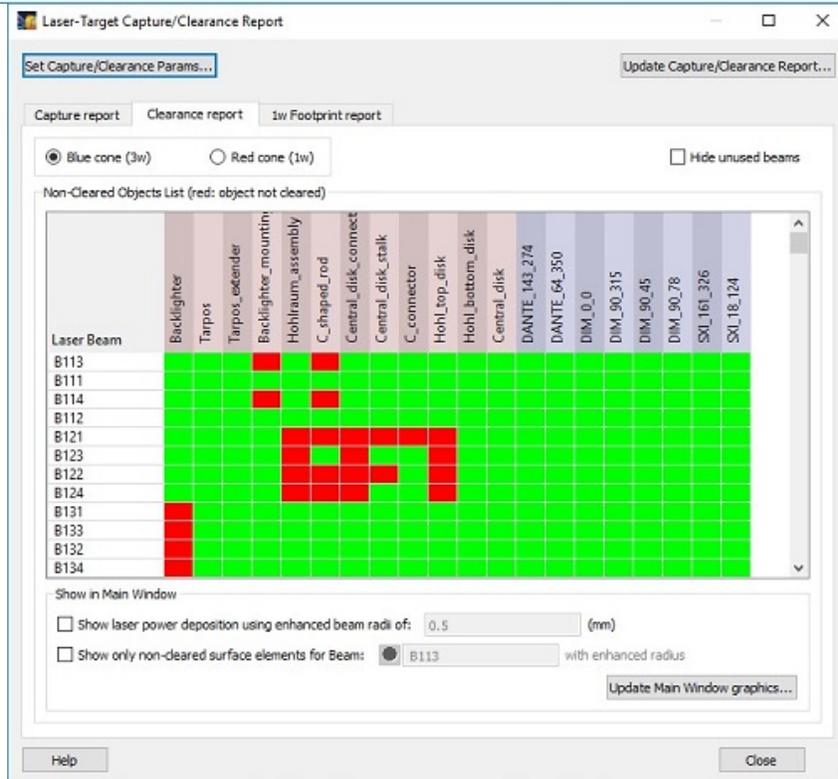
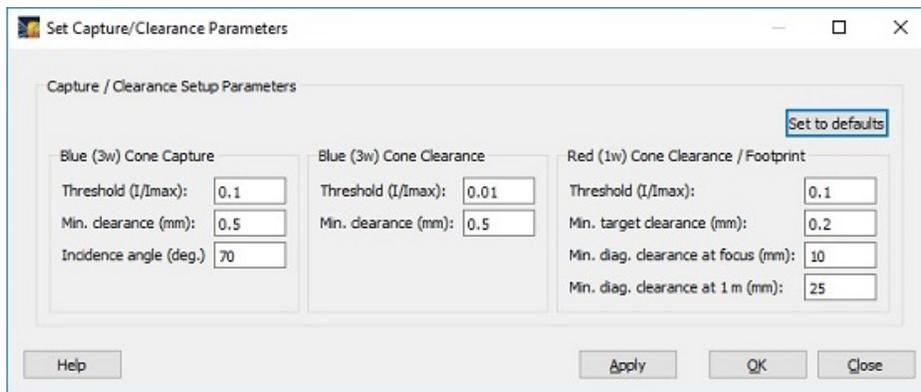
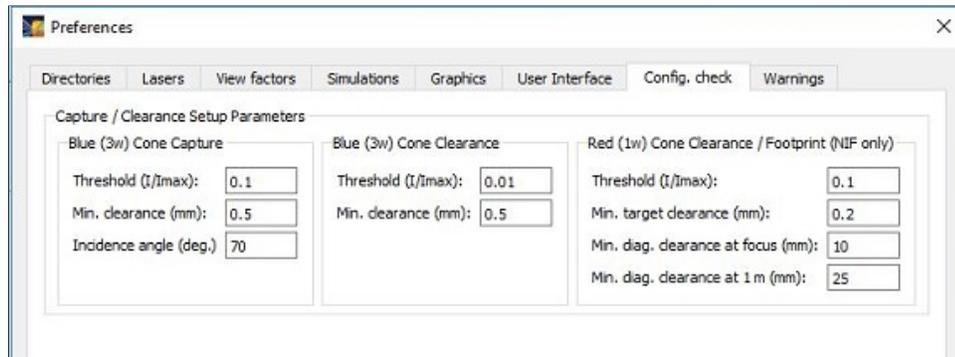


