5. 510(k) Summary

5.1 510(k) owner

RaySearch Laboratories AB
Sveavägen 25, plan 9
111 34 Stockholm
Sweden

Tel: +46 (8) 54506130
Fax: +46 (8) 54506139

5.2 Contact person

Ladan Amiri, Sr. Quality and Regulatory Affairs Engineer

5.3 Preparation date

January 14, 2014

5.4 Trade name

RayStation

Trade name and version number are written together, i.e. "RayStation 4.0.2" to easily distinguish the submitted device from the predicate device RayStation 3.5.

5.5 Common name

Radiation treatment planning system

5.6 Classification name

Medical charged-particle radiation therapy system (21 CFR 892.5050, Product Code MUJ)

5.7 Predicate devices

RayStation 3.5	K130617
XiO RTP System	K102216

5.8 Device description

RayStation 4.0.2 is a treatment planning system, i.e. a software program for planning and analysis of radiation therapy plans. Typically, a treatment plan is created by importing patient images obtained from a CT scanner, defining regions of interest either manually or semi-automatically, deciding on a treatment setup and objectives, optimizing the treatment parameters, comparing rival plans to find the best compromise, computing the clinical dose distribution, approving the plan and exporting it.

The main workflow, creating a treatment plan from imported patient image data, is described below:

Flow of Events

User	*System*
1. The user launches RayStation 4.0.2	
2. The user imports a patient and case with CT images through DICOM	
	3. The system imports the data and checks consistency of in-data
4. The user enters the Structure Definition module and creates ROIs using the contouring tools	
	5. The system adds the ROIs to the patient case
6. The user enters the Plan Setup module and creates a plan and a treatment setup with specified machine, treatment energy and delivery type (SMLC)	

7. The user specifies beam configuration including isocenter, dose grid and fluence grid resolution	
	8. The system adds the plan and treatment setup to the patient case
9. The user enters the Plan Optimization module and creates an optimization problem	
10. The user defines the algorithm and segmentation settings and starts the optimization	
	11. The system generates a deliverable step-and-shoot plan
	12. The system displays the plan as - 2D and 3D dose and patient displays - DVH curves - Plan data (beams, segments etc.)
13. The user reviews the plan	
14. The user enters the Plan Evaluation module and evaluates the plan	
15. The user approves and exports the plan together with dose, structure sets and images	
	16. The system exports the plan and patient data to a DICOM server

5.9 Intended use

RayStation is a software system designed for treatment planning and analysis of radiation therapy. The treatment plans provide treatment unit set-up parameters and estimates of dose distributions expected during the proposed treatment, and may be used to administer treatments after review and approval by the intended user.
The system functionality can be configured based on user needs.
The intended users of RayStation shall be clinically qualified radiation therapy staff trained in using the system.

The intended use for RayStation 4.0.2 is the same as for the predicate device RayStation 3.5.

5.10 Technological characteristics summary

5.10.1 General technology

The technological characteristics are the same for RayStation 4.0.2 as for the predicate device RayStation 3.5.

Comparing RayStation 4.0.2 with RayStation 3.5, the newer version includes usability, performance and connectivity improvements. Both versions are built on the same software platform and share basic design. Both versions have been developed under the same quality system meeting the same requirements for safety and effectiveness.

5.10.2 Proton planning with Pencil Beam Scanning (PBS)

The proton planning functionality in RayStation 3.5 is extended in RayStation 4.0.2 by adding Pencil Beam Scanning (PBS) functionality.

The RayStation 4.0.2 proton planning with Pencil Bam Scanning (PBS) technology is substantially equivalent to the predicate device XiO RTP System - Proton Spot Scanning.

Comparing RayStation 4.0.2 and XiO RTP System, both systems give the user the ability to crate proton treatment plans that involve a series of small proton beams for which dose and monitor units are calculated and displayed individually. This allows users to create intensity modulated ration therapy (IMRT) plans with protons.

5.11 Assessment of non-clinical performance data

5.11.1 General technology

The test specification of RayStation 4.0.2 is a further developed version of the test specification of RayStation 3.5. This is supported by the requirements specification, for which the same is true. The successful verification and validation of RayStation 4.0.2 therefore support the substantial equivalence of the above RayStation versions.

5.11.2 Proton planning

The verification performed for proton planning verifies the functionality for

- Proton planning treatment plan calculation
- Proton energy range estimation
- Proton dose calculation
- Pencil Beam Scanning (PBS)

This is the same functionality as included in the predicate device XiO RTP System. The test results thereby support a determination of substantial equivalence.

5.12 Test conclusion

The summary of the performed non-clinical tests shows that RayStation 4.0.2 is as safe and effective, and performs as well as the predicate devices.

