RAYPLAN V2025

Release Notes

Traceback information:
Workspace Main version a985
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Disclaimer

For information on functionality not available for regulatory reasons, see the Regulatory Information in the RayPlan Instructions for Use.

Declaration of conformity

CE 2862

Complies with Medical Device Regulation (MDR) 2017/745. A copy of the corresponding Declaration of Conformity is available on request.

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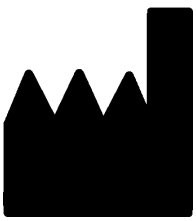
1 INTRODUCTION

1.1 ABOUT THIS DOCUMENT

This document contains important notes about the RayPlan v2025 system. It contains information related to patient safety and lists new features, known issues and possible workarounds.

Every user of RayPlan v2025 must be familiar with these known issues. Contact the manufacturer for any questions about the content.

1.2 MANUFACTURER CONTACT INFORMATION



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1.3 REPORTING OF INCIDENTS AND ERRORS IN SYSTEM OPERATION

Report incidents and errors to the RaySearch support email: support@raysearchlabs.com or to your local support organization via telephone.

Any serious incident that has occurred in relation to the device must be reported to the manufacturer.

Depending on applicable regulations, incidents may also need to be reported to national authorities. For the European Union, serious incidents must be reported to the competent authority of the European Union Member State in which the user and/or patient is established.

2 NEWS AND IMPROVEMENTS IN RAYPLAN V2025

This chapter describes the news and improvements in RayPlan v2025 as compared to RayPlan 2024B.

2.1 SUPPORT FOR UPRIGHT TREATMENTS

- RayPlan now supports upright treatment planning for plans using the Leo Cancer Care upright patient positioning system with variable backrest tilt angle.
- New 3D room models for upright treatments.
- Requires product license rayUpright.

2.2 INFRASTRUCTURE AND SPEED IMPROVEMENTS

- It is now faster to open modules and to switch between modules.
- The memory consumption during optimization of a treatment plan is reduced.
- The method for producing search directions in the optimization algorithm has been updated. As a result, most optimizations are expected to be faster. The result of an optimization will differ but in most cases these differences are small.
- The creation of a new database system based on an existing system has been improved. The creation no longer depends on the SQL server backup and restore functionality. This change removes known problems and reduces the time needed to create a system.

2.3 SECURITY

- RayPlan Storage tool now supports a Data administration role, to allow non-SQL Server admin users to for example import/export data and transfer patients.
- SQL Server user permissions can be defined for *RayStationResourceDB*, *RayStationServiceDB*, *RayStationIndexDB* and *RayStationLicenseDB*.
- SQL Server data encryption (TDE) can be enabled for all RayPlan databases.
- SQL Server audit logging definition is now supported by RayPlan.
- It is now mandatory to define one or more AD groups with access rights (read and write) to the RayPlan databases. The recommendation is to use a specific *RayStation-Users* group.

- It is now mandatory to specify groups with access to the RayPlan services.
- Active directory validation has been improved. Use either local users and groups, or the domain users and groups (default). Mixed setups are not supported.

2.4 GENERAL SYSTEM IMPROVEMENTS

- The graphic design of RayPlan has been modernized.
- Toggling ROI visibility and deleting multiple ROIs are much faster than in previous releases.
- Some tables now have a context menu entry that copies the entire table content to the clipboard for subsequent paste into other applications.
- In the *Beam dose specification points* tab, the *Copy to all* function is now available in the *Points* column.
- Rotations applied to an image set in patient 2D views through either the *Image view transformation* panel in the Visualization tab or the *Rotate* 2D click tool can now be saved and loaded from the Visualization tab. Saving and loading a rotation is only available in modules with *Image view transformation* enabled (Structure definition and Brachy planning modules).
- The button for setting pivot point has been removed from the *Image view transformation* panel. The rotations applied through the panel now use the current slice intersection as the pivot point.
- It is now possible to decide which of the materials installed with RayPlan will be available when setting a material override for an ROI. The list of available materials will be empty in RayPlan v2025 until actively selected. The selection is made by clicking *ROI material management* and then *Add new common material* (available in the *ROI* list and the *ROI/POI details* dialog).
    - The following predefined materials have been removed: Brass, Cerrobend, CoCrMo and Steel. Existing patients using these materials will not be affected by this change.
    - The following predefined materials have had minor updates with respect to mass density, material composition and/or mean excitation energy: Adipose, Air, Aluminum [Al], Brain, Cartilage, Cranial bone, Eye lens, Heart, Iron [Fe], Kidney, Lead [Pb], Liver, Lung, Muscle skeletal (called Muscle in previous version), PVC, RW3, Silver [Ag], Skin, Spleen and Wax. Existing patients using these materials will not be affected by this change.
- For computations using multiple CPU cores it is now possible to set a suggested limit for the number of CPU threads used. This can be used to improve system responsiveness when running multiple instances of RayPlan on the same computer.
- Auto recovery now works for cases with data structures larger than 2GB. Compression has been added, and memory stream has been replaced with file stream.
- The patient size command in RayPlan Storage has been optimized.
- There is now a separate Physics mode application, see *section 2.14 Physics mode on page 14*.

