



## Release Highlights for CAM350 Product Version 10.2

### Introduction

CAM350 Version 10.2.2 is a support release for CAM350. CAM350 10.2.2 includes support for Microsoft Windows 7 and Mentor PADS Layout version 9.2. Other CAM350 updates include resolutions for customer reported problems concerning ODB++ support for offset pads and flip panels, mill tabs in route arcs and mill route support for flipped images.

CAM350 10.2 includes Gerber import improvements for polygon self intersection analysis and DRC analysis accuracy updates for polygon outlines with arcs.

CAM350 Version 10.1 is a support release for CAM350. CAM350 10.1 includes performance improvements and memory usage improvements over previous releases of CAM350. Areas of improved performance include Gerber import and ODB++ import. Optimization for memory usage is delivered in CAM350 10.1 for all polygon analysis, which means that larger more complex layers of polygons can now be processed for commands such as Netlist Extract and Gerber Import. CAM350 10.1 also delivers over 50 important customer reported defect resolutions.

CAM350 Version 10.0 introduced significant new functionality, including reading and writing Blueprint-PCB files, new graphics user interface, a project explorer bar, flip panel support, design compare, Expedition cross probing, and various enhancements.

### New Functionality

The following functional enhancements are contained in CAM350 Version 10.1

- ✓ Gerber Import and Export Improvements
- ✓ ODB++ Import Improvements
- ✓ Netlist Extract Updates
- ✓ PADS Import Updates

### Details

**Gerber Import and Export Improvements** – The File > Import > Gerber Data command has been updated for CAM350 V10.2 to report illegal self intersecting polygons and prompt the user with the option to repair.

The File > Import > Gerber Data command has been updated for CAM350 V10.1 to include faster polygon processing. Certain CAD systems generate so-called cutline polygons that are used for efficient flooding and display. CAM350 reduces these complex shapes into simple outlines with circular or polygonal voids. The process to analyze the cutline polygons has been optimized. For certain Gerber designs, import times can improve by up to a factor of 20 times. This optimization will affect many Mentor Graphics designs.

The File > Import > Gerber Data and File > Export > Gerber Data commands have been updated to pass arcs in polygon outlines as true arcs, rather than as segmented chords. This update allows for more accurate Gerber data in CAM350 and allows for smaller Gerber files on export from CAM350.

**ODB++ Import Improvements** – The File > Import > ODB++ command has been updated for CAM350 V10.1. The ODB++ data transfer format is an important standard for the PCB fabrication industry. For CAM350 V10.1, the ODB++ import performance has been improved by up to a factor of 10 times for large designs. The ODB++ import command is also updated for CAM350 V10.1 to support stacked blind and buried vias.

**Netlist Extract Updates** – For CAM350 V10.1, the Utilities > Netlist Extract command has been updated to utilize memory more effectively. Specifically, for large designs, the analysis of complex layers in previous releases of CAM350 could exceed the standard 2 gigabyte limit for processes on Windows 32 bit operating systems. Parallel programming for layer analysis is now used in CAM350 V10.1 to break through the 2 gigabyte limit. For large designs, the connectivity analysis for complex layers is performed in separate 2 gigabytes memory pools, separate from the main CAM350 process. The parallel programming techniques are invoked based on the quantity of data being analyzed.

Additionally for CAM350 V10.1, the Utilities > Netlist Extract command has been updated to support complete connectivity analysis of plated drill slots, plated mill slots and all plated mill routes. The analysis of plated slots and mill routes now enables greater coverage of the final fabrication artwork.

**PADS Import Updates** – The File > Import > CAD Data command has been updated to support PADS Layout Version 9.0. New features include support for importing chamfered and rounded pads from PADS Layout decal definitions. These new pad definitions coincide with ODB++ intrinsic aperture definitions. The ODB++ standard names are used for these chamfered and rounded pads.

**Defect Fixes** – Over 50 software corrections have been made to previously existing functionality, further improving upon CAM350's quality and reliability:

## **Defect fixes for CAM350 V10.2.2**

Software corrections and enhancements have been made to previously existing functionality, further improving upon CAM350's quality and reliability:

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### **FILE > OPEN**

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Areas affected: Mill Route Visibility

Symptoms: The File > Open command may fail to properly display mill routes for certain mill closed cutout shapes.

Reference number: 54076

### **ANALYSIS**

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Areas affected: Streams RC Checks

Symptoms: For certain design files with fine patterns, Streams RC may report erroneous errors for Track to Track and Plated Drill to Copper checks.

