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Document Title	Eclipse Treatment Planning Customer Release Note
Abstract	This document provides immediate release information for using Eclipse Treatment Planning 15.1. This document is the English-language original.
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Introduction

The Eclipse Treatment Planning System is used to plan radiotherapy treatments for patients with malignant or benign diseases. Eclipse TPS is used by medical professionals trained in radiation dosimetry for patients considered suitable for radiotherapy by an oncologist. Eclipse is used to plan external beam irradiation with photon, electron, and proton beams, as well as for internal irradiation (Brachytherapy) treatments. Eclipse is part of Varian's integrated oncology environment.

WARNING **This customer release note is intended for radiation therapists, radiation oncologists, dosimetrists, and medical physicists who are qualified and properly trained users of the above mentioned hardware and/or software. The users must be familiar with all functions, the consequences of all operations, and the potential hazards involved.**

This document uses the following visual cues to help you locate and find information:

WARNING **A warning describes actions or conditions that can result in serious injury or death.**

CAUTION **A caution describes actions or conditions that can result in minor or moderate injury.**

Notice **A notice describes a practice not related to physical injury to include equipment, data, and other issues.**

Note *A note describes information that may pertain to only some conditions, readers, or sites.*

Tip *A tip describes useful but optional information such as a shortcut, reminder, or suggestion, to help get optimal performance from the equipment or software.*

Eclipse Treatment Planning 15.1

This section describes the following for Eclipse Treatment Planning:

- Warnings
- System Components / Compatibility
- System Requirements
- New Features and Enhancements in Eclipse Treatment Planning 15.1
- New Features and Enhancements in Eclipse Treatment Planning 15.0
- Changes in Eclipse Treatment Planning 15.1 from the Previous Release
- Changes in Eclipse Treatment Planning 15.0 from the Previous Release
- Known Issues for Eclipse Treatment Planning 15.1
- Performance Information

Warnings

Note

Any abnormal termination of the application may cause loss of critical patient data. The methods listed below are some common ways of ending a software program that is unresponsive or that appears to be "frozen".

- *Pressing the CTRL+ALT+DEL key combination to open the Windows Security dialog box and then (a) selecting Shut Down to end the computer session or (b) selecting Task Manager to end the program.* **In either case, data loss may occur as a result.**
- *Accessing Task Manager directly by right-clicking the Windows Task Bar and then selecting End Task to end the "frozen" program.* **Data loss may occur as a result.**
- *Powering down the computer using the hardware power switch.*
- *Pressing and holding the Restart button.*

Any method used to terminate the software program may cause loss of treatment plan data.

Note

Regional Settings in the Windows operating system using commas as the decimal separator are not recognized by Eclipse. For example, the entry "1,23" will not be recognized as "1.23". The decimal point "." should always be used regardless of the Regional Settings.

WARNING **In Eclipse and/or BrachyVision integrated with ARIA Radiation Therapy Management, any changes made in RT Administration will affect all of the integrated applications and not just the workstation or application from which RT Administration was accessed.**

For example, the Planning Coordinate System specified in RT Administration defines a static coordinate axis system that applies to all clients that connect to the common Varian System Database. These and other configuration parameters are shared by Eclipse, BrachyVision, and ARIA RTM applications. Consult the user documentation for individual software applications for more information.

WARNING **It is recommended to verify and confirm the patient setup with an appropriate position verification method before treatment, especially when the couch shifts printed in the plan report are used.**

Sample plans may be generated using, for example, anthropomorphic phantoms and actual patient setup positions compared directly with couch shift values printed from Eclipse.

CAUTION **Concurrent editing can result in loss of data if users are not paying enough attention to the messages that appear in the application. There are different behaviors in the way the users are informed depending on the application type.**

Pay close attention to any warning messages that appear. Loss of data can be avoided if users are informed about concurrent editing and take appropriate actions.

CAUTION **In the virtual simulation process, Eclipse must know whether the laser system is aligned to the DICOM Origin or to the CT center pixel. Alignment to the CT center pixel means that the CT scanner isocenter is located at the center of the CT image and aligned with the laser system. The CT scanner protocol may shift the CT image in a way that it is no longer centered to the CT center pixel. This can lead to Eclipse incorrectly calculating the coordinates of the isocenter to be marked on the patient's skin using the laser system. When using the incorrectly calculated coordinates, the laser system will point to wrong isocenter positions, and if not verified carefully, the patient can be treated in the wrong position.**

CAUTION **All beam data and calculation model files within Eclipse contain checksums and are managed by Beam Configuration. Do not edit these files manually. If differences are found the system will issue a warning "Warning : <name of the parameter file>. Check failed." If this occurs, verify and revalidate (reapprove) the beam data or calculation model for which this warning has been issued.**

System Components / Compatibility

This Customer Release Note describes the state of the software, which contains the following components, and their compatibility:

- Varian System Server, Release 15.1
- ARIA Radiation Therapy Management Client, Release 15.1
- Biological Optimization, Release 1.6.1.4
- Biological Evaluation, Release 1.6.1.4
- Conformal Optimization, Release 1.6.1.4
- DICOM Services, Release 15.1
- ARIA DICOM Import and Export 15.1
- Eclipse Distributed Calculation Framework, Release 15.1
- Eclipse Cone Planning, Release 15.1
- Microsoft SQL 2014 Standard and Enterprise
- Microsoft Internet Explorer, version 11
- Contouring, Image Registration and SmartAdapt, Release 15.1
- Plan Model Library 15.0
- Plan Converter, Release 1.0.0.9
- SRS Localization, Release 15.1

Compatibility of Software Applications

The following software products are approved for installation on Eclipse workstations:

- ARIA Oncology Information System for Radiation Oncology 15.1

- Image Browser 15.1
- Offline Review 15.1
- Portal Dosimetry 15.1
- RT Summary 15.1
- Tx Preparation 15.1
- Smart Segmentation Knowledge Based Contouring 15.1
- Varian RPM Data Converter 2.5

The validation for the following applications is limited to installing them and verifying that they do not adversely affect Eclipse:

- Adobe Acrobat Reader 9, 10 or 11
- Microsoft Office 2007, 2010 or 2013
- Cute PDF version 3.0
- .decimal p.d. 5.1.9
- ITC DICOMpiler 4.08.31.01
- IMSure 3.7.1
- K&S DIAMOND dose calculation 6.1
- MUCheck version 8.4
- RadCalc version 6.3

Note *Consult with the software vendor to determine the compatibility of any 3rd party applications with 64-bit operating systems.*

Note *Version 13.7 was the last Eclipse DCF version that supports the PBC algorithm, version 15.0 and newer do not support PBC algorithms.*

The GGPB, DVO, PRO and PGO algorithms will be obsoleted after 15.1, future Eclipse releases are not planned to support these algorithms.

System Requirements

Please refer to https://www.varian.com/oncology/products/software/treatment-planning/eclipse and select “resources” for current and specific details regarding minimum hardware and operating system specifications.

If you are without Internet access, a copy of the hardware specifications may be requested via facsimile or postal service by referring to the “Contact Information” page of this release note.

New Features and Enhancements in Eclipse Treatment Planning 15.1

- New capabilities have been added to the Eclipse Scripting API. Please refer to the *Eclipse Scripting API Reference Guide (P1015247-003-C)* for more details.

New Features and Enhancements in Eclipse Treatment Planning 15.0

- This version of the software improves the data security and access permissions in different hospital environments. It protects patient data and allows a defined application environment for Varian software. This version introduces a new approach to user and application access control, based on a new security implementation. The customer, as the owner of the local IT environment, is responsible to supply and configure an appropriate Windows domain environment that is suitable to host the ARIA Oncology Information System.
- Defining multiple fractionations for a plan is no longer supported. Instead of multiple fractionations in a single plan, you can create a copy of the plan, modify the number of fractions or the dose per fraction value in the plan copy, and optionally, create a plan sum of the original plan and the plan copies. Existing plans containing multiple fractionations (excluding Proton or Brachytherapy Plans) are converted into separate plan copies each containing one fractionation during the database upgrade (for example, a plan with two fractionations is converted into two plans, each with one fractionation).
- A new tab, Reference Points, has been added to the Info Window. It displays the planned dose per fraction, planned total dose for all fractions, and the dose contribution of each field to each reference point. These values were previously displayed in the Plan Organizer, which has been removed. In addition, the new Reference Points tab can be used to view the dose contribution from all plans included in a plan sum.
- In IRREG Planning, the Doses tab of the Info Window has been renamed as Reference Points tab.
- You can now create and delete reference points in the Reference Point Organizer.
- When using the command **New Location for New Reference Point**, a new reference point is created into the patient volume of the selected structure, to the mass center of that structure.
- The field meterset (MU) is now explicitly stored for each field instead of storing it as the product of MU/Gy and the field dose in the primary reference point. The MU/Gy is no longer stored. If you need the MU/Gy value, you can calculate it by using the meterset (MU) and the field dose in the primary reference point.