- It is now possible to access image sets from other cases.
  - It is now possible to add and remove ROI and POI associations between different cases, using the *Associate ROIs/POIs between cases* dialog.
  - It is now possible to create frame-of-reference registrations with image sets accessed from another case.

2.5 PATIENT DATA MANAGEMENT

- The *Open case* dialog has been redesigned.
  - Loading is now faster for database systems with many patients.
  - The 100 latest modified patients are now listed when opening the dialog, making it easier to find the recently used patients.
  - More plan information is displayed: approval information, planning image set and number of fractions.

2.6 PATIENT MODELING

- It is now possible to define a volume box as focus region for gray-level based rigid registration. The focus volume/volume of interest is defined in the patient views on the primary image set.
- It is now possible to select image sets and to create multiple rigid registrations without needing to close the dialog. It is also possible to select how a rigid registration shall be created directly in the creation dialog, possible options are:
  - Gray-level based (default)
  - Use existing registration
  - Set to zero
- POI geometries can now be copied between image sets using the *Copy geometries* dialog.
- POI geometries can now be copied and mapped between image sets by right-clicking on the *POI* list.
- It is now possible to rotate patient 2D views in the Structure definition module using a click tool similar to zoom and pan.
- Mapped POIs can now be added to structure templates.
- It is now possible to create POIs defined in a rotated image view coordinate system.
- ROI and POI associations can now be added and removed between different cases, using the *Associate ROIs/POIs between cases* dialog.

- It is now possible to create frame-of-reference registrations with image sets accessed from another case.
- It is now possible to smooth ROIs using the new *Smooth ROI* tool.

2.7 BRACHYTHERAPY PLANNING

- The 2D views can now be automatically rotated to align with a dwell point or a channel tip.
- It is now possible to view delivery times corrected for the current source activity.
- It is now possible to create a row of POIs from a channel, all positioned at a certain lateral distance from the dwell points.
- It is now possible to create POIs with a slice intersection offset in rotated image views.
- It is now possible to save and load dwell time distribution as a template.
- The dose can now be scaled to reach an average dose value in a set of points.
- Applicator models with flexible channels can now be imported. The flexible channels can be modified after import.
- Rotations applied to an image set in patient 2D views through either the *Image view transformation* panel in the *Visualization* tab or the *Rotate* 2D click tool can now be saved and loaded from the *Visualization* tab.
- The dose brush in brachytherapy plans has been improved to update the dose in real time by scaling the dwell times of the selected dwell points.
- Monte Carlo dose computation support has been added for the BEBIG Co0.A86 source.
- It is possible to commission afterloaders for brachy Monte Carlo dose computation. Commissioning will entail that afterloaders can compute dose using the brachy Monte Carlo dose algorithm for a specific source selected during commissioning.
- DICOM export mode '*Varian*' has been introduced, enabling the export of treatment plans in a format suitable for direct import into Varian's ARIA/BrachyVision systems. The mode is set in RayPlan Physics. Note that further plan transfer to Varian afterloaders has not been validated by RaySearch.
- Improvements have been made to the dwell time graph. It is now easier to select dwell points and to adjust dwell times.

2.8 PLAN SETUP

- DRR settings have been re-designed to be specified per beam and imager, and the support for multiple DRR types has been removed. The settings are automatically applied in all views, in images in reports and at DICOM export of RTImage.
  - DRR settings values (such as Level/Window) can be copied to all beams.

