Name of document
DICOM Conformance Statement

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Leksell GammaPlan <sup>®</sup> & Leksell SurgiPlan <sup>®</sup>		2012-10-15	11	1 (57)



# **DICOM Conformance Statement**

# Leksell GammaPlan<sup>®</sup> & Leksell SurgiPlan<sup>®</sup>

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## 1 Introduction

## 1.1 Scope and field of application

The scope of this DICOM conformance statement is to facilitate data exchange with equipment of Elekta Neuro Sciences. This document specifies the conformance to the DICOM standard (formally called the NEMA PS3.X-1993 standards). It contains a short description of the applications involved and provides technical information about the data exchange capabilities of the equipment. The main elements describing these capabilities are the supported DICOM service object pairs (SOP) classes, Roles and Transfer Syntaxes.

## **1.2 Reference documents**

Digital Imaging and Communications in Medicine (DICOM). Version 3.0. National Electrical Manufacturer's Association. Rosslyn, VA, United States of America. 2011.

## 1.3 **Revision history**

Issue	Date	Author	Status	Description
1	1999-10	JrC	Approved	Version for SIF 4.6
2	2002-02-25	EH	Approved	Approved for SIF 4.7 (description of PET support added)
3	2003-08-11	EH	Approved	Approved for SIF 4.7.2 (support for PET added).
4	2005-06-30	ErSa	Approved	Approved for SIF 4.7.2.
5	2006-03-22	НВо	Approved	Approved for Leksell GammaPlan <sup>®</sup> 7.
6	2006-10-24	ErSa	Approved	Approved for Leksell GammaPlan® 7 (support for reading CD-R).
7	2008-09-12	ErSa	Approved	Approved for Leksell GammaPlan <sup>®</sup> and Leksell SurgiPlan <sup>®</sup> 8.2
8	2008-09-12	ErSa	Approved	Approved for Leksell GammaPlan <sup>®</sup> and Leksell SurgiPlan <sup>®</sup> 8.3
9	2008-09-21	ErSa	Approved	Approved for Leksell GammaPlan <sup>®</sup> and Leksell SurgiPlan <sup>®</sup> 9.
10	2010-10-29	ErSa	Approved	Approved for Leksell GammaPlan <sup>®</sup> and Leksell SurgiPlan <sup>®</sup> 10.0
10.1	2012-09-20	ErSa	Draft	Updated for Leksell GammaPlan <sup>®</sup> and Leksell SurgiPlan <sup>®</sup> 10.2
11	2012-10-15	ErSa	Approved	Approved for Leksell GammaPlan <sup>®</sup> and Leksell SurgiPlan <sup>®</sup> 10.2

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#### 1.4 Terminology

Term	Explanation
AE	Application Entity
AET	Application Entity Title
AP	Application Profile
FSR	File Set Reader
FSC	File Set Creator
PDU	Protocol data unit
SCP	Service Class Provider
SCU	Service Class User
SOP	Service Object Pair
UID	Unique Identifier
NTPS	The abbreviation for Leksell GammaPlan and Leksell SurgiPlan is Neuro Treatment planning system NTPS.

## 1.5 Important notes

This Conformance Statement by itself does not guarantee successful interoperability of Elekta equipment with non-Elekta equipment. The user (or user's agent) should be aware of the following issues:

#### Scope

The goal of DICOM is to facilitate inter-connectivity rather than interoperability. Interoperability refers to the ability of application functions, distributed over two or more systems, to work successfully together. The integration of medical devices into a networked environment may require application functions that are not specified within the scope of DICOM. Consequently, using only the information provided by this Conformance Statement does not guarantee interoperability of Elekta equipment with non-Elekta equipment. It is the user's responsibility to analyze thoroughly the application requirements and to specify a solution that integrates Elekta equipment with non-Elekta equipment.

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## Validation

Elekta equipment has been carefully tested to assure that the actual implementation of the DICOM interface corresponds with this Conformance Statement. Where Elekta equipment is linked to non-Elekta equipment, the first step is to compare the relevant Conformance Statements. If the Conformance Statements indicate that successful information exchange should be possible, additional validation tests will be necessary to ensure the functionality, performance, accuracy and stability of image and image related data. It is the responsibility of the user (or user's agent) to specify the appropriate test suite and to carry out the additional validation tests.

#### New versions of the DICOM Standard

The DICOM standard will evolve in future to meet the user's growing requirements and to incorporate new features and technologies. Elekta plans to adapt its equipment to future versions of the DICOM standard. In order to do so, Elekta reserves the right to make changes to its products or to discontinue its delivery. The user should ensure that any non-Elekta provider linking to Elekta equipment also adapts to future versions of the DICOM Standard. If not, the incorporation of DICOM enhancements into Elekta equipment may lead to loss of connectivity (in case of networking) and incompatibility (in case of media).

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## 2 Implementation Model

The Elekta Neuro Treatment Planning system consist of one Elekta Storage Server Application Entity connected to one or more Leksell GammaPlan<sup>®</sup> or Leksell SurgiPlan<sup>®</sup> Treatment Planning Workstations.

## 2.1 Applications data flow diagrams

The application data flows for the different services supported by the Elekta Storage Server, Leksell GammaPlan<sup>®</sup> and Leksell SurgiPlan<sup>®</sup> are described below.

## **Verification SCU**



Figure 1 Application Data Flow Diagram - Verification SCU.

## Verification SCP



Figure 2 Application Data Flow Diagram - Verification SCP.

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## Storage SCP



Figure 3 Application Data Flow Diagram - Storage SCP.

## Storage SCU



Figure 4 Application Data Flow Diagram - Storage SCU.

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## Query/Retrieve SCP



Figure 5 Application Data Flow Diagram – Query/Retrieve SCP.

## File Set Reader



Figure 6 Application Data Flow Diagram – File Set Reader from DICOM CD-R.

Note: This is a partially conformant File Set Reader as it is able to perform M-READ but not MINQUIRE FILE Media Storage Operation.

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## File Set Writer



Figure 7 Application Data Flow Diagram – File Set Writer to USB medium.

Note: This is a partially conformant File Set Creator as it is able to perform M-WRITE but not M-INQUIRE FILE or MINQUIRE FILESET Media Storage Operation.

## 2.2 Functional definitions of Application Entity

## Elekta Storage Server

The Elekta Storage Server waits for another application to connect at the TCP/IP port number 104. When another application makes a DICOM association request, the Storage Server acts as a SCP for the storage service class: It stores the DICOM objects in the inbox of the Leksell GammaPlan<sup>®</sup> and Leksell SurgiPlan<sup>®</sup> Treatment Planning. The Storage Server also acts as a SCP for the verification service class: It responds to C-ECHO requests from other applications.

## Leksell GammaPlan<sup>®</sup> and Leksell SurgiPlan<sup>®</sup>

Leksell GammaPlan® and Leksell SurgiPlan® are DICOM Clients (SCU) for the purpose of

- Importing DICOM Images and DICOM RT Structure Sets, drawn in the image planes of an already imported image series.
- Requests a remote query/retrieve SCP to perform a search and match to the keys specified in the request in order to display the results in the Leksell GammaPlan<sup>®</sup> and Leksell SurgiPlan<sup>®</sup> user interface. Depending on user action (Import) Leksell GammaPlan<sup>®</sup> and Leksell SurgiPlan<sup>®</sup> sends a C-GET or a C-MOVE request to initiate a C-STORE operation on the SCP to start an image transfer from the remote query/retrieve SCP to Leksell GammaPlan<sup>®</sup> and Leksell SurgiPlan<sup>®</sup>. A C-MOVE request is only sent if the query/retrieve SCP does not support the C-GET service.
- Exporting DICOM Images and DICOM Structure sets object to a remote Service Class Provider (DICOM Server). Leksell GammaPlan<sup>®</sup> also exports DICOM RT Dose and DICOM RT Plan objects. The RT objects can be exported together with an image series. Only 3D volumes can be exported. The DICOM RT Dose object contains the global dose distribution within the skull for the currently active treatment plan. A DICOM RT Plan object is created and used to connect the dose object with the structure sets and images. The DICOM RT Object can be exported together with CT, MR and PET images.
- Writing DICOM Images and DICOM Structure sets objects to a USB flash drive. Leksell GammaPlan<sup>®</sup> also writes DICOM RT Dose and DICOM RT Plan objects. This is a partially conformant File Set Creator (FSC) as it is able to perform M-WRITE but not M-INQUIRE FILE SET or M-INQUIRE FILE Media Storage Operation.

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- Reading DICOM object stored on a CD-ROM. This is a partially conformant File Set Reader (FSR) as it is able to perform M-READ but not M-INQUIRE FILE Media Storage Operation.
- Echo Utility for test and validation purposes. It sends a verify request to a specified DICOM node. It acts as a SCU for the verification service class.

## 2.3 Sequencing of Real World Activities

The user "verification" of a remote application can be made during a configuration session of the remote applications. Retrieve of images is only possible if results from a previous "Search..." operation exists and those entities can be selected for "Import".

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## **3** AE specifications

## 3.1 Elekta Storage Server AE Specification - Storage

The Elekta Storage Server Application Entity provides Standard Conformance to the following DICOM V3.0 SOP classes for storage as a SCP:

SOP Class Name	UID
CT Image Storage	1.2.840.10008.5.1.4.1.1.2
MR Image Storage	1.2.840.10008.5.1.4.1.1.4
XA Image Storage	1.2.840.10008.5.1.4.1.1.12.1
PET Image Storage	1.2.840.10008.5.1.4.1.1.128
RT Structure Set	1.2.840.10008.5.1.4.1.1.481.3
SC Image Storage	1.2.840.10008.5.1.4.1.1.7

Table 1: SOP Classes for storage supported by the Elekta Storage Server.

## **Association Establishment Policies**

#### General

The Elekta Storage Server accepts association in response to C-STORE requests from other Applications Entities. It will accept C-STORE requests for CT, MR, XA, PET, RT Structure Set and SC SOP classes and in this case will act as storage service class provider. The Storage Server is a LINUX daemon, waits for C-STORE requests, and performs the necessary operations upon it receiving such requests.

#### Number of Associations

The number of simultaneous associations that will be accepted by the Elekta Storage Server is limited to 5.

#### Asynchronous Nature

The Elekta Storage Server does not perform asynchronous operations window negotiation.

## **Implementation Identifying Information**

The Elekta Storage Server does not export any DICOM object. The only occasion where an Implementation Identifier may be used is during the establishment of the association with a DICOM peer. For this reason the implementation identifying information of the OFFIS DCMTK DICOM toolkit has been kept unchanged:

IMPLEMENTATION\_CLASS\_UID= 1.22276.0.7230010.3.0.3.5.4IMPLEMENTATION\_VERSION= OFFIS\_DCMTK\_354

## Association Initiation by Real World Activity

The Elekta Storage Server never initiates an association.

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## Association Acceptance Policy

## Remote System Requests Image Storage on the Elekta Storage Server

#### Associated Real World Activity – Storage Provider

A DICOM AE sends a storage request to the Elekta Storage Server. If the request is accepted the images and objects are stored on the Elekta Storage Server.

#### Presentation context table - storage

	Presentation Context Table					
Abstract Syntax		Transfer Syntax List		Role	Extended Negotiation	
Name	UID	Name	UID			
CT Image Storage	1.2.840.10008.5.1.4.1.1.2	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None	
		Explicit VR Little Endian	1.2.840.10008.1.2.1			
		Explicit VR Big Endian	1.2.840.10008.1.2.2			
MR Image Storage	1.2.840.10008.5.1.4.1.1.4	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None	
		Explicit VR Little Endian	1.2.840.10008.1.2.1			
		Explicit VR Big Endian	1.2.840.10008.1.2.2			
X-Ray Angiographic	1.2.840.10008.5.1.4.1.1.12. 1	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None	
Image Storage		Explicit VR Little Endian	1.2.840.10008.1.2.1			
		Explicit VR Big Endian	1.2.840.10008.1.2.2			
PET Image Storage	1.2.840.10008.5.1.4.1.1.12 8	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None	
		Explicit VR Little Endian	1.2.840.10008.1.2.1			
		Explicit VR Big Endian	1.2.840.10008.1.2.2			
RT Structure Set Storage	1.2.840.10008.5.1.4.1.1.48 1.3	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None	
		Explicit VR Little Endian	1.2.840.10008.1.2.1			
		Explicit VR Big Endian	1.2.840.10008.1.2.2			
Secondary Capture	1.2.840.10008.5.1.4.1.1.7	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None	
Image Storage		Explicit VR Little Endian	1.2.840.10008.1.2.1			

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	Explicit VR Big E	ndian	1.2.840.10008.	1.2.2	

Table 2: Presentation context table: C-STORE service

#### **C-STORE SCP conformance**

The Elekta Storage Server is Conformance Level 0 Storage SCP. The stored attributes may be accessed only through Leksell GammaPlan<sup>®</sup> and Leksell SurgiPlan<sup>®</sup> and only for display. The duration of storage of these attributes is at the user discretion.

#### Presentation context acceptance criterion

The Elekta Storage Server will accept any context listed in Table 2. There is no check for duplicate contexts.

#### Transfer syntax selection policies

The preference in acceptance of Transfer Syntaxes is:

Implicit Little Endian above Explicit Little Endian above Explicit Big Endian

## 3.2 Elekta Storage Server AE Specification - Verification

The Elekta Storage Server Application Entity provides Standard Conformance to the Verification DICOM V3.0 SOP class as a SCP:

SOP Class Name	UID
Verification	1.2.840.10008.1.1

Table 3: SOP Classes for verification supported by the Elekta Storage Server.

#### General

The Elekta Storage Server accepts association in response to C-ECHO requests and act as verification service class provider. The Storage Server is a LINUX daemon, waits for C-ECHO requests, and performs the necessary operations upon it receiving such requests.

#### Number of Associations

The number of simultaneous associations that will be accepted by the Elekta Storage Server is limited to 5.

#### Asynchronous Nature

The Elekta Storage Server does not perform asynchronous operations window negotiation.

#### **Implementation Identifying Information**

The Elekta Storage Server does not export any DICOM object. The only occasion where an Implementation Identifier may be used is during the establishment of the association with a DICOM peer. For this reason the implementation identifying information of the OFFIS DCMTK DICOM toolkit has been kept unchanged:

IMPLEMENTATION\_CLASS\_UID = 1.22276.0.7230010.3.0.3.5.4

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IMPLEMENTATION\_VERSION= OFFIS\_DCMTK\_354

## Association Initiation by Real World Activity

The Elekta Storage Server never initiates an association.

## Association Acceptance Policy

## Remote system requests verification

#### Associated real world activity - Verification Provider

A remote DICOM AE wish to verify the application level communication using the C-ECHO command.

#### Presentation context table - verification

Presentation Context Table						
Abst	ract Syntax	Transfer Sy	ntax List	Role	Extended	
Name	UID	Name	UID		Negotiation	
Verification	1.2.840.10008.1.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None	
		Explicit VR Little Endian	1.2.840.10008.1.2.1	SCP	None	
		Explicit VR Big Endian	1.2.840.10008.1.2.2	SCP	None	

Table 4: Presentation context table: C-ECHO service

## **C-ECHO SCP conformance**

The Elekta Storage Server provides standard conformance to the C-ECHO service as a Service Class Provider.

#### Presentation context acceptance criterion

The only accepted presentation context is defined in Table 4.

#### Transfer syntax selection policies

The preference in acceptance of Transfer Syntaxes is:

Implicit Little Endian above Explicit Little Endian above Explicit Big Endian

## 3.3 Leksell GammaPlan® and Leksell SurgiPlan® AE - Storage

Leksell GammaPlan<sup>®</sup> and Leksell SurgiPlan<sup>®</sup> Application Entity provides Standard Conformance the following DICOM V3.0 SOP classes for storage as a SCU:

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	CT Image Storage	1.2.840.10008.5	.1.4.1.1.2			
	MR Image Storage	1.2.840.10008.5	.1.4.1.1.4			

1.2.840.10008.5.1.4.1.1.128

1.2.840.10008.5.1.4.1.1.7

 RT Structure Set
 1.2.840.10008.5.1.4.1.1.481.3

 Table 5: SOP Classes for storage supported by Leksell GammaPlan® and Leksell SurgiPlan®.

Leksell GammaPlan<sup>®</sup> Application Entity also provides Standard Conformance the following DICOM V3.0 SOP classes as a SCU:

SOP Class Name	UID
RT Dose Storage	1.2.840.10008.5.1.4.1.1.481.2
RT Plan Storage	1.2.840.10008.5.1.4.1.1.481.5

Table 6: SOP Classes supported only by Leksell GammaPlan® only.

## **Association Establishment Policies**

**PET Image Storage** 

<sup>1</sup>SC Image Storage

#### General

The maximum PDU size for Leksell GammaPlan<sup>®</sup> and Leksell SurgiPlan<sup>®</sup> can be configurable from a minimum of 4 Kbytes. There is no upper limit. It is limited by the available system resources. The default value is 64 Kbytes.