- Access to the DICOM Import Export workspace is integrated into Eclipse. Patient, plan and image data import and export take place through the DICOM Import Export workspace, which can be called directly from Eclipse using the **File > Import** and **File > Export** commands. Dose plane data can still be exported using the separate **Export > Dose Plane** command available by right clicking the dose in the Focus window. For complete information about the functionality of DICOM Import Export, refer to *DICOM Import and Export Reference Guide* (P1014877). For information on the Export Dose Plane functionality, refer to *Eclipse Photon and Electron Reference Guide* (P1015029), Chapter 24.
- Modeling of patient support structures has been added to the Contouring workspace in order to facilitate the addition of reoccurring objects to patient data sets. For example, such objects can be couch tops and patient immobilization devices. Support structure models define the geometry of one or more support structures and their HU values. There are two types of models: cross-section based models, which apply the same 2D geometry along all image slices, and structure set based models, for which the geometry can vary from slice to slice. Each shape within a model represents the geometry of a component characterized by a constant HU. Refer to *Report of AAPM Task Group 176* for more information on dosimetric effects caused by couch tops and immobilization devices.
- Modifications were made to dose-related terms in the GUI, and the print templates were adjusted accordingly. The modifications mostly affect field properties, plan properties and the Info Window.
- Visual Scripting, a tool for non-programmers to create scripts, has been introduced. Using Visual Scripting Workbench, you can create ESAPI scripts with a visual programming method, without the need to know how to program C# code. Please refer to the *Eclipse Scripting API Reference Guide (P1015247)* for more details.

Changes in Eclipse Treatment Planning 15.1 from the Previous Release

Contouring, Registration and SmartAdapt

- Structure modification is now correctly recognized regardless of scope of contour changes. This corrects issue identified in Eclipse 13.6MR2 where contour save was not performed if contours have been modified with Draw Planar Contour, Brush, Draw Geometrical Shape tool or Eraser only without any other modification to contour or structure set.
- The automatic fill feature of the Brush tool no longer requires enclosing the edited area while drawing with the Brush. It is sufficient to make the new contour intersect the existing contour. The performance of the auto-fill behavior in the Brush contouring tool has been significantly improved.
- The performance of the Contouring, SmartAdapt and Registration workspaces in 3-view or 4-view layout with topograms has been significantly improved.

- The Draw Planar Contour and Brush tools remain selected when switching to a different structure.
- The performance of structure list, drawing toolbar slide-out and other overlays over images in the Citrix environment has been significantly improved.
- Boolean operations can be applied cumulatively without switching the tool off, if the output structure is used as an input structure. This allows performing multiple Boolean operations to a single structure without interruption.
- The Draw Planar Contour tool closes the contour when switching the slice.
- The automatic interpolation and extrapolation options of the Draw Planar Contour tool are no longer remembered. This prevents accidental interpolation of the contours being edited.

  When the Draw Planar Contour tool is selected, the structure visualization is changed to contour only. Editing a slice with the automatic interpolation option changes the slice visualization to thick line with semi-transparent fill. This indicates that the contour was manually modified and will be used as an input slice for interpolation.

  Once another slice is modified a few slices apart, the automatic interpolation option replaces all contours between the nearest manually modified slices. This is indicated by visualizing recently interpolated slices with thin line and semi-transparent fill.

  As soon as the Draw Planar Contour tool is deselected, the structure visualization returns to its original state and the history of manually modified contours is discarded.
- The Draw Planar Contour tool behaves consistently when editing contours. Starting/Closing the contour outside of an existing contour is used to remove parts from the segment. Starting/Closing the contour inside of an existing segment is used to add part to this segment.
- The output of PET Subvolume thresholding has been improved in order to remove partial pixel shifts in resulting volumes.
- Copying contours between registered images has been improved. A structure propagation function uses all available CPUs to copy the different slices of the structure in parallel. However, this parallelization was creating conflicts when the different CPUs try to write to the target structure at the same time, resulting in intermittent copy failures. The propagation function has been adjusted to utilize single CPU when writing target structures.
- Moving window and split window are correctly shown in case one of the images has assigned CT value for a structure.
- Instability due to long sessions of editing a patient in Contouring, Registration or SmartAdapt has been fixed.
- Hiding CBCT images from the image strip in Contouring, Registration and SmartAdapt workspaces is now possible.

- Copy and paste of single slice contours to other slice(s) is supported by copy/paste mechanism integrated in the Draw Planar Contour tool. This functionality can be accessed by shortcut keys (CTRL+C, CTRL+V) and new options in its Context menu.
- The robustness of avoid painting over feature in the Brush tool has been improved.
- The performance of window and level adjustment has been improved for Contouring, Registration, and SmartAdapt workspaces.
- It is now sufficient to press CTRL key at any time during drawing with the Brush tool to fill the structure.
- Direction of mouse wheel motion when zooming in/out can now be configured to match External Beam Planning direction.
- Default material is now assigned automatically upon automatic body search.
- It is now possible to use Contouring, Registration and SmartAdapt on main and secondary display in Citrix environment.

External Beam Planning

- With the selection of a single isocenter setup in the arc geometry tool, the original isocenter is now preserved. The arc geometry tool preservers the isocenter if the new arc setup has one isocenter and the original plan had one isocenter.
- With version 15.0, the ConvertPixelFormat tool has been made obsolete as the support for directly opening ZIP pixel files has been restored in Eclipse. The opening of the ZIP pixel files failed in case the write access was removed. This issue has been solved.
- The 2D arc display was opposite to the start stop angles shown in the plan tab, in the field properties and in the 3D view in case the fields were created from a plan template with half arcs (0-180deg rotation) for a patient that did not have a body contour at the time of the field creation. This issue in the 2D arc display has been solved.
- In V15.0 when creating a plan, the plan creation wizard automatically created a primary reference point for the target structure. If the structure did not have existing reference points, user could not verify the new created primary reference point and define the dose limits in this step. This behavior has changed; the automatically created primary reference point can be checked again in the plan creation wizard.
- The system now shows an error message during treatment approval in External Beam Planning when the dose limit is exceeded and the system is using cGy as the dose unit.
- AAA versions 13.0.26–13.7.15 no longer ignore the CT value assignments when a photon and an electron field are in the same plan and they are calculated at the same time using GGPB (all versions) or eMC (version 13.5.35 or earlier).

- If the user creates a structure with the type “Support” and assigns a HU value higher than 10000, AAA 13.7 and older versions did not show a warning, only an information in the calculation log that this supporting structure has not been taken into account in the calculation: “Information: HU value is not defined for patient support device [ID of structure]. This support structure is not accounted for in the dose calculation.”. This issue has been fixed and Eclipse now shows an error message: “Cannot calculate: Invalid HU value (10001) for <StructureID>”. V15 algorithms will take into account the CT values up to maximum value defined by the user in the CT calibration curve. The maximum value that can be defined in the CT calibration curve is 29768 HU.
- In case of CT images where the Body gets closer than 5 cm to the image bottom edge and the user tried to add a couch structure, it could happen that parts of the couch structure where outside the image. This issue has been solved.

Optimization: IMRT, VMAT and RapidPlan

- Photon Optimizer produced in some cases plans with more inhomogeneity in the PTV compared to PRO. This issue has been solved.
- The mean dose and other gEUD objectives always showed 0% cost. This issue has been solved.
- The Arc Geometry tool crashed when the option 'Fit Collimator to Target' in the Fine-tune Fields tab was used for a plan that had a setup field present before entering the tool in V15.0. This issue has been solved.
- In V15.0, the Arc Geometry tool only allowed the option 'Fit Collimator to Target' in the Fine-tune Fields tab when an arc geometry was applied. This has been fixed, the option 'Fit Collimator to Target' can again be used for manually created arc geometry.

