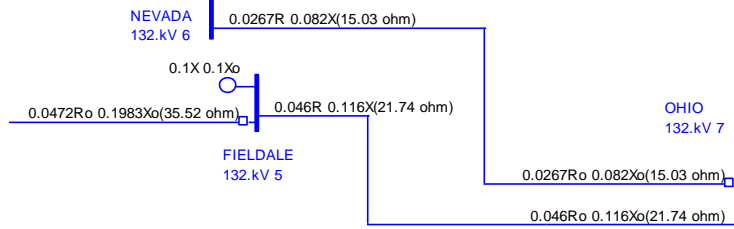# ASPEN OneLiner™
Version 14.5 Update

This maintenance release contains fixes for all known bugs to date and some program improvements.

You have been given a link to download the setup program OneLinerV14.5Setup.exe. You can run this setup to update an existing installation or to create a new *OneLiner V14* installation. Please write to support@aspeninc.com in English (suporte@aspeninc.com in Spanish and Portuguese) or call us (650-347-3997) if you have questions.
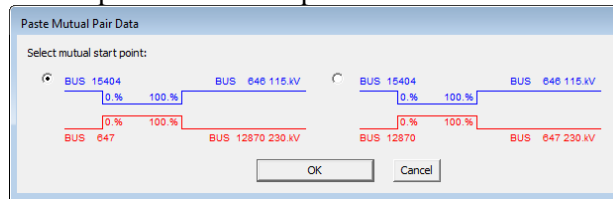
Program Improvements between Versions 14.4 and 14.5

- **New command for checking relay settings**: This is the first of two relay-checking commands designed to help you comply with PRC-027's mandate for checking relays in a systematic way. This Check Relay Setting command checks the settings of instantaneous and time-element of overcurrent relays and zone-1 and -2 settings of distance relays on transmission lines. The checking algorithm for overcurrent relays is similar to that of the existing Check | OC Minimum Pickup and Check | OC Instantaneous commands. The ability of this command to check distance-relay settings is entirely new.

- **New command for checking relay coordination using stepped-event**: This is the second of two relay-checking commands designed to help you comply with PRC-027's mandate for checking relays in a systematic way. Unlike the existing Check | Primary/Backup Coordination command, this new commands utilizes an alternative way to check relay coordination that does not require coordinating pairs. Specifically, the new command performs stepped-events simulation on different locations on a line, and in each case examines the sequence of events that takes place. The checking report highlights any unexpected relay operations, such as the tripping of a branch other than the study line before the fault is clear. Also, any time before a relay on the study line is tripped, this command identifies the backup relay and the coordinating time interval (CTI).

- **New manufacturer-specific distance relay models LPRO4000P__ and LPRO4000G__** that simulate ERLPhase relay LPRO4000 distance protection functions. You can also import LPRO4000 relay settings directly from L-PRO off line setting files (.lps).

- **Improved logic for importing relay data from RAT file:** When the relay location cannot be found in the network using bus name and nominal kV, OneLiner will make additional attempt to use bus numbers to place the relay. This will allow you to use the Import Relay command in a new network base case in which some bus names were altered but the bus numbers remain unchanged.

- **Added relay database connector section in RAT file:** Relay database connectors allows OneLiner to open connection to ASPEN and PowerBase relay databases to import settings to OLR network. This data section can potentially be used for automatically populate OLR network with relay data.

- **Enhancement in differential relay model**: You can now enter current-threshold value of zero in the line-differential relay dialog box to indicate that the corresponding differential element in disabled.

- **Enhanced logic for importing mutual pair data from change file:** The program is now capable of processing CHF files with very large number of mutual-line pairs.

- **Enhanced View | Impedance on 1-line display**: The line impedance in primary ohm is now shown next to per-unit value.

- **New alternative DXT file data format for zero-sequence mutual coupling pairs [MUPAIR DATA]:** Mutual-pair data in this section are stored in a compact form, and they are not aggregated into mutual groups as it was done in the legacy [MUTUAL DATA] section. As a result, the new section is much shorter in length. OneLiner v14 will continue to support the legacy [MUTUAL DATA] section.