Reference number: 54074

### **INFO REPORTS**

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Areas affected: Centroid Report

Symptoms: For certain design files with long device names, the Info > Reports > Centroid command may fail to complete.

Reference number: 54072

### **BED OF NAILS EDITOR**

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Areas affected: Export CircuitLine

Symptoms: For certain design files, the File > Export command in the Bed Of Nails Editor may fail to complete for CircuitLine format.

Reference number: 54075

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## FILE IMPORT

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Areas affected: Import Gerber

Symptoms: The File > Import > Gerber Data command may fail or cause incorrect graphics for Gerber files that have undefined apertures.

Reference number: 53976,53815

Areas affected: Import Gerber

Symptoms: The File > Import > Gerber Data command may fail for certain Gerber files that have the percent character ("%") in aperture macro names.

Reference number: 42567

Areas affected: Import PADS ASCII

Symptoms: The File > Import > CAD Data command does not support PADS Layout version 9.2 ASCII files.

Reference number: 54003

Areas affected: Import ODB++

Symptoms: The File > Import > ODB++ command may cause pads to shift for ODB++ files that contain pads that are offset from the associated component pin origins.

Reference number: 53975

Areas affected: Import ODB++

Symptoms: The File > Import > ODB++ command fails to properly import and flatten ODB++ files that contain flipped images.

Reference number: 53778

Areas affected: Import Drill Data

Symptoms: The File > Import > Drill Data command does not support the Excellon command ("%SR\*%") to end step and repeat data in drill files.

Reference number: 53863

Areas affected: Import Drill Data

Symptoms: The File > Import > Drill Data command may fail for certain Allegro generated NC Drill files.

that have very small arcs.

Reference number: 53486,51315,50813

Areas affected: Import AutoImport

Symptoms: The File > Import > AutoImport command fails to initialize colors for layers properly when the NEXT button is selected on the AutoImport dialog.

Reference number: 53852

## FILE EXPORT

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Areas affected: Export ODB++

Symptoms: The File > Import > ODB++ command may fail to export correct Mill data for certain Mill route definitions with arcs.

Reference number: 53853

## PANEL EDITOR

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Areas affected: Edit Flip

Symptoms: The Edit > Flip command may fail to properly display mill data that contains arcs for stepped images that are flipped.

Reference number: 53847

## NC EDITOR

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Areas affected: Add Mill Tab

Symptoms: The Add > Mill Tab command may incorrect add mill tab locations and associated perforations for certain jagged mill route patterns.

Reference number: 53822

Areas affected: Settings View Options

Symptoms: The Middle Mouse zoom setting will be lost after modifying and saving changes to the Settings > View Options dialog in the Panel Editor.

Reference number: 54002

Areas affected: Explode Step & Repeat Data

Symptoms: The Edit > Change > Explode Step & Repeat command fails to report that step and repeat (SR) NC data does not exist in the current design.

Reference number: 53848

## UTILITIES

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Areas affected: Netlist Extract

Symptoms: The Utilities > Netlist Extract command may fail to complete for designs that have zero size Dcodes.

Reference number: 53868

## USER INTERFACE

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Areas affected: Grid Visibility

Symptoms: The Grid Visibility toggle on the command toolbar may cause CAM350 to crash when the dashboard toolbar is not visible.

Reference number: 53872

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## FILE IMPORT

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Areas affected: Import DXF

Symptoms: The File > Import > DXF command may fail for certain DXF files that have very small arcs.

Reference number: 53874

Areas affected: Import Drill Data

Symptoms: The File > Import > Drill Data command is incorrect for Seib&Meyer 3000 files that have drilled slots (code G85).

Reference number: 53835

Areas affected: Import PADS ASCII

Symptoms: The File > Import > CAD Data command will display reference designators that have PADS Label visibility set to "None".

Reference number: 53844

Areas affected: Import PADS ASCII

Symptoms: The File > Import > CAD Data command may drop drill definitions for pad stacks that have square pads.

Reference number: 53862

## FILE EXPORT

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Areas affected: Export DXF

Symptoms: The File > Import > DXF command will fail to complete when exporting DXF data and panel mill data layers are specified for output.

Reference number: 53834

## EDIT

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Areas affected: Break At Vertex

Symptoms: The Edit > Line Change > Break At Vtx command will fail to complete when modify segments for an added circle that has been sectorized.

Reference number: 53866

## ANALYSIS

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Areas affected: Streams Report

Symptoms: The Info > Report > Streams Results command truncates net name lists for long names or long lists of net names.

Reference number: 53776

## USER INTERFACE

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Areas affected: Cursor Display

Symptoms: For certain Microsoft Intellimouse Mouse drivers, the CAM350 cursor graphics may disappear for various window commands.