#### Number of Associations

Leksell GammaPlan<sup>®</sup> and Leksell SurgiPlan<sup>®</sup> support one active association at a time as a Service Class User.

#### Asynchronous Nature

Leksell GammaPlan<sup>®</sup> and Leksell SurgiPlan<sup>®</sup> do not support asynchronous operations and will not perform asynchronous window negotiation.

## **Implementation Identifying Information**

IMPLEMENTATION\_CLASS\_UID= 1.2.840.113854.88IMPLEMENTATION VERSION= ELEKTA NTPS 10.2

## Association Initiation by Real World Activity

Leksell GammaPlan<sup>®</sup> or Leksell SurgiPlan<sup>®</sup> sends a C-STORE request to a remote Applications Entities.

## **Association Initiation Policy**

Leksell GammaPlan<sup>®</sup> and Leksell SurgiPlan<sup>®</sup> initiates associations for the purpose of

• Export DICOM objects to PACS, Linac or other similar systems

<sup>&</sup>lt;sup>1</sup> Only Secondary Capture of tomographic images can be sent to a remote Application Entity.

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## Association Acceptance Policy

Leksell GammaPlan<sup>®</sup> or Leksell SurgiPlan<sup>®</sup> does not accept associations.

## **Requests for DICOM Object Storage on Remote Systems**

#### Associated Real World Activity – Storage User

Leksell GammaPlan<sup>®</sup> and Leksell SurgiPlan<sup>®</sup> requests associations with remote systems that it wishes to send DICOM objects to.

#### Presentation context table - storage

Presentation Context Table					
Abstract Syntax		Transfer Syntax List		Role	Extended Negotiation
Name	UID	Name	UID		
CT Image Storage	1.2.840.10008.5.1.4.1.1.2	Implicit VR Little Endian	1.2.840.10008.1.2	BOTH	None
MR Image Storage	1.2.840.10008.5.1.4.1.1.4	Implicit VR Little Endian	1.2.840.10008.1.2	BOTH	None
PET Image Storage	1.2.840.10008.5.1.4.1.1.128	Implicit VR Little Endian	1.2.840.10008.1.2	вотн	None
RT Structure Set Storage	1.2.840.10008.5.1.4.1.1.481.3	Implicit VR Little Endian	1.2.840.10008.1.2	вотн	None
Secondary Capture Storage	1.2.840.10008.5.1.4.1.1.7	Implicit VR Little Endian	1.2.840.10008.1.2	BOTH	None

Table 7: Presentation context table: C-STORE service for Leksell GammaPlan® and Leksell SurgiPlan®.

Presentation Context Table						
Abstract Syntax		Transfer Syntax List		Role	Extended Negotiation	
Name	UID	Name	UID			
RT Dose Storage	1.2.840.10008.5.1.4.1.1.481.2	Implicit VR Little Endian	1.2.840.10008.1.2	BOTH	None	
RT Plan Storage	1.2.840.10008.5.1.4.1.1.481.5	Implicit VR Little Endian	1.2.840.10008.1.2	BOTH	None	

Table 8: Presentation context table: C-STORE service for Leksell GammaPlan® only

#### C-STORE SCU conformance

Leksell GammaPlan<sup>®</sup> and Leksell SurgiPlan<sup>®</sup> provides standard conformance for Storage as a SCU. The systems performs a Conformance Level 0 for Storage, i.e., not all DICOM Type 1 and 2 attributes received earlier by another module may have been stored for re-export.

#### Presentation context acceptance criterion

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Not applicable.

Transfer syntax selection policies

Not applicable.

## 3.4 Leksell GammaPlan<sup>®</sup> and Leksell SurgiPlan<sup>®</sup> AE – Verification

Leksell GammaPlan<sup>®</sup> and Leksell SurgiPlan<sup>®</sup> Application Entity provides Standard Conformance the following DICOM V3.0 SOP classes for verification as a SCU for :

SOP Class Name	UID
Verification	1.2.840.10008.1.1

Table 9: SOP Classes for verification supported by Leksell GammaPlan® and Leksell SurgiPlan®.

## **Association Establishment Policies**

#### General

The maximum PDU size for Leksell GammaPlan<sup>®</sup> and Leksell SurgiPlan<sup>®</sup> can be configurable from a minimum of 4 Kbytes. There is no upper limit. It is limited by the available system resources. The default value is 64 Kbytes.

#### Number of Associations

Leksell GammaPlan<sup>®</sup> and Leksell SurgiPlan<sup>®</sup> support one active association at a time as a Service Class User.

#### Asynchronous Nature

Leksell GammaPlan<sup>®</sup> and Leksell SurgiPlan<sup>®</sup> do not support asynchronous operations and will not perform asynchronous window negotiation.

## Implementation Identifying Information

IMPLEMENTATION\_CLASS\_UID= 1.2.840.113854.88IMPLEMENTATION\_VERSION= ELEKTA\_NTPS\_10.2

## Association Initiation by Real World Activity

Leksell GammaPlan<sup>®</sup> or Leksell SurgiPlan<sup>®</sup> sends a C-ECHO request to a remote Applications Entities.

## **Association Initiation Policy**

Leksell GammaPlan® and Leksell SurgiPlan® initiates associations for the purpose of

• Verify the application level communication to another system

## Association Acceptance Policy

Leksell GammaPlan<sup>®</sup> or Leksell SurgiPlan<sup>®</sup> does not accept associations.

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## Remote system requests verification

#### Associated real world activity – Verification User

Leksell GammaPlan<sup>®</sup> or Leksell SurgiPlan<sup>®</sup> requests associations from remote systems to verify the application level communication using the C-ECHO command.

#### Presentation context table - Verification

Presentation Context Table					
Abst	ract Syntax	Transfer Syntax List		Role	Extended
Name	UID	Name	UID		Negotiation
Verification	1.2.840.10008.1.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None

Table 10: Presentation context table: C-ECHO service

#### **C-ECHO SCU conformance**

Leksell GammaPlan® and Leksell SurgiPlan® provides standard conformance for Verification as SCU.

#### Presentation context acceptance criterion

Not applicable.

#### Transfer syntax selection policies

Not applicable.

# 3.5 Leksell GammaPlan<sup>®</sup> and Leksell SurgiPlan<sup>®</sup> AE Specification – Query/Retrieve

Leksell GammaPlan<sup>®</sup> and Leksell SurgiPlan<sup>®</sup> Application Entity provides Standard Conformance the following DICOM V3.0 SOP classes for Query/Retrieve as a SCU<sup>2</sup>:

SOP Class Name	UID
Patient Root Query/Retrieve Information Model - FIND	1.2.840.10008.5.1.4.1.2.1.1
Study Root Query/Retrieve Information Model - FIND	1.2.840.10008.5.1.4.1.2.2.1
Patient Root Query/Retrieve Information Model - GET	1.2.840.10008.5.1.4.1.2.1.3
Patient Root Query/Retrieve Information Model - MOVE	1.2.840.10008.5.1.4.1.2.1.2

Table 11: SOP Classes for Query/Retrieve supported by Leksell GammaPlan® and Leksell SurgiPlan®.

<sup>&</sup>lt;sup>2</sup> A license is required for the Query/Retrieve functionality.

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## **Association Establishment Policies**

#### General

The maximum PDU size for Leksell GammaPlan<sup>®</sup> and Leksell SurgiPlan<sup>®</sup> can be configurable from a minimum of 4 Kbytes. There is no upper limit. It is limited by the available system resources. The default value is 64 Kbytes.

#### Number of Associations

Leksell GammaPlan<sup>®</sup> and Leksell SurgiPlan<sup>®</sup> support one active association at a time as a Service Class User.

#### Asynchronous Nature

Leksell GammaPlan<sup>®</sup> and Leksell SurgiPlan<sup>®</sup> do not support asynchronous operations and will not perform asynchronous window negotiation.

#### **Implementation Identifying Information**

IMPLEMENTATION\_CLASS\_UID = 1.2.840.113854.88

IMPLEMENTATION\_VERSION= ELEKTA\_NTPS\_10.2

## Association Initiation by Real World Activity

Leksell GammaPlan<sup>®</sup> or Leksell SurgiPlan<sup>®</sup> sends a C-FIND request to a remote Applications Entity followed by a C-GET request if the Entity supports a C-MOVE request is sent otherwise.

## **Association Initiation Policy**

Leksell GammaPlan® and Leksell SurgiPlan® initiates associations for the purpose of

- Finding DICOM objects on remote Application Entities
- Retrieve DICOM objects from remote Application Entities

## **Requests for finding DICOM Object on Remote Systems**

#### Associated Real World Activity - Find

Leksell GammaPlan<sup>®</sup> and Leksell SurgiPlan<sup>®</sup> send a C-FIND request when the user queries a remote Query/Retrieve SCP for patients, studies, series or objects. The search on the STUDY level is performed using the Study Root Query Retrieve Information Model with the following tags:

Description	Tag	Value
Patient's Name	(0010,0010)	The value is entered in the GUI. Non ascii letters included in the entered value will be replaced by a question mark (?).
Patient ID	(0010,0020)	The value is entered in the GUI
Study Date	(0008,0020)	A date range is entered in the GUI.
Query/Retrieve level	(0008,0052)	STUDY
Study Time	(0008,0030)	Empty
Study ID	(0020,0010)	Empty

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Study Instance UID	(0020,000d)	Empty	

The search on the SERIES level is performed using the Patient Root Query Retrieve Information Model with the following tags:

Description	Tag	Value
Patient ID	(0010,0020)	From the STUDY level query.
Study Instance UID	(0020,000d)	From the STUDY level query
Query/Retrieve level	(0008,0052)	SERIES
Modality	(0008,0060)	Empty
Series Instance UID	(0020,000e)	Empty
Series Number	(0020,0011)	Empty

The search on the IMAGE level is performed using the Patient Root Query Retrieve Information Model with the following tags:

Description	Tag	Value
Patient ID	(0010,0020)	From the STUDY level query.
Study Instance UID	(0020,000d)	From the STUDY level query
Series Instance UID	(0020,000e)	From the SERIES level query
Query/Retrieve level	(0008,0052)	IMAGE
SOP Instance UID	(0008,0018)	Empty
Instance Number	(0020,0013)	Empty

The attributes with empty values or with wild cards "\*" or "?" above are retrieved from the Query/Retrieve SCP. Leksell GammaPlan® and Leksell SurgiPlan®.does not support code extension techniques multiple values of Specific Character Sets are not supported.

#### Presentation context table - Find

Presentation Context Table							
Abstract Syntax		Transfer Syntax List		Role	Extended Negotiation		
Name	UID	Name	UID				
Patient Root Query/Retrieve Information Model – FIND	1.2.840.10008.5.1.4.1.2.1.1	Implicit VR Little Endian	1.2.840.10008.1.2	вотн	None		
Study Root Query/Retrieve Information	1.2.840.10008.5.1.4.1.2.2.1	Implicit VR Little Endian	1.2.840.10008.1.2	вотн	None		

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Model – FIND			

Table 12: Presentation context table: C-FIND service for Leksell GammaPlan® and Leksell SurgiPlan®.

#### **C-FIND SCU conformance**

Leksell GammaPlan<sup>®</sup> and Leksell SurgiPlan<sup>®</sup> provides standard conformance for the C-FIND service as SCU.

#### Presentation context acceptance criterion

Not applicable.

#### Transfer syntax selection policies

Not applicable.

#### **Requests for retrieving DICOM Object on Remote Systems**

#### Associated Real World Activity - Move/Get

Leksell GammaPlan<sup>®</sup> and Leksell SurgiPlan<sup>®</sup> requests associations for retrieving DICOM objects on remote DICOM AE. On user selection of a specific DICOM series or a DICOM object, a C-GET request is sent to systems supporting the C-GET service if this service is not supported a C\_MOVE request is sent. When retrieving a selected DICOM series a C-FIND request on the IMAGE level is sent before the C-GET/C-MOVE request. The C-GET/C-MOVE request will include the following tags:

Description	Tag	Value
Patient ID	0010,0020	From the previous C-FIND query
Study Instance UID	0020,000d	From the previous C-FIND query
Series Instance UID	0020,000e	From the previous C-FIND query
SOP Instance UID	0008,0018	A vector of values from the preceding C-FIND query when retrieving DICOM series. One value when retrieving a DICOM object.

#### Presentation context table – Move/Get

Presentation Context Table							
Abstract Syntax		Transfer Syntax List		Role	Extended Negotiation		
Name	UID	Name	UID				
Patient Root Query/Retrieve Information Model - GET	1.2.840.10008.5.1.4.1.2.1.3	Implicit VR Little Endian	1.2.840.10008.1.2	вотн	None		
Patient Root Query/Retrieve Information	1.2.840.10008.5.1.4.1.2.1.2	Implicit VR Little Endian	1.2.840.10008.1.2	вотн	None		

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Model - MOVE							_

Table 13: Presentation context table: C-GET and C-MOVE service for Leksell GammaPlan<sup>®</sup> and Leksell SurgiPlan<sup>®</sup>.

#### **C-GET** conformance

Leksell GammaPlan<sup>®</sup> and Leksell SurgiPlan<sup>®</sup> provides standard conformance for the C-GET service as SCU.

#### **C-MOVE SCU conformance**

Leksell GammaPlan<sup>®</sup> and Leksell SurgiPlan<sup>®</sup> provides standard conformance for the C-MOVE service as SCU.

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## 4 **Communication profiles**

#### 4.1 Supported Communication Stacks

The Elekta Storage Server, Leksell GammaPlan<sup>®</sup> and Leksell SurgiPlan<sup>®</sup> provide DICOM V3.0 TCP/IP Network Communication Support as defined in part 8 of the DICOM standard.

## 4.2 TCP/IP Stack

Elekta Storage Server inherits the TCP/IP stack from the LINUX operating system upon which they execute.

## 4.3 OSI Stack

Not supported.

## 4.4 Physical Media Support

## Reading DICOM Object stored on CD-ROM

#### **Specification**

Leksell GammaPlan<sup>®</sup> and Leksell SurgiPlan<sup>®</sup> can read DICOM part 10 formatted Objects stored on CD-R with the ISO/IEC 9660 Media Format. All DICOM objects on the CD-R will be sent to the Elekta Storage Server. I.e. the DICOM Directory File (DICOMDIR) is not used and it is not possible to select separate files to be stored. The Leksell GammaPlan<sup>®</sup> and Leksell SurgiPlan<sup>®</sup> are then not conformant to any application profiles defined in the DICOM standard. DICOM objects without Meta information will also be sent to the Elekta Storage Server.

Leksell GammaPlan<sup>®</sup> and Leksell SurgiPlan<sup>®</sup> is partially conformant as FSR because it supports the M-READ service but does not the M-INQUIRE FILE service. The following table defines which objects are read by the application and which transfer syntaxes are supported:

Information Object Definition	Service Object Pair Class UID	Transfer Syntax	UID
CT Image	1.2.840.10008.5.1.4.1.1.2	Implicit VR Little Endian	1.2.840.10008.1.2
		Explicit VR Little Endian	1.2.840.10008.1.2.1
		Explicit VR Big Endian	1.2.840.10008.1.2.2
		JPEG Lossless, Non- Hierarchical, First-Order Prediction (Process 14 [Selection Value 1])	1.2.840.10008.1.2.4.70
		JPEG Lossless, Non- Hierarchical (Process 14)	1.2.840.10008.1.2.4.57
MR Image	1.2.840.10008.5.1.4.1.1.4	Implicit VR Little Endian	1.2.840.10008.1.2
		Explicit VR Little Endian	1.2.840.10008.1.2.1
		Explicit VR Big Endian	1.2.840.10008.1.2.2

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		JPEG Lossless, Non- Hierarchical, First-Order Prediction (Process 14 [Selection Value 1])	1.2.840.10008.1.2	.4.70
		JPEG Lossless, Non- Hierarchical (Process 14)	1.2.840.10008.1.2	.4.57
X-Ray Angiographic	1.2.840.10008.5.1.4.1.1.12.1	Implicit VR Little Endian	1.2.840.10008.1.2	
Image		Explicit VR Little Endian	1.2.840.10008.1.2	.1
		Explicit VR Big Endian	1.2.840.10008.1.2	.2
		JPEG Lossless, Non- Hierarchical, First-Order Prediction (Process 14 [Selection Value 1])	1.2.840.10008.1.2	.4.70
		JPEG Lossless, Non- Hierarchical (Process 14)	1.2.840.10008.1.2	.4.57
PET Image	1.2.840.10008.5.1.4.1.1.128	Implicit VR Little Endian	1.2.840.10008.1.2	
		Explicit VR Little Endian	1.2.840.10008.1.2	.1
		Explicit VR Big Endian	1.2.840.10008.1.2	.2
		JPEG Lossless, Non- Hierarchical, First-Order Prediction (Process 14 [Selection Value 1])	1.2.840.10008.1.2	.4.70
		JPEG Lossless, Non- Hierarchical (Process 14)	1.2.840.10008.1.2	.4.57
Secondary Capture	1.2.840.10008.5.1.4.1.1.7	Implicit VR Little Endian	1.2.840.10008.1.2	
Image		Explicit VR Little Endian	1.2.840.10008.1.2	.1
		Explicit VR Big Endian	1.2.840.10008.1.2	.2
		JPEG Lossless, Non- Hierarchical, First-Order Prediction (Process 14 [Selection Value 1])	1.2.840.10008.1.2	.4.70
		JPEG Lossless, Non- Hierarchical (Process 14)	1.2.840.10008.1.2	.4.57
RT Structure Set Storage	1.2.840.10008.5.1.4.1.1.481.3	Implicit VR Little Endian	1.2.840.10008.1.2	
		Explicit VR Little Endian	1.2.840.10008.1.2	.1
		Explicit VR Big Endian	1.2.840.10008.1.2	.2

Table 14: Media Storage: Objects and Transfer

# Writing DICOM Object to USB flash drives

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#### Specification

Leksell GammaPlan<sup>®</sup> and Leksell SurgiPlan<sup>®</sup> can write DICOM part 10 formatted objects to USB flash drives. They are partially conformant as FSC as it is able to perform M-WRITE but not M-INQUIRE FILE SET or M-INQUIRE FILE Media Storage Operation. They are not conformant to any application profiles defined in the DICOM standard. The following table defines which objects are written by the applications and which transfer syntaxes are supported:

Information Object Definition	Service Object Pair Class UID	Transfer Syntax	UID
CT Image	1.2.840.10008.5.1.4.1.1.2	Implicit VR Little Endian	1.2.840.10008.1.2
MR Image	1.2.840.10008.5.1.4.1.1.4	Implicit VR Little Endian	1.2.840.10008.1.2
X-Ray Angiographic Image	1.2.840.10008.5.1.4.1.1.12.1	Implicit VR Little Endian	1.2.840.10008.1.2
PET Image	1.2.840.10008.5.1.4.1.1.128	Implicit VR Little Endian	1.2.840.10008.1.2
Secondary Capture Image	1.2.840.10008.5.1.4.1.1.7	Implicit VR Little Endian	1.2.840.10008.1.2
RT Structure Set Storage	1.2.840.10008.5.1.4.1.1.481.3	Implicit VR Little Endian	1.2.840.10008.1.2

Table 15: Media Storage: Objects and Transfer supported by Leksell GammaPlan® and Leksell SurgiPlan®.