- **New input options in PowerScript™ function DoArcFlash():** This function now lets you select the stepped-event-simulation clearance calculation method and to specify the number of tiers to include in the list of protective device.

- **Improved simulation of logic scheme:** The program now takes into account in simulation all logic schemes, including ones that reference off-line component(s). Off-line elements in logic scheme equation are treated as "not-asserted" in scheme evaluation.

- **New graphical dialog box to help you pick the correct line orientation** when pasting mutual pair data from clipboard.

- **The Add | Unstable Power Swing Region** commands in the both the OC Curves and DS Relays window have been modify to make them work with relays on GSUs.

- **The lower limit of text size on the one-line diagram** has been changed from 8 to 4 to allow for high resolution screens.

- **Increased fault solution buffer size** to allow for higher number of faults with outages to be simulated in a single execution of Specify Classical Fault command.

- **Improve the appearance** of labels for the vertical axes of the time-distance diagram.

- **Enhanced distance relay window zoom logic** to work at very low zoom level.

- **Enhance Ground Current Calculator command.** You now have the option of showing the results for the fault being display or for all the faults that have been simulated. If there are multiple faults, the report will give you a summary of the highest neutral current, highest fault current, and highest remote current at the very end of the report.

- **Improved ground current calculator command.** OneLiner now gives you the option to include in a single report all the fault cases. Previously, this command works only on the fault solution that is being displayed. The ground current report now also includes X/R ratio and the magnitude of the asymmetric current, as well as a summary section that shows maximum value of local and remote ground-mat currents.

- **Improved PRC-025** display in the DS Relays Window. The program now shows the "stress point" as a small black circle on the impedance diagram.

New and Updated Overcurrent Relay Curves

- **Cooper.rly:** Cooper 15.5kV ELSP Fuse
- **Eaton.rly:** Digitrip 520/520M/520MC/520i/520Mi/520MCi
- **ABB.rly:** PCD Recloser curves
- **SEL.rly:** SEL-411 TOC IEC and US standards TOC curves

Bug Fixes in OneLiner since version 14.4

- Fixed error in RDBI logic for importing SEL411L relay.
- Fixed bug in change file delete relay command and in the importRelayLoc() function. The old logic failed when relay name or bus name contain semicolon char, which is used as delimiter in relay text file format.
- Fix bug in logic for recloser time calculation and curve drawing to correctly handle the time adder and time multiplier application flags that were introduced in OneLiner V14.4.
- Fixed memory bug in Arcflash calculator command, which caused program crash in some cases.
- Fixed bug in PowerScrip SetData for BUS_nTapBus parameter. The 3-terminal tap value for this flag was not supported correctly.
- Fixed bug in generator loadability calculation command logic. The command was incorrectly disabled when user selected some relay on generator step-up transformers.
- Fixed graphical display bug that caused branch name text to be pushed out of list box window when the text is too long.
- Fixed bug in relay setting import logic: SEL directional settings were not being imported.
- Fixed bug in logic for reading change file in ANAFAS format
- Bug fix in PowerCalc engine logic. Constant array was not up-to-date.
- Fixed software bug in PowerBase import and link logic: the option of used setting file option was not being saved in OLR file.
- Fixed software bug in the File | Info | Journal report command: The section for breaker was missing in the report. Also data records from previous version OLR files did not always print correctly.
- Fixed software bug in logic for importing distance relay settings from external files and databases. Setting parameters were not being imported correctly for some relay types
- Fixed error in reading zero sequence mutual data in ANAFAS change file
- Fixed bug in SEL distance relay types SEL_321G__, SEL_321P__, SEL_421G__, SEL_421P__, SEL_311G__, SEL_311P__. The program incorrectly simulated zone delay setting value OFF as zero.
- Fixed a bug for export of logic scheme, fuse and recloser data to text file.
- Added missing data field "UseZ2" to breaker rating option file (OSF) section [ASPEN OneLiner ANSI X/R Ratio Options]
- Fixed typo in DoArcFlash PowerScript function name. It was spelled as DoAcrFlash.
- Fix bug in Fault | Show solution on 1-line command logic for printing voltage and differential relay operating time to TTY.
- Fixed bug in PowerScript DoFault() function that caused performance issue when the function is being called repeatedly with the nClearPrev flag set to On.
- Fixed error in PowerScript PostData() function for breaker data.
- SS1 file current outputs included too few decimal points