Cone Planning

- Isodose lines are now shown in the Cone Planning reports.

Changes in Eclipse Treatment Planning 15.0 from the Previous Release

Contouring, Registration and SmartAdapt

- Switching registrations and images registered to the same target image preserves presentation context i.e. current view location, rotation, and magnification. To preserve context when switching to images click preferred registration line first. Note that for cases where multiple registrations exist between images, the current one (the one opened last) is used to retain the view geometry.

- Body autosegmentation is now automatically applied to all CT images. User with System Administration rights can change default processing options for Body Autosegmentation by setting current options of the Body Search tool as institution default. CBCT and MRI images require applying the Body Search tool manually.
- Moving inserted support structure models is now possible by using the Transform Structure tool. Multiple components of a support structure can be moved together by selecting the structures in the structure list (press Ctrl and click the structure IDs) and then using the Transform Structure tool.
- Draw Planar Contour and Brush tools remain selected when switching to different structure.
- The deformation size in Draw Planar Contour tools is stored as user preference.
- Small structures are now visualized regardless of zoom level.
- Contouring, Registration and Smart Segmentation Knowledge Based Contouring uses software rendering by default, enabling more robust behavior in remote environments. On physical machines, use the **Tools > Options > Rendering Device** command and switch rendering to Hardware in order to improve performance.
- The DICOM origin is now shown in the structure list. It is possible to toggle visibility of the DICOM origin.
- It is now possible to specify the desired contour resolution in the DICOM Media File Import filter in DICOM Import Export.
- When editing contours with the Brush or Eraser tools, the tool draws a trail to enable faster performance in remote environments. To enable the Brush or Eraser to modify contours directly instead of trailing, clear the **Show Brush Trail** check box in in **Tools > Options > Brush and Eraser**.

External Beam Planning

- The plan creation wizard for photon planning has been modified. When creating a new photon or electron plan in Eclipse, the treatment unit is now selected after selecting the primary reference point for the plan. The patient position is selected after selecting the treatment unit.
- The Arc Geometry Tool has a new **Automatic Collimator Angle** option. By selecting this option, the tool automatically generates the collimator angles for the selected arc field setup. For multiple arc fields, the collimator angles are varied from arc to arc, which can improve the spatial dose definition of the beam, because the MLC modulates each arc field from a different direction.
- Note that the collimator angles for predefined arc setups defined in Table 2 (Arc Setup Selection Criteria) on page 167 in *Eclipse Photon and Electron Instructions for Use* (P1015271) are only valid when using the **Fixed: Use Complement Angle** option for the collimator angle in the Arc Geometry Tool.
- The issue of dose information showing a larger dose for "3D MAX for PTV" than for "3D Dose MAX" has been solved:

With the introduction of eMC version 13.6.23, the default normalization to 100% at the global Dmax was changed to 100% at the Dmax on the central axis (CAX), regardless of the eMC algorithm version used. In version 15.0, you can now select the normalization mode to be used in the algorithm properties of the version 15.0 eMC algorithm. This means that both methods (100% at the global Dmax, 100% at the Dmax on the CAX) are available. Older eMC versions used in the version 15.0 client continue using 100% at the Dmax on the CAX as the default normalization.

- Previously, if the slot for a block tray in an electron field was defined in Field Properties (Accessories Tab, Slot selections), a tray for an electron block could not be defined until this value was deleted. Now the slot can be defined in either Field Properties or Block Properties.
- Previously, the MLC Shaping tool was closed when the selection was changed from an MLC to another object, even if that object was also an MLC. This logic has been changed so that if the selection moves to another MLC, the MLC Shaping tool stays open. If the selection is moved to an MLC that cannot be edited with the Shaping tool, for instance, a locked or unapproved MLC, the Shaping tool is closed.
- The behavior of the Fit to Structure tool has been changed. The **Optimize Collimator Rotation** check box is now disabled if the coordinate system selection is set to “Collimator”. The **Optimize Collimator Rotation** check box is enabled if the coordinate system selection is set to “BEV”.
- The following dose-related terms have been changed in plan reports:
  - Prescribed Dose →Total Dose
  - Dose at primary reference point → Planned Total Dose
  - Prescribed Dose Percentage → Treatment Percentage
- For IMRT fields using the step and shoot technique, two extra parameters, “Minimum Segment MU” and “Minimum Aperture Area”, have been added in order to better control the leaf sequences generated by the LMCMSS algorithm.
  - Minimum Segment MU: Minimum amount of MU to be given by each segment of the IMRT field. Accepted values range from 0.0 to 12.0 MU.
  - Minimum Aperture Area: Minimum size of the MLC aperture to be respected by each segment of the IMRT field. Accepted values range from 0.0 to 4.0 cm².

  These new parameters can be defined in the Calculation Options of the LMCMSS algorithm. When using these parameters, the limits defined in the Operating Limits in RT Administration are overridden for IMRT step and shoot fields.
- The Insert > New Compensator command will result in an error message which instructs user to define an algorithm for compensator calculation. This is not possible because PBC algorithm has been obsoleted. To create a compensator, right mouse click on an existing fluence and select "Create compensator from fluence”.
- The functionality to export the dose plane has new options:

- Planar dose for all individual fields in a plan can now be exported simultaneously.
- Settings for exporting the planar dose can be saved as default in the Export Dose Plane dialog box.

- When creating verification plan on a phantom, the Create Verification Plan wizard now has the option to save three structure sets as defaults instead of only one. The previous options of using the patient's structure set currently open and selecting another structure set for one-time use remain available.
- In order to provide consistent behavior in Citrix environments, the DICOM print settings have been changed to apply to the entire site and to be shared by all users by default. This change makes it necessary to re-enter any existing DICOM print settings.
- Previously, when several workspaces were bundled together in a single operating system process, the switch between the workspaces did not release any license allocated in the source workspace. This problem has been fixed by also releasing all licenses during workspace switch within the operating system process. If the workspace switch is cancelled, the system attempts to reacquire the task license, and it terminates if this fails. *This behavior has been in place since v13.5 MR1, but it has not been previously mentioned in Customer Release Notes.*
- Changes related to virtual simulation:
  - The configuration is now managed using the **Tools > Configure Virtual Simulation** command. The old configuration using the **Workstation Configuration** command has been removed.
  - The CT isocenter can now be placed at the user origin of the image and used for virtual simulation. The setting is done in the CT Scanner Configuration dialog box that opens from the Virtual Simulations Configurations dialog box.
  - The configuration can now be defined to be global or user-specific, and each configuration can have its own CT settings.
- CBCT images generated on TrueBeam now report the imaging dose using the DICOM tags CTDIvol and CTDI Phantom Type Code Sequence. These are stored to the SliceCT-table. The values are shown on the General tab of the CBCT images.
- The HU limit for the panel surface of Varian-provided couches is changed from 299 HU to 1000 HU. The Brainlab couch requires in some cases a panel surface of 900 HU.
- Improvements have been done to the zoom-in tools in orthogonal views:
  - The Zoom-in rectangle widget in orthogonal views has been changed: After the view has been zoomed in to the selected rectangle, the orthogonal planes are moved to the center of the view.
  - The behaviour of the **Move Viewing Planes to Structure** command has been changed: Now both the structure and the viewing planes are placed to the center of the display when the command is used.

- The same logic has also been implemented in the following objects in connection with the **Move Viewing Planes** command**:**
  - Structure
  - Reference point with location
  - Field isocenter/entry point
  - User origin
  - Global dose maximum, Target dose maximum, Target dose minimum
  - Normalization point

- You can no longer edit the patient data through the Patient Properties dialog box in External Beam Planning. To edit the patient data, you need to switch to the Registration workspace. A direct link to the Registration workspace has been added to the Patient Properties dialog box.
- Plan validation no longer marks the reference image alignment in the plan as invalid when the plan is missing information about the frame of reference. This issue typically affected plans and field images imported from 3rd party systems.
- The following issue has been solved in IRREG Planning: If a plan without a structure set did not have a frame of reference (FOR) defined at the series level, and contained a field with non-zero isocenter coordinates and had a reference image attached, planning approval was not possible.
- New plan revision can be created from treatment approved, unplanned, treated or retired plan that does not have a revision yet. The command will create a copy of the plan and set the original plan into retired state. If the plan is linked to a retired prescription revision, meaning that a new revision of the linked prescription is available, the same “Update Plan” dialog will be opened and the plan needs to be updated to the latest prescription revision before plan revision can be created. If, in addition, the plan has treated fractions, now an additional new dialog, “Linking Plan to Prescription”, will be displayed, which allows defining how the treated fractions need to be taken into account when setting the value for the number of fractions in the new plan revision
- During approvals and in printout, the full name of the approver will be displayed instead of only the user ID.
- Second Channel Integrity Check (SCIC), a plan-level integrity checking mechanism that is used to guarantee that parameters relevant to the treatment are not changed after the plan has been approved and before the plan is used for treatment, has been improved.