## Revisions for VISRAD 16.0.0

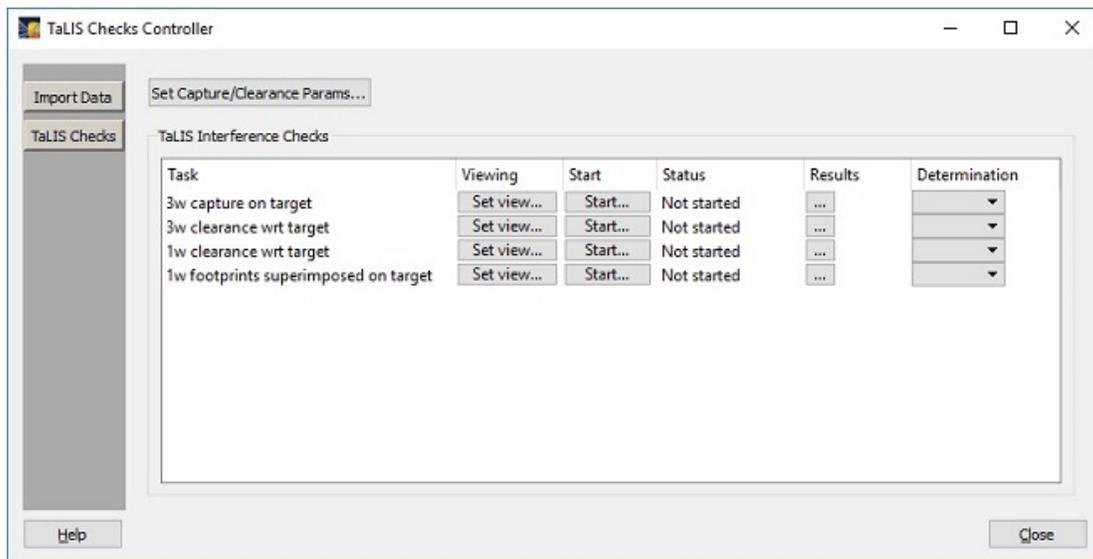
- Support has been added for the SLAC MEC target chamber:
  - 4 beams have been added to the Laser System: X-ray beam (fixed in Port P 90-180), 2 movable Nd:Glass (long-pulse) beams, 1 movable short-pulse beam.
  - Angles for *Diagnostic Ports*: Ports are identified by their angle with respect to target chamber center (e.g., P 90-180) has a polar angle of 90 degrees, and azimuthal angle of 180 degrees.
- Laser Beam Capture/Clearance Calculations:
  - 1 $\omega$  (red cone) Footprint Calculations can now be performed for NIF. In these calculations, any portion of the target mesh on which two or more red cones overlap are tracked.
    - Results are displayed in the *Main Graphics Frame* (either shown automatically after a calculation, or using the *Display | 1 $\omega$  Cone Overlap* menu item).
    - A summary of the results are tabulated in the *Capture/Clearance Reports* dialog on the *1 $\omega$  (red cone) Footprint Report* tab.
    - Enhanced laser beam cone radii are utilized (set using *Min. Target Clearance* in *Red (1 $\omega$ ) Cone Clearance / Footprint* box; see below).
  - The section used to set parameters for the capture/clearance calculations and the section used to show results have been separated into two different widgets (left and right widgets shown below):



