



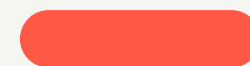
ACCURAY

第三者評価用**Procedure**作成方法

For Precision

(Radixact System ver. 2.x, ver. 3.x)

2021.8.6_ver.A





照射野5x10cm、10cm深において、1Gy照射の例

始めに

- 1 Gy照射の作成例 (Ex.10.3 sec)

1. 照射野5x10 cm, 10 cm深において、照射時間 60 secの測定結果を記録します。
2. 測定結果より、1 Gy照射に必要な照射時間を算出します。

例) 測定結果が5.83 Gyであった場合

- 1 Gyの照射時間 = $60 \div 5.83 = 10.3$ sec (小数点2位四捨五入)
- Warm Upの10 secと合わせ、照射時間は、20.3 secとなります。

※本手順書ではこの照射時間例に沿った値を使用しますが、実際にはご施設の値を使用してください。

Procedure作成方法

Create Machine QAを選択

The screenshot displays the Radixact ACCURAY software interface. At the top left, system information is shown: Machine Name: TT2_MOTION, Machine Serial Number: 2345435, Machine Status: Connected, Water Temperature: 29.07 °C, Service Mode: OFF, Magnetron Warmup Status: Complete, and KV Warmup Status: Complete. The top center features a 'What's Next?' section with a 'Treatment Delivery Console' and a prompt to 'Select one of the workflows below.' The top right shows the Radixact ACCURAY logo, user information (User: a.a), System Version: 2.0, and Software Version: 7.0.2.0.77. The main area contains a grid of workflow icons: Warmup, Air Scan, CT Number Calibration, Treat Patient, Treat Patient QA, Static Couch Patient QA, Treat Phantom, Synchrony Simulation, Review Registration, Machine QA, and Create Machine QA. The 'Create Machine QA' icon is highlighted with a red box and an arrow pointing to it. Below the interface, a red-bordered box contains the text: 'Create Machine QAをクリックします。' (Click on Create Machine QA).

Create Machine QAをクリックします。

Procedure作成方法

基本設定

The screenshot shows the 'Machine QA' configuration window. At the top, there are buttons for 'Reset', 'Load from File', 'Load from Data Server', 'Load from Patient Plan', 'Save to Data Server', and 'Save to File'. Below these, the 'Machine QA Name' field is highlighted with a red box and contains the text 'Output 1Gy'. An arrow points from this box to a callout on the right. The 'Reference Image and Lasers' section includes 'Image Type' (Loaded from File), 'Reference Image File' (c:\accuray\tdc\calibrationData\TomoPhant_256_256_98.img), and 'Data Type' (Short). The 'Endianness' is set to 'Big'. Dimensions and element sizes are specified for X, Y, and Z axes. The 'Couch Setup' section shows 'Setup Type' (Default), 'IECf Y' (250.0), and 'IECf Z' (350.0). A 'Procedures' list contains one entry: '1: 5x10cm 10.3sec'. Below this, the 'Procedure' section has a 'Description' field highlighted with a red box, containing '5x10cm 10.3sec', with an arrow pointing to a callout on the right. Other fields include 'Compression Type' (Compression Factor), 'Compression Factor' (10), and an 'Export Delivery Plan' button. At the bottom, a 'Fragment Summary' box lists technical details like 'Type of delivery: Helical', 'Total number of projections: 24', and 'Procedure Time: 9.41 seconds'.

Machine QA Nameを入力します。
※ 本例では“Output 1Gy”とします

Descriptionを入力します。
※本例では“5x10cm 10.3sec”とします。

Procedure作成方法

Radiograph ・ Beam ・ Jaws ・ Gantry ・ Sinogramの設定

The screenshot shows a software interface for configuring a procedure. The interface is divided into several sections, each with a title and a list of configuration fields. The fields are as follows:

- Radiograph**
 - Radiograph Type: None (dropdown menu)
 - Radiograph Instructions Filename: (text field with Browse button)
 - Gantry Rotations: 1 (text field)
- Beam**
 - Beam Type: Treatment (dropdown menu)
 - Nominal MU: 1180 (text field)
 - Pulse Rate: 300 (text field)
- Jaws**
 - Jaw Mode: Fixed (dropdown menu)
 - Front Jaw Position (mm): -21.0 (text field)
 - Back Jaw Position (mm): 21.0 (text field)
 - Dynamic Jaw File: (text field with Browse button)
- Gantry**
 - Gantry Movement Mode: Fixed (dropdown menu)
 - Gantry Start Angle (degrees): 0.0 (text field)
 - Time Per Gantry Rotation (seconds): 1.0 (text field)
- Sinogram**
 - Sinogram Mode: Dynamic (file) (dropdown menu)
 - Sinogram Filename: F:\Capture\Create MachineQA_Ver3\10.3\Sinogram1_1.bin (text field with Browse button)
 - Sinogram Editor: Edit (button)
 - Warmup Source: Automatic (dropdown menu)
 - Projections Per Rotation: 10 (text field)
 - Projections: 103 (text field)
 - Warmup Projections: 0 (text field)
- Couch**
 - Couch Mode: Fixed (dropdown menu)
 - Couch Velocity (mm/rotation): 5.35 (text field)
 - Couch Offset Origin: Setup (dropdown menu)
 - Couch Offset (mm): 0 (text field)

Radiograph Typeを“None”に設定します。

Beam Typeを“Treatment”に設定します。

Jaw Modeを“Fixed”に設定し、“Front Jaw: -21.0 Back Jaw: 21.0”を選択します。

Gantry Movement Modeを“Fixed”に設定し、Gantry Start Angle に“0”を入力、Time Per Gantry Rotationに“1”を入力します。