Leksell GammaPlan<sup>®</sup> also supports writing the following objects:

Information Object Definition	Service Object Pair Class UID	Transfer Syntax	UID
RT Dose         1.2.840.10008.5.1.4.1.1.481.2           Storage         1.2.840.10008.5.1.4.1.1.481.2		Implicit VR Little Endian	1.2.840.10008.1.2
RT Plan Storage	1.2.840.10008.5.1.4.1.1.481.5	Implicit VR Little Endian	1.2.840.10008.1.2

Table 16: Media Storage: Objects and Transfer supported only by Leksell GammaPlan®

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## 5 Extensions, Specialization, Privatization

## 5.1 **Private Data Elements**

Private Attributes are added to the RT Plan exported by Leksell GammaPlan<sup>®</sup> if the Dose Reference Type (300A,0020) is TARGET. The used group is 0009 and the private identification code is added to element 0010. Thereby we have reserve the block 0009,1000 – 0009,10FF.

Attribute Name	Тад	Туре	Value Type	Value Multiplicity	Attribute Description	Pd051
> Implementor Identification Code	(0009,0010)	1	LO	1	Identifier for the implementor reserving the private elements.	ELEKTA GAMMAPLAN
> Target Bounding Box Size	(0009,1020)	3	DS	3	A vector defining the size in the X, Y and Z directions of the Patient Coordinate System, the values given in mm of a bounding box containing the target.	
> Target Volume Size	(0009,1021)	3	DS	1	The size in cubic centimeters of the target volume (TV). <sup>3</sup>	
> Prescription Isodose Volume Size	(0009,1022)	3	DS	1	The size in cubic centimeters of the the prescription isodose volume (PIV) <sup>3</sup> .	
> Prescription Isodose Volume in Target	(0009,1023)	3	DS	1	The size in cubic centimeters of the part of the prescription isodose volume (PIV) that is inside the target volume (TV), i.e. Volume(PIV∩TV). <sup>3</sup>	
> Paddick Conformity Index	(0009,1024)	3	DS	1	The conformity index defined by Paddick: Volume(PIV∩TV) <sup>2</sup> /( Volume(TV) * Volume(PIV)) <sup>4</sup>	
> Dose Gradient Index	(0009,1025)	3	DS	1	The quotient between the half- prescription isodose volume size and the prescription isodose volume size. 4	
> 12 Gy Volume	(0009,1026)	3	DS	1	The size in cubic centimeters of the the volume receiving more than 12 Gy. <sup>3</sup>	
> Target Prescription Isodose	(0009,1027)	3	DS	1	The isodose in percent to which the dose (300A,0026) is prescribed. <sup>5</sup>	

Table 17: Private Data Elements included in the RT Plan exported by Leksell GammaPlan®.

<sup>&</sup>lt;sup>3</sup> Will be set to zero if no target is defined.

<sup>&</sup>lt;sup>4</sup> Will be set to NULL if no target is defined.

<sup>&</sup>lt;sup>5</sup> Will not be included if no target is defined.

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## 6 Configuration

## 6.1 Elekta Storage Server

The Application Entity Title for the Storage Server and the port is defined in a configuration file. The default AET (as generated when the application is installed) is ELEKTA\_STORAGE and the port is 104. This configuration is intended to be performed by Elekta service engineers only.

## 6.2 Leksell GammaPlan<sup>®</sup> and Leksell SurgiPlan<sup>®</sup>

The AET of Leksell GammaPlan<sup>®</sup> and Leksell SurgiPlan<sup>®</sup> can be configured in the user interface. Leksell GammaPlan<sup>®</sup> and Leksell SurgiPlan<sup>®</sup> listen to port 50 001. The IP-address is configured when installing the Leksell GammaPlan<sup>®</sup> and Leksell SurgiPlan<sup>®</sup> workstation. The AET, IP-address and port of the remote Storage and Query/Retrieve SCP can be configured in the user interface. The maximum PDU size for Leksell GammaPlan<sup>®</sup> Leksell SurgiPlan<sup>®</sup> is configurable from a minimum of 4 Kbytes. There is no upper limit. It is limited by the available system resources. The default value is 64 Kbytes.

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## 7 Support of Extended Character Sets

Leksell GammaPlan<sup>®</sup> and Leksell SurgiPlan<sup>®</sup> support the following character sets in addition to the default when handling DICOM objects:

- ISO\_IR 100
- ISO\_IR 101
- ISO\_IR 109
- ISO\_IR 110
- ISO\_IR 144
- ISO\_IR 127
- ISO\_IR 126
- ISO\_IR 138
- ISO\_IR 148
- ISO\_IR 192

Code extension techniques are currently not supported.

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# DICOM Image Attributes handled by Leksell GammaPlan<sup>®</sup> and Leksell SurgiPlan<sup>®</sup>

The tables below list the DICOM attributes handled by Leksell GammaPlan<sup>®</sup> and Leksell SurgiPlan<sup>®</sup> when handling DICOM image objects.

Name	TAG	Usage/Comment
Patient Name	(0010, 0010)	Identification
Patient ID	(0010, 0020)	Identification
Study Date	(0008,0020)	Identification
Study Time	(0008,0030)	Identification
Instance Number	(0020,0013)	User information
Patient Orientation	(0020, 0020)	3D reconstruction
Modality	(0008, 0060)	Identification/Validation See Note 1
Image Orientation Patient	(0020, 0037)	3D reconstruction
Bits Allocated	(0028, 0100)	Pixel data interpretation and display
Bits stored	(0028, 0101)	Pixel data interpretation and display
Samples per pixel	(0028, 0002)	Pixel data interpretation and display
Photometric Interpretation	(0028, 0004)	Pixel data interpretation
High Bit	(0028, 0102)	Pixel data interpretation and display
Pixel Representation	(0028, 0103)	Pixel data interpretation and display
Columns	(0028, 0011)	Pixel data interpretation and display
Rows	(0028, 0010)	Pixel data interpretation and display
Pixel Data	(7FE0, 0010)	Pixel data interpretation and display
Pixel Data Group Length	(7FE0,0000)	Must match length of Pixel Data attribute
Transfer Syntax UID	(0002, 0010)	Criteria to perform byte swapping
Pixel spacing	(0028, 0030)	3D reconstruction
Pixel Aspect Ratio	(0028,0034)	Pixel data interpretation and display
Series Number	(0020, 0011)	Separation of a stack in several series
Instance Number	(0020, 0013)	User information
Slice Location	(0020, 1041)	Separation of a stack in several series

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Study Instance UID	(0020, 000D)	Separation of a stack in several series
Image Position Patient	(0020, 0032)	3D reconstruction
Slice Thickness	(0018, 0050)	3D reconstruction/validation. See Note 2
Spacing between Slices	(0018, 0088)	3D reconstruction/validation See Note 2
CT rescale slope	(0028, 1053)	Pixel data interpretation and display
CT rescale intercept	(0028, 1052)	Pixel data interpretation and display
KVP	(0020,0012)	Used during electron density calculations.
Pixel Padding Value	(0028, 0120)	Pixel data interpretation and display
Window Center	(0028, 1050)	Pixel data interpretation and display
Window Width	(0028, 1051)	Pixel data interpretation and display
Manufacturer	(0008, 0070)	Used during electron density calculations.
Manufacturer's Model Name	(0008,1090)	Used during electron density calculations.
Station Name	(0008,1010)	Used during electron density calculations.
Frame of Reference	(0020,0052)	Reference to other DICOM objects
Series Instance UID	(0020, 000E)	Separation of a stack in several series
SOP Instance UID	(0008, 0018)	Image object identification
Specific Character Set	(0008,0005)	The exported DICOM RT objects will have the same Specific Character Set as the referring DICOM images.
SOP Class UID	(0008,0016)	Used to determine if the application support this DICOM object.
Series Type	(0054,1000)	For rejection of dynamic PET studies.
Number Of Frames	(0028,0008)	For rejection of multi frame angio studies.

Table 18: Image DICOM Attributes handled by Leksell GammaPlan<sup>®</sup> and Leksell SurgiPlan<sup>®</sup>.

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#### Note 1

The accepted values for "modality" are: CT, MR, XA, PT, RTSTRUCT, OT and DS. Note DS is a retired enumerated value for modality since the introduction of XA, but it can still be found in some image headers.

Note 2

For a valid 3D reconstruction, it is required that "slice thickness" and "spacing between slices" do not differ more than an application-configured tolerance.

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# **DICOM RT Attributes exported by Leksell GammaPlan®**

The Structure Set Module, ROI Contour Module and the RT ROI Observation Module Attributes are applicable for both Leksell GammaPlan<sup>®</sup> and Leksell SurgiPlan the other attributes listed below are only applicable for Leksell GammaPlan<sup>®</sup>.

GENERAL IMAGE	MODULE			
ATTRIBUTES				
Attribute	Tee	Turne	Attuikuta Descuintian	Malua
Name	Tag	туре	Attribute Description	value
			A number that identifies this	
			image. Note: This Attribute was	
Instance			named Image Number in earlier	
Number	(0020,0013)	2	versions of this Standard.	<null></null>
			Image identification	
			characteristics. See C.7.6.1.1.2	
			for Defined Terms and further	
Image Type	(0008,0008)	3	explanation.	DERIVED\SECONDARY\DOSE
IMAGE PLANE M	IODULE			
ATTRIBUTES	1			
Attribute				
Name	Тад	Туре	Attribute Description	Value
			Physical distance in the patient	
			between the center of each	
			pixel, specified by a numeric	
			pair - adjacent row spacing	
			(delimiter) adjacent column	
			spacing in mm. See 10.7.1.3 for	<value data="" depending="" grid<="" on="" td="" –=""></value>
Pixel Spacing	(0028,0030)	1	further explanation.	size>
			The direction cosines of the	
			first row and the first column	
Image			with respect to the patient. See	
Orientation			C.7.6.2.1.1 for further	
(Patient)	(0020,0037)	1	explanation.	<value data="" depending="" on=""></value>
			The x, y, and z coordinates of	
			the upper left hand corner	
			(center of the first voxel	
			transmitted) of the image, in	
Image Position	(0000 0000)		mm. See C.7.6.2.1.1 for further	
(Patient)	(0020,0032)	1	explanation.	<value data="" depending="" on=""></value>
Slice Thickness	(0018 0050)	2	Nominal slice thickness, in mm	<null></null>
	DULE			STORIA
ATTRIBUTES				
Attribute Name	Тад	Туре	Attribute Description	Value
Include (Image			•	
Pixel Macro'				See IMAGE PIXEL MACRO
Table C 7-11h				ATTRIBUTES
IMAGE PIXFI MA	ACRO			
ATTRIBUTES				
Attribute				
Name	Тад	Туре	Attribute Description	Value

			Number of samples (planes) in	
Samples per			this image. See C.7.6.3.1.1 for	
Pixel	(0028,0002)	1	further explanation.	1
			Specifies the intended	
			interpretation of the pixel data.	
Photometric			See C.7.6.3.1.2 for further	
Interpretation	(0028,0004)	1	explanation.	MONOCHROME2
				<value data="" depending="" on="" pixels<="" td="" –=""></value>
Rows	(0028,0010)	1	Number of rows in the image.	covering the selected object>
			Number of columns in the	<value data="" depending="" on="" pixels<="" td="" –=""></value>
Columns	(0028,0011)	1	image	covering the selected object >
			Number of bits allocated for	
			each pixel sample. Each sample	
			shall have the same number of	
			bits allocated. See PS 3.5 for	
Bits Allocated	(0028,0100)	1	further explanation.	16
			Number of bits stored for each	
			pixel sample. Each sample shall	
			have the same number of bits	
			stored. See PS 3.5 for further	
Bits Stored	(0028,0101)	1	explanation.	16
			Most significant bit for pixel	
			sample data. Each sample shall	
			have the same high bit. See PS	
High Bit	(0028,0102)	1	3.5 for further explanation.	15
			Data representation of the pixel	
			samples. Each sample shall have	
			the same pixel representation.	
			Enumerated Values:	
			0000H = unsigned	
			integer.	
Pixel			0001H = 2's	
Representation	(0028,0103)	1	complement	0
			A data stream of the pixel	
			samples that comprise the	
			Image. See C.7.6.3.1.4 for	
			further explanation.	
Divel Data	(7550.0010)	10	Required if Pixel Data Provider	<value data="" depending="" dose<="" on="" td="" –=""></value>
		IC	ORL (0028,7FE0) is not present.	values>
ATTRIBUTES				
Attribute Name	Taa	Turne	Attaileute Description	Value
Attribute Name	Tag	туре	Attribute Description	value
			Number of frames in a Multi-	
Number of		_	trame Image. See C.7.6.6.1.1 for	<value data="" depending="" frames<="" on="" td="" –=""></value>
Frames	(0028,0008)	1	further explanation.	covering the selected object>
			Contains the Data Element Tag	
Frame			of the attribute that is used as	
Increment			the frame increment in Multi-	
Pointer	(0028,0009)	1	frame pixel data. See C.7.6.6.1.1	(3004,000C)

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			for further explanation.	
ATTRIBUTES	.E			
Attribute				
Name	Tag	Туре	Attribute Description	Value
Samples per			Number of samples (planes) in this image. See C.8.8.3.4.1 for specialization. Required if Pixel	
Pixel	(0028,0002)	1C	Data (7FE0,0010) is present.	1
Photometric			Specifies the intended interpretation of the pixel data. See C.8.8.3.4.2 for specialization. Required if Pixel	
Interpretation	(0028,0004)	1C	Data (7FE0,0010) is present.	MONOCHROME2
			Number of bits allocated for each pixel sample. Each sample shall have the same number of bits allocated. See C.8.8.3.4.3 for specialization. Required Pixel Data (7FE0,0010) is	
Bits Allocated	(0028,0100)	1C	present.	16
			Number of bits stored for each pixel sample. Each sample shall have the same number of bits stored. See C.8.8.3.4.4 for specialization. Required if Pixel	
Bits Stored	(0028,0101)	1C	Data (7FE0,0010) is present.	16
			Most significant bit for each pixel sample. Each sample shall have the same high bit. See C.8.8.3.4.5 for specialization. Required if Pixel Data	
High Bit	(0028,0102)	1C	(7FE0,0010) is present.	15
Pixel			Data representation of the pixel samples. Each sample shall have the same pixel representation. See C.8.8.3.4.6 for specialization. Required Pixel Data (7FE0,0010) is	
Representation	(0028,0103)	1C	present.	0
Dose Units	(3004,0002)	1	Units used to describe dose. Enumerated Values: GY = Gray RELATIVE = dose relative to implicit reference value	GY