- Fixed error in X/R ratio results in networks with current-limited generators or voltage controlled current sources.
- Adjusted lower limit of SEL direction element current pickup to 0.005 to match capability of SEL recloser controls
- Fixed a bug that caused program crash in specify classical fault on switch.
- Fixed a bug in View | Line end command that caused program crash in some networks when a relay group is selected.
- Fixed the Mutual Pair dialog box logic to removed unneeded restriction of percent values.
- Fixed error in logic for showing solution on the 1-line for distance relays with "PT at" parameter set to some bus other than the relay group location. The relay operating time in the solution was incorrect when per-unit is used for voltage results.
- Fixed bug in PowerScript function GetRelayTime(). The "PT at" property of distance relay was not being taken into account correctly.
- Added a message box to ask user to validate PT location when pasting distance relay with "PT at" set to a location other than the local relay bus.
- Fixed bug in Arc Flash Calculator command that caused program to crashed when list of device is longer than a certain limit.
- Fixed a bug in copy/paste mutual pair command that affected value of 'From' and 'To' percent of mutual segments.
- Fixed a bug that caused data error in mutual pair data when Insert Tap bus command is executed on mutually coupled line.
- Primary Ohm display of impedances on the RX diagram was not always done consistently on kV base at the relay's CT location. Fixed.
- Fixed bug in handling of script function APSFileDialog() parameter sInitDir.
- The UseANSIxr flag was missing from breaker rating report in CSV format. Fixed.
- Fixed bug in the Add Coordination Pair command that caused program to crash in some cases.
- Added new logic for handling change files that have a large number of new mutual-coupling pairs. Previous versions were bogged down by memory requirements as mutual pairs were added to large mutual groups.
- Fixed a bug in the change file add-bus logic.
- Fixed bug in Breaker rating logic. Open switch was incorrectly included in outage list for breaker rating simulation.
- Fixed a bug in the logic for reading Equivalent network component ID prefix in File | Preferences dialog box. It caused the prefix to be truncated to 1 character.
- The Help button in the dialog box of the voltage-Sag for one Bus command brings up the help contents for the Voltage-Sag Batch command. Fixed.
- Fixed a bug in evaluation of logic scheme in stepped-event simulation.
- Fixed logic in Breaker dialog box to avoid unwanted truncating of floating value in contact parting time and interrupting time fields.
- Fixed a bug in PowerScript DoFault() function that cause the function to run only one remote bus fault on 3-W transformer instead of two.
- Fixed bug in read change file and open text data file logic scheme data.
- Fixed a bug in the line differential relay dialog box.
- Added logic in fault locator command to reject event file that do not have all 6 phase quantities.