Reference number: 44126

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## FILE IMPORT

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Areas affected: Import Gerber

Symptoms: The File > Import > Gerber command loses arc precision for polygons in for certain small designs.

Reference number: 53699

Areas affected: Import ODB++

Symptoms: The File > Import > ODB++ command incorrectly assigns nets to finger edge pads for certain files output by Mentor Expedition.

Reference number: 53590

Areas affected: Import ODB++

Symptoms: The File > Import > ODB++ command incorrectly imports bottom mounted finger connector components for certain ODB++ files.

Reference number: 53686

Areas affected: Import ODB++

Symptoms: The File > Import > ODB++ command incorrectly handles angles for components and other elements for ODB++ files output by PADS Layout 9.1.

Reference number: 53668

Areas affected: Import PADS ASCII

Symptoms: The File > Import > CAD Data command may drop custom apertures for PADS 9.x files when alphanumeric pin mapping does not specify all pins in a component.

Reference number: 53675

Areas affected: Import HPGL

Symptoms: The File > Import > HPGL command fails to complete for certain HPGL files with filled polygons.

Reference number: 53666

## FILE EXPORT

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Areas affected: Export Gerber

Symptoms: The File > Export > Gerber command may drop some features after the import DXF command is executed for certain DXF files with polygons.

Reference number: 53672

Areas affected: Export Gerber

Symptoms: The File > Export > Gerber command may drop resolution for certain designs with filled polygons.

Reference number: 53616

Areas affected: Export Drill and Mill Data

Symptoms: The File > Export > Drill Data and Mill Data command dialogs should support the Copy Names button to copy layer names to file names just as the Export Gerber dialog already does.

Reference number: 53629

## ANALYSIS

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Areas affected: Find Pin Holes

Symptoms: The Analysis > Find Pin Holes command may find false errors for certain designs with complex polygons.

Reference number: 53663

Areas affected: Find Pin Holes

Symptoms: The Analysis > Find Pin Holes command may fail to complete for certain designs with polygons that have arcs.



Reference number: 53644

Areas affected: Acid Traps

Symptoms: The Analysis > Acid Traps command may find false errors for certain designs with complex polygons.

Reference number: 53680

## UTILITIES

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Areas affected: Quick Part

Symptoms: The Utilities > Quick Part command does not keep track of the side of the board on which the parts are placed. Quick Part should allow you to create parts from pads on the bottom side and match pads on either top or bottom side of the board.

Reference number: 53135

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## FILE IMPORT

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Areas affected: Import ODB++

Symptoms: The File > Import > ODB++ command may create invalid CAM data for certain ODB++ data files.

Reference number: 53591

## FILE EXPORT

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Areas affected: Export Composites

Symptoms: The File > Export > Composites command may fail to complete for composite definitions created by deleting table entries.

Reference number: 53597

## EDIT

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Areas affected: Delete Segment

Symptoms: The Delete Segment command may fail to complete for certain arcs or circles that have be sectorized.

Reference number: 53631

## ANALYSIS

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Areas affected: DRC

Symptoms: The Analysis > DRC command may fail to complete for certain designs with polygons that have arcs with out of memory message.

Reference number: 53627

Areas affected: Streams DFF

Symptoms: The Streams DFF check for Copper for Border minimum gap may report false errors for certain board outlines with arcs.

Reference number: 53660

Areas affected: Streams Design Compare

Symptoms: For an ODB++ file import, the Design Compare function reports false errors for TopPartOutline and BotPartOutline layers.

Reference number: 53640

## UTILITIES

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Areas affected: Clear Silkscreen

Symptoms: The Utilities > Clear Silkscreen command may fail to complete for certain CAM files.

Reference number: 53595

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## FILE IMPORT

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Areas affected: Import Gerber

Symptoms: The File > Import > Gerber Data command drops certain voids for complex outline polygons.

Reference number: 53484

Areas affected: Auto Import

Symptoms: The File > Import > Auto Import command should load IPC-D-356 and IPC-D-356-A netlist formats.