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			Type of dose. Defined Terms:	
			PHYSICAL = physical dose	
			EFFECTIVE = physical dose after	
			correction for biological effect	
			using user-defined modeling	
			technique	
			ERROR = difference between	
Dose Type	(3004,0004)	1	desired and planned dose	PHYSICAL
Instance			A number that identifies this	
Number	(0020,0013)	3	object instance.	<null></null>
			Type of dose summation.	
			Defined Terms:	
			PLAN = dose calculated for	
			entire RT Plan	
			MULTI_PLAN = dose calculated	
			for 2 or more RT Plans	
			FRACTION = dose calculated for	
			a single Fraction Group within	
			RT Plan	
			BEAM = dose calculated for one	
			PPACHY = dose calculated for	
			one or more Brachy Application	
			Setups within BT Plan	
Dose			CONTROL POINT = dose	
Summation			calculated for one or more	
Type	(3004 000A)	1	Control Points within a Beam	PLAN
.,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	(000 ),000 ,	-	Sequence describing RT Plan	
			associated with dose. Required	
			if Dose Summation Type	
			(3004,000A) is PLAN,	
			MULTI PLAN, FRACTION, BEAM,	
			BRACHY or CONTROL_POINT.	
			Only a single item shall be	
			permitted in this sequence,	
			unless Dose Summation Type	
			(3004,000A) is MULTI_PLAN, in	
			which case two or more items	
Referenced RT			shall be included in this	
Plan Sequence	(3000,0002)	10	sequence.	<ul><li>One item&gt;</li></ul>
Instance				
Reference				
Macro' Table				
10-11				<reference objects<="" plan="" rt="" td="" to=""></reference>
			An array which contains the	
			dose image plane offsets (in	
			mm) of the dose image frames	
			in a multi-frame dose. Required	
			if multi-frame pixel data are	
			present and Frame Increment	
			Pointer (0028,0009) points to	
Grid Frame			Grid Frame Offset Vector	
Offset Vector	(3004,000C)	1C	(3004,000C). See C.8.8.3.2.	<value data="" depending="" on=""></value>

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Dose Grid Scaling	(3004,000E)	1C	Scaling factor tha multiplied by the found in the Pixe (7FE0,0010) attril Image Pixel Mode doses in the dose specified by Dose (3004,0002). Required if Pixel I (7FE0,0010) is pre	t when dose grid data I Data bute of the ule, yields grid units as Units Data esent.	<value de<="" th=""><th>pending on</th><th>data&gt;</th></value>	pending on	data>
STRUCTURE SET	MODULE ATTRI	BUTES					
Name	Тад	Туре	Attribute Descri	ption	Value		
Structure Set Label	(3006,0002)	1	User-defined lab Set.	el for Structure	ROIs in <i< td=""><td>mage study</td><td>name&gt;</td></i<>	mage study	name>
Date	(3006,0008)	2	last modified.	i ucture set WdS	<null></null>		
Structure Set Time	(3006,0009)	2	Time at which St was last modified	ructure Set I.	<null></null>		
Referenced Frame of Reference Sequence	(3006,0010)	3	describing Frame in which the ROIs One or more iten included in this so C.8.8.5.1.	s of Reference are defined. ns may be equence. See	<one item<="" td=""><td>1&gt;</td><td></td></one>	1>	
>Frame of	(0020.0052)	1	Uniquely identifi	es Frame of	<frame of<="" td=""/> <td>f reference</td> <td>in image</td>	f reference	in image
>RT Referenced Study Sequence >>Include 'SOP	(3006,0012)	3	Introduces seque containing series referenced. One may be included sequence.	to be or more items in this	<one item<="" td=""><td>1&gt;</td><td></td></one>	1>	
Instance Reference Macro' Table 10-11					<study in:<br="">study&gt;</study>	stance UID	of image
>>RT Referenced Series Sequence	(3006,0014)	1	Introduces seque describing series within the referent which are used in Structure Set. On items may be inclused sequence.	ence of items of images nced study defining the e or more luded in this	<one item<="" td=""><td>1&gt;</td><td></td></one>	1>	
>>>Series			Unique identifier	r for the series	<series in<="" td=""><td>stance UID</td><td>of image</td></series>	stance UID	of image
Instance UID >>>Contour Image Sequence	(0020,000E) (3006.0016)	1	containing the im Introduces seque describing images series used in def Structure Set (typ images). One or r may be included sequence.	nages. ence of items s in a given fining the bically CT or MR more items in this	study>	n per image	in the study >

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>>>>Include 'Image SOP Instance Reference Macro' Table				
10-3				<sop image="" instance="" of="" uid=""></sop>
Structure Set	(3006 0020)	а	Introduces sequence of ROIs for current Structure Set. One or more items may be included in this sequence	<one item="" ner="" td="" volumes<=""></one>
Norsequence	(3000,0020)	5	Identification number of the	sone nem per volumes
SPOI Number	(2006.0022)	1	ROI. The value of ROI Number (3006,0022) shall be unique within the Structure Set in which it is created	concernment starting at 1
>KOI Number	(3006,0022)	1	Uniquely identifies Frame of	<sequence 1="" at="" number="" starting=""></sequence>
>Referenced Frame of	(2005.0024)		Reference in which ROI is defined, specified by Frame of Reference UID (0020,0052) in Referenced Frame of Reference	
Reference UID	(3006,0024)	1	Sequence (3006,0010).	<trame of="" oid="" reference=""></trame>
>ROI Name	(3006,0026)	2	User-defined name for ROI.	<user defined="" name="" volume=""></user>
>ROI Generation Algorithm	(3006.0036)	2	generate ROI. Defined Terms: AUTOMATIC = calculated ROI SEMIAUTOMATIC = ROI calculated with user assistance	ΜΑΝΙΙΑΙ
	ODULE	-		
ATTRIBUTES				
Attribute				
Name	Tag	Туре	Attribute Description	Value
ROI Contour Sequence	(3006,0039)	1	Introduces sequence of Contour Sequences defining ROIs. One or more items may be included in this sequence.	<one item="" per="" volume=""></one>
>Referenced			Uniquely identifies the referenced ROI described in the Structure Set ROI Sequence	
ROI Number	(3006,0084)	1	(3006,0020).	<reference number="" roi="" to=""></reference>
>ROI Display Color	(3006,002A)	3	RGB triplet color representation for ROI, specified using the range 0-255.	<user color="" defined="" volume=""></user>
>Contour	(3006 0040)	3	Introduces sequence of Contours defining ROI. One or more items may be included in this sequence	cone item ner Region in Volumes
JEquence	(3000,0040)	J		
>>Contour Image			containing the contour. One or more items may be included in	
Sequence	(3006,0016)	3	this sequence.	<one item=""></one>

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>>>Include				
'Image SOP				
Instance				
Reference				
Macro' Table				<reference containing="" image="" td="" the<="" to=""></reference>
10-3				contour>
20 0			Geometric type of contour. See	
			Enumerated Values	
			POINT = cingle point	
			OPEN DIANAR – open contour	
			containing conlanar points	
			contour containing non	
Cantana			CLOSED_PLANAR = Closed	
>>Contour	(2000,0042)	1	contour (polygon) containing	
Geometric Type	(3006,0042)	1		CLOSED_PLANAR
>>Number of			Number of points (triplets) in	
Contour Points	(3006,0046)	1	Contour Data (3006,0050).	<number in="" of="" region="" vertices=""></number>
			Sequence of (x,y,z) triplets	
			defining a contour in the patient	
			based coordinate system	
			described in C.7.6.2.1.1 (mm).	
			See C.8.8.6.1 and C.8.8.6.3.	
			Note: Contour Data may not	
			be properly encoded if Explicit-	
			VR transfer syntax is used and	
			the VL of this attribute exceeds	<vertex coordinates="" dicom<="" in="" td=""></vertex>
>>Contour Data	(3006,0050)	1	65534 bytes.	patient coordinates>
RT ROI OBSERVA	TIONS MODUL	E		
ATTRIBUTES	ſ	1		
Attribute Name	Тад	Туре	Attribute Description	Value
			Introduces sequence of	
			observations related to ROIs	
RT ROI			defined in the ROI Module. One	
Observations			or more items may be included	
Sequence	(3006,0080)	1	in this sequence.	<one item="" per="" volume=""></one>
			Identification number of the	·
			Observation. The value of	
			Observation Number	
			(3006,0082) shall be unique	
>Observation			within the RT ROI Observations	
Number	(3006,0082)	1	Seguence (3006,0080).	<index 0="" at="" starting=""></index>
	· · · · · · · · · · · /			
			Uniquely identifies the	
>Referenced			Uniquely identifies the referenced ROI described in the	
			Uniquely identifies the referenced ROI described in the Structure Set ROI Sequence	
ROI Number	(3006.0084)	1	Uniquely identifies the referenced ROI described in the Structure Set ROI Sequence (3006.0020).	<reference item="" roi="" to=""></reference>
ROI Number	(3006,0084)	1	Uniquely identifies the referenced ROI described in the Structure Set ROI Sequence (3006,0020).	<reference item="" roi="" to=""></reference>
ROI Number >ROI Observation	(3006,0084)	1	Uniquely identifies the referenced ROI described in the Structure Set ROI Sequence (3006,0020).	<reference item="" roi="" to=""></reference>
ROI Number >ROI Observation	(3006,0084)	1	Uniquely identifies the referenced ROI described in the Structure Set ROI Sequence (3006,0020). User-defined label for ROI Observation	<reference item="" roi="" to=""></reference>
ROI Number >ROI Observation Label	(3006,0084)	1	Uniquely identifies the referenced ROI described in the Structure Set ROI Sequence (3006,0020). User-defined label for ROI Observation.	<reference item="" roi="" to=""> <ul> <li><user defined="" name="" volume=""></user></li> </ul></reference>
ROI Number >ROI Observation Label	(3006,0084) (3006,0085)	1	Uniquely identifies the referenced ROI described in the Structure Set ROI Sequence (3006,0020). User-defined label for ROI Observation. Type of ROI. See C.8.8.8.1. Defined Terms:	<reference item="" roi="" to=""> <ul> <li><user defined="" name="" volume=""></user></li> </ul></reference>
ROI Number >ROI Observation Label >RT ROI Interpreted	(3006,0084) (3006,0085)	1	Uniquely identifies the referenced ROI described in the Structure Set ROI Sequence (3006,0020). User-defined label for ROI Observation. Type of ROI. See C.8.8.8.1. Defined Terms: EXTERNAL = external patient	<reference item="" roi="" to=""> <ul> <li><user defined="" name="" volume=""></user></li> </ul></reference>
ROI Number >ROI Observation Label >RT ROI Interpreted Type	(3006,0084) (3006,0085)	1 3	Uniquely identifies the referenced ROI described in the Structure Set ROI Sequence (3006,0020). User-defined label for ROI Observation. Type of ROI. See C.8.8.8.1. Defined Terms: EXTERNAL = external patient contour	<reference item="" roi="" to=""> <ul> <li><user defined="" name="" volume=""></user></li> </ul></reference>

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-				Pd117_CONFST	FAT Edition Page 11 42 (57)		42 (57)
			PTV = Planning Ta (as defined in ICR CTV = Clinical Tar defined in ICRU50 GTV = Gross Tum defined in ICRU50 TREATED_VOLUM Volume (as define IRRAD_VOLUME Volume (as define BOLUS = patient I used for external AVOIDANCE = reg dose is to be min ORGAN = patient MARKER = patient MARKER = patient MARKER = patient MARKER = patient MARKER = patient MARKER = treat isocenter to be us external beam th CONTRAST_AGEN into which a cont been injected CAVITY = patient cavity BRACHY_CHANNI brachytherapy ch BRACHY_CHNL_S brachytherapy ch SUPPORT = extern support device FIXATION = extern fixation or immos device DOSE_REGION = as a dose referen CONTROL = ROI to control of dose of and calculation	arget Volume (U50) get Volume (as 0) or Volume (as 0) AE = Treated ed in ICRU50) = Irradiated ed in ICRU50) bolus to be beam therapy gion in which imized organ at marker or izer registration at marker or izer registration			
Interpreter	(3006.00A6)	2	interpretation.	periorning the	<null></null>		
RT GENERAL PLA	AN MODULE	1					
NUV- Note							
Attribute							
Name	Tag	Туре	Attribute Descri	ption	Value		
			User-defined lab	el for			
RT Plan Label	(300A,0002)	1	treatment plan.		<user def<="" td=""><td>ined plan name&gt;</td><td>1</td></user>	ined plan name>	1
RT Plan Name	(300A,0003)	3	User-defined nar treatment plan.	me for	<user def<="" td=""><td>ined plan name&gt;</td><td></td></user>	ined plan name>	

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RT Plan			User-defined description of	
Description	(300A,0004)	3	treatment plan.	<user comment="" defined="" plan=""></user>
			Date treatment plan was last	<treatment date="" date,="" of<="" plan="" td=""></treatment>
RT Plan Date	(300A,0006)	2	modified.	approval>
			Time treatment plan was last	
RT Plan Time	(300A,0007)	2	modified.	<empty></empty>
			Describes whether RT Plan is	
			based on patient or treatment	
			Defined Terms:	
			PATIENT = RT Structure Set	
			exists	
RT Plan			TREATMENT_DEVICE = RT	
Geometry	(300A,000C)	1	Structure Set does not exist	PATIENT
RT PRESCRIPTION	N MODULE			
ATTRIBUTES	1			
Attribute				
Name	Тад	Туре	Attribute Description	Value
			Introduces sequence of Dose	
Doco Roforonco			References. One or more items	
Sequence	(3004 0010)	3		<one item="" per="" targets<="" td=""></one>
Sequence	(300A,0010)	5	Identification number of the	
			Dose Reference. The value of	
			Dose Reference Number	
>Dose			(300A,0012) shall be unique	
Reference			within the RT Plan in which it is	<number 1<="" id:="" matching="" target="" td="" the=""></number>
Number	(300A,0012)	1	created.	for target A, 2 for target B etc.>
			Structure type of Dose	
			Reference.	
			Defined Terms:	
			POINT = dose reference point	
			VOLUME = dose reference	
			volume specified as ROI	
			COORDINATES = point specified	
			by Dose Reference Point	
>Dose			Coordinates (300A,0018)	
Reference			SITE = dose reference clinical	
Structure Type	(300A,0014)	1	site	SITE
>Dose				
Reference			User-defined description of	<user defined="" td="" treatment<=""></user>
Description	(300A,0016)	3	Dose Reference.	prefix> <user defined="" name="" target=""></user>
			Type of Dose Reference.	
			Defined Terms:	
			(corresponding to GTV/ DTV/ or	
			CTV in ICRU50)	
>Dose			ORGAN AT RISK = Organ at	
Reference Type	(300A,0020)	1	Risk (as defined in ICRU50)	TARGET
>Target			Prescribed dose (in Gv) to Dose	
Prescription			Reference if Dose Reference	
Dose	(300A.0026)	3	Type (300A.0020) is TARGET.	<target [gv]="" dose="" prescription=""></target>

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RT PATIENT SETUP MODULE				
ATTRIBUTES				
Altribute	Tag	Tuno	Attribute Deceription	Value
Name	Tag	туре	Attribute Description	Value
			Introduces sequence of patient	
Detient Ceture			setup data for current plan. One	
Patient Setup	(2004.0180)	1	or more items may be included	
Sequence	(300A,0180)	1	In this sequence.	<one item="" per="" run="" snot=""></one>
			Identification number of the	
			Patient Setup. The value of	
			(2004 0182) shall be unique	
NPatient Setur			(500A,0162) shall be unique	
Number	(3004 0182)	1	created	<sequence 1="" at="" number="" starting=""></sequence>
Number	(300A,0102)	1	Patient position descriptor	Sequence number starting at 12
			relative to the equipment	
			Required if Patient Additional	
			Position (300A.0184) is not	
			present. See Section	
>Patient			C.8.8.12.1.2 for Defined Terms	
Position	(0018,5100)	1C	and further explanation.	HFS/HFP
			Introduces sequence of Fixation	· · ·
>Fixation			Devices used in Patient Setun	
Device			One or more items may be	
Sequence	(300A.0190)	3	included in this sequence.	<zero item="" one="" or=""></zero>
	(0000, 9000)	-	Type of Fixation Device used	
			during in Patient Setup.	
			Defined Terms:	
			BITEBLOCK	
			HEADFRAME	
			MASK	
			MOLD	
			CAST	
			HEADREST	
			BREAST_BOARD	
			BODY_FRAME	
			VACUUM_MOLD	
>>Fixation			WHOLE_BODY_POD	
Device Type	(300A,0192)	1	RECTAL_BALLOON	HEADFRAME/BITEBLOCK
>>Fixation			User-defined label identifier for	
Device Label	(300A,0194)	2	Fixation Device.	<null></null>
			The Fixation Device Pitch Angle,	
			i.e. orientation of PITCHED	
			FIXATION DEVICE coordinate	
			system with respect to IEC	
			PATIENT SUPPORT coordinate	
>>rixation			system (degrees). Pitching is the	
	(2004 0100)	2		<shot anglos<="" gamma="" run="" td=""></shot>
Aligie	(200H,0122)	5		Shot i uli gallilla aligiez