- Fixed bug in the Data Browser table for distance relays. The Reach1 field was displayed incorrectly in some cases.
- The Place Bus command sometime resulted in broken line graphic. Fixed.
- Fixed a bug in the Conductor Damage Curve dialog box in OC Curves Window. When the user selected "AWG size 4", the dialog box replaced it with "AWG size 4/0".
- Added logic to COMTRADE reading logic to handle the case when sampling frequency data in .cfg file are missing.
- Fixed a bug in Bus Fault Summary command's report logic.
- Fixed a bug in the save-binary-file logic, which damages the data file when Save | As command failed.
- Fixed a bug in relay export command: coordination pair data was not included in the relay text data file (.RAT).
- Fixed bug in stepped-event simulation of signal-only flag for instantaneous and time elements of overcurrent relays.
- The unstable swing limit display in R-X diagram is now drawn as a complete circle instead of an arc.
- Fixed a bug in the Diagram | Acquire Graphic from Another File command, to prevent it from issuing the "Input file is inconsistent" error when the command is executed on some large OLR files.
- Bug fixed: The Acquire Graphic from Another File command should not acquire the szEquivID[] string.
- Fixed bug in reading and writing on/off-line flag data field in load unit and generating unit data records.
- Fixed bug in Phasor probe Excel connector: Tertiary current was not printed.
- Fixed bug in logic for reading breaker rating option from disk file.
- Fixed bug in phasor panel size initial setup.
- Fixed bug in PowerScript GetData() function logic for DG_vParamLabels.
- Fixed bug in Distance Relays Window display logic. Generator loadability limits and unstable swing limits were covered up by the load region.
- Fixed bug in Bus Fault Summary command dialog box. The Tag option did not work when the input tag string does not have the semicolon character at the end. Also the CSV report with tag option was not formatted correctly.
- Modified the Read-ANAFAS-Change-File logic to eliminate loads, shunts and generators that no longer have any active or out-of-service units after the modifications.
- Fixed a bug in Fault Locator command that affected results in cases with L-L faults.
- Fixed a bug in displaying unstable swing limit display on R-X diagram. The limits that were displayed for one relay was not reset when the user selects another relay to display from the one-line diagram.
- Phasor probe bug fix: Selection for sequence current on transformer did work.
- Fixed bug in command Check | Relay Loadability command, which caused error in calculation of relays on 3-winding transformers.
- Fixed a bug in PowerScript function GetSCCurrent() that caused the program to bomb when computing generator unit current.
- Fixed bug in Phasor Probe dialog box. Changes in the "common reference" selection in one panel were not passed onto the other panels correctly.
- Fixed error in logic for reporting zone direction setting in GE distance relay models.

- Fixed error in REL670 relay model. This relay setting must be entered in primary value.
- Fixed a bug in logic for displaying apparent impedance of SEL relays. The K-factor value was not displayed consistently.
- Fix an error in logic for computing K0 value of GE relays for display on the RX diagram.
- Fixed a bug SEL-421 phase Quad element, which caused incorrect simulation results in some cases. Also added logic to stop printing T setting in the caption when none of the Quad zone is active.
- Fixed error in PSC902 operating time report logic. The number of zones was incorrectly set to 5 when in fact it should be 4.
- Fixed a flaw in phase comparator simulator logic of P443 relay, which caused incorrect result in some cases. Also removed the restriction of Delta direction application in Mho element simulation.
- **Fix several bugs in the logic for reading ANAFAS change files.** These bugs had to do with missing mutual-coupling data, undefined memo and tag files for several object types, and the inability to process winding-configuration data and transformer neutral impedances.
- **Fixed a bug in the PRC-025 display in the OC Curves Window and in the DS Relay Window.** This problem happens when the relay is on the network side of the GSU looking into the network and when the relay is on a line that connects the GSU to the rest of the system.

Bug Fixes in Case comparison program since version 14.3

- Fixed Case comparison program logic to exclude generic distance relay method parameters: Min pickup and Zone1 Delay settings from comparison of manufacturer specific DS relay types to avoid false negative difference report.
- Fixed case comparison program logic for mutual coupling data: The program generated the [MODIFY MUTUAL] commands for pairs that have X=0 & R=0 which OneLiner fails to process. Changed correlation logic to include these in the [ADD MUTUAL] section instead.
- Fixed a bug in logic for comparing mutual pair data.
- The program did not generate the [ADD MUTUAL], [DELETE MUTUAL] and [MODIFY MUTUAL] commands correctly for all cases. For example, when a non-zero mutual pair object in FileA is linked to a zero mutual pair object in FileB, the program failed to generate a [DELETE MUTUAL] command in the CHF file.
- Fixed error in logic for "boundary equipment only" option. It was missing in the logic for reading large binary file.
- Fixed a number of bugs that affected change file data for relay groups, coordination pairs for relay groups on switches and also logic schemes

Bug Fixes in PTI PSS/E-to-ASPEN Data Conversion Program since version 14.3

- Fixed software bug in PSS/E to ASPEN data conversion program. Long bus name was not handled correctly.
- Fixed a bug in logic for reading transformer data from SEQ file. The values for fRG2 + j fXG2 were incorrectly copied as neutral impedance for winding code 8.
- The mutual-data arrays have been re-dimensioned to be the same as OneLiner's.