Reference number: 53551

Areas affected: Drill Data

Symptoms: The File > Import > Drill Data command does not support G85 (drilled slots)

for Sieb & Meyer format.  
Reference number: 53160

Areas affected: Import ODB++  
Symptoms: The File > Import > ODB++ command fails to complete for certain Genesis files that have annular ring attributes and CAMTEK attributes.  
Reference number: 53573

Areas affected: Import ODB++  
Symptoms: The File > Import > ODB++ command fails to complete for certain Zuken files that illegal references to layers that are not defined.  
Reference number: 53577

## FILE EXPORT

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Areas affected: Export Gerber  
Symptoms: The File > Export > Gerber Data command does not properly export arcs that are in mirrored raster polygon outlines.  
Reference number: 53575

## UTILITIES

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Areas affected: Draw To Raster  
Symptoms: The Utilities > Polygon Conversion > Draw To Raster command displays the warning message for polygons with more than 16,000 vertices multiple times for one command. There should be an option to not display the warning again.  
Reference number: 53570

## GUI

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Areas affected: Arc segmentation  
Symptoms: Arc graphics are not smooth for large arcs when you zoom such that the arc radius is larger than the width of the graphics port.  
Reference number: 53579

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## FILE IMPORT

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Areas affected: Import Gerber

Symptoms: The File Import Gerber Data command may execute slowly for designs with large cutline polygons.

Reference number: 50258, 47635

Areas affected: Import Gerber

Symptoms: The File Import Gerber Data command may drop polygon voids for certain designs with cutline polygons.

Reference number: 52454

Areas affected: Auto Import

Symptoms: The File Auto Import command does not use the autoimport templates if you select the autoimport template radio button and then select the Finish button.

Reference number: 52479

Areas affected: Import Gerber

Symptoms: The File Import Gerber Data command may create incorrect polygon outlines with arcs for certain designs.

Reference number: 50115, 50523

Areas affected: Import Gerber

Symptoms: The File Import Gerber Data command does not support any angle rotation of dcodes for drawn lines. NOTE: CAM350 10.1 still does not support drawing lines with any angle dcodes, but now warning messages are displayed.

Reference number: 51006

Areas affected: Import Gerber

Symptoms: The File Import Gerber Data command may fail to complete for certain designs with complex polygons.

Reference number: 43531

Areas affected: Import PADS ASCII

Symptoms: The File Import CAD Data command fails to properly import oblong thermals or split mixed planes for PADS ASCII files.

Reference number: 53140

Areas affected: Import PADS ASCII

Symptoms: The File Import CAD Data command does not support PADS ASCII version 9.0 files.

Reference number: 53198

Areas affected: Import PADS ASCII

Symptoms: The File Import CAD Data command does not support the PADS CAM document setting for oversizing and undersizing pads.

Reference number: 53371

Areas affected: Import PADS ASCII

Symptoms: The File Import CAD Data command may fail to complete for certain PADS ASCII files with long net names.

Reference number: 53129

Areas affected: Import PADS ASCII

Symptoms: The File Import CAD Data command may create an incorrect through hole drill layer for PADS ASCII files that have no through hole drills or vias.

Reference number: 50498

Areas affected: Import ODB++

Symptoms: The File Import ODB++ command may fail to complete for certain ODB++ files from Altium Designer.

Reference number: 53384

Areas affected: Import ODB++

Symptoms: The File Import ODB++ command may fail to correctly define the blind and buried via layer table for certain ODB++ files.

Reference number: 53138

Areas affected: Import ODB++

Symptoms: The File Import ODB++ command may drop nets for pins for large designs.

Reference number: 53132

Areas affected: Import ODB++

Symptoms: The File Import ODB++ command may fail to import certain layers for compressed ODB++ folders.

Reference number: 53365

Areas affected: Import ODB++

Symptoms: The File Import ODB++ command may incorrectly import extra pads for top mounted components that have SMT pads on the bottom layer.

Reference number: 44514

Areas affected: Import DXF

Symptoms: The File Import DXF command may incorrectly mirror data for certain designs.

Reference number: 49895

Areas affected: Import DXF

Symptoms: The File Import DXF command may incorrectly import polygon data with certain extended data format.

Reference number: 44089, 34127

Areas affected: Import DXF

Symptoms: The File Import DXF command may fail to complete for certain design files.

Reference number: 47591, 46671, 43752

Areas affected: Import DXF

Symptoms: The File Import DXF command may drop a number of interpolated edges or polygons after CAM file save and load.

Reference number: 43567

Areas affected: Import DXF

Symptoms: The File Import DXF command may drop pads for certain design files.

Reference number: 43262

## FILE OPEN

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Areas affected: File Open

Symptoms: The File Open \*.CAM file may fail to complete for certain designs with Streams errors that refer to deleted nets.

Reference number: 52353, 47382

Areas affected: File Open

Symptoms: The File Open \*.CAM file fails to load Tool Table CAP definitions for \*.CAM files that have database version 8.0 or older.

Reference number: 51970

Areas affected: File Merge

Symptoms: The File Merge command may fail to complete for designs that have long DFM error strings in stored error reports.