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			Setup Technique used in Patient	
			Setup.	
			Defined Terms:	
			ISOCENTRIC	
			FIXED SSD	
			TBI	
>Setup			BREAST BRIDGE	
Technique	(300A.01B0)	3	SKIN APPOSITION	ISOCENTRIC
RT FRACTION SCI	HEME MODULE	3		
ATTRIBUTES				
Attribute Name	Тад	Type	Attribute Description	Value
Attribute Marine	145	турс	Introduces sequence of	Vulue
			Fraction Groups in current	
			Fraction Scheme One or more	
Fraction Group			items may be included in this	
Sequence	(3004 0070)	1	sequence	<one item="" per="" target=""></one>
Sequence	(300A,0070)	1	Identification number of the	
			Fraction Crown The value of	
			Fraction Group. The value of	
			(2004,0071) shall be unique	
<b>-</b>			(300A,0071) shall be unique	
>Fraction	(2224 2274)		within the RT Plan in which it is	
Group Number	(300A,0071)	1	created.	<sequence 1="" at="" number="" starting=""></sequence>
			Introduces sequence of Dose	
			References for the current	
>Referenced			Fraction Group. One or more	<one dose<="" each="" for="" item="" td=""></one>
Dose Reference			items may be included in this	reference/target with the primary
Sequence	(300C,0050)	3	sequence.	target first in the sequence>
			Uniquely identifies Dose	
			Reference specified by Dose	
			Reference Number (300A.0012)	
>>Referenced			within Dose Reference	
Dose Reference			Sequence (300A.0010) in RT	<reference dose="" reference<="" td="" to=""></reference>
Number	(3000.0051)	1	Prescription Module	number>
Humber	(3000,0031)	-		
Townsh			Prescribed dose (In Gy) to Dose	
>>Target			Reference if Dose Reference	
Prescription			Type (300A,0020) of referenced	
Dose	(300A,0026)	3	Dose Reference is TARGET.	<target [gy]="" dose="" prescription=""></target>
>Number of			Total number of treatments	
Fractions			(Fractions) prescribed for	
Planned	(300A,0078)	2	current Fraction Group.	<number fractions="" of=""></number>
			Number of Beams in current	
			Fraction Group. If Number of	
			Beams is greater then zero,	
			Number of Brachy Application	
>Number of			Setups (300A,00A0) shall equal	
Beams	(300A,0080)	1	zero.	<number of="" shots=""></number>
			Introduces sequence of	
			treatment beams in current	
			Fraction Group. Required if	
			Number of Beams (300A,0080)	
			is greater than zero. One or	
>Referenced			more items may be included in	
Beam Sequence	(300C.0004)	1C	this sequence.	<one item="" per="" shot=""></one>

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	1	1		- D			
			Uniquely identifie	s Beam Number			
			(300A 00C0) within	n Beam			
>>Referenced			Sequence (300A 0	() () () () () () () () () () () () () (			
Beam Number	(3000 0006)	1	Beams Module	0007 11 111	<referen< td=""><td>re to heam</td><td>number&gt;</td></referen<>	re to heam	number>
Beammaniber	(3000,0000)	-	Coordinates (x y z	) of point at	Hereren		
			which Beam Dose	is specified in			
>>Beam Dose			the patient based	coordinate			
Specification			system described i	in C.7.6.2.1.1	<dose ref<="" td=""><td>erence poi</td><td>nt of the target</td></dose>	erence poi	nt of the target
Point	(300A,0082)	3	(mm). See Note 3.		in DICOM	patient co	odinates >
						•	
			Dose (in Gv) at Be	am Dose			
			Specification Point	(300A.0082)	<dose [g<="" td=""><td>vl delivered</td><td>d by the shot in</td></dose>	vl delivered	d by the shot in
>>Beam Dose	(300A,0084)	3	due to current Bea	am.	the Beam	ification Point>	
		_	Machine setting to	o be delivered			
			for current Beam,	specified in			
			Monitor Units (ML	J) or minutes			
			as defined by Prim	ary			
			Dosimeter Unit (30	00A,00B3) (in			
>>Beam			RT Beams Module	) for			
Meterset	(300A,0086)	3	referenced Beam.	See Note 4.	<shot td="" tim<=""><td>e&gt;</td><td></td></shot>	e>	
			Number of Brachy	/ Application			
			Setups in current F	raction			
>Number of			Group. If Number	of Brachy			
Brachy			Application Setups	s is greater			
Application			then zero, Number	r of Beams			
Setups	(300A,00A0)	1	(300A,0080) shall e	equal zero.	0		
RT BEAMS MOD	ULE						
ATTRIBUTES							
Name	Tag	Туре	Attribute Descrip	tion	Value		
				nce of			
			treatment heams f	for current RT			
			Plan One or more	items may be			
Beam Sequence	(300A.00B0)	1	included in this sec	auence.	<one iter<="" td=""><td>n per shot&gt;</td><td>&gt;</td></one>	n per shot>	>
			Identification num	abor of the			
			Ream The value of	f Beam			
			Number (300A 000	°0) shall he			
			unique within the	RT Plan in			
>Beam Number	(300A.00C0)	1	which it is created	. See Note 1.	<sequenc< td=""><td>e number</td><td>starting at 1&gt;</td></sequenc<>	e number	starting at 1>
		-					
			User-defined nam	e for Beam	<user def<="" td=""><td>ined treat</td><td>ment</td></user>	ined treat	ment
>Beam Name	(300A.00C2)	3	See Note 1.	E. C. Dearm	prefix> <sh< td=""><td>not name/I</td><td>D&gt;</td></sh<>	not name/I	D>
	(000, 1,000,000)		Motion characteris	stic of Beam.	preme er		
			See Note 5.				
			Enumerated Value	es:			
			STATIC = All Contro	ol Point			
			Sequence (300A.0	111)			
			attributes remain	, unchanged			
			between consecut	ive pairs of			
			control points with	n changing			
			Cumulative Meters	set Weight			
			(300A,0134).	-			
>Beam Type	(300A,00C4)	1	DYNAMIC = One of	r more	STATIC		

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			Control Point Sequence (300A,0111) attributes between one or more consecutive pairs of co points with changing Cumulative Meterset V (300A,0134).	e s change ontrol Weight				
>Radiation Type	(300A,00C6)	2	Particle type of Beam. Defined Terms: PHOTON ELECTRON NEUTRON PROTON	PHO	OTON			
>Treatment Machine Name	(300A,00B2)	2	User-defined name id treatment machine to for beam delivery. See Department in the ins	entifying be used Note 2. <u stitution</u 	lser def	ined radiat	ion un	it name>
>Institutional Department Name	(0008,1040)	3	where the equipment that is to be used for b delivery. Measurement unit of dosimeter.	is located beam <u machine</u 	lser def	ined clinic	name>	
>Primary Dosimeter Unit	(300A,00B3)	3	See C.8.8.14.1. Enumerated Values: MU = Monitor Unit MINUTE = minute	MI	NUTE			
>Beam Limiting Device Sequence	(3004.0086)	1	Introduces sequence limiting device (collims or leaf (element) sets. more items may be ind this sequence	of beam ator) jaw One or cluded in	ne iten			
>>RT Beam Limiting Device Type	(300A,00B8)	1	Type of beam limiting (collimator). Enumerated Values: X = symmetric jaw pain direction Y = symmetric jaw pain direction ASYMX = asymmetric j IEC X direction ASYMY = asymmetric j Y direction MLCX = multileaf (mul element) jaw pair in IE direction MLCY = multileaf (mul element) jaw pair in IE direction	device r in IEC X r in IEC Y aw pair in pair in IEC ti- iC X ti- iC Y X				
>>Number of		1	Number of leaf (elem jaw pairs (equal to 1 fo standard beam limitin	ent) or or g device				
>>Leaf Position Boundaries	(300A,00BE)	2C	Boundaries of beam lin device (collimator) lea mm) in IEC BEAM LIMI DEVICE coordinate axi	miting ves (in TING s NL	JLL			

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r	1	Γ	I				
			appropriate to R	Beam Limiting			
			Device Type (300	A,00B8), i.e. X-			
			axis for MLCY, Y-a	axis for MLCX.			
			Contains N+1 Val	ues, where N Is			
			the Number of Le	eat/Jaw Pairs			
			(300A,00BC), star	Ting from Lear			
			(Element) Pair 1.	Required if			
			Beam Limiting De	evice Sequence			
			(SOUA, OUBD) IS SE				
			(300A 00B8) is M	ICX or MICY			
			Uniquely identifi	es Patient			
			Setup to be used	for current			
			beam, specified b	ov Patient			
>Referenced			Setup Number (3	00A.0182)			
Patient Setup			within Patient Se	tup Sequence			
Number	(300C,006A)	3	of RT Patient Setu	up Module.	<referen< td=""><td>ce to Patien</td><td>t Setup item&gt;</td></referen<>	ce to Patien	t Setup item>
			Delivery Type of t	treatment.			
			Defined Terms:				
			TREATMENT = no	ormal patient			
			treatment	-			
			OPEN_PORTFILM	= portal image			
			acquisition with o	open field			
			TRMT_PORTFILM	I = portal image			
			acquisition with t	reatment port			
			CONTINUATION =	continuation =			
			of interrupted tre	eatment			
			SETUP = no treat	ment beam is			
			applied for this R	T Beam. To be			
			used for specifyir	ng the gantry,			
			couch, and other	machine			
. Tuestas sut			positions where a	K-Ray set-up			
>I reatment	(2004,0005)	2	Images or measu	rements are to			
Delivery Type	(300A,00CE)	3	be taken		IKEATIVIE	IN I	
>Number of	(2004,0000)	1	Number of wedg	ges associated	0		
wedges	(300A,00D0)	T	with current Bear		0		
>Number of	(2004.0050)		Number of comp	bensators	•		
Compensators	(300A,00E0)	1	associated with c	urrent Beam.	0		
>Number of	(2004.0055)	1	Number of boli a	issociated with	0		
BOIL	(300A,00ED)	1	current Beam.		0		
>Number of	(2004.0050)		Number of shield	ding blocks	0		
BIOCKS	(300A,00F0)	1	associated with B	seam.	0		
			Value of Cumula	tive Meterset			
			Weight (300A,01	34) for final			
				0111)			
			Required if Cumu	ulative			
>Final			Meterset Weight	is non-null in			
Cumulative			Control Points on	ecified within			
Meterset			Control Point Sec		<same as<="" td=""><td>meterset fr</td><td>or last (2nd)</td></same>	meterset fr	or last (2nd)
Weight	(300A 010F)	10	(300A.0111) See	C.8.8.14 1	control no	int.>	
Number of			Number of contr	rol points in	sontroi pe		
Control Points	(3004 0110)	1	Ream		2		
Control Tomus	(300, (0110)	-	Deann.		2		

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			Introduces sequence of	
			machine configurations	
			describing treatment beam	
			Two or more items may be	
. Control Doint			included in this service of Con	
>Control Point	(2224.2444)		included in this sequence. See	2.1
Sequence	(300A,0111)	1	C.8.8.14.5 and C.8.8.14.6.	<2 items>
			Index of current Control Point,	
>>Control Point			starting at 0 for first Control	_
Index	(300A,0112)	1	Point.	0/1
			Cumulative weight to current	
			control point. Cumulative	
			Meterset Weight for the first	
			item in Control Point Sequence	
			shall always be zero. Cumulative	
			Meterset Weight for the final	
			item in Control Point Sequence	
>>Cumulative			shall always be equal to Final	
Meterset			Cumulative Meterset Weight	
Weight	(3004 0134)	2		0/ <shot time=""></shot>
Weight	(300A,0134)	2	566 6.0.0.14.1.	
			Introduces a sequence of Dose	
>>Referenced			References for current Beam.	<one dose<="" each="" for="" item="" td=""></one>
Dose Reference			One or more items may be	reference/target with the primary
Sequence	(300C,0050)	3	included in this sequence.	target first in the sequence>
			Uniquely identifies Dose	
			Reference specified by Dose	
			Reference Number (300A,0012)	
>>>Referenced			in Dose Reference Sequence	
Dose Reference			(300A,0010) in RT Prescription	<reference dose="" reference<="" td="" to=""></reference>
Number	(300C,0051)	1	Module.	number>
				For control point 0: 0
				For control point 1 if the dose
				reference represents the target to
				which the shot belongs: 1
				For control point 1 if the dose
			Coefficient used to calculate	reference represents another target.
			cumulative dose contribution	heam dose to the dose reference
			from this Beam to the	point of the referenced target
>>>Cumulativo			referenced Dece Reference at	divided by the beam does to the
>>>Culliulative			the surrent Control Doint, Soo	divided by the beam dose to the
Dose Reference	(2004.0400)	2	coo 117	reference point of the target to
Coefficient	(300A,010C)	2	0.8.8.14.7.	which the shot belongs.0/1
>>Nominal			Nominal Beam Energy at	
Beam Energy	(300A,0114)	3	control point (MV/MeV).	<1.25>
			Dose Rate to be set on	
			treatment machine for segment	<shot [gy="" dose="" minutes]<="" rate="" td=""></shot>
>>Dose Rate			beginning at current control	corresponding to the calculated
Set	(300A,0115)	3	point (e.g. MU/min).	meterset>
			Introduces sequence of hear	
			limiting device (cellimeter) is	
			ar loof (clonent) northing	
			or rear (element) positions.	
>>Beam			Required for first item of	
Limiting Device			Control Point Sequence, or if	
Position	(2004 2000)		Beam Limiting Device changes	< I wo items. One in the X- and one
Sequence	(300A,011A)	1C	during Beam. One or more	in the Y-direction>

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			items may be inc sequence.	luded in this			
>>>RT Beam Limiting Device Type	(300A,00B8)	1	Type of beam lim (collimator). The attribute shall co Beam Limiting De (300A,00B8) defin of Beam Limiting Sequence (300A, Enumerated Valu X = symmetric jaw direction Y = symmetric jaw direction ASYMX = asymmetric IEC X direction ASYMY = asymmetric Y direction MLCX = multileaf element) jaw pain direction MLCY = multileaf element) jaw pain direction	iting device value of this rrespond to RT evice Type ned in an item Device 00B6). les: w pair in IEC X w pair in IEC Y etric jaw pair in etric pair in IEC f (multi- r in IEC X	X and Y		
>>>Leaf/Jaw Positions	(300A,011C)	1	Positions of be device (collin (element) or jaw in IEC BEAM LIM coordinate axis a RT Beam Limitin (300A,00B8), e MLCX, Y-axis for I 2N values, wh Number of Le (300A,00BC) in Device Sequence Values shall be li (element) subsc 102, 1N, 201, Note	eam limiting mator) leaf v pairs (in mm) AITING DEVICE appropriate to ng Device Type e.g. X-axis for MLCY. Contains here N is the af/Jaw Pairs Beam Limiting e (300A,00B6). isted in IEC leaf ript order 101, 202, 2N. See e 2.	Hard cod and Y-dire	led to -10 and action.	10 for the X-
>>Gantry Angle	(300A,011E)	1C	Gantry angle of r source, i.e. orient GANTRY coordinat respect to IEC FIX coordinate syster Required for first Control Point Sec Gantry Angle cha Beam.	tation of IEC ate system with ED REFERENCE m (degrees). item of quence, or if nges during	0		