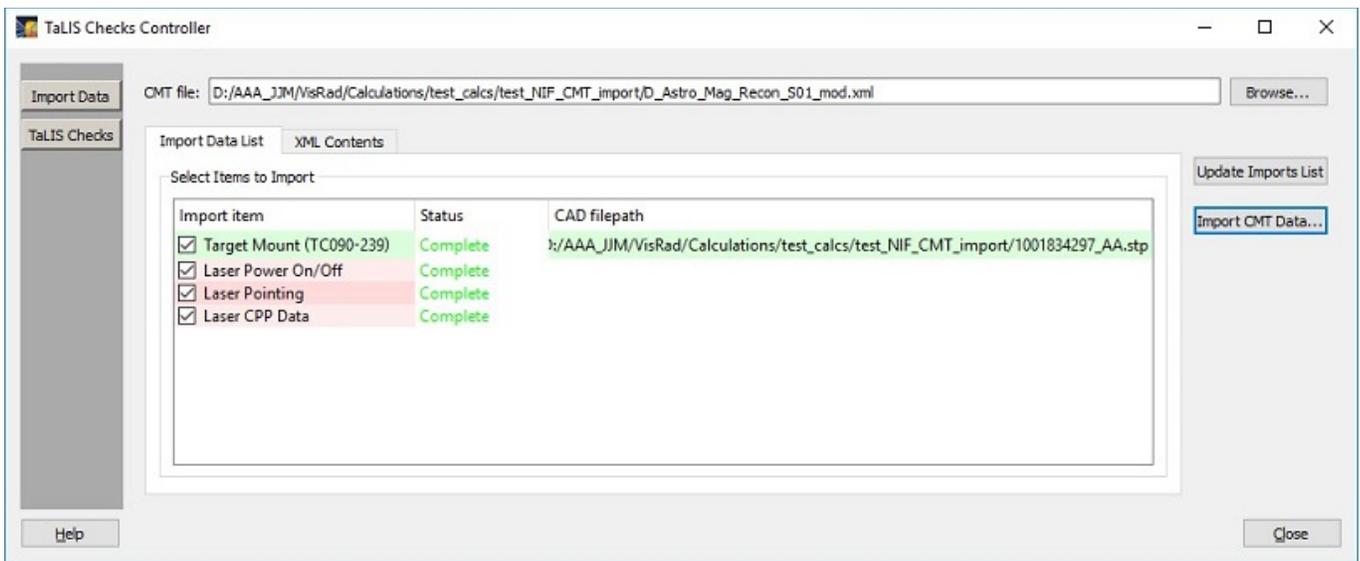
- Default setup parameters for laser beam capture/clearance have been added. Default values are stored in *Preferences* on the *Config. Check* tab (see below). When clicking on the *Set to Defaults* button on the *Set Capture/Clearance Parameters* dialog, the default values for the setup parameters are loaded.



- NIF TaLIS Interference Checks: A new controller for supporting TaLIS Interference Checks has been added (see below). To access the *TaLIS Checks Controller*, select the *NIF-OPS | TaLIS Checks* menu item.
  - Supported checks include:
    - Capture of 3 $\omega$  beams on target
    - Clearance of 3 $\omega$  beams for Target and Chamber Components
    - Clearance of 1 $\omega$  beams for Target and Chamber Components
    - 1 $\omega$  Footprint on target
  - For each calculation, the following are supported:
    - Setting the default view in the *Main Graphics Frame*
    - Starting the calculation
    - Showing the calculation status (*In progress, Pass, Fail*)
    - Showing tabulated results in the *Capture/Clearance Reports* dialog



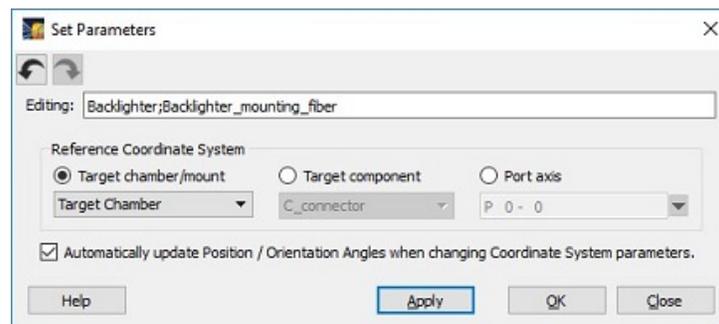
- NIF CMT XML file support:
  - The ability in input target and laser beam data from NIF CMT XML files has been added. Supported data includes:
    - Target Data
      - Target STP file associated with each target mount
    - Laser Beam Data
      - Beam On/Off Data
      - Pointing Data:
        - Pointing position, with pointing provided in Cartesian (x,y,z) coordinates in the target chamber coordinate system.
        - Defocus (a positive value moves the lens towards the target)
        - For both position and defocus variables, units of "cm", "mm", and "um" (microns) are supported.
      - Phase Plate (CPP) Data:
        - Phase plate name



