automatically enables the receiver virtual serial port.
- SurvCE will now configure the base to cable and generic device without error.
- SurvCE will now set the APN username and password correctly.
- QStar8 -- SurvCE will now add the ephemeris data to the log file when logging.

Javad

Version 5.0

- The Triumph2 is now longer supported as a *base* in SurvCE.

Leica

Version 5.0

- All Models -- If logging to baseline ascii (*.ski) file is turned on with depth sounder in use, depth elevation will be properly applied.
- SurvCE will now restore the thread to it's previous state after running a GPS Average. Previously, going into Monitor Skyplot from that routine could kill the updating positions when returning to store points.
- SurvCE will now show actively updating status in the setup screen for Advanced GPS monitoring.
- All Models -- SurvCE will now properly retrieve the log files from the SD card of the receiver.
- All Models -- SurvCE now sets the correct logging interval based on the user selection.

Navcom

Version 5.0

- The “corrections bias” option is now displayed as “Base Receiver Type” to be consistent with other receivers.
- SurvCE will not send improper base id during radio setup that caused error message from receiver. Will not allow 0 as base ID for NCT 5B or 5E correction types.

Novatel

Version 5.0

- Novatel Smart AG -- SurvCE now supports a new autobase option.

Pentax

Version 5.0

- The Pentax antennas have been updated according to data from the manufacturer.

Satlab

Version 5.0

- All Models -- The "Send RTK To Rover" will always be on and grayed out when IntRTK is in use.
- All Models -- IntRTK setup parameters area/groupID have been renamed to User/Station ID.
- All Models -- SBAS and Glonass Sats will no longer be grouped together.
- SL300 -- IntRTK is now supported. It is also supported for other models when using data collector internet.
- SL300 -- Satlab300 will no longer display L2 S/N values.
- SL300 -- The antenna offset information has been updated.
- SL600 -- SurvCE no longer has the potential to lock up the receiver during base setup.
- SL600 -- SurvCE no longer has the potential to fail during Rover initialization.
- SL600 -- The SL600 default RTK type is now SCMRX.
- SL600 -- SurvCE now allows the user to select the audio mode.

South

Version 5.0

- All --Receivers now switch between base and rover without error.
- S82 2013 -- SurvCE now supports position rates 2hz and 5hz.

Spectra Precision (formerly Ashtech)

Version 5.01

- SP80 -- SurvCE will no longer cause an error to appear on the screen of the SP80 by sending a command that is not supported in older firmware.

Version 5.0

- All Models-- SurvCE can now send antenna selection "none" to the receiver without an error.
- All Models -- SurvCE no longer has the potential to freeze up when the view mode is changed in the stakeout routine.
- All Models -- SurvCE will no longer attempt to store vectors in auto by interval mode for spectra precision drivers. Limitations in the driver make this error prone.
- All Models -- SurvCE will now restore the thread to it's previous state after running a GPS Average. Previously, going into Monitor Skyplot from that routine could kill the updating positions when returning to store points.
- All Models -- SurvCE will now show actively updating status in the setup screen for Advanced GPS monitoring.
- All Models -- The battery status B will no longer display on instrument that do not have a secondary battery.
- All Models -- It is now possible to enable/disable beidou sats.
- All Models -- The "SET BEEP" option has been removed from GPSUtilities and moved to the receiver tab.
- All Models -- When logging raw data, the site duration will now be saved in SurvCE and reused when reentering the dialog.
- All Models -- SurvCE no longer has the potential to fail when tagging a point.
- SP80 -- SurvCE will now set the display language on the receiver to match the current translation in use by SurvCE.
- SP80 -- Now supports the new RTX servers.
- SP80 -- The theft-protection email tab will now display properly on landscape devices.
- SP80 -- SurvCE will now retry if the command to get the correction type fails. This works around a firmware error. If the retry fails, SurvCE will add a note to the raw file, but continue storing the base point, even with an ambiguous elevation.
- SP80 -- SurvCE no longer has the potential to get an incorrect elevation on the first reading of an auto by interval.
- SP80 -- SurvCE now refreshes the file list properly in Log Raw GNSS when the user switches to an empty storage device.
- SP80 -- SurvCE now allows the user to disable sats even when they are not currently being tracked.
- SP80 -- SurvCE can now enable/disable Glonass sats.
- SP80 -- Calibration of the tilt sensors is now supported in GPS Utilities.
- SP80 -- The Spectra Precisions SP80 now supports RTK Bridge. When configured as a rover, this allows the corrections stream on the modem to be rebroadcast on the radio for use by other devices.
- SP80 -- The SP80 now supports Dual RTK. This means two RTK streams will be sent to the

receiver, and the receiver will select the best solution.