>>Ganty         Direction of Ganty Rotation when viewing ganty from lisocenter, for segment following Control Point, Required for first litem of Control Point Sequence, or if Ganty Rotation Direction changes during Beam. See C.8.8.14.8.           >>Gantry Rotation         (3004,011F)           1C         Bank Mathematication Control Point Sequence, or if Ganty Rotation Direction changes during Beam. See C.8.8.14.8.           Direction         (3004,011F)           1C         Bank Mathematication Control Point Requires angle, le. orientation of IEC BEAM ULMITIND EVICE coordinate system with respect to IEC GANTRY coordinate system (degrees). Required for first litem of Control Point Sequence, or if Beam limiting Device Angle         NONE           >>Beam         Direction of Beam limiting Device Angle         O           (300A,0120)         1C         changes during Beam. O         0           >>Beam         Direction of Paem limiting Device Rotation Direction of Paem limiting Device Rotation Direction Point. Required for first litem of Control Point. Required for Rotation Direction changes during Beam. See C.8.3.14.8.         NONE           >>Patient         Direction of Patient Support Rotation Direction changes during Beam. See C.8.3.14.8.         NONE	ELEKTA INSTRUMENT AB			Document Pd117_CONFSTAT		Edition 11	Page 51 (57)		
>>Barn         Direction of Gantry Rotation when viewing gather viewing Control Point. Required for first Item of Control Point Sequence, or if Gantry Notation Direction changes during Beam. See C.8.8.14.8.           >>Gantry         CV = clockwise           Rotation         GOVC = counter-clockwise           Direction         (300A,011F)           12         NONE = no rotation           NONE         Beam Limiting Device angle, L. orientation of IEC DEAM LIMITING DEVICE coordinate system with respect to IEC GANTRY coordinate system (degrees). Required for first Item of Control Point Sequence, or if Beam Limiting Device Angle           Angle         ID           (300A,0120)         IC           Charges during Beam.         0           Direction of Beam Limiting Device Angle         0           Angle         ID irection or Beam Limiting Device Rotation when viewing beam limiting device (collimation) from radiation source, for segment following Control Point. Required for first Item of Control Point. Required for first Item of Control Point. Required for first Item of Control Point. Required for first Item of Control Point. SUPPORT (untable) coordinate system with respect to IEC FixED REFIENCE coordinate system with respect t						<u> </u>	- ()		
>>Ganty         isocenter, for segment following           >>Gantry         item of Control Point. Required for first item of Control Point Sequence, or if Gantry Rotation Direction Changes during Beam. See C.8.8.14.8.           >>Gantry         item of Control Point. Required for first item of Control Point. Sequence, or if Gantry Rotation Direction           Rotation         Item merated Values: C.8.8.14.8.           Direction         (3004,011F)           Item merated values: Direction         Item merated values: C.2 counter-clockwise           NONE         orientation of IEC BEAM LIMITING DEVICE coordinate system with respect to IEC GANTRY coordinate system (degrees). Required for first item of Control Point Sequence, or if Beam Limiting Device Angle Angle         0           >>Beam         item of Control Point Sequence, or if Beam Limiting Device Angle Control Point Sequence, or if Beam Limiting Device Angle Angle         0           >>Beam         item of Control Point Sequence, or if Beam Limiting Device Rotation Direction changes during Beam. See C.8.8.14.8.         Item of Control Point Sequence, or if Beam Limiting Device Rotation ICC or Counter-clockwise           >>Beam         Item of Control Point Required for first item of Control Point Sequence, or if Beam Limiting Device Rotation Direction changes during Beam. See C.8.8.14.8.           >>Beam         Item of Control Point Sequence, or if Beam Limiting Device Rotation Direction changes during Beam. See C.8.8.14.8.           Support Angle         Item of Control Point Sequence, or if Patient Support Rotation				Direction of Ga	ntry Rotation				
>>Basm         isocenter, for segment following Control Point. Required for first item of Control Point Sequence, or if Gatty Rotation Direction Changes during Beam. See C.8.8.14.8.           >>Gantry         CC = counter-clockwise           Direction         (300A,011F)         IC           NOME = no rotation         NOME           Direction         (300A,012F)         IC           Seam         Limiting Device angle, i.e. orientation of IEC BEAM           Limiting Device         Beam Limiting Device condinate system with respect to IEC           Angle         (300A,0120)         IC           Direction         (300A,0120)         IC           Direction of Beam Limiting Device Rolation whore wing beam limiting device         0           Angle         Direction of Beam Limiting Device Rotation whore wing beam limiting device Rotation Direction changes during Beam. Sec C.8.8.14.8.           Power Cockwise         CC = counter-clockwise           Direction         (300A,0121)         IC           Nome = no rotation         NOME           Precision whore wing table from above, for segment following Control Point. Required for first item of Control Point Sequence, or if Beam Limiting Device Rotation         NOME           Precision         (300A,0121)         IC         NOME = no rotation           NONE         Direction of Patient Support Rotation         NOME				when viewing	gantry from				
>>Gantry         Control Point Required for first           >>Gantry         arc Control Point Sequence, or if Gantry Notation Direction charges during Beam. See C.8.8.14.8.           Direction         (300A,011F)           1C         NONE = no rotation           NONE         NONE = no rotation           NONE         Beam Limiting Device angle, i.e. ori featury system with respect to IEC GANTRY coordinate system (degrees). Required for first item of Control Point Sequence, ori feature system mith respect to IEC GANTRY coordinate system (degrees). Required for first item of Control Point Sequence, ori feature system item of Control Point Sequence, ori feature system following Device Rotation when viewing beam limiting Device (collimator) from radiation source, for segment following Control Point. Required for first item of Control Point Sequence, or if Beam Limiting Device or if Beam Limiting Device Ori C = counter-clockwise           >>Beam Limiting Device Rotation         IC         NONE = no radiation Source, for segment following Control Point. Required for first Item of Control Point. Required for first Item of Control Point Sequence, or if Patient Support Rotation           >>Patient         IC         NONE = no radiation Direction changes during Beam. See C.8.8.14.8. Enumerated Values: Control Point Sequence, or if Patient Support Rotation Direction Changes during Rel.e. orientation of IC PATIENT SUPPORT (turntable) coordinate system				isocenter, for seg	ment following				
>>Gantry       item of Control Point Sequence, charges during Beam. See C.8.8.14.8; Enumerated Values: C.C = counter-clockwise Direction       NONE         >>Band Direction       (300A,011F)       1C       NONE = no rotation       NONE         >>Base Direction       (300A,011F)       1C       NONE = no rotation       NONE         >>Base Direction       (300A,011F)       1C       NONE = no rotation       NONE         >>Base Direction       (300A,0120)       1C       charges during beam.       0         >>Base Direction       (300A,0120)       1C       charges during beam.       0         >>Base Direction       (300A,0120)       1C       charges during beam.       0         >>Base Direction       0       Direction of Beam Limiting Device Rotation when viewing beam limiting device (collimator) from radiation source, for segment following Control Point. Required for first titem of Control Point Sequence, or if Beam Limiting Device Rotation Direction changes during Beam. Sec C.8.3.14.8.         >>Beam       Enumerated Values: CW = clockwise Direction       NONE         Direction of Patient Support Rotation       NONE         >>Beam       Direction of Patient Support Rotation       NONE         Direction       (300A,0121)       IC       NONE         Note       Direction changes during Beam. Support Rotation Of IEC PATIENT SUPPORT (untrable) coordinate sy				Control Point. Re	equired for first				
>>Gantry         or if Gantry Rotation Direction changes during Beam. See C. 8.8.14.8. Enumerated Values: CC = counter-clockwise           Direction         (300A,011F)         C         CC = counter-clockwise           Direction         (300A,011F)         EBam Limiting Device angle, i.e. orientation of IEC BEAM LIMITING DEVICE coordinate system with respect to IEC GANTRY coordinate system (degrees). Required for first item of Control Point Sequence, or if Beam Limiting Device Angle Angle         0           >>Beam         Isome System with respect to IEC GANTRY coordinate system (degrees). Required for first item of Control Point Sequence, or if Beam Limiting Device Angle Angle         0           >>Beam         Isome System vith respect to IEC GANTRY coordinate system (degrees). Required for first item of Control Point Sequence, or if Beam Limiting Device Angle Control Point Required for first item of Control Point Sequence, or or if Beam Limiting Device Rotation Direction or Langes during Beam. See C. 8.8.14.8.           >>Beam         Enumerated Values: CW = clockwise CW = clockwise CC = counter-clockwise Notation Direction of Patient Support Rotation Direction Point. Required, for first item of Control Point Requence, or if Patient Support Rotation Direction Point. Required for first item of Control Point Sequence, or if Patient Support Rotation Direction Patient Support Rotation Direction Point Sequence, or if Patient Support Rotation Direction Patient Support Rotation Direction Patient Support Rotati				item of Control P	oint Sequence,				
>>Gantry         (a) Changes during Beam. See C.8.8.14.8.         (b) CW = CCKNUSE           Rotation         CC = counter-clockwise         NONE           Direction         (300A,011F)         1C         NONE = no rotation         NONE           >>Beam         LIMITIND DEVICE Coordinate system with respect to IEC GANTRY coordinate system (degrees). Required for first item of Control Point Sequence, or if Beam Limiting Device Angle Angle         0           >>Beam         Item of Control Point Sequence, or if Beam Limiting Device Angle Angle         0           >>Beam         Item of Control Point Sequence, or if Beam Limiting Device Angle Angle         0           System         Veck Rotation when viewing beam limiting device         0           System         Control Point Required for first item of Control Point Sequence, or if Beam Limiting Device         0           System         Control Point Required for first item of Control Point Sequence, or if Beam Limiting Device         0           System         CC = counter-clockwise         0           Direction of Patient Support Rotation         CC = counter-clockwise         0           Direction of Patient Support Rotation         CC = counter-clockwise         0           Direction of Patient Support Rotation         NONE         0           Direction of Patient Support Rotation         NONE         0				or if Gantry Rota	ation Direction				
>>Gantry       C.8.3.14.8.         >>Gantry       CW = clockwise         Rotation       (300A,011F)       1C         Direction       (300A,011F)       1C         NONE       Peam Limiting Device angle, i.e.         orientation of ICE BEAM       UMITING DEVICE coordinate         system with respect to IEC       GANTRY coordinate system         (degrees), Required for first       O         Limiting Device       orif Beam Limiting Device Angle         Angle       (300A,0120)       1C         Angle       (300A,0120)       1C         Vice, for segment following       Device Rotation when viewing         beam limiting device       Control Point Sequence,         (collimator) from radiation       Source, for segment following         control Point, Required for first       item of Control Point Sequence,         viring Beam.       Control				changes durin	g Beam. See				
>>Gantry Rotation         Enumerated Values: CV = colcokwise         OW = clockwise           Direction         (300A,011F)         1C         NONE = no rotation         NONE           Direction         (300A,011F)         1C         Beam Limiting Device angle, i.e. orientation of IEC BEAM         NONE           Seam         LIMITING DEVICE coordinate system with respect to IEC GANTRY coordinate system (degrees). Required for first item of Control Point Sequence, or if Beam Limiting Device Angle         0           Angle         (300A,0120)         1C         changes during Beam.         0           Seam         Direction of Beam Limiting Device Rotation when viewing beam limiting device (collimator) from radiation source, for segment following Control Point Sequence, or if Beam Limiting Device Rotation Direction Changes during Beam. Sec 6.8.8.14.8.         Enumerated Values: CW = clockwise           >>Beam         Enumerated Values: CW = clockwise         CC = counter-clockwise           Direction (300A,0121)         1C         NONE           NONE         Direction of Patient Support Rotation         NONE           Support Angle         CC = counter-clockwise         CC = counter-clockwise           Support Rotation         CC = counter-clockwise         CC = counter-clockwise           Support Rotation         CC = counter-clockwise         CC = counter-clockwise           CV = clockwise         CC = counte				C.8.8.2	14.8.				
Seartry         CW = clockwise           Direction         (300A,011F)         IC         NONE = no rotation         NONE           Direction         (300A,011F)         IC         Beam Limiting Device angle, i.e.         NONE           >>Beam         intern-clockwise         GANTRY coordinate         system with respect to IEC         GANTRY coordinate           >>Beam         item of Control Point Sequence,         or if Beam Limiting Device Angle         0           Angle         (300A,0120)         IC         changes during Beam.         0           Angle         (300A,0120)         IC         changes during Beam.         0           Control Point Sequence,         or if Beam Limiting Device Angle         0         0           Angle         (300A,0120)         IC         changes during Beam.         0           Control Point Sequence,         or if Beam Limiting Device         0           Control Point Sequence,         or segment following         0           Control Point Sequence,         or segment following         0           Control Point Sequence,         or segment following         0           Direction of Patient Support         Rotation Direction changes         0           Control Point Sequence, orif Beam Limiting Device         Rotation Direc				Enumerate	d Values:				
Rotation         CC = counter-clockwise         NONE           Direction         (300A,011F)         IC         NONE no rotation         NONE           NONE         no contantion of IEC BEAM         LIMITINO DEVICE coordinate         system with respect to IEC           Sharper         item of Control Point Sequence,         LIMITINO DEVICE coordinate system         0           Limiting Device         or if Beam Limiting Device Angle         0           Angle         300A,0120)         1C         changes during Beam.         0           Device Rotation when viewing beam limiting Device         0           Share         Control Point Required for first litem of Control Point Sequence, or if Beam Limiting Device Rotation Precision of Beam Limiting Device Rotation Direction changes during Beam.         0           Share         Control Point Required for first litem of Control Point Sequence, or if Beam Limiting Device Rotation Direction changes during Beam.         0           Share         CC = counter-clockwise         CC = counter-clockwise           Note         IC         NONE         1C           NOME         Direction of Patient Support         NONE         1C           Rotation         Control Point Required for fist litem of Control Point.         Required f	>>Gantry			CW = clo	ockwise				
Direction         (300A,011F)         1C         NONE = no rotation         NONE           Beam Limiting Device angle, i.e. orientation of IEC BEAM LIMITING DEVICE coordinate system with respect to IEC GANTRY coordinate system (degrees). Required for first time of Control Point Sequence, or if Beam Limiting Device Angle         0           Angle         (300A,0120)         1C         changes during Beam.         0           Jinection         0         Direction of Beam Limiting Device Rotation when viewing beam limiting Device (collimator) from radiation source, for segment following Control Point. Required for first item of Control Point Sequence, or if Beam Limiting Device Rotation Direction changes during Beam. See C.8.3.14.8.         NONE           >>Beam         (300A,0121)         1C         NONE = no rotation         NONE           >>Beam         (300A,0121)         1C         NONE = no rotation         NONE           >>Beam         (300A,0121)         1C         NONE = no rotation         NONE           >>Patient         (300A,0121)         1C         NONE = no rotation         NONE           >>Patient         (300A,0123)         1C         NONE = no rotation         NONE           >>Patient         Support Angle         (300A,0123)         1C         NONE = no rotation         NONE           Support Angle         (300A,0123)         1C         NONE = no rotation	Rotation			CC = counter	r-clockwise				
>>Beam Limiting Device angle, i.e.         orientation of IEC BEAM           LIMITING DEVICE coordinate         system with respect to IEC           Agile         (300A,0120)         1C           Angle         (300A,0120)         1C           Angle         (300A,0120)         1C           Changes during Beam.         0           Direction of Beam Limiting Device Angle         0           Angle         (300A,0120)         1C           Changes during Beam.         0           Direction of Beam Limiting Device Angle         0           Control Point Sequence,         0           Imiting Device         (collimator) from radiation           source, for segment following         0           Control Point. Required for first         Item of Control Point Sequence,           or if Beam Limiting Device         ro if Beam Limiting Device           Rotation Direction Changes         CC = counter-clockwise           Direction         (300A,0121)         1C           NONE         Direction of Patient Support           Rotation         CC = counter-clockwise           Direction         (300A,0121)         1C           NONE         Direction of Patient Support Rotation           Support Angle         (300A,0123)	Direction	(300A,011F)	1C	NONE = nc	rotation	NONE			
>>Beam         istem item item item item item item item i				Beam Limiting D	evice angle, i.e.				
>>Beam       LIMITING DEVICE coordinate         uimiting Device       GANTRY coordinate system         Angle       (300A,0120)       1C         Charges during beam.       0         Direction of Beam Limiting       0         Collar Control Point Sequence, or if Beam Limiting Device Angle       0         Angle       (300A,0120)       1C       Charges during beam.       0         Collar Control Point Sequence, or if Beam Limiting Device Rotation when viewing beam limiting device (collimator) from radiation source, for segment following Control Point Sequence, or if Beam Limiting Device Rotation Direction changes during Beam. See C.8.3.14.8.       Enumerated Values:         Limiting Device       CC = counter-clockwise       NONE         Rotation       Direction of Patient Support       NONE         System with respect to 1C       Fatient Support Rotation       NONE         Support Rotation       Direction of Patient Support Rotation       NONE         Support Rotation       Cort or lop int. Required for first tiem of Control Point Support Rotation       NONE         Support Rotation       Intervence or of Patient Support Rotation       NONE         Support Rotation       Direction changes during Beam. See C.8.3.14.8.       Enumerated Values:         Control Point Support Rotation       Direction changes during Beam. See C.8.3.14.8.       Enumerated Values				orientation of IEC	C BEAM				
>>Beam         GANTRY coordinate system           Limiting Device         or if Beam Limiting Device Angle           Angle         (300A,0120)           1C         changes during Beam.           0         Direction of Beam Limiting Device Angle           Angle         (300A,0120)           1C         changes during Beam.           0         Direction of Beam Limiting           Device Rotation when viewing beam limiting device         (collimator) from radiation           source, for segment following         Control Point. Required for first litem of Control Point Sequence, or if Beam Limiting Device           Rotation         CW = clockwise           Cautoring Beam. See C.8.8.14.8.         Enumerated Values:           Limiting Device         CW = clockwise           Rotation         CC = counter-clockwise           Direction of Patient Support         Rotation when viewing table           From above, for segment         following Control Point.           Required for first time of         Control Point. Required for first ifem of           Control Point Sequence, or if         Patient Support Rotation           Direction (300A,0121)         1C         NONE = no rotation           NONE         CC = counter-clockwise         Control Point.           Support Action         CC =				LIMITING DEVICE	coordinate				
>>Beam         GANTRY Coordinate system           Limiting Device         Gequiced for first           Angle         (300A,0120)         1C         changes during Beam.         0           Angle         (300A,0120)         1C         changes during Beam.         0           Support         0         Direction of Beam Limiting Device Angle         0           Collimatory from radiation         0         Direction of Beam Limiting device         0           Collimatory from radiation         Source, for segment following         0           Control Point Required for first         Item of Control Point Sequence, or if Beam Limiting Device         Control Point Sequence, or if Beam Limiting Device           Rotation         Direction of Patient Support         NONE         Direction diverse           >>Beam         Enumerated Values:         Direction of Patient Support         NONE           Direction         (300A,0121)         C         NONE = no rotation         NONE           Sequent following Control Point.         Required for first tem of Control Point.         Required for first tem of Control Point.           Required for first tem of Control Point.         Required for first tem of Control Point.         Required for first tem of Control Point.           Support         CC = counter-clockwise         CC = counter-clockwise				system with resp	ect to IEC				
>>Beam         item of Control Point Sequence, or if Beam Limiting Device Angle           Angle         (300A,0120)         1C         changes during Beam.         0           Angle         (300A,0120)         1C         changes during Beam.         0           Direction of Beam Limiting Device Rotation when viewing beam limiting device (collimator) from radiation source, for segment following Control Point. Required for first item of Control Point Sequence, or if Beam Limiting Device Rotation Direction changes during Beam. See C.8.8.14.8.         Enumerated Values:           Limiting Device Rotation         CC = counter-clockwise         NONE           Direction of Patient Support Rotation         Direction of Patient Support Rotation Point. Required for first           Direction         (300A,0121)         1C         NONE           Patient Support Rotation         Direction of Patient Support Rotation when viewing table from above, for segment following Control Point. Required for first item of Control Point Sequence, or if Patient Support Rotation Direction         NONE           >>Patient         CW = clockwise CC = counter-clockwise         NONE           Support Rotation         CW = clockwise CC = counter-clockwise         NONE           Patient Support Rotation Direction         IC         NONE = no rotation NONE           Support Rotation Direction         G00A,0123)         1C         NONE = no rotation NONE           Patient Support				GANTRY coordina	ate system				
>>Beam         item of Control Point Sequence, or if Beam Limiting Device Angle         0           Angle         (300A,0120)         1C         changes during Beam.         0           Angle         (addition of Beam Limiting Device (collimator) from radiation source, for segment following Control Point. Required for first item of Control Point Sequence, or if Beam Limiting Device Rotation Direction Changes during Beam. See C.8.8.14.8.         Enumerated Values:           Limiting Device         CC = counter-clockwise         CC = counter-clockwise           Direction         (300A,0121)         1C         NONE = no rotation         NONE           Pretion         (300A,0121)         1C         NONE = no rotation         NONE           Patient Support         Rotation when viewing table from above, for segment following Control Point.         Required for first item of Control Point Sequence, or if Patient Support Rotation         NONE           >>Patient         (300A,0123)         1C         NONE = no rotation         NONE           Direction         (300A,0123)         1C         NONE = no rotation<	_			(degrees). Requir	ed for first				
Limiting Device       or if Beam Limiting Device Angle       0         Angle       (300A,0120)       1C       changes during Beam.       0         Angle       Direction of Beam Limiting       Device Rotation when viewing beam limiting device       0         Collinator) from radiation       source, for segment following       Control Point. Required for first litem of Control Point Sequence, or if Beam Limiting Device       Rotation Direction changes         Available       during Beam. See C.8.8.14.8.       Enumerated Values:       CW = clockwise         Sotation       CC = counter-clockwise       Direction of Patient Support       NONE         Direction       (300A,0121)       1C       NONE = no rotation       NONE         >>Beam       Direction of Patient Support       Rotation Direction Point.       Required for first item of         Cortol Point Sequence, or if       Patient Support Rotation       Direction Changes during Beam.       See C.8.8.14.8.         >>Patient       Support Rotation       See C.8.8.14.8.       CW = clockwise       CW = clockwise         Support       CW = clockwise       CC = counter-clockwise       CW = clockwise       CW = clockwise         Support       CW = clockwise       CC = counter-clockwise       CW = clockwise       CW = clockwise         Support       CW = clockwise	>>Beam			item of Control P	oint Sequence,				
Angle       (300A,0120)       1C       changes during Beam.       0         Direction of Beam Limiting Device Rotation when viewing beam limiting device (collimator) from radiation source, for segment following Control Point. Required for first item of Control Point Sequence, or if Beam Limiting Device Rotation Direction changes during Beam. See C.8.8.14.8. Enumerated Values: CW = clockwise CC = counter-clockwise       NONE         Direction       (300A,0121)       1C       NONE = no rotation       NONE         >>Beam       Direction of Patient Support Rotation when viewing table from above, for segment following Control Point. Required for first item of Control Point. Required for first item of Control Point. Required for first item of Control Point. Required Values: CW = clockwise CC = counter-clockwise         >>Patient       See C.8.8.14.8. Enumerated Values: CW = clockwise CC = counter-clockwise       NONE         >>Patient       See C.8.8.14.8. Enumerated Values: CW = clockwise CC = counter-clockwise       NONE         Support       G300A,0123)       1C       NONE = no rotation       NONE         Patient Support angle, i.e. orientation of IEC PATIENT SUPPORT (turntable) coordinate system with respect to IEC FixED REFERENCE coordinate system (degrees). Required for first item of Control Point Support Angle       Q300A,0122)       1C	Limiting Device	(222)		or if Beam Limitir	ng Device Angle				
>>Beam     Direction of Beam Limiting       Device Rotation when viewing beam limiting device (collimator) from radiation source, for segment following Control Point, Required for first item of Control Point Sequence, or if Beam Limiting Device Rotation Direction changes during Beam. See C.8.8.14.8.       >>Beam     Enumerated Values: CW = clockwise       Limiting Device Rotation     CC = counter-clockwise       Direction     (300A,0121)       1C     NONE = no rotation       NONE     NONE       Direction of Patient Support Rotation     NONE       None = no rotation     NONE       Direction     (300A,0121)       1C     NONE = no rotation       NONE     Direction of Patient Support Rotation       See C.8.8.14.8.     Required for first item of Control Point Sequence, or if Patient Support Rotation Direction changes during Beam. See C.8.8.14.8.       Support     CW = clockwise CC = counter-clockwise       Direction     (300A,0123)       1C     NONE = no rotation       NONE     NONE       Patient Support Rutation Direction changes during Beam. See C.8.8.14.8.       Support     CW = clockwise CC = counter-clockwise       Direction     NONE       Patient Support angle, i.e. orientation of IEC PATIENT SUPPORT (turntable) coordinate system with respect to IEC FIXED REFERENCE coordinate system with respect to IEC FIXED REFERENCE coordinate system with respect to IEC       >>Patient     <	Angle	(300A,0120)	1C	changes during B	eam.	0			
>>Beam     item initing device (collimator) from radiation source, for segment following Control Point. Required for first item of Control Point Sequence, or if Beam Limiting Device Rotation Direction changes during Beam. See C.8.8.14.8.       >>Beam     Enumerated Values: CCW = clockwise       Limiting Device Rotation     CCW = clockwise       Direction     (300A,0121)     1C       NONE     Direction of Patient Support Rotation when viewing table from above, for segment following Control Point. Required for first item of Control Point Sequence, or if Patient Support Rotation       >>Patient     Immerated Values: CW = clockwise       Support     Rotation when viewing table from above, for segment following Control Point. Required for first item of Control Point Sequence, or if Patient Support Rotation       Support     Immerated Values: CW = clockwise CC = counter-clockwise       Support     CW = clockwise CC = counter-clockwise       Support     Immerated Values: CW = clockwise       Immerated Values: CW = clockwise     Immerated Values: CW = clockwise       Support     Immerated Values: CW = clockwise       Support     Immerated Values: CW = clockwise       Support     Immerated Values: CW = clockwise       First Emo of Control Point     SUPPORT (turntable) coordinate system with respect to IEC FIKED REFEREN				Direction of Bean	n Limiting				
>>Beam limiting device (collimator) from radiation source, for segment following Control Point. Required for first item of Control Point Sequence, or if Beam Limiting Device Rotation Direction changes during Beam. See C.8.8.14.8.         >>Beam       Enumerated Values: Uimiting Device         CW = clockwise       CW = clockwise         Rotation       CC = counter-clockwise         Direction       (300A,0121)       1C         NONE       Direction of Patient Support         Rotation       Direction of Patient Support         Rotation       Control Point.         Bill       Following Control Point.         Required for first item of Control Point.       Required for first item of         Control Point Sequence, or if Patient Support Rotation       Direction changes during Beam.         See C.8.8.14.8.       Enumerated Values:         Support       CC = counter-clockwise         Direction       (300A,0123)       1C         NONE = no rotation       NONE         Direction       (300A,0123)       1C         NONE = no rotation       NONE         Support (300A,0123)       1C       NONE = no rotation         NONE       Patient Support angle, i.e. orientation of IEC PATIENT         SUPPORT (turntable) coordinate system (degrees). Required for first item of Control Point       Support Angle				Device Rotation v	when viewing				
>>Beam       icontrol Point. Required for first         item of Control Point. Sequence,         or if Beam Limiting Device         Rotation Direction changes         during Beam. See C.8.8.14.8.         Enumerated Values:         Limiting Device         Rotation         Direction         (300A,0121)         1C         NONE = no rotation         NONE         From above, for segment         following Control Point.         Required for first item of         Control Point Sequence, or if         Patient Support Rotation         Direction         Support         (300A,0123)         1C         NONE = no rotation         NONE         Patient Support Rotation         Direction changes during Beam.         See C.8.14.8.         Support         (300A,0123)         1C       NONE = no rotation         NONE				beam limiting de	vice				
>>Beam       Control Point. Required for first         Limiting Device       Rotation Direction changes         during Beam. See C.8.8.14.8.       Enumerated Values:         Limiting Device       CW = clockwise         Rotation       CC = counter-clockwise         Direction       (300A,0121)       1C         NONE       Direction of Patient Support         Rotation       Control Point. Required for first item of         CCW = clockwise       CC = counter-clockwise         Direction       (300A,0121)       1C         NONE       Direction of Patient Support         Rotation when viewing table       from above, for segment         following Control Point.       Required for first item of         Control Point Sequence, or if       Patient Support Rotation         Direction changes during Beam.       See C.8.8.14.8.         Support       CC = counter-clockwise         Direction       (300A,0123)       1C         NONE = no rotation       NONE         Direction       NONE = no rotation       NONE         Support       CC = counter-clockwise       Content-clockwise         Direction       NONE = no rotation       NONE         Direction       NONE = no rotation       NONE				(collimator) from	radiation				
>>Beam       Control Point. Required for first         item of Control Point Sequence,       or if Beam Limiting Device         Rotation Direction changes       during Beam. See C.8.8.14.8.         Limiting Device       Enumerated Values:         Rotation       CC = counter-clockwise         Direction       (300A,0121)       1C         NONE = no rotation       NONE         Direction       GaoA,0121)       1C         NONE = no rotation       NONE         Patient Support       Rotation when viewing table         from above, for segment       following Control Point.         Required for first item of       Control Point Sequence, or if         Patient Support Rotation       Direction changes during Beam.         See C.8.8.14.8.       Enumerated Values:         Support       CW = clockwise         CC = counter-clockwise       CW = clockwise         Direction       (300A,0123)       1C         NONE = no rotation       NONE         Patient Support angle, i.e.       orientation of IE CPATIENT         SuPPORT (turntable) coordinate       system with respect to IEC         FIXED REFERENCE coordinate       system (degrees). Required for         system (degrees). Required for       first item of Control Point				source, for segme	ent following				
>>Beam       item of Control Point Sequence, or if Beam Limiting Device Rotation Direction changes during Beam. See C.8.8.14.8.         Limiting Device       Enumerated Values: CW = clockwise         Direction       (300A,0121)         1C       NONE = no rotation         NONE       Direction of Patient Support Rotation or patient Support         Direction       (300A,0121)         1C       NONE = no rotation         NONE       Direction of Patient Support Rotation when viewing table from above, for segment following Control Point.         Required for first item of Control Point Sequence, or if Patient Support Rotation Direction changes during Beam. See C.8.8.14.8.         >>Patient       Enumerated Values: CW = clockwise         Support       CC = counter-clockwise         Direction       (300A,0123)         1C       NONE = no rotation         NONE       Patient Support angle, i.e. orientation of IEC PATIENT SUPPORT (turntable) coordinate system with respect to IEC FIXED REFERENCE coordinate system with respect to IEC FIXED REFERENCE coordinate system (degrees). Required for first item of Control Point         >>Patient       (300A,0122)       1C				Control Point. Re	quired for first				
>>Beam       if Beam Limiting Device         Rotation Direction changes       during Beam. See C.8.8.14.8.         Limiting Device       CW = clockwise         Rotation       CC = counter-clockwise         Direction       (300A,0121)       1C         NONE       Direction of Patient Support         Rotation       Control Point.         Required for first item of       Control Point.         Required for first item of       Control Point Sequence, or if         Patient Support Rotation       Direction changes during Beam.         See C.8.3.14.8.       Enumerated Values:         Support       CW = clockwise         Control Point Sequence, or if       Patient Support Rotation         Direction (300A,0123)       1C       NONE = no rotation         NONE       CC = counter-clockwise       NONE         Direction       (300A,0123)       1C       NONE = no rotation         NONE       Patient Support angle, i.e.       orientation of IEC PATIENT         SUPPORT (turntable) coordinate       system with respect to IEC         FIXED REFERENCE coordinate       system (degrees). Required for         Support Angle       (300A,0122)       1C       Sequence, or if Patient Support				item of Control P	oint Sequence,				
>>Beam       Kotation Direction Changes         Limiting Device       Enumerated Values:         Rotation       CW = clockwise         Direction       (300A,0121)         1C       NONE = no rotation         NONE       Direction of Patient Support         Rotation when viewing table       from above, for segment         following Control Point.       Required for first item of         Control Point Sequence, or if       Patient Support Rotation         Direction       See C.8.8.14.8.         >>Patient       Enumerated Values:         Support       CC = counter-clockwise         Control Point Sequence, or if       Patient Support Rotation         Support       CC = counter-clockwise         CC = counter-clockwise       CC = counter-clockwise         Direction       (300A,0123)       1C         NONE       Patient Support angle, i.e.       orientation of IEC PATIENT         SUPPORT (turntable) coordinate       system with respect to IEC         FIXED REFERENCE coordinate       system (dgrees). Required for         Support Angle       G00A,0122)       1C         Sequence, or if Patient Support       0				or if Beam Limitin	ng Device				
>>Beam       Image Control Beam See C.S. 14.6.         Limiting Device       Enumerated Values:         Rotation       CW = clockwise         Direction       (300A,0121)         1C       NONE = no rotation         NONE       Direction of Patient Support         Rotation       Direction of Patient Support         Rotation when viewing table       from above, for segment         following Control Point.       Required for first item of         Control Point Sequence, or if       Patient Support Rotation         Direction of action when viewing Beam.       See C.8.8.14.8.         >>Patient       Enumerated Values:         Support       CW = clockwise         CV = clockwise       CW = clockwise         Direction       (300A,0123)         1C       NONE = no rotation         NONE       Patient Support angle, i.e.         orientation of IEC PATIENT       SUPPORT (turntable) coordinate         System with respect to IEC       FIXED REFERENCE coordinate         system with respect to IEC       FIXED REFERENCE coordinate         system with respect to IEC       FIXED REFERENCE coordinate         system (degrees). Required for       first item of Control Point         Support Angle       (300A,0122)       1C     <				Rotation Directio	n changes				
>>Patient       CW = clockwise         Limiting Device       (300A,0121)       1C       NONE = no rotation       NONE         Direction       (300A,0121)       1C       NONE = no rotation       NONE         Direction       (300A,0121)       1C       NONE = no rotation       NONE         Direction       (300A,0121)       1C       NONE = no rotation       NONE         Patient Support       Rotation when viewing table       from above, for segment       following Control Point.         Required for first item of       Control Point Sequence, or if       Patient Support Rotation       Direction changes during Beam.         >>Patient       See C.8.8.14.8.       Enumerated Values:       CW = clockwise         Support       CC = counter-clockwise       CC = counter-clockwise         Direction       (300A,0123)       1C       NONE = no rotation       NONE         Direction       (300A,0123)       1C       NONE = no rotation       NONE         Support       Gioun,0123)       1C       NONE = no rotation       NONE         >>Patient       SupPORT (turntable) coordinate       system with respect to IEC       FIXED REFERENCE coordinate         system (degrees). Required for       Fixet mot fortrol Point       Support Angle       (300A,0122)	>> Doom			Courses and Value	2 C.8.8.14.8.				
Rotation       (300A,0121)       1C       NONE = no rotation       NONE         Direction       (300A,0121)       1C       NONE = no rotation       NONE         Direction       (300A,0121)       1C       Direction of Patient Support Rotation when viewing table from above, for segment following Control Point. Required for first item of Control Point Sequence, or if Patient Support Rotation Direction changes during Beam. See C.8.8.14.8.         >>Patient       CW = clockwise CW = clockwise Rotation       CW = clockwise CC = counter-clockwise CC = counter-clockwise         Direction       (300A,0123)       1C       NONE = no rotation         NONE       Patient Support angle, i.e. orientation of IEC PATIENT SUPPORT (turntable) coordinate system with respect to IEC FIXED REFERENCE coordinate system (degrees). Required for first item of Control Point         >>Patient       (300A,0122)       1C       Sequence, or if Patient Support	>>BedIII			CW = clockwice	les:				
Notation       (300A,0121)       1C       NONE = no rotation       NONE         Direction       (300A,0121)       1C       NONE = no rotation       NONE         Price to of Patient Support       Rotation when viewing table       from above, for segment       following Control Point.         Required for first item of       Control Point Sequence, or if       Patient Support Rotation       Direction changes during Beam.         >>Patient       See C.8.8.14.8.       Enumerated Values:       Support         Support       CC = counter-clockwise       CC = counter-clockwise         Direction       (300A,0123)       1C       NONE = no rotation       NONE         Patient Support agle, i.e.       orientation of IEC PATIENT       SUPPORT (turntable) coordinate       system with respect to IEC         FIXED REFERENCE coordinate       system (degrees). Required for       system (degrees). Required for       system (degrees). Required for         >>Patient       (300A,0122)       1C       Sequence, or if Patient Support       0	Potation			CW = CIOCKWISE	duvico				
Diffection       (300A,0121)       1C       NONE = norotation       NONE         Direction of Patient Support       Rotation when viewing table       from above, for segment       following Control Point.         Required for first item of       Control Point Sequence, or if       Patient Support Rotation       Direction changes during Beam.         >>Patient       See C.8.8.14.8.       Enumerated Values:       See C.8.8.14.8.         Support       CC = counter-clockwise       CC = counter-clockwise         Direction       (300A,0123)       1C       NONE = no rotation         NONE       Patient Support angle, i.e.       orientation of IEC PATIENT         SUPPORT (turntable) coordinate       system with respect to IEC       FIXED REFERENCE coordinate         >>Patient       (300A,0122)       1C       Sequence, or if Patient Support       0	Direction	(2004 0121)	10	CC = Counter-Clock	.KWISE	NONE			
>>Patient       Support         Rotation when viewing table       from above, for segment         following Control Point.       Required for first item of         Control Point Sequence, or if       Patient Support Rotation         Direction changes during Beam.       See C.8.8.14.8.         Support       Enumerated Values:         Support       CC = counter-clockwise         Direction       (300A,0123)         1C       NONE = no rotation         NONE       Patient Support angle, i.e.         orientation of IEC PATIENT       SUPPORT (turntable) coordinate         system with respect to IEC       FIXED REFERENCE coordinate         system (degrees). Required for       Fixt item of Control Point         >>Patient       (300A,0122)       1C         Support Angle       (300A,0122)       1C	Direction	(500A,0121)		NONE - NO TOLALI	UII	NONE			
>>Patient       image: addition when viewing table         from above, for segment       following Control Point.         Required for first item of       Control Point Sequence, or if         Patient Support Rotation       Direction changes during Beam.         See C.8.8.14.8.       Enumerated Values:         Support       CW = clockwise         Rotation       CC = counter-clockwise         Direction       (300A,0123)         1C       NONE = no rotation         NONE       Patient Support angle, i.e.         orientation of IEC PATIENT       SUPPORT (turntable) coordinate         System with respect to IEC       FIXED REFERENCE coordinate         system (degrees). Required for       first item of Control Point         Support Angle       (300A,0122)       1C				Potation when vi	owing table				
>>Patient       following Control Point.         Required for first item of       Control Point Sequence, or if         Patient Support Rotation       Direction changes during Beam.         See C.8.8.14.8.       Enumerated Values:         Support       CW = clockwise         Rotation       CC = counter-clockwise         Direction       (300A,0123)         1C       NONE = no rotation         NONE       Patient Support angle, i.e.         orientation of IEC PATIENT         SUPPORT (turntable) coordinate         system with respect to IEC         FIXED REFERENCE coordinate         system (degrees). Required for         first item of Control Point         Support Angle       (300A,0122)         1C       Sequence, or if Patient Support         orientation of IEC PATIENT         Support Angle       Support (angle, i.e.				from above for s	egment				
>>Patient       Required for first item of         Control Point Sequence, or if       Patient Support Rotation         Direction changes during Beam.       See C.8.8.14.8.         Support       Enumerated Values:         Support       CC = counter-clockwise         Direction       (300A,0123)         1C       NONE = no rotation         NONE       Patient Support angle, i.e.         orientation of IEC PATIENT       SUPPORT (turntable) coordinate         System with respect to IEC       FIXED REFERENCE coordinate         system (degrees). Required for       first item of Control Point         Support Angle       (300A,0122)       1C				following Control	Point				
>>Patient       Control Point Sequence, or if         Patient Support Rotation       Direction changes during Beam.         See C.8.8.14.8.       Enumerated Values:         Support       CC = counter-clockwise         Rotation       CC = counter-clockwise         Direction       (300A,0123)         1C       NONE = no rotation         NONE       Patient Support angle, i.e.         orientation of IEC PATIENT         SUPPORT (turntable) coordinate         system with respect to IEC         FIXED REFERENCE coordinate         system (degrees). Required for         first item of Control Point         Support Angle       (300A,0122)         1C       Sector or if Patient Support         of if the system (degrees). Required for         first item of Control Point				Required for first	item of				
>>Patient Support Rotation       Patient Support Rotation         Direction changes during Beam.       See C.8.8.14.8.         Support       Enumerated Values:         Support       CW = clockwise         Rotation       CC = counter-clockwise         Direction       (300A,0123)         1C       NONE = no rotation         NONE       Patient Support angle, i.e.         orientation of IEC PATIENT         SUPPORT (turntable) coordinate         system with respect to IEC         FIXED REFERENCE coordinate         system (degrees). Required for         first item of Control Point         Support Angle       (300A,0122)         1C       Sequence, or if Patient Support				Control Point Sec	wence or if				
>>Patient       Direction changes during Beam.         >>Patient       Enumerated Values:         Support       CW = clockwise         Rotation       CC = counter-clockwise         Direction       (300A,0123)         1C       NONE = no rotation         NONE       Patient Support angle, i.e.         orientation of IEC PATIENT         SUPPORT (turntable) coordinate         system with respect to IEC         FIXED REFERENCE coordinate         system (degrees). Required for         Support Angle       (300A,0122)         1C       Sequence, or if Patient Support				Patient Support F	Rotation				
>>Patient       See C.8.8.14.8.         Support       Enumerated Values:         Support       CW = clockwise         Rotation       CC = counter-clockwise         Direction       (300A,0123)         1C       NONE = no rotation         NONE       Patient Support angle, i.e.         orientation of IEC PATIENT         SUPPORT (turntable) coordinate         system with respect to IEC         FIXED REFERENCE coordinate         system (degrees). Required for         first item of Control Point         Support Angle       (300A,0122)         1C       Sequence, or if Patient Support				Direction change	s during Beam				
>>Patient       Enumerated Values:         Support       CW = clockwise         Rotation       CC = counter-clockwise         Direction       (300A,0123)         1C       NONE = no rotation         NONE       Patient Support angle, i.e.         orientation of IEC PATIENT         SUPPORT (turntable) coordinate         system with respect to IEC         FIXED REFERENCE coordinate         system (degrees). Required for         system (degrees). Required for         first item of Control Point         Support Angle       (300A,0122)         1C       Sequence, or if Patient Support				See C 8 8 14 8	o danng beann				
Support       CW = clockwise         Rotation       CC = counter-clockwise         Direction       (300A,0123)         1C       NONE = no rotation         Patient Support angle, i.e.       orientation of IEC PATIENT         SUPPORT (turntable) coordinate         system with respect to IEC         FIXED REFERENCE coordinate         system (degrees). Required for         first item of Control Point         Support Angle       (300A,0122)         1C       Sequence, or if Patient Support	>>Patient			Enumerated Value	les:				
Rotation       CC = counter-clockwise         Direction       (300A,0123)         1C       NONE = no rotation         Patient Support angle, i.e.       orientation of IEC PATIENT         SUPPORT (turntable) coordinate         system with respect to IEC         FIXED REFERENCE coordinate         system (degrees). Required for         first item of Control Point         Support Angle         (300A,0122)         1C	Support			CW = clockwise					
Direction       (300A,0123)       1C       NONE = no rotation       NONE         Patient Support angle, i.e.       Orientation of IEC PATIENT       Orientation of IEC PATIENT         SUPPORT (turntable) coordinate       SUPPORT (turntable) coordinate       System with respect to IEC         FIXED REFERENCE coordinate       System (degrees). Required for       System (degrees). Required for         >>Patient       first item of Control Point       0	Rotation			CC = counter-close	ckwise				
Patient Support angle, i.e.       Patient Support angle, i.e.         orientation of IEC PATIENT       SUPPORT (turntable) coordinate         SUPPORT (turntable) coordinate       system with respect to IEC         FIXED REFERENCE coordinate       system (degrees). Required for         Support Angle       (300A,0122)       1C	Direction	(300A.0123)	1C	NONE = no rotati	on	NONE			
Patient (300A,0122)          Orientation of IEC PATIENT         SUPPORT (turntable) coordinate         system with respect to IEC         FIXED REFERENCE coordinate         system (degrees). Required for         first item of Control Point         Support Angle         (300A,0122)         1C		(	-	Patient Suppo	ort angle. i.e.				
SUPPORT (turntable) coordinate         system with respect to IEC         FIXED REFERENCE coordinate         system (degrees). Required for         first item of Control Point         Support Angle       (300A,0122)         1C       Sequence, or if Patient Support         0				orientation of	IEC PATIENT				
system with respect to IEC       FIXED REFERENCE coordinate       system (degrees). Required for       first item of Control Point       Support Angle     (300A,0122)       1C     Sequence, or if Patient Support				SUPPORT (turnta	ble) coordinate				
>>Patient     FIXED REFERENCE coordinate       >>Patient     first item of Control Point       Support Angle     (300A,0122)       1C     Sequence, or if Patient Support				system with re	espect to IFC				
>>Patient     system (degrees). Required for first item of Control Point       Support Angle     (300A,0122)       1C     Sequence, or if Patient Support				FIXED REFEREN	CE coordinate				
>>Patient first item of Control Point Support Angle (300A,0122) 1C Sequence, or if Patient Support 0				system (degrees	). Required for				
Support Angle (300A,0122) 1C Sequence, or if Patient Support 0	>>Patient			first item of C	ontrol Point				
	Support Angle	(300A,0122)	1C	Sequence, or if P	atient Support	0			