- Templates for DRR settings now include Level/Window, allowing the user to automatically apply predefined Level/Window values to all beams/imagers.
- The default DRR settings template is automatically applied to all newly created beams.

2.9 PLAN OPTIMIZATION

- VMAT optimization with the protect feature applied has been improved. In certain cases where the target is completely hidden by a protected structure, the conversion to segments previously failed. This has now been resolved.
- The algorithm for positioning closed leaf pairs in between multiple targets has been improved to minimize dose to normal tissue. This may affect the treatment techniques VMAT, Conformal Arc and DMLC.
- The arrows representing objectives/constraints in the DVH are now visible when viewing absolute ROI volumes in the DVH. Dragging the arrows and the context menu now behaves similarly to the relative volume display.
- For 3D-CRT plans, wedge is no longer selected as a beam optimization variable by default.
- For 3D-CRT plans, it is now possible to set the 'Minimum segment area' constraint in the *Settings* dialog for optimization and segmentation settings.
- Auto-scale to primary prescription is now automatically deactivated when fine-tune optimization is started.
- It is now possible to select jaw assignment *Lock to limits* also for LINACs where jaw movement rule is *Per segment*.

2.10 ELECTRON PLANNING

- The applicator name is included in the cutout report.

2.11 QA PREPARATION

- Approval of phantoms to be used in the QA preparation module is now done in the separate Physics mode application instead of in the former Beam 3D modeling module in RayPlan Physics. Phantoms that were approved in Beam 3D modeling in a previous version must be unapproved and then approved again in Physics mode to be available for QA plan creation.

2.12 DICOM

- The population of the attribute *Source to Surface Distance (300A,0130)* has been updated. Previously, the value included *Bolus* and *Patient Positioning Devices*, but now it strictly represents the source to skin distance. The previous value is now exported in attribute *Source to External Contour Distance (300A,0132)*.

- A new machine setting is added: Default patient setup technique. It will be exported as *Setup technique (300A,01B0)* in the RT Patient setup module.

2.13 VISUALIZATION

- Several more visualization settings can now be saved in the *Save visualization settings* dialog. Settings not possible to save are hidden instead of disabled.
- Dose visibility in material views can be toggled on or off using a separate visualization setting. The default value is off, to have a clear view of the full material distribution throughout the patient. This setting can also be saved as part of the visualization settings.
- Positions reflecting SSD intersection points (*Source to skin* and *Source to surface*) are now visualized in views. If the points coincide, only one point is visualized.
- Both *Source to surface* and *Source to skin* distances are visible in the DRR views (if applicable).
- Machine models for Room view are added, for use with upright treatments.

2.14 PHYSICS MODE

- Physics mode is a separate application, which is a version of RayPlan that uses phantoms as patients and allows the user to work with uncommissioned LINAC treatment machines.
- Physics mode replaces the Beam 3D modeling module in RayPlan Physics.
- Physics mode offers similar tools for patient modeling and plan creation as in RayPlan.

2.15 RAYPLAN PHYSICS

- The Beam 3D modeling module is removed and replaced by the Physics mode application.

2.16 PHOTON BEAM COMMISSIONING

- Monte Carlo dose curve post processing during beam modelling is now faster.

2.17 ELECTRON BEAM COMMISSIONING

- The Elekta template electron applicators are updated to work with thicker electron cutouts.

2.18 RAYPLAN DOSE ENGINE UPDATES

The changes to the dose engines for RayPlan v2025 are listed below.

Dose engine	2024B	v2025	Requires recommissioning	Dose effect[i]	Comment
All	-	-	-	Negligible	ROI volumes might be slightly different when comparing with an identical ROI in previous versions of RayPlan.
Photon Collapsed Cone	5.10	5.11	No	Negligible	Added support for dose calculation using patient position SITTING for non-arc delivery techniques. Updates to coordinate system transformations needed to support SITTING may have minor effect on dose computed for beams with gimbal angles.
Photon Monte Carlo	3.2	3.3	No	Negligible	Added support for dose calculation using patient position SITTING for non-arc delivery techniques. Updates to coordinate system transformations needed to support SITTING may have minor effect on dose computed for beams with gimbal angles.
Electron Monte Carlo	5.2	5.3	No	Negligible	Beam line material handling has been refactored, causing a slight change in the results of the electron phase space calculation on the floating-point precision level. This has a minor effect on the computed electron Monte Carlo dose, which due to the statistical nature can be very sensitive to even small disturbances. For dose calculation with low statistical uncertainty, the difference in dose compared to the previous version is negligible.
Brachy TG43	1.6	1.7	No	Negligible	Routine version increment