Sinogram Modeを“Dynamic(file)”に設定し、Editをクリックします。

Procedure作成方法

Sinogramの編集①

Sinogram Editor ID: 3763472E

Create a new sinogram

Create a new Sinogramアイコンをクリックします。

Resize the sinogramアイコンをクリックします。

Resize Sinogram ID: 8EE0831F

Leaf count: 64

Projection count: 103

OK Cancel

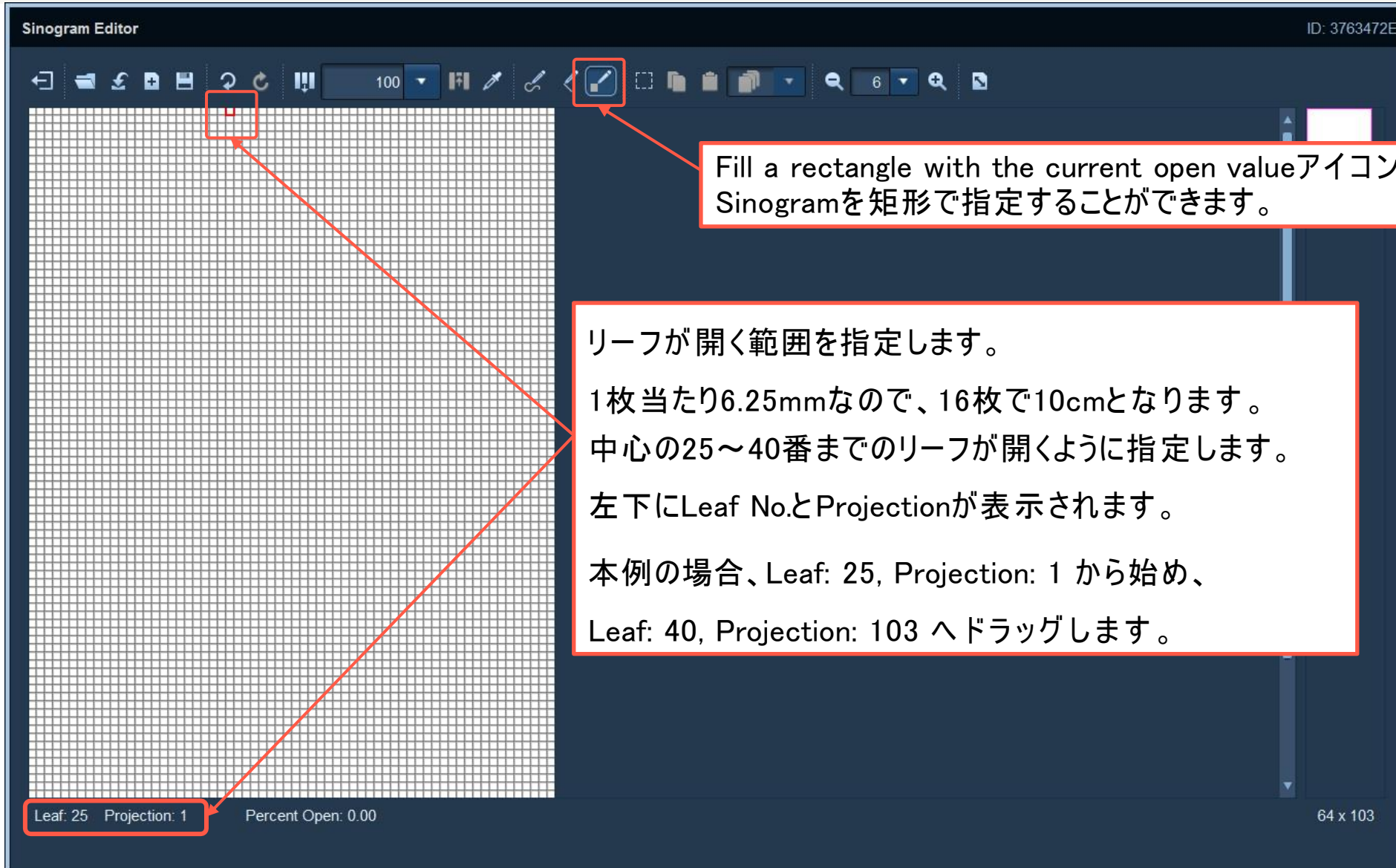
Projection countに“103”を入力します。

OKをクリックします。

Leaf: Projection: Percent Open: 64 x 144

Procedure作成方法

Sinogramの編集②



The screenshot shows the Sinogram Editor interface. At the top, there is a title bar with 'Sinogram Editor' and 'ID: 3763472E'. Below it is a toolbar with various icons. A red box highlights a specific icon in the toolbar, which is a square with a diagonal line and a small red square. A red arrow points from this icon to a red box on the grid. Another red arrow points from the bottom-left corner of the grid to a red box containing the text 'Leaf: 25 Projection: 1'. The grid itself is a large white area with a fine grid pattern. The bottom status bar shows 'Leaf: 25 Projection: 1', 'Percent Open: 0.00', and '64 x 103'.

Fill a rectangle with the current open valueアイコンをクリックします。
Sinogramを矩形で指定することができます。

リーフが開く範囲を指定します。
1枚当たり6.25mmなので、16枚で10cmとなります。
中心の25～40番までのリーフが開くように指定します。
左下にLeaf No.とProjectionが表示されます。
本例の場合、Leaf: 25, Projection: 1 から始め、
Leaf: 40, Projection: 103 へドラッグします。

Leaf: 25 Projection: 1 Percent Open: 0.00 64 x 103

Procedure作成方法

Sinogramの編集③

Sinogram Editor ID: 3763472E

Leaf: 40, Projection: 103までドラッグすると幅10cm、10.3秒分のSinogramが出来ます。

Leaf: 40 Projection: 103 Percent Open: 100.00

64 x 103

Procedure作成方法

Sinogramの保存

Sinogram Editor ID: 3763472E

Save the sinogram to a file

Save the sinogram to a fileアイコンをクリックし、SinogramをFileとして保存します。

File Nameを入力します。
ここでは“5x10 103proj”です。

Saveをクリックします。

Exit the Sinogram EditorアイコンをクリックしてSinogram Editorを終了します。

Leaf: Projection: Percent Open: 64 x 103

Procedure作成方法

Projection・Couchの設定

Fragment#1 x +

Radiograph
Radiograph Type: None
Radiograph Instructions Filename: Browse
Gantry Rotations: 1