  The improvement fixes both the false positives issue and provides better diagnostics in the case of a true secondary check failure.

  In addition to the technical changes to ensure checksum correctness, the change also includes the extension of the photon SCIC definition to support additional treatment modalities:

  - Multiple wedge support
  - Patient position

- Patient setup technique
- Gating support
  - Respiratory signal compensation technique
  - Respiratory signal source

Optimization: IMRT, VMAT and RapidPlan

- The issue in the Optimization dialog box for photon plans optimized with an avoidance sector has been solved. If setup fields are added after the optimization and you select to re-optimize the plan, the avoidance sector is no longer removed.
- The issue where the OAR dose increased if you restarted the optimization and selected the **Continue from previous optimization** option when using a target gEUD objective during optimization is solved.
- The issue related to using intermediate dose in VMAT optimization if the first field in the plan is a setup field has been fixed.
- An issue in photon optimization when using the **Continue from previous optimization** option for a previously calculated conformal arc plan has been fixed.
- The issue reported when using avoidance sectors and the Varian Standard scale has been solved. Photon Optimizer converts all scales to the IEC scale. Optimized plans are now correctly converted back to the user-defined Varian Standard scale in External Beam Planning, both in clockwise and counter-clockwise directions.
- The volume values in Vol [cm^3] are now shown for each dose-volume objective after the Optimization dialog box is closed and then reopened.
- The issue has been solved where the DVH estimation algorithm used the simple mean + std model even when there were 20 partitions for the in-field portion, if the algorithm did not find an acceptable regression model for the first and second GED principal component scores. The fallback to the simple mean + std model is again occurring when the training set has fewer than 20 partitions.
- There was an issue in optimization using the DVO algorithm where the final reported MU and dose were double the prescription when the IMRT optimization was restarted and the **Use the current plan dose as an intermediate dose for optimization** option was used for a plan that was not normalized (that is, a plan that used the **No Plan Normalization** option). This issue has been solved.
- The intermediate dose calculation for photon plans in the Optimization dialog box is now supported if a tray has been added in a field.
- A notification has been implemented in the Optimization dialog box for structures that are partially outside of the body when using the PO algorithm. The actual dose is no longer displayed for lower optimization objectives with 100% volume, if the structure is not completely inside the body structure. An icon with an exclamation mark and a tooltip is now displayed next to that lower objective. The actual dose reported by the algorithm would be inaccurate because it is calculated for a cropped volume with the outside parts removed.

- The ability to limit the X-size of the treatment field during VMAT-planning when using the Elekta Agility MLC is working again. For each arc the option 'limit X-size' can be activated and a size for X1 and X2 can be defined under the Plan Information Drawer in the Photon Optimization Dialog.
- Earlier when using PO and using avoidance sectors with coplanar and non-coplanar plans, there was a reduction in target dose coverage in the area not avoided. This issue has been resolved.
- The optimization on plans created in Eclipse prior to v10, or on new plans created on an old structure set/image combination where the sizes don't match is now prevented to avoid getting shifted dose distributions caused by those datasets. As a work around duplicate the patients structure set, and copy the plan to be re-optimized to the new structure set. Then re-optimize the plan on the new structure set. If the dose is still shifted, then the structure set/image combination size probably does not match. As a work around for the size difference, export and reimport the CT-images, plan and structure set. During the reimport a new 3D image will be created that matches the size of the structure set.
- The issue when using intermediate dose for a PO IMRT optimization that the progress bar was not progressing has been solved.

Proton Planning

- The plan creation wizard has been modified. When creating a new proton plan in Eclipse, the treatment unit and patient support device are now selected after selecting the primary reference point for the plan. The patient position is selected after selecting the patient support device.
- The snout affects the Field-Specific Target generation, the Field-Specific Target is generated only within the projected snout size and shape. If the base structure extends beyond the projected snout size, the Field-Specific Target will be cropped at the edge of the snout projection. In previous releases, the following parameters were missing: the snout size and shape.
- Acuros Protons algorithm uses the CT mass density curve to convert the CT values (HU) in the image to mass density (g/cc). It then determines the material composition based on the density. Within a range: 0 g/cc - 3.0 g/cc the mapping is automatic, from density to tissue material (lung, muscle, bone, etc). When “Plan Uncertainty Dose” is used the “Calibration curve error” only affects the mass density in the range of 0 g/cc - 3.0 g/cc, above 3.0g/cc the curve remains intact.
- When an approved verification plan was imported, it was displayed in the plan tree with the 3rd party approved treatment plan icon. A 3rd party approved verification plan icon was missing from the system. A new icon has been added for 3rd party approved verification plan.
- Image resolutions >1 mm no longer affect the (smoothing step) of the Field-Specific Target algorithm. This makes the Field-Specific Target slightly larger than before and its edges more accurately defined if the image resolution is > 1 mm.

- The order of the smoothing steps has changed. As a result, smoothing is no longer biased to push the Field-Specific Target edge slightly inwards, which makes the generated Field-Specific Target slightly larger than before.

Import/Export

- DICOM Import Export now supports to import DICOM RT dose objects without the corresponding referenced DICOM RT plan object, provided the DICOM frame of reference is the same for the CT, structure set, and dose. The workflow steps are as follows:

    1. Import the CT and structure set
    2. Create a treatment plan in *External Beam Planning* with the imported CT and structure set but do not calculate dose.
    3. Open DICOM Import Export and import the RT dose object. A dialog will appear with a drop-down selection box for selecting the created plan.
    4. Use the drop-down to select the created plan for connection.

Known Issues for Eclipse Treatment Planning 15.1

Contouring, Registration and SmartAdapt

- Using the 2D static brush on two blended images A and B, where B is registered against A with some pitch or yaw or both, the following might be observed:
    - Wiggling of the brush shape while drawing.
    - Unintended modification of the contour in the neighboring slices.

    This is caused by a design limitation, when projecting the brush shape and the contours to the slices of the registered image B that are not aligned to the transversal drawing view. As the visualization of registered images is aligned to the target image (indicated by the arrow of the registration object in the GUI), this limitation is observed when drawing on the source image (tail of the registration object).

    As a workaround, create an inverted copy of the registration (choose **Registration > Invert Registration**) and select this inverted registration for contouring. An alternate solution is to double-click the source image and draw contours in non-blended views.
- Processing mode for post processing tool is reset to 3D.
- Contouring, Registration and SmartAdapt workspaces do not allow entering Window Width and Window Level directly. Windowing is possible only via widget displayed on a side of image.
- Function to flip image Left/Right is no longer available.
- Pencil tool is not available in 4D player.

- While inserting support structure models, the Window/Level settings are automatically set to better visualize low-density patient immobilization devices. Manual adjustments of Window/Level settings are disabled. Use the Automatic Window/Level functionality to restore the default CT window.
- Export of deformed PET images from SmartAdapt may corrupt the data. Use structure propagation and blended views in SmartAdapt to perform contouring tasks on deformed PET images.
- Registration does not allow modifying structures. To copy a structure to a registered image, create or modify the structure, switch to the Contouring workspace.
- Legacy images with imported with inversed slice order (e.g. images in CadPlan CART image format) are not supported.
- Converting structures of type Body and Support to High Resolution is not supported.
- Use of chain registrations is not adequately described in *Registration, SmartAdapt and Contouring Instructions for Use* (P1015140).
- Chain registrations allow creating new registrations based on existing registrations. For instance, if CT A is registered to CT B, and CT B is registered to CT C, the chain registration feature can be used to create a new registration between CT C and CT A. This new registration combines transformations from registrations CT A to CT B and CT B to CT C. This new registration is independent of the previous registrations used to create it.
- The creation of a thin automatic bolus (~0.2–0.3 cm) sometimes results in varying thickness, causing air gaps between the bolus and the body contour. Manual correction may be needed to adjust the bolus.
- When you rotate a 2D image, the image is snapped to the orthogonal axes when the rotation is smaller than 5 degrees. Press Shift when you use the Rotate tool to freely rotate the image.
- *Smart Segmentation Knowledge Based Contouring Instructions for Use* describes the Post Processing - Extraction functionality in section "Modify the Search Body Tool Settings" rather than "Use Post-Processing Tools" section.
- CT values assigned for structures are now converted to electron densities in the export of structure sets by using the electron density calibration curve. Similarly, imported structure electron densities are converted to stored CT values using the electron density calibration curve. This may cause differences in assigned CT values when importing structure sets with assignments higher than 100 HU from previous Eclipse versions.
- If one of the predefined couch structures is assigned to the patient and the couch structure contains very thin layers, it might be possible that the thin layer will not be completely drawn. This issue depends on the CT grid size and the position of the Body structure. We advise to carefully check the automatically inserted couch structures and in case they are not complete, to manually adjust the missing parts.