Dose engine	2024B	v2025	Requires recommis-sioning	Dose effect [i]	Comment
Brachy Monte Carlo	1.0	1.1	No	Negligible	Routine version increment

i The dose effect (Negligible/Minor/Major) refers to the effect when recommissioning of the machine model is not performed. After successful recommissioning the dose changes should be minor.

2.19 CHANGED BEHAVIOR OF PREVIOUSLY RELEASED FUNCTIONALITY

- Note that RayPlan 11A introduced some changes regarding prescriptions. This information is important if upgrading from a RayPlan version earlier than 11A:
  - Prescriptions will always prescribe dose for each beam set separately. Prescriptions defined in RayPlan versions prior to 11A relating to beam set + background dose are obsolete. Beam sets with such prescriptions cannot be approved and the prescription will not be included when the beam set is DICOM exported.
  - Prescription percentage is no longer included in exported prescription dose levels. In RayPlan versions prior to 11A, the Prescription percentage defined in RayPlan was included in the exported Target Prescription Dose. This has been changed so that only the Prescribed dose defined in RayPlan is exported as Target Prescription Dose. This change also affects exported nominal dose contributions.
  - In RayPlan versions prior to 11A, the Dose Reference UID exported in RayPlan plans was based on the SOP Instance UID of the RT Plan/RT Ion Plan. This has been changed so that different prescriptions can have the same Dose Reference UID. Because of this change, the Dose Reference UID of plans exported prior to 11A has been updated so that if the plan is re-exported a different value will be used.
- Note that RayPlan 11A introduced some changes regarding Setup imaging systems. This information is important if upgrading from a RayPlan version earlier than 11A:
  - A Setup imaging system (in earlier versions called Setup imaging device) can now have one or several Setup imagers. This enables multiple setup DRRs for treatment beams as well as a separate identifier name per setup imager.
    + Setup imagers can be gantry-mounted or fixed.
    + Each setup imager has a unique name which is shown in its corresponding DRR view and is exported as a DICOM-RT Image.
    + A beam using a setup imaging system with multiple imagers will get multiple DRRs, one for each imager. This is available for both setup beams and treatment beams.
- Note that RayPlan 11B introduced changes in the dose statistics calculations. This means that small differences in evaluated dose statistics are expected when comparing to a prior version.

This affects:

- DVHs
- Dose statistics
- Clinical goals
- Prescription evaluation
- Optimization objective values

This change also applies to approved beam sets and plans, meaning that, for example, prescription and clinical goals fulfillment may change when opening a previously approved beam set or plan from a RayPlan version prior to 11B.

The dose statistics accuracy improvement is more noticeable with increasing dose range (difference between minimum and maximum dose within an ROI), and only minor differences are expected for ROIs with dose ranges smaller than 100 Gy. The updated dose statistics no longer interpolates values for Dose at volume, $D(v)$, and Volume at dose, $V(d)$. For $D(v)$, the minimum dose received by the accumulated volume v is instead returned. For $V(d)$, the accumulated volume that receives at least the dose d is returned. When the number of voxels within an ROI is small, the discretization of the volume will become apparent in the resulting dose statistics. Multiple dose statistics measures (e.g., D5 and D2) may get the same value when there are steep dose gradients within the ROI, and similarly, the dose ranges lacking volume will appear as horizontal steps in the DVH.

- Note that RayPlan 2024A introduced the possibility to associate a clinical goal to either the beam set dose or the plan dose. This information regarding existing plans and templates with clinical goals is important if upgrading from a RayPlan version earlier than 2024A:
  - Physical clinical goals in single beam set plans will now be automatically associated with that beam set.
  - For plans with multiple beam sets, physical clinical goals will be duplicated to ensure all possible associations within the plan. For example, a plan with two beam sets will yield three corresponding copies of each clinical goal: one for the plan and one for each of the two beam sets.
  - Clinical goals defined in templates will be assigned to beam set with name 'BeamSet1'. Users who plan with multiple beam sets are advised to update their templates with the correct association and beam set name.
- In the ROI list, an ROI with material override will be indicated with the mass density of the selected material instead of '*'.
- The block/cutout contour will by default be kept constant when rotating the collimator for photon and electron beams. Previously, the default behavior was to change the contour to maintain the same exposed area after the collimator rotation. This has now changed so that the contour is kept constant.