DEPARTMENT OF HEALTH & HUMAN SERVICES

Public Health Service

Food and Drug Administration
10903 New Hampshire Avenue
Document Control Center – WO66-G609
Silver Spring, MD 20993-0002

May 15, 2014

RaySearch Laboratories AB
% Ms. Ladan Amiri
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Sveavagen 25, plan 9
111 34 Stockholm
SWEDEN

Re: K140187
Trade/Device Name: RayStation 4.0.2
Regulation Number: 21 CFR 892.5050
Regulation Name: Medical charged-particle radiation therapy system
Regulatory Class: II
Product Code: MUJ
Dated: April 13, 2014
Received: April 16, 2014

Dear Ms. Amiri:

We have reviewed your Section 510(k) premarket notification of intent to market the device referenced above and have determined the device is substantially equivalent (for the indications for use stated in the enclosure) to legally marketed predicate devices marketed in interstate commerce prior to May 28, 1976, the enactment date of the Medical Device Amendments, or to devices that have been reclassified in accordance with the provisions of the Federal Food, Drug, and Cosmetic Act (Act) that do not require approval of a premarket approval application (PMA). You may, therefore, market the device, subject to the general controls provisions of the Act. The general controls provisions of the Act include requirements for annual registration, listing of devices, good manufacturing practice, labeling, and prohibitions against misbranding and adulteration. Please note: CDRH does not evaluate information related to contract liability warranties. We remind you, however, that device labeling must be truthful and not misleading.

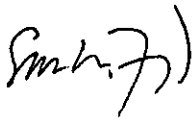
If your device is classified (see above) into either class II (Special Controls) or class III (PMA), it may be subject to additional controls. Existing major regulations affecting your device can be found in the Code of Federal Regulations, Title 21, Parts 800 to 898. In addition, FDA may publish further announcements concerning your device in the Federal Register.

Please be advised that FDA's issuance of a substantial equivalence determination does not mean that FDA has made a determination that your device complies with other requirements of the Act or any Federal statutes and regulations administered by other Federal agencies. You must comply with all the Act's requirements, including, but not limited to: registration and listing (21 CFR Part 807); labeling (21 CFR Part 801); medical device reporting (reporting of medical device-related adverse events) (21 CFR 803); good manufacturing practice requirements as set forth in the quality systems (QS) regulation (21 CFR Part 820); and if applicable, the electronic product radiation control provisions (Sections 531-542 of the Act); 21 CFR 1000-1050.

If you desire specific advice for your device on our labeling regulation (21 CFR Part 801), please contact the Division of Industry and Consumer Education at its toll-free number (800) 638 2041 or (301) 796-7100 or at its Internet address http://www.fda.gov/MedicalDevices/ResourcesforYou/Industry/default.htm. Also, please note the regulation entitled, "Misbranding by reference to premarket notification" (21CFR Part 807.97). For questions regarding the reporting of adverse events under the MDR regulation (21 CFR Part 803), please go to http://www.fda.gov/MedicalDevices/Safety/ReportaProblem/default.htm for the CDRH's Office of Surveillance and Biometrics/Division of Postmarket Surveillance.

You may obtain other general information on your responsibilities under the Act from the Division of Industry and Consumer Education at its toll-free number (800) 638-2041 or (301) 796-7100 or at its Internet address http://www.fda.gov/MedicalDevices/ResourcesforYou/Industry/default.htm.

Sincerely yours,



for

Janine M. Morris
Director
Division of Radiological Health
Office of In Vitro Diagnostics
and Radiological Health
Center for Devices and Radiological Health

Enclosure

DEPARTMENT OF HEALTH AND HUMAN SERVICES
Food and Drug Administration

Indications for Use

Form Approved: OMB No. 0910-0120
Expiration Date: January 31, 2017
See PRA Statement below.

510(k) Number *(if known)*
K140187

Device Name
RayStation 4.0.2

Indications for Use *(Describe)*
RayStation is a software system designed for treatment planning and analysis of radiation therapy. The treatment plans provide treatment unit set-up parameters and estimates of dose distributions expected during the proposed treatment, and may be used to administer treatments after review and approval by the intended user.

The system functionality can be configured based on user needs.

The intended users of RayStation shall be clinically qualified radiation therapy staff trained in using the system.

Type of Use *(Select one or both, as applicable)*

☒ Prescription Use (Part 21 CFR 801 Subpart D) ☐ Over-The-Counter Use (21 CFR 801 Subpart C)

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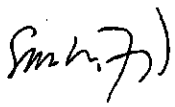
FOR FDA USE ONLY

Concurrence of Center for Devices and Radiological Health (CDRH) *(Signature)*



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