Beam
Beam Type: Treatment Beam type: Treatment, Pulse rate: 300, Nominal MU: 1180
Nominal MU: 1180
Pulse Rate: 300

Jaws
Jaw Mode: Fixed
Front Jaw Position (mm): -21.0 Front Jaw: -21.0 Back Jaw: 21.0
Back Jaw Position (mm): 21.0
Dynamic Jaw File: Browse

Gantry
Gantry Movement Mode: Fixed
Gantry Start Angle (degrees): 0.0
Time Per Gantry Rotation (seconds): 1.0

Sinogram
Sinogram Mode: Dynamic (file)
Sinogram Filename: F:\Capture\Create MachineQA_Ver3\10.3\Sinogram1_1.bin Browse
Sinogram Editor: Edit

Warmup Source: Automatic
Projections Per Rotation: 10
Projections: 103
Warmup Projections: 0

Couch
Couch Mode: Fixed
Couch Velocity (mm/rotation): 5.35
Couch Offset Origin: Setup
Couch Offset (mm): 0

Warmup Sourceを“Automatic”に設定します。
Projections Per Rotationに“10”を入力し、
1 Projection当たり 0.1秒とします。
※本例ではProjectionsに“103”を入力し、照射時間を10.3 秒にします。

Couch Modeを“Fixed”に設定します。
Couch Offset Originを“Setup”に設定し、
Couch Offset(mm)に“0”を入力します。
この値はReady-Yes後Couchが進む距離です。
“0”の場合、測定時に予めCouchをGantryに入れておきます。

Procedure作成方法

Fragment Summaryの確認

The screenshot shows the 'Machine QA' software interface. At the top, there are buttons for 'Reset', 'Load from File', 'Load from Data Server', 'Load from Patient Plan', 'Save to Data Server', and 'Save to File'. Below these, the 'Machine QA Name' is set to 'Output 1Gy'. The 'Reference Image and Lasers' section includes 'Image Type' (Loaded from File), 'Reference Image File' (F:\Capture\Create MachineQA_Ver3\10.3\ReferenceImage.bin), and a 'Browse' button. The 'Data Type' is 'Short' and 'Endian Type' is 'Big'. Dimensions (X: 256, Y: 98, Z: 256) and Element Size (X: 1.914062, Y: 2.0, Z: 1.914062) are specified. Start and Movable Lasers coordinates are all 0.0. The 'Couch Setup' section shows 'Setup Type' as 'Default', 'IECf Y' as 250.0, and 'IECf Z' as 350.0. A 'Procedures' list contains one entry: '1: 5x10cm 10.3sec', with 'Clone' and 'Delete' buttons. The 'Procedure' section shows 'Description' as '5x10cm 10.3sec', 'Compression Type' as 'Compression Factor', and 'Compression Factor' as 10. An 'Export Delivery Plan' button is visible. A 'Fragment Summary' window is open, showing the following details: Type of delivery: Static, Total number of projections: 103, Projections per second: 10.00, Gantry Rotations: None, Projections per rotation: NA, Couch Velocity: 0.00 mm/sec, Total Couch Distance: 0.00 mm, and Procedure Time: 10.30 seconds. A red box highlights this window, and a red arrow points from a text box to it.

Fragment SummaryでProjection Timeを確認します。
※本例では10.30 secondsです。

Procedure作成方法

Fragment Summaryの確認

The screenshot shows the 'Machine QA' software interface. At the top, there are several buttons: 'Reset', 'Load from File', 'Load from Data Server', 'Load from Patient Plan', 'Save to Data Server', and 'Save to File'. The 'Save to File' button is highlighted with a red box. Below these buttons, there are various input fields for 'Machine QA Name', 'Reference Image and Lasers', 'Data Type', 'Endian Type', 'Dimensions', 'Element Size', 'Start', 'Movable Lasers', 'Couch Setup', and 'Procedures'. The 'Procedures' list shows '1: 5x10cm 10.3sec'. Below this, there are fields for 'Procedure Description', 'Compression Type', and 'Compression Factor'. At the bottom, there is a 'Fragment Summary' section with details like 'Type of delivery: Static', 'Total number of projections: 103', 'Projections per second: 10.00', 'Gantry Rotations: None', 'Projections per rotation: NA', 'Couch Velocity: 0.00 mm/sec', 'Total Couch Distance: 0.00 mm', and 'Procedure Time: 10.30 seconds'. A 'Status' section is also visible at the very bottom.