- The materials installed with RayPlan will no longer be available when setting a material override for an ROI until actively selected to be available. The selection is made by clicking *ROI material management* (available in the *ROI* list and the *ROI/POI details* dialog), then *Add new common material* and then selecting materials to add from the list under *Add predefined*.
- The visibility of the material view in the 2D Patient views has been improved. Both *Image* and *Material* are now displayed as options in the view header, and view selection is done directly in the header. The current selection is highlighted.
- Beam 3D modeling has been removed from RayPlan Physics. The separate Physics mode application is now used for approval of phantoms to be used in the QA preparation module and for working with uncommissioned LINAC treatment machines. Phantoms that were approved in Beam 3D modeling in a previous version must be unapproved and then approved again in Physics mode to be available for QA plan creation.

2.20 RESOLVED FIELD SAFETY NOTICES (FSNS)

The issue described in Field Safety Notice (FSN) 157634 has been resolved.

Resolved: FSN 157634 - Incorrect Hounsfield units in DICOM exported CT image sets created from 4D CT

The issue with sometimes incorrect DICOM Rescale Slope and Rescale Intercept values, and therefore incorrect Hounsfield units in exported DICOM CT image sets created as minimum, maximum or average of a 4D CT set, has been resolved.

Minimum, maximum or average CT image sets previously created with RayPlan 2024B may still be incorrect. If this functionality has been used in RayPlan 2024B, contact RaySearch support for assistance.

2.21 NEW AND SIGNIFICANTLY UPDATED WARNINGS

For the complete list of warnings, see *RSL-D-RP-v2025-IFU, RayPlan v2025 Instructions for Use*.

2.21.1 New warnings

WARNING!

Images in upright scanning position typically labeled as HFS. Due to the limitations of the DICOM standard, images acquired in the upright scanning position are typically labeled as head-first supine (HFS). The 'SITTING' scanning position does not exist in DICOM. For images acquired by CT scanners that provide the backrest pitch angle, this angle will be shown in the RayPlan GUI as a suffix appended to the patient scanning position.

(1201906)

2.21.2 Significantly updated warnings

WARNING!

HDR brachytherapy delivery in magnetic fields. If the HDR brachytherapy treatment is performed in a magnetic field (e.g. delivery during MRI), there might be large discrepancies between delivered dose and dose computed using RayPlan. The derivation of published TG43 parameters does not include magnetic fields and RayPlan's brachytherapy Monte Carlo dose engine does not account for magnetic fields during particle transport. Any effect of magnetic fields on the dose distribution will thus be disregarded in the dose computation. The user must be aware of this limitation if the treatment is to be delivered in a magnetic field. Special care should be taken for ^{60}Co sources and for magnetic field strengths larger than 1.5 T as well for regions containing (or in close proximity to) air.

(332358)

WARNING!

Dwell time limits. The dwell time limits in RayPlan Physics are based on the reference air kerma rate at the specified reference date and time for the current source; no decay correction is applied at the time of planning. Ensure that the specified limits account for the full expected range of decay correction factors over the lifetime of the source - in particular, to avoid violating any afterloader constraints on the maximum permitted dwell time.

(283881)

WARNING!

Brachytherapy applicator models must be validated before clinical use. It is the responsibility of the user to validate all brachytherapy applicator models before they are used in clinical brachytherapy treatment plans.

RayPlan is developed to be used by trained Radiation Oncology professionals. Users are strongly advised to adhere to industry standards for quality assurance of brachytherapy applicators and treatment planning. This includes performing dosimetric verification using methods such as gafchromic film measurements, as recommended by the American Association of Physicists in Medicine (AAPM) in *Task Group 56 (TG-56) on the quality assurance of brachytherapy equipment and Medical Physics Practice Guideline 13.a*.

It is also strongly advised to create a structure template and, after completing relevant quality assurance checks, to approve the template to ensure that the applicator structures are not unintentionally changed. During the treatment planning process, users should only use structures from these approved templates to maintain consistency and accuracy in treatment delivery.