Import/Export

- In order to import EOPP plans with DICOM import, ensure that the minimum energy being used for EOPP is correctly set in RT Administration, in the Energy Mode Tab for the Energy Range minimum value.
- Scanning a field photo within Eclipse does not activate the apply button. In order to get the field photo entered into the field properties, images can be added via the file browser.
- When sending contoured structures over between two different systems through DICOM, small changes in the contours can occur due to the use of different internal structure models, therefore the contours should always be checked.
- When importing a treatment plan with dose distribution or without a dose distribution and the plan is calculated in Eclipse, no isodose level template is selected by default. The isodose level template needs to be selected manually to view the isodose lines.
- The Patient Import and Export filter available in previous Eclipse versions was obsoleted in v13.7. The equivalent functionality to import or export the complete patient data set can be performed in the DICOM Import Export workspace directly accessible from Eclipse.

External Beam Planning

- Selecting Insert > New Compensator will result in an error message which instructs user to define an algorithm for compensator calculation. This is not possible because PBC algorithm has been obsoleted. To create a compensator, right mouse click on an existing fluence and select "Create compensator from fluence."
- Creation of plan template or clinical protocol will fail for plans that include setup field without energy defined. Workaround is to define an energy for the setup field before saving plan as a template or in a clinical protocol.
- In certain circumstances, when using Fit and Shield with arc arrangements, a field with invalid gantry rotation will be created. Under these conditions, the system will notify the planner.
- Partial Treatment Planning is not supported for mARC plans.
- If an arc field is first created manually with an extended angle, and the next arc fields are created using the Arc Geometry Tool, all arc fields in the plan will erroneously indicate that they use extended angles.
- An Elekta Agility machine created in RT Administration from the default machine XML can be used for VMAT optimization, but changing the treatment unit to another similar Elekta Agility machine gives the error “The treatment unit does not have jaw tracking”. To solve this issue, go to RT Administration, open the Operating Limits tab for the Elekta Agility machine and set the CollY **Motion Mode** to “Dynamic” and define the same **Max Speed** for it as for CollY1 and CollY2.

- The following information is missing from *Eclipse Photon and Electron Instructions for Use*: The isodose lines do not align with point dose calculations, because the isodose lines are interpolated from voxel centers according to the voxel size defined by the matrix resolution.
- When you do not use the client during a certain time slot, the workspace gets locked. If this happens during dose calculation, and the dose calculation finishes before you unlock the workspace, the system will not display the MU values for the treatment fields in the Info Window even if the dose is calculated. To refresh the MU display, click a tab other than the Fields tab in the Info Window.
- Fit and Shield tool is disabled for arc dynamic (conformal arc and VMAT) fields with Elekta Beam Modulator machine.
- The Eclipse skin flash tool does not compensate for beam profile. If the tool is used with unflattened beams, ensure that the dose fall-off in the flashed region is clinically acceptable.
- The 'Fit MLC to Structure' tool is working incorrectly when the maximum leaf speed has a smaller value than the minimum leaf gap in the MLC properties in RT Administration. Ensure that the maximum leaf speed has a higher value than the minimum leaf gap values.
- When you use the fit and shield function, the leaves which are not used but are inside the field have the minimum leaf gap opening defined in the RT Administration (Arc dynamic leaf gap). Those leafs are stationary so depending on the position of that gap, it can produce unwanted high dose to the patient. To avoid this, you can use the fit to structure function instead. There the non-used leafs will be closed, or as a second option you can reduce the minimum arc dynamic leaf gap in RT Administration.
- The Fit and Shield tool cannot be used with non-Varian treatment units that do not support interdigitation.
- Planning using a 3D image set that is created from a scanned 2D film (secondary capture modality) is not supported in this version.
- Splitting arc fields for verification plans results in invalid leaf positions for the arc subfields. Use full arc verification plan instead.
- If AAA/Acuros XB has been chosen for dose calculation and user changes a physical compensator to an electronic compensator with the option "Convert to Electronic Compensator," the following error message appears "The Body structure has not been contoured." However, this error message is erroneous. Change the dose calculation algorithm from AAA/Acuros XB to a blank (no value), then electronic compensator conversion will succeed.
- In case the field size is edited in a verification plan that has been calculated with v10 or older algorithms, the actual fluence is not invalidated and as a result the calculated dose will be based on the CBSF factor and the original fluence of the field and no warning is issued. In case of v11 or newer algorithms the actual fluence will be recalculated prior to the dose calculation each time and it will take into account the changed field size.

- If in External Beam Planning the “QFix Calypso kVue Couch” is added to a particular patient image, in some cases it could happen that some parts of the thin top surface are missing. When adding the "QFix Calypso kVue Couch" directly in contouring, the issue is not present.
- When a dose relevant plan change is done (for example the number of fractions is changed), the motion protocol that was already linked to that plan will automatically be unlinked without notification. The motion protocol will need to be re-selected again from the Treatment Preparation application.
- When the treatment unit for a plan with multiple electron fields or other fixed SSD fields is changed with the Change Treatment Unit tool, the SSD is reset to the treatment unit’s Source to Field Entry Distance (SFED), or if the SFED is not defined, to the Source Axis Distance (SAD). If the treatment unit is changed from the field properties for each field individually, the SSD is not reset to the SFED/SAD value.