- SP80 -- SurvCE now supports duplicate output of RTK data on the modem when the radio is in use.
- SP80 -- SurvCE now supports the “copy file” feature in the log raw data file management dialog. This allows the user to copy files easily from the hard drive of the receiver to storage.
- SP80 -- SurvCE will now allow lock mode and anti-theft mode simultaneously and will not warn about a password error.
- SP80 -- SurvCE can now use the wifi module to connect direct-IP.
- SP60/SP80 -- SurvCE will now query the base position every 60 seconds, and rewrite the base position record if it changed.
- SP80 -- Lock/Unlock receiver now supported.
- PM500/PF500/SP60 -- SurvCE will now be able to properly configure older Ashtech models in CMR base mode.
- Epoch 50 -- The internal antenna is now listed.
- Epoch 50/PM700 -- SurvCE now supports changing the logging interval.

Stonex

Version 5.0

- All Models -- Internal XDL radio is now supported, with expanded radio settings.
- All Models -- RTCM3.2 is now supported.
- All Models -- Cable connection now supported.
- S10 -- The Stonex S10 will now properly complete setup when base point is a known point.
- S10 -- The Stonex S10 now streams more fluidly.
- S10 -- ELevel and Incline Adjustment now supported.
- S7 -- The Stonex S7 driver now only displays with the Stonex S7 data collector is used.

Topcon/Sokkia/Sokkia

Version 5.01

- The Wavecom and GSM modems are now added back in for the TopconGB and Topcon Legacy.

Version 5.0

- Topcon GPS now supports erms and nrms errors. This is a requirement in Brazil.
- SurvCE will no longer hang after taking GPS readings during setup of certain Topcon receivers as base.

Trimble

Version 5.0

- Trimble GPS (and all receivers with Trimble boards) now supports RTCM 3.2.
- Trimble receivers will no longer have the potential to store vectors without a base ID.

Total Station

Carlson

Version 5.01

- CR+ -- SurvPC will no longer fail when connecting to a CR+, switching drivers, and switching back.

Foif

Version 5.0

- SurvCE will no longer unexpectedly change the units displayed on the total station from feet to meters..

Geomax

Version 5.0

- Zipp 20 -- Temperature and pressure will be sent to instrument correctly. SetAngle and SetAngleAndRead will verify that the angle has changed in the instrument before continuing.
- Zipp 20 -- Units of temperature and pressure will be converted if needed before being sent to Zipp20 instrument.
- Zipp20 -- The pressure default has been changed to 29.9 InHg, and the temperature default has been changed to 68 degrees fahrenheit.
- Zipp20 -- The X and Y axis on the leveling dialog have been reversed.

Leica

Version 5.0

- TS1100 -- Powersearch is improved.

Nikon

Version 5.0

- The Nikon total station will now change the units on the total station to match the job units selected in SurvCE.
- The Nikon total station will now report out of level if it gets no response when taking a reading.
- SurvCE will now check Nikon distance units before every reading to make sure they were not changed by the user.

Pentax

Version 5.0

- The intermittent failures in SetAngle and SetAngleAndRead are solved.
- SurvCE will correctly handle distances 100 or greater or updated models.

Spectra Precision

Version 5.0

- SurvCE will now retrieve the licence required to run the Focus 30 automatically during installation, or the first time the driver is used.

Stonex

Version 5.0

- SurvCE will no longer report Invalid Response when firmware returns undocumented value for instrument parameter curvature/refraction. That parameter will remain unchanged by SurvCE.

Trimble

Version 5.0

- The Trimble 5600 DR Series robot can now be run robotically or non-robotically as a station directly connected to the data collector. Enhanced driver stability.