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			Angle changes during Beam.	
			Table Top (non-isocentric)	
			angle i.e. orientation of IEC	
			coordinate system with respect	
			to IEC PATIENT SUPPORT	
			coordinate system (degrees)	
			Bequired for first item of	
			Control Point Sequence or if	
>>Table Top			Table Ton Eccentric Angle	
Eccentric Angle	(2004 0125)	10	changes during Ream	0
Lecentric Angle	(300A,0123)	10	Direction of Table Ton Eccentric	0
			Botation when viewing table	
			from above, for segment	
			following Control Doint	
			Poquired for first item of	
			Control Doint Sequence, or if	
			Table Top Eccentric Potation	
			Direction changes during Pear	
			Soo C 9 9 14 9	
>>Table Ten			See C.o.o.14.o.	
Eccentric			CW = clockwise	
Botation			CW = Clockwise	
Direction	(2004 0126)	10	NONE = no rotation	NONE
Direction	(300A,0120)	IC	Table Tep Bitch Angle, i.e. the	NONE
			Table Top Pitch Angle, I.e. the	
			rotation of the fect table TOP	
			coordinate system about the X-	
			axis of the IEC TABLE TOP	
			coordinate system (degrees). If	
			required by treatment delivery	
			device, shall be present for first	
			Item of Control Point Sequence.	
			If required by treatment	
			delivery device and if Table Top	
			Pitch Angle changes during	
			Beam, shall be present in all	
			subsequent items of Control	
>>Table Top			Point Sequence. See	
Pitch Angle	(300A,0140)	1C	C.8.8.25.6.2.	0
			Direction of Table Top Pitch	
			Rotation when viewing the	
			table along the positive X-axis of	
			the IEC TABLE TOP coordinate	
			system, for segment following	
			Control Point. If required by	
			treatment delivery device, shall	
			be present for first item of	
			Control Point Sequence. If	
			required by treatment delivery	
			device and if Table Top Pitch	
			Rotation Direction changes	
			during Beam, shall be present in	
>>Table Top			all subsequent items of Control	
Pitch Rotation			Point Sequence. See C.8.8.14.8	
Direction	(300A,0142)	1c	and C.8.8.25.6.2.	NONE