(?26082)

WARNING!

Verify database consistency before upgrade. Before creating a new system based on an existing system in the RayPlan Storage Tool, the user must verify the data consistency in the existing system. This can be done by using the *Validate* command in the Storage Tool for systems based on RayPlan 7 or later; for systems based on earlier versions, use the ConsistencyAnalyzer tool.

(10241)

3 KNOWN ISSUES RELATED TO PATIENT SAFETY

There are no known issues related to patient safety in RayPlan v2025.

Note: *Additional release notes may potentially be distributed shortly after installation.*

4 OTHER KNOWN ISSUES

4.1 GENERAL

Limitations when using RayPlan with large image set

RayPlan now supports import of large image sets (>2GB), but some functionality will be slow or cause crashes when using such large image sets:

- Smart brush/Smart contour/2D region growing are slow when a new slice is loaded
- Creating large ROIs with gray-level thresholding might cause a crash

(144212)

Slight inconsistency in dose display

The following applies to all patient views where dose can be viewed on a patient image slice. If a slice is positioned exactly on the border between two voxels, and dose interpolation is disabled, the dose value presented in the view by the "Dose: XX Gy" annotation can differ from the actual presented color, with regards to the dose color table.

This is caused by the text value and the rendered dose color being fetched from different voxels. Both values are essentially correct, but they are not consistent.

The same can occur in the dose difference view, where the difference might seem larger than it actually is, because of neighboring voxels being compared.

(284619)

Auto recovery includes steps from the redo list

The action list in the *Recover unsaved changes* dialog will include steps that were undone before an uncontrolled termination of RayPlan. Before recovery, make sure to review the list of actions and deselect steps that should not be recovered.

(1201661)

4.2 IMPORT, EXPORT AND PLAN REPORTS

Laser export not possible for decubitus patients

Using the laser export functionality in the Virtual simulation module with a decubitus patient causes RayPlan to crash.

(331880)

RayPlan sometimes reports a successful TomoTherapy plan export as failed

When sending a RayPlan TomoTherapy plan to iDMS via RayGateway, there is a timeout in the connection between RayPlan and RayGateway after 10 minutes. If the transfer is still ongoing when the timeout starts, RayPlan will report a failed plan export even though the transfer is still in progress.

If this happens, review the RayGateway log to determine if the transfer was successful or not.

338918

Report Templates must be upgraded after upgrade to RayPlan v2025

The upgrade to RayPlan v2025 requires upgrade of all Report Templates. Also note that if a Report Template from an older version is added using Clinic Settings, this template must be upgraded to be used for report generation.

Report Templates are upgraded using the Report Designer. Export the Report Template from Clinic Settings and open it in the Report Designer. Save the upgraded Report Template and add it in Clinic Settings. Do not forget to delete the old version of the Report Template.

(138338)

4.3 BRACHYTHERAPY PLANNING

Mismatch of planned number of fractions and prescription between RayPlan and SagiNova

There is a mismatch in the interpretation of the DICOM RT Plan attributes *Planned number of fractions* (300A, 0078) and *Target prescription dose* (300A,0026) in RayPlan compared to the brachytherapy afterloading system SagiNova. This applies specifically to SagiNova versions 2.1.4.0 or earlier. If the clinic is using a version later that 2.1.4.0, contact customer support to verify whether the issue persists.

When exporting plans from RayPlan:

- The target prescription dose is exported as the prescription dose per fraction multiplied by the number of fractions of the beam set.
- The planned number of fractions is exported as the number of fractions for the beam set.

When importing plans into SagiNova for treatment delivery:

- The prescription is interpreted as the prescription dose per fraction.
- The number of fractions is interpreted as the total number of fractions, including fractions for any previously delivered plans.

Possible consequences are:

- At treatment delivery, what is displayed as prescription per fraction on the SagiNova console is actually the total prescription dose for all fractions.
- It might not be possible to deliver more than one plan for each patient.

Consult with SagiNova application specialists for appropriate solutions.

(285641)

DICOM connectivity issue with Oncentra Brachy related to measured source paths

An issue has been identified affecting the DICOM import of measured applicator model source paths into Oncentra Brachy.