- The command line for *VISRAD* startup has been updated to support accepting a NIF CMT XML file as input. The filename follows the "-n" switch (e.g., -n qsNifCmtXmlFilename). Details for command line startup for *VISRAD* is provided in the documentation.
- Preferences: default directory for target CAD input files identified in the CMT XML file has been added on the *Directories* tab.
- NIF Laser Beams: The default values for the power in the red (1 $\omega$ ) and green (2 $\omega$ ) cones have been changed to have non-zero values. For each cone, the new default value is 5% of the total cone power. (Default values are only utilized for new workspaces.)
- Two NIF Phase Plates (CPPs) have been added:

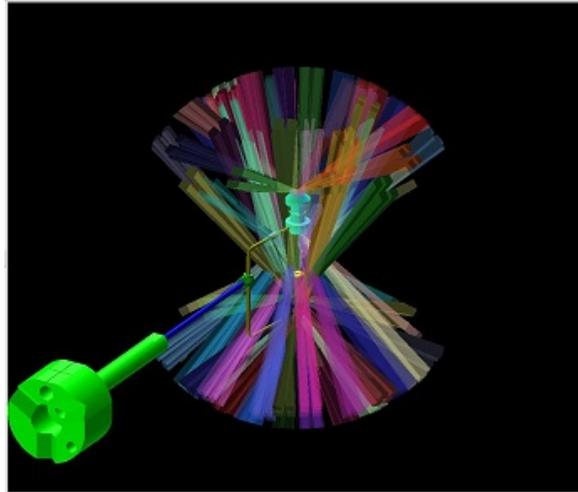
NIF CPP	HWHM R-major ( $\mu\text{m}$ )	HWHM R-minor ( $\mu\text{m}$ )	Supergaussian $n^*$
No CPP	75	75	2.0
400 $\mu\text{m}$ CPP	189	189	7.145

- Importing CAD Files:
  - Importing more than one CAD file at a time is now supported (using the *File | Import CAD Files* menu item).
  - When importing a STP-formatted CAD file as a *Target Component*, if the CAD file contains more than one object (or "shape"), a reference object is automatically set up, and each of the CAD objects use this reference object as their *Reference Coordinate System*. This allows users to easily rotate or translate the entire set of CAD objects. The reference object is a small *Cone* object that is hidden when set up, and it is set to be ignored in laser deposition and radiosity simulations.
  - When importing STP CAD files, progress messages are posted on the bottom of the *Main Window*.
- Support for changing the *Reference Coordinate System* for multiple *Target Components* has been added. To do this, right-click on the *Target Components List* and select the *Set Ref. Coord. System* menu item.