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						33 (37)
			Enumerated Values:			
			CW = clockwise			
			CC = counter-clockwis	se		
			NONE = no rotation			
			Table Top Roll Angle, i.e.	. the		
			rotation of the IEC TABLE	ТОР		
			coordinate system about	t the		
			IEC Y-axis of the IEC TABL	E TOP		
			coordinate system (degre	es). If		
			required by treatment de	livery		
			device, shall be present for	or first		
			item of Control Point Sequ	uence.		
			If required by treatme	nt		
			delivery device and if Tabl	le Тор		
			Roll Angle changes dur	ing		
			Beam, shall be present i	n all		
			subsequent items of Cor	ntrol		
>>Table Top			Point Sequence. See	2		
Roll Angle	(300A,0144)	1C	C.8.8.25.6.2.	0		
			Direction of Table Top I	Roll		
			Rotation when viewing	the		
			table along the positive Y-	axis of		
			the IEC TABLE TOP coord	inate		
			system, for segment follo	owing		
			Control Point. If require	d by		
			treatment delivery device	, shall		
			be present for first item	n of		
			Control Point Sequence	e. If		
			required by treatment de	livery		
			device and if Table Top	Roll		
			Rotation Direction chan	iges		
			during Beam, shall be pres	sent in		
			all subsequent items of Co	ontrol		
			Point Sequence. See C.8.8	3.14.8		
			and C.8.8.25.6.2.			
			Enumerated Values:			
>>Table Top			CW = clockwise			
Roll Rotation			CC = counter-clockwis	se		
Direction	(300A,0146)	1C	NONE = no rotation	NONE		
			Table Top Vertical position	n in		
			IEC TABLE TOP coordinate			
			system (mm). Required for	r first		
			item of Control Point Sequ	ience,		
>>Table Top			or if Table Top Vertical Pos	sition		
Vertical			changes during Beam. See			
Position	(300A,0128)	2C	C.8.8.14.6.	0		
		ł	Table Top Longitudinal po	sition		
			in IEC TABLE TOP coordina	ite		
			system (mm). Required for	r first		
			item of Control Point Sequ	ience.		
>>Table Top			or if Table Top Longitudina	al		
Longitudinal			Position changes during Be	eam.		
Position	(300A 0129)	20	See C 8 8 14 6	0		

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>>Table Top Lateral Position	(300A,012A)	2C	Table Top Latera IEC TABLE TOP cc system (mm). Re- item of Control P or if Table Top La changes during B C.8.8.14.6.	l position in pordinate quired for first oint Sequence, teral Position eam. See	0		
>>lsocenter			Isocenter coordi the patient based system described (mm). Required f Segment Control Sequence, or if Se Isocenter Position	nates (x,y,z) in I coordinate I in C.7.6.2.1.1 or first item of Point egment n changes	<shot pos<="" td=""><td>sition in DICC</td><td>0M patient</td></shot>	sition in DICC	0M patient
Position	(300A,012C)	2C	during Beam.		coodinate	s >	
ATTRIBUTES	LL						
Attribute							
Name	Tag	Туре	Attribute Descri	ption	Value		
Patient's Name	(0010 0010)	2	Patient's full nan	he	<conied f<="" td=""><td>rom the ima</td><td>765&gt;</td></conied>	rom the ima	765>
T ducine s Name		<u> </u>	Primary hosnital	identification			<u> </u>
Patient ID	(0010,0020)	2	number or code f	for the patient.	<copied f<="" td=""><td>rom the imag</td><td>ges&gt;</td></copied>	rom the imag	ges>
Patient's Birth							
Date	(0010,0030)	2	Birth date of the	patient.	<copied f<="" td=""><td>rom the imag</td><td>ges&gt;</td></copied>	rom the imag	ges>
			Sex of the named Enumerated Valu M = mal F = fema	i patient. ies: e ile			
Patient's Sex	(0010,0040)	2	O = othe	er	<copied fr<="" td=""><td>om the imag</td><td>jes&gt;</td></copied>	om the imag	jes>
GENERAL STUDY							
Name	Тад	Туре	Attribute Descri	ption	Value		
Study Instance UID	(0020,000D)	1	Unique identifier	r for the Study.	<copied f<="" td=""><td>rom the imag</td><td>ges&gt;</td></copied>	rom the imag	ges>
Study Date	(0008,0020)	2	Date the Study s	tarted.	<copied f<="" td=""><td>rom the ima</td><td>ges&gt;</td></copied>	rom the ima	ges>
Study Time	(0008,0030)	2	Time the Study s	tarted.	<copied f<="" td=""