When importing an applicator model from an XML file into RayPlan, it is possible to import measured source paths. These measured source paths are characterized by absolute 3D positions of the source points that are not equidistant. The measured source paths are imported from the XML files as described in *RSL-D-RP-v2025-BAMDS, RayPlan v2025 Brachy Applicator Model Data Specification*, and the resulting 3D source positions in RayPlan correctly represent the source paths provided in the XML files. The 3D source positions are also correct in DICOM exports from RayPlan. However, when importing the file into Oncentra Brachy the measured source paths undergo a shift, causing a discrepancy between the absolute source positions in Oncentra Brachy and RayPlan. This could mean that a dose distribution recomputed in Oncentra does not match the corresponding dose distribution calculated in RayPlan.

The dose distribution computed by RayPlan is correct, provided that the applicator is correctly modeled in RayPlan. As noted in the *RSL-D-RP-v2025-IFU, RayPlan v2025 Instructions for Use* (see warning 726082, Review applicator models), users are strongly advised to adhere to industry standards on applicator model quality assurance to ensure that the applicator is accurately represented in RayPlan.

This issue is specific to measured source paths within applicator models and does not affect source paths reconstructed by other methods.

(1043992)

Delivery of Brachytherapy plans on Elekta afterloaders

When exporting Brachytherapy treatment plans from RayPlan for delivery on Elekta afterloaders, the plans must be re-approved in Oncentra Brachy before they can be transferred to the afterloader. This is a requirement of the Elekta delivery system.

As a result:

- The plan becomes temporarily unapproved in Oncentra Brachy, which may increase the risk of unintended modifications.
- The plan identifier (UID) changes upon re-approval, making it more time-consuming to confirm that the delivered plan is identical to the original plan approved in RayPlan.

To support safe and efficient clinical workflows, RaySearch will provide a Python script upon request that allows users to verify whether two DICOM RT plans (e.g., the one exported from RayPlan and the one exported from Oncentra Brachy) are equivalent for delivery. This tool is intended to help clinics ensure plan integrity when using Elekta afterloaders.

For more information or to request the verification script, contact RaySearch support.

(1202989)

4.4 PLAN DESIGN AND 3D-CRT BEAM DESIGN

Center beam in field and collimator rotation may not keep the desired beam openings for certain MLCs

Center beam in field and collimator rotation in combination with "Keep edited opening" might expand the opening. Review apertures after use and if possible use a collimator rotation state with "Auto conform".

(144701)

4.5 PLAN OPTIMIZATION

No feasibility check of max leaf speed performed for DMLC beams after dose scaling

DMLC plans that result from an optimization are feasible with respect to all machine constraints. However, manual rescaling of dose (MU) after optimization may result in violation of the maximum leaf speed depending on the dose rate used during treatment delivery.

(138830)

4.6 CYBERKNIFE PLANNING

Verifying deliverability of CyberKnife plans

CyberKnife plans created in RayPlan may, for about 1% of the cases, fail the deliverability validation. Such plans will not be deliverable. The affected beam angles will be identified by the deliverability checks that are run at plan approval and plan export.

(344672)

The spine tracking grid smaller in Accuray TDC than the grid displayed in RayPlan

The spine tracking grid used and displayed in Accuray TDC (Treatment Delivery Console) for treatment delivery setup will be around 80% smaller than the grid visualized in RayPlan. In RayPlan, make sure to assign the grid a margin around the intended setup area. Note that the grid size is editable in Accuray TDC at delivery.

(933437)

4.7 RAYPLAN PHYSICS

Updated recommendations for detector height usage

Between RayPlan 11A and RayPlan 11B, recommendations on the usage of detector height and depth offset for depth dose curves have been updated. If the previous recommendations were followed, the modeling of the build-up region for photon beam models could lead to surface dose overestimation in computed 3D dose. When upgrading to a RayPlan version newer than 11A, it is recommended to review and, if needed, update photon beam models with respect to the new recommendations. Refer to section *Detector height and depth offset* in *RSL-D-RP-v2025-REF, RayPlan v2025 Reference Manual*, section *Depth offset and detector height* in *RSL-D-RP-v2025-RPHY, RayPlan v2025 RayPlan Physics Manual* and *RSL-D-RP-v2025-BCDS,*

RayPlan v2025 Beam Commissioning Data Specification for information about the new recommendations.

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