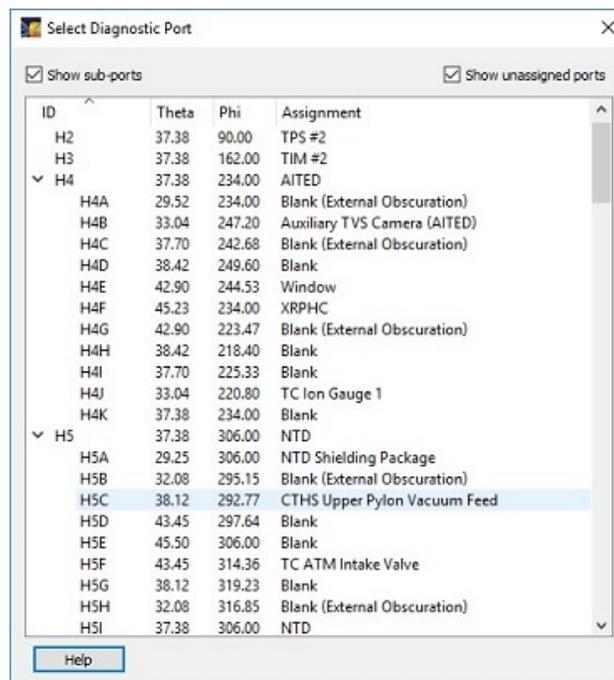


- Display of Laser Beams in *Main Window*:
  - The ability to show laser beams with an enhanced radius can be done using the *Lasers | Show Enhanced Radius* menu item.
    - Enhanced radii values for the *Fixed* submenu item are set in the *Clearance Report* tab (*Show in Main Window* box) of the *Capture/Clearance Reports* dialog, and in the *SRF Laser Parameters* widget for OMEGA.
    - Enhanced radii values for other submenu items are set in the *Set Capture/Clearance Parameters* widget.

- The ability to limit the extent (distance from focus) for which laser beam cones are rendered has been added. To do this, select the *Edit | Preferences* menu item, and on the *Lasers* tab, set the value for *Limit display of beams from focus*. For NIF, this affects blue (3 $\omega$ ) cones only.



- **Laser Beam Spot Overlays:** The ability to adjust the thickness of contour lines for the beam spot overlays has been added. To do this, select the *Edit | Preferences* menu item, and on the *Lasers* tab, set the value for the *Line Thickness* in the *Beam Spot Overlays* box.
- **Target Positioning Viewer:** For NIF, the limits for *x*, *y*, and *z* translations have been increased from 10 mm to 30 mm.
- **Chamber Component Parameters Dialog:** *Size/Gridding* tab was added. This shows the number of surface elements and nodes that make up the *Chamber Component*, and its min/max *x*, *y*, and *z* node positions in the target chamber coordinate system. All values are not editable.
- The *Diagnostic Ports Selector*, which is used by several dialogs to select the angles of a diagnostic port, has been updated.
  - Check boxes are now at the top, and are used to show or hide sub-ports and unassigned ports. Unassigned ports are those that have *Assignment* string that is empty, or starts with either "Blank" or "Unassigned".
  - The sub-ports of individual ports can be expanded or collapsed by clicking on the icon to the left of the port ID. However, this capability is not available when sorting by other than the *ID* column.
  - The list can be searched by right-clicking in the list and selecting the *Find* menu item.



- **Copy/paste of position variables:** It is now possible to copy and paste position variables between dialogs. When this is done, all 3 position variables are copied, and the geometry (Cartesian, cylindrical, or spherical) is tracked. When pasting into boxes using a different geometry, the position variables are converted to that geometry. (Note: conversions do not take into account the *Reference Coordinate System* used for the position variables.) To do this, right-click on any of the 3 position boxes, and selected *Copy (Paste) Position Variables*. Affected dialogs include:
  - Object Parameters Dialog - Position tab
  - Laser Parameters Dialog - Pointing tab

- Clipping Volume Parameters Dialog - Position tab
- Coordinate Transformations Tool
- Line-Target Intersection Points Tool
- Point-to-Point Distance Tool
- Orientation Angles Calculator
- Set Viewing Position Dialog - Scene position
- Target Component Positions Dialog - copy supported
- OMEGA *X-TVS/Y-TVS Viewer*: When exporting 1-bit N/W views, it is now possible to adjust the transparency of the silhouette images. The transparency used is specified in *Graphics* tab (*Target Positioning Viewer* box) in *Preferences*.
- Bug fixes:
  - *Set Viewing Parameters* dialog: bug associated with setting the *Scene* position when using cylindrical geometry has been fixed.
  - A problem that caused a crash to occur when importing STP-formatted CAD files has been fixed.
  - A problem that prevented the f-number of custom laser beams to be edited has been fixed.
  - Crash that sometimes occurred when adding a GENERALIZED\_MESH target component to the *Chamber Components List* has been fixed.