“Save to XML File”をクリックします。

The 'Save' dialog box is open, showing the 'Look In' field set to 'calibrationData'. The file list includes folders like '5x10cm 20sec', 'CouchImages', 'CTs', 'Film cal 2.5 x 2.5', 'JawProfiles', 'sinograms', 'TomoPhant_20200415', and 'TreatmentProcedures'. The 'Save Binaries' checkbox is checked. The 'File Name' field contains 'Output 1Gy'. The 'Files of Type' dropdown is set to 'Machine QA files'. The 'Save' button is highlighted with a red box.

File Nameを入力します。
※本例では“Output 1Gy”です。

“Save”をクリックします。

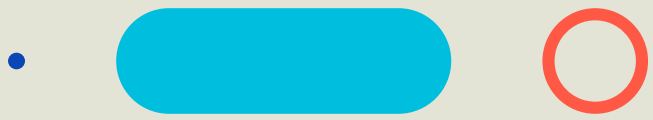
Procedure作成方法

データサーバーに保存

The screenshot shows the 'Machine QA' configuration window. At the top, there are several buttons: 'Reset', 'Load from File', 'Load from Data Server', 'Load from Patient Plan', 'Save to Data Server', and 'Save to File'. The 'Save to Data Server' button is highlighted with a red box and an arrow pointing to it from a text box that says 'Save to Data Serverをクリックします。' (Click Save to Data Server).

Below the buttons, the 'Machine QA Name' is set to 'Output 1Gy'. Under 'Reference Image and Lasers', the 'Image Type' is 'Loaded from File' and the 'Reference Image File' is 'F:\Capture\Create MachineQA_Ver3\10.3\ReferenceImage.bin'. The 'Data Type' is 'Short' and 'Endian Type' is 'Big'. Dimensions are X: 256, Y: 98, Z: 256. Element Size is X: 1.914062, Y: 2.0, Z: 1.914062. Start is X: 0.0, Y: 0.0, Z: 0.0. Movable Lasers are X: 0.0, Y: 0.0, Z: 0.0. 'Couch Setup' is 'Default', IECf Y is 250.0, and IECf Z is 350.0. The 'Procedures' list contains '1: 5x10cm 10.3sec'. The 'Procedure' description is '5x10cm 10.3sec', 'Compression Type' is 'Compression Factor', and 'Compression Factor' is 10. There is an 'Export Delivery Plan' button. A 'Fragment Summary' box shows: Type of delivery: Static, Total number of projections: 103, Projections per second: 10.00, Gantry Rotations: None, Projections per rotation: NA, Couch Velocity: 0.00 mm/sec, Total Couch Distance: 0.00 mm, Procedure Time: 10.30 seconds. The 'Status' section is empty.

A modal dialog box titled 'Saving Machine QA Procedure to Data Server' (ID: 23208413) is open. It shows a list of steps: Validating parameters, Validating reference image file, Validating procedures, Validating Procedure: 5x10cm 10.3sec, Validating fragment [1] settings, Checking for matching beam, Validating fixed jaw settings, Validating sinogram file, Finished validating Procedure: 5x10cm 10.3sec, Finished validating parameters, Uploading to server..., Creating machine QA record, Building Machine QA, Loading Reference Image, Building procedure sets, Building procedure, Building fragment, Loading Sinogram, and Uploading files. At the bottom, a red box highlights the message 'Machine QA record created successfully' and a 'Close' button. An arrow points from this message to a text box that says 'Machine QA record created successfullyと表示されたらCloseをクリックします。' (Click Close when 'Machine QA record created successfully' is displayed).



Thank you

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