Reference number: 51588

## FILE SAVE

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Areas affected: File Save As

Symptoms: The File Save As \*.CAM file will not save correctly to earlier CAM350 file versions when first invoking CAM350.

Reference number: 53155

## FILE PRINT

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Areas affected: File Print

Symptoms: The File Print command will not output correct colors when more than 16 (sixteen) colors are used in a plot output.

Reference number: 53199, 53114

Areas affected: File Print

Symptoms: The File Print command will print black graphics and text as red when the background color is set to white.

Reference number: 53012

## EDIT

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Areas affected: Edit Flip

Symptoms: The Panel Editor Edit Flip command does not support flipping the stepped image in place without specifying the exact flip axis.

Reference number: 52284

Areas affected: UNDO

Symptoms: The UNDO command does not work for the Edit Flip command in the Panel Editor.

Reference number: 53347

Areas affected: Align

Symptoms: The Edit Layers Align command will select data on invisible (OFF) layers if those layers are turned off during the execution of the Align command.

Reference number: 52061

## INFO

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Areas affected: Report Dcode

Symptoms: The Info Report Dcode command may fail for custom apertures that are created with raster polygons and that have been exploded.

Reference number: 53192

Areas affected: Query

Symptoms: The Query All command will select data on invisible (OFF) layers if those layers are turned off during the execution of the Query command.

Reference number: 52790

## ANALYSIS

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Areas affected: Compare Netlist

Symptoms: The Analysis Compare Netlist command may fail to complete after importing certain ODB++ files with incorrect CAD Netlist data.

Reference number: 53137

Areas affected: Compare Netlist

Symptoms: The Analysis Compare Netlist command may fail to complete for certain designs with component pads that are annular rings.

Reference number: 47637, 53194

Areas affected: Copper Area

Symptoms: The Analysis Copper Area command may fail to calculate accuracy copper areas for small IC Packaging designs.

Reference number: 53364

Areas affected: Gerber to Mill

Symptoms: In the NC Editor, the Utilities Gerber to Mill command does not properly use Mill Circle parameters when the user chooses to use the same circle parameters for all circles on the layer.

Reference number: 52355

## UTILITIES

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Areas affected: Netlist Extract

Symptoms: The Utilities Netlist Extract Compare command does not analyze plated drill slots and plated mill slots for proper connectivity.

Reference number: 53209, 53196



## PANEL EDITOR

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Areas affected: Tool > Panel Editor

Symptoms: The Tool Panel Editor command will fail to complete for certain symbol libraries migrated from earlier versions of CAM350.

Reference number: 50753

Areas affected: Setup

Symptoms: The Setup Load dialog for loading and saving Panel Setup files (\*.pan) does not use the general Windows file open and save dialogs.

Reference number: 52536

## MACROS

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Areas affected: Layer Macro

Symptoms: The layertype! should allow support for NC\_PRIMARY and NC\_SECONDARY output. (NOTE: The new macro layerncrank! retrieves NC\_PRIMARY or NC\_SECONDARY for layers of NC\_DATA type.)

Reference number: 47372

## GUI

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Areas affected: Panel Editor Edit Menu

Symptoms: In the Panel Editor Edit menu, The Spin Image command should be positioned next to the Flip command for ease of use.

Reference number: 51330

Areas affected: Navigation Bar

Symptoms: The Navigation Bar does not allow the user to change the layer type to NC\_SECONDARY.

Reference number: 51289

Areas affected: Copper Sliver Fix Button

Symptoms: The Analysis Copper Sliver dialog has a nonfunctional "Fix" button.

Reference number: 44923

## INSTALLATION

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Areas affected: Installation sequence

Symptoms: When installing DownStream software, if you choose to install CAM350 first then the installation asks if you want to install BluePrint-PCB. However, if you choose to install BluePrint-PCB first, the installation does not ask if you want to install CAM350.

Reference number: 51817

## LICENSING

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Areas affected: Multiple Key License File

Symptoms: If multiple nodelocked license files are concatenated into a single file and the resultant license file is used to open CAM350, the Floating License Product Choice dialog unnecessarily appears.

Reference number: 51457

## HELP

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Areas affected: Macro Key Assignment

Symptoms: The help file for assigning keys refers to assigning CAM350 commands to function keys. This is wrong. Only CAM350 macros can be assigned to function keys.

Reference number: 53158

Areas affected: File Merge Macros

Symptoms: The help file for macro `external_map_layer2new@` describes only two macro arguments, when there are in fact three.

Reference number: 51776