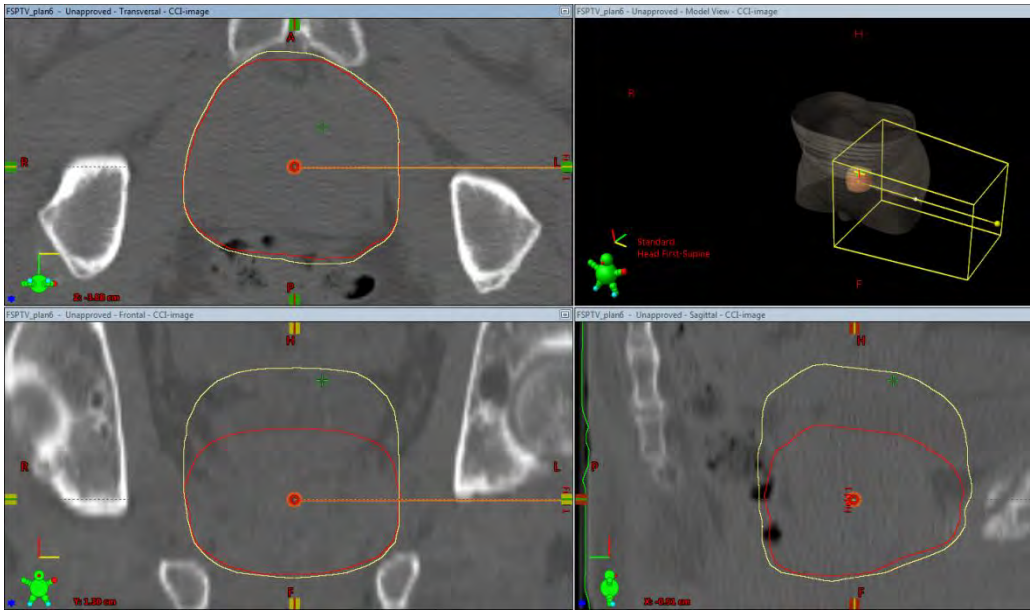
Proton Planning

- The interaction of protons with snout is not modeled during dose calculation. Therefore, a modulated scanning plan without a block or MLC should not contain spots or lines that pass too close by the border of the snout opening. The generation of spots or lines by PCS beam line calculation and by NUPO optimization is limited by the snout opening, the snout position and the snout margin (Beam configuration, Scanning machine parameters, Snout margin). The snout margin parameters, Snout margin for spots [in-air spot sigma] and Additional snout margin for spots [mm], control the snout margin for modulated scanning. The total snout margin is the sum of the two values and it may be different for each energy, as the spot sigma is different for each energy.”
- Distances to beam line modifiers are not exported in the DICOM RT Ion Plan.
- In DEM (Dosimetrically Equivalent Machine) change, not all layers of a static DRR are removed in proton setup fields. Delete the static DRR and regenerate any layers required.
- When a new structure set is assigned for a treatment plan that uses the double scattering, single scattering, or uniform scanning technique, the assigned block and compensator are not rescaled if the isocenter location, snout position, and virtual SAD are changed. Create a verification plan instead if you want to verify a block and dose distribution.
- For the IBA proton system, special care needs to be taken (1) when configuring the beam for the double scattering and uniform scanning, and (2) when editing the beam line.
    - For long SOBPs, the 90% isodose may not completely cover the target at the proximal end. This can be improved by fine tuning the beam configuration to enhance the correspondence between calculation and measurements.

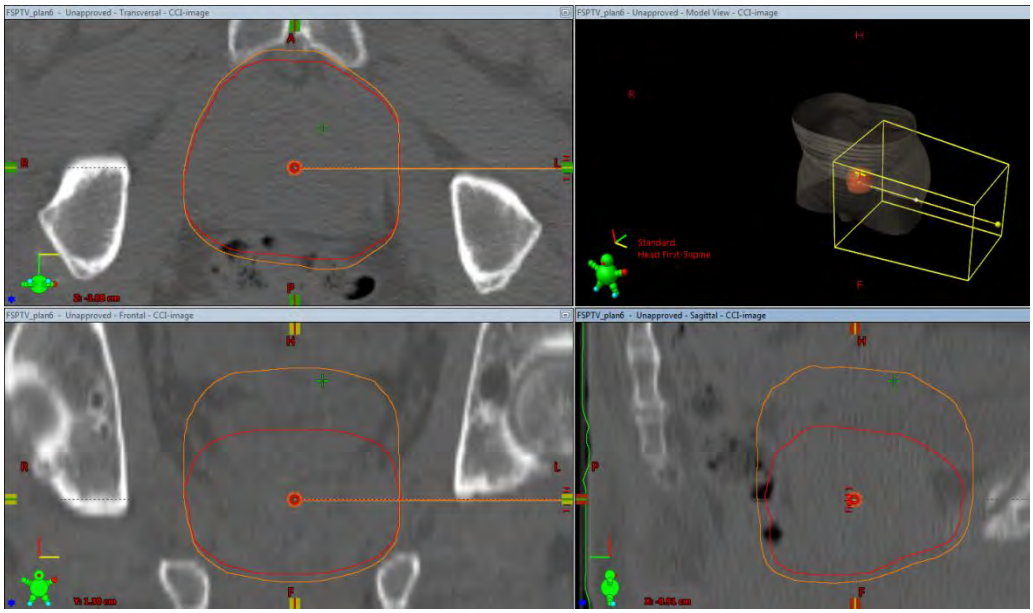
- IBA does not consider the Nominal Energy defined in Eclipse when selecting the beam line parameters. After the beam line editing, the Nominal Energy and the Nominal Range can be unrelated. If this is the case, the Nominal Energy used in Eclipse for the dose distribution calculation can be different from the Nominal Energy used by the IBA delivery system.

- It is not possible to mix proton treatment units within the same plan. Use Plan Sum to accomplish this.
- When measuring depth dose profiles for proton beam configuration, it is important to select the largest snout and a large aperture (or no aperture at all). Moreover, move the snout as close to the water phantom as possible.
- Target margin values are not supported in the DICOM export or import operations. Exporting and re-importing proton plans will lose all margins in the original plan.
- When you create a single optimized multi-field plan with the modulated scanning technique, and then calculate using F5, and then add a second field and calculate again, the first field has twice the weighting of the second field. Ensure that you delete the beam line of all fields which are already calculated. This forces the system to recalculate the fields correctly.
- DRR images of setup fields do not visualize the snout or block. If the snout or block outline is needed on the DRR, use the 'Create DRR from Imager SAD' functionality from the treatment field context menu.
- The default value for the imagers attached to the proton treatment machine in RT Administration always uses the IEC61217 scale, despite the scale of the machine.
- Volume calculation times are dependent on the defined calculation volume and the selected grid size. If the grid size is half the previous value, calculation times can be expected to be up to 8 times longer.
- In Eclipse, the export of a proton plan will fail if no dose has been calculated for the plan. If you want to share plans, calculate the dose first, and only then export the plans. The exported plan will have a valid beam line which can then be imported correctly. DICOM does not support proton plans with no beam line.
- Currently, if proton patch fields are used, and the angle between the primary field and the patch field is 0 or close to zero, the dose junction points cannot be properly located and the calculation will fail. When using proton patch fields, ensure that the angle between the primary and patch field is much greater than 0.
- You need to manually add blocks or MLCs to patch fields.
- If the default compensator drill bit has not been defined, the calculation process stops and asks you to define the drill bit.
- The field sizes in proton planning are calculated in the same way for both the user defined option and non-user defined option cases. The behavior after the field size checking has changed. Previously, an aperture extending outside the field size limits was always considered as a fatal error and calculation stopped. Currently, if a user-defined option is used from the beam line editor, the field size extending outside the limits is considered only a warning and calculation still proceeds. Verify that field sizes are appropriate when using the beam line editor.

- Eclipse provides the minimum total block thickness and also the minimum thickness of the block pieces. For the dose calculation, Eclipse always uses 1 block with the total block thickness. This information can be used by the block cutter to decide whether to create a block in multiple slices. ARIA RTM does not verify if the number of block pieces (slices) has been correctly entered in the plan information before the treatment approval of the plan. You need to enter and verify the number of block pieces (slices) before treatment approval.
- The creation of a *"field-specific target"* from an existing structure (example: CTV) with zero margins and small calibration curve error is not a supported use case.
  - If margins are smaller than the resolution of the CT (CT slice separation) the "field-specific target" can be clipped from a few directions (mostly z-direction) compared to original target. The generated target will not cover the original structure entirely.
  - If "0" margins are used the "field-specific target" can show an unwanted margin of approximately 0.2 cm.
  - Example 1: gantry 90 degrees; 2 cm Head margin; 0 cm margin in the other directions, no range uncertainty margin (The base structure for the field-specific target is shown in red; the field-specific target is shown in yellow).



  - Example 2: gantry 90 degrees; 2 cm Head margin; 0.2 cm margin in the other directions, no range uncertainty margin (The base structure for the field-specific target is shown in red; the field-specific target is shown in orange).



The structures need to be reviewed by the user.

- “Field-specific target", The snout shape and size affects the resulting field-specific target if the base structure extends beyond the divergently projected snout shape and size. This information is not stored with the field-specific target parameters, and thus Eclipse does not notify the user if the snout is different than the snout that the field-specific target was generated with.
- EAAPI for protons: It is responsibility of those who implement custom proton algorithms using the EAAPI Compensator capability to ensure that predefined parts of the beamline (modifiers, settings and other parameters) are properly accounted for in compensator calculation or, in the case the algorithm does not support the compensator option, to reject calculation with a proper error message.
- *Eclipse Proton Reference Guide* contains erroneous information about the snout position/air gap calculation. The calculation takes place as follows:

  When adding a field in a proton plan, you can define whether the air gap or the snout position value in Field Properties is used as input to calculation. If the air gap is defined, then the snout position is calculated from it. If the snout position is defined, the air gap is calculated from it.

  The air gap is the shortest distance, measured parallel to the central beam axis (axis from source to isocenter), from the most downstream surface in the beam line to the skin within snout borders. The snout position is the sum of isocenter-to-skin distance and air gap.

  The following beam line elements are considered when determining what is the most downstream surface in the beam line:

  - Snout tip
  - Compensator downstream surface, if the beam line has a compensator. The surface position is the same as
    - Compensator slot position, if “Compensator above tray” is selected in RT Administration.

        - Compensator slot position + compensator thickness, if “Compensator above tray” is not selected in RT Administration.
    - Block downstream surface, if the beam line has a block. The surface position is the same as block slot position (a block is always above the tray).
    - Range shifter downstream surface, if the beam line has a range shifter that has “Attached to snout” selected in RT Administration. The position defined in RT Administration is the downstream surface position.

    Of these surfaces, the one that is furthest away from the source is the most downstream surface in the beam line.

IMRT and VMAT Optimization with Photon Optimization (PO) Algorithm

- Loading an objective template in PO optimization does not completely match plan structures if the objective template was saved with multiple duplicate entries for the same structure.
- Right mouse click 'Paste' into the optimization text input field for dose is not working. The value will change back to the original value when enter is pressed. Use the 'Ctrl+V' short key instead. The right mouse click 'Copy' and 'Cut' functions work as intended.
- Photon Optimization may report the wrong actual dose for lower objectives if a portion of the structure is outside of the body, or the few voxels of the structure are driving the max dose. As a workaround change the % of volume for the objective to 99%.
- The following warning will be displayed by the Optimization dialog box, "Optimization is available only for plans that contain fields with the same treatment unit and no accessories" if the plan includes a static MLC and the PO algorithm is used. As a workaround, use the DVO algorithm.
- The Optimization dialog box does not correctly display the dose inside a bolus if you use the color wash. The issue is only in the visual display—the dose is correct despite the error in the display.
- An issue was reported when excluding fields in the Optimization dialog box for a re-optimized plan when using the Photon Optimization algorithm; the previously optimized MLC sequences will be removed for the excluded fields. As a workaround, use the DVO Optimization algorithm.
- The max MU objective in the PO dialog was increased from 4000 to the treatment machine operating limit max value for MU multiplied by the treatment beam count in the plan. The optimization dialog will crash if the MU objective is selected to be used during optimization if the treatment machine operating max limit for MU is not configured in the Administration Workspace.
- The jaw tracking for VMAT plans using Elekta linacs with MLCs that do not interdigitate might show for a few control points sub-optimal jaw tracking of the Y-jaws compared to results generated by the PO versions 13.7 or 13.6. If such a plan does not meet the clinical objectives, re-optimization with slightly changed jaw settings or modified collimator angles might improve the result.

IMRT, VMAT and Beam Angle Optimization with Dose Volume Optimizer (DVO) and Progressive Resolution Optimizer (PRO) Algorithm

- IMRT: Eclipse determines if a treatment unit is capable of handling large IMRT fields (LF-IMRT) from the operating limits in RT Administration for Field X(Y) and Collimator X1/X2 (Y1/Y2) types. The operating limit properties should have motion mode values of “Multiple Static Positions” or “Dynamic” for the field and collimator types. The Treatment Preparation workspace also checks these operating limits. If the motion modes are not set to “Multiple Static Positions” or “Dynamic”, a plan that is not split in Eclipse may show as invalid in Treatment Preparation.
- Occasionally an error is encountered when calculating dose for an Elekta VMAT plan, and the user will be notified “Some MLC leaf positions exceed the physical limitations of the MLC device…Continue Calculation?” Using the Verify Leaf Positions command may not remove the errors. The workaround is to re-optimize with slightly different parameters.

RapidPlan

- After database upgrade from version 13.5 to 15.1, the outlier column does not exist in ‘Plans of the DVH Estimation Model’ view, nor does the structure specific outlier tables exist among the graphs and tables for models created prior to v13.6. To add the missing outlier statistics, re-train the DVHE model using DCF v15.1.
- In some cases the estimation band is not visible in the optimization dialog DVH view, even though the user interface indicates that estimates are present. The DVH estimate can be visualized in the External Beam Planning DVH view. In some cases, DVHE algorithm sends an upper estimate where there are two DVH points for the same dose. The estimates assume that the dose values are given in strictly increasing order. When same value is read twice in a row, the estimate may not be visible.
- The DVH estimates can be cleared from approved plans and structure sets. The system does not perform an automatic save when the estimates are cleared, so reload all will reload the estimates.
- Online Help in Model Configuration Workspace opens the French Online Help even if the system is configured for an English user.
- The dose and volume statistics reported in Model Configuration and displayed in Model Analytics have a typical accuracy of +\-2% compared to the statistics calculated in External Beam Planning. During the extraction and training phase, Model Configuration uses a lower resolution and fewer bins than External Beam Planning. The difference can be confirmed by analyzing the quality of the contour and the position of the structure relative to the high dose in External Beam Planning. Even higher individual errors do not typically impact the model and there is no reason to remove them from a training set unless they appear as outliers. For additional information, refer to *Eclipse Photon and Electron Algorithms Reference Guide (P1015026)*, Chapter *DVH Estimation Algorithm for RapidPlan*.
- The dose prescription exported from Model Configuration and displayed in Model Analytics is not rounded to a 2 decimal precision.

- After adding a patient to a RapidPlan model it is recommended to close the patient prior to running extraction or training in the Model Configuration Workspace on the same model. Failure to close the patient may trigger a crash in the Model Configuration Workspace.
- The predicted mean dose objective may be lower than the actual prediction. The predicted dose can be edited manually in the optimization dialog.

Calculating, Viewing, and Evaluating Dose

- One can experience long calculation times for verification plans with collapsed arcs when using Acuros XB and angular resolution turned off. To prevent slow calculation in this scenario, set angular resolution in DCF settings to a specified degree resolution.
- When calculating doses with fields containing an Elekta motorized wedge (MW), the field is split in two and calculated separately as two subfields, an open field and a motorized wedge field. The field normalization type for each subfield is separately calculated based on the rules in Eclipse Algorithms Reference Guide. For example, if “100% to isocenter” is chosen as the field normalization type and the dose in isocenter is lower than 50% of the maximum dose at the isocenter plane in one of these subfields, the warning message “Dose in isocenter is too small. Cannot use it for field normalization” appears (even if the sum of the doses in the open field and the MW field in isocenter is more than 50% of the maximum dose on the isocenter plane). If this occurs, the mapping from the weight factor to the wedge angle (and to the “wedge dose”) changes abruptly, and the appropriate weight factor to produce a desired wedge angle has to be found through a process of trial and error. However, if the normalization mode "no field normalization" is used, such abrupt changes of normalization mode are avoided.
- eMC is a 3D algorithm and cannot calculate the dose for a single plane (function key F6).

Beam Configuration

- If the data is originally from an Eclipse version older than 7.3.10 SP4, the output factor axis is shown till 4000 mm. The axis values shown in the Beam Configuration application are only a labeling issue. The system still calculates the results correctly.
- In RT Administration application, it is possible to add trays with the same internal code for the same machine. Ensure that a unique ID is used for each accessory and custom code.
- Custom code does not populate to accessory properties internal code field, but may be referenced under the field properties.
- Information is missing from the "Detailed Range Shifter Type Parameter" table in the *Eclipse Proton Algorithm Reference Guide*. The table should also state the following:
  - Description for SINGLE: “The range shifter consists of a single plate. The range shifter may be in or out of the beamline.” DICOM type = BINARY

- Description for FIXED: “The range shifter consists of a single plate. The range shifter is always present in the beamline.” DICOM type = BINARY

The other Range shifter types described in the table stays the same.

- Only a calculation grid size of 0.2 cm can be defined in 'Dose Calculation Parameters' during configuration of PRO or PO for the machine type 'Elekta Beam Modulator'. The calculation grid size 0.25 cm cannot be used for this machine type.
- When creating a new calculation model and selecting 'Use same beam data as existing calculation model', it is possible to assign the calculation model to use beam data that is not compatible with the calculation model. Ensure that beam data is current and compatible with the current version.

IRREG Planning

- In IRREG planning, if a plan without a structure set does not have frame of reference (FOR) defined on the series level and it contains a field with non-zero isocenter coordinates and has a reference image attached, the planning approval will be prohibited.

Conformal Optimization, Biological Optimization, and Biological Evaluation

- Occasionally, if the display is locked while more than one Biological Optimization, Biological Evaluation, or Conformal Optimization dialogs are open, inconsistent behavior may occur and the dialogs may become unavailable. It is suggested to use only one of these workspaces at a time if the display is to be locked.
- Currently in Biological Evaluation, it is possible that structures are outside of the dose matrix, or only partially covered, and there is no warning that the calculated DHV is not correct/complete. Ensure that the dose matrix covers each structure entirely.
- In Citrix, after the application got locked due to HIPAA time-out or by intentionally locking the application from User Home, the icon of the active RaySearch instance remains in the taskbar and the tooltip of the icon shows the patient name and ID.
- In Citrix, the RaySearch modules cannot be activated again once they have been minimized. It is recommended to not minimize those modules in Citrix.

Eclipse Stereotactic Planning

- SRS Localization currently does not support CBCT image sets.
- The EMT (Energy Mode Technique) configuration for the SRS ARC and SRS Static techniques is not performed when importing a new External Beam Linac or updating an existing one using the xml script exported from Treatment Administration. The EMT for these techniques needs to be manually configured.

- The dose at the isocenter may differ from the prescription dose if the plan was normalized to the isocenter. This happens if the isocenter position is not in line with a calculation point of the dose matrix. Shifting the isocenter slightly may resolve the issue. The interpolation effect can also be decreased by reducing the point separation value in the Cone Planning fine dose matrix from the 1 mm default. The user can also use the default normalization; GlobalDoseMax.

Eclipse Scripting API

- The online help for Eclipse Scripting API in 15.0 is the version created for 13.7. The help file will be updated in next clinical release.

Miscellaneous Known Issues

- Be careful not to change a treatment plan on a workstation while it is being calculated in another Eclipse session on the same workstation or on another workstation. When plans have been edited concurrently, always verify the final state of the plan information.
- Export of objective template does not show an export dialog if the ID field of the objective template has a slash " / "on it.
- When trying to print a PDF report or a view from Eclipse, nothing will be printed when using Adobe X Pro PDF printer. The workaround is to use CutePDF v3.0PDF printer.
- Workstations with ATI graphics card may have the Model View/BEV not refreshed properly when using Windows 7. The workaround is to turn off the following option which seems to prevent this from occurring: Control Panel >System >Advanced > Performance >Visual Effects >Fade out menu items after clicking.
- Eclipse does not take the physical operating limits of the machine into account during calculation of delta couch shifts. In case of multiple isocenters in a plan the couch may try to drive to values outside limits.
- If the Regional Settings in the Windows operating system are set to use commas as the decimal separator, the following issues arise:
  - In Eclipse plan or field properties, numbers with commas as decimal separators will not be accepted. For example, the entry "1,23" will result in an error condition.
  - If a comma is used in Optimizer Objectives, the decimal part is cut off. For example, "1,99" becomes "1" and "23,87" becomes "23". However, the comma is accepted when values are edited in DCF Calculation Models.
- If you manually enter reference point doses to a plan in the Plan Parameters workspace and then later on edit the plan in External Beam Planning, the manually entered dose values will be cleared. Instead, add the doses in the Plan Parameters Workspace after the planning has been finished in External Beam Planning.
- Clearing an editing stamp in the Multi-User Administration tab of RT Administration may cause Contouring or Registration to crash.

Performance Information

- Eclipse should be operated by qualified personnel only.
- Configure the short-date format for your Windows operating system to display the month and year in an unambiguous manner (for example, dd-MMM-yyyy). Eclipse has been validated using regional settings for English (United States). The date format used in the application depends on these operating system settings.
- Do not install any third-party software, or updates to the operating system without instructions from Varian Medical Systems. Eclipse has been validated on the operating system listed in this Customer Release Note. Varian does not guarantee normal performance of the software when non-validated third-party software is installed on the system, because the installation may modify the operating system components used by Eclipse. For more information on Varian's policy regarding the installation of third-party software on workstations pre-loaded with Varian Medical Systems Software products, refer to Customer Technical Bulletin CTB-GE-534, and to the compatibility details in this Customer Release Note.
- Check all media and data files before you use them on a computer that is used to run Eclipse. Computer viruses can cause corruption of data files and adverse effects in software that run on computers infected by a computer virus. For more information on appropriate virus protection, refer to Customer Technical Bulletin CTB-GE-309 (Varian Medical Systems Anti-Virus Software Policy).
- If you add your computer to a network, make sure that the network is secure or that the passwords used to access the computer are not compromised. Unauthorized users that gain access to your system can cause damage to your system.
- Back up your system regularly. The patient database, including image directories, should be backed up routinely.
- Plan report templates from Eclipse 6.5, builds 7.3.10, and earlier are not supported in this version of Eclipse. New report templates are installed with the new version. If customized report templates were created at your clinic, they will not be available after the upgrade unless they are copied to the appropriate location. Varian personnel will not perform that task. If such customized report templates are made available in Eclipse 15.1 it is the customer's responsibility to verify that they work properly.
- All installed printers should be tested at the customer site to make sure that printing works as expected and all of the required information is available on the printouts.

Using within a Citrix Environment

- When the recommended progression resolution compression is used, it is normal to have the new contour appear slightly out-of-focus for a short moment during mouse movement.
- The Citrix server version 6.5 and below supports only one selected NLS version.

Note *For additional information on the use of Citrix with Eclipse Treatment Planning, refer to the Citrix for ARIA Oncology Information System and Eclipse Treatment Planning System Customer Release Note (P1003111).*

User Documentation

The user documentation for this version of Eclipse Treatment Planning includes:

- DICOM Import and Export Reference Guide, P1015139
- BrachyVision Algorithm Reference Guide, P1015287
- Beam Configuration Reference Guide, P1016132
- Biological Modeling Reference Guide B502697R01A
- Biological Optimization, Biological Evaluation, Conformal Optimization Instructions for Use, B503586R01A
- Dosimetric Review Reference Guide (Plan Parameters Workspace), P1015274
- Eclipse Algorithm API Reference Guide, P1014090
- Eclipse Photon and Electron Algorithms Reference Guide, P1015026
- Eclipse Cone Planning Online Help, B504830R01A
- Eclipse Ocular Proton Planning Reference Guide, P1005367
- Eclipse Scripting API Online Help, P1015245
- Eclipse Scripting API Online Help for Research Users, P1013131 (obsoleted after 15.0 release)
- Eclipse Scripting API Reference Guide, P1015247
- Eclipse Scripting API Reference Guide for Research Users, P1015248 (obsoleted after 15.0 release)
- Eclipse Proton Algorithms Reference Guide, P1012702
- RT Administration Reference Guide, P1015249
- Registration, SmartAdapt and Contouring Instructions for Use, P1015140
- Registration, SmartAdapt and Contouring Reference Guide, P1015141
- Smart Segmentation Knowledge Based Contouring Instructions for Use, P1015142
- Smart Segmentation Knowledge Based Contouring Reference Guide, P1015143
- RT Summary Reference Guide, P1015138

- BrachyVision Instructions for Use, P1015270
- BrachyVision Reference Guide, P1015027
- Eclipse Photon and Electron Instructions for Use, P1015271
- Eclipse Photon and Electron Reference Guide, P1015029
- Eclipse Proton Instructions for Use, P1015272
- Eclipse Proton Reference Guide, P1015028
- Treatment Preparation Reference Guide, P1015134
- Varian Service Portal Administration Reference Guide, P1014877
- Varian Oncology Services Reference Guide, P1015263

Contact Varian Customer Support

Varian Customer Support is available on the internet, by e-mail, and by telephone. Support services are available without charge during the initial warranty period.

The MyVarian website provides contact information, product documentation, and other resources for all Varian products.

1. Go to www.MyVarian.com.
2. Choose an option:
   - If you have an account, enter your User login information (email and password).
   - If you do not have an account, click **Create New Account** and follow the instructions. Establishing an account may take up to two working days.
3. Click **Contact Us** at the top of the window to display customer support and training options, and international e-mail addresses and telephone numbers.
4. From the Contact Us page, choose an option:
   - Call Varian Medical Systems support using a phone support number for your geographic area.
   - Complete the form corresponding to your request for use on a call with a live Varian representative; then follow the instructions to complete the remote connect options, and click **Submit**.

   You can order documents by phone, request product or applications support, and report product-related issues. Links on the MyVarian website navigate to other support resources for products, services, and education.
5. To find documents, click **Product Documentation**.
   Online documents in PDF format include customer technical bulletins (CTBs,) manuals, and customer release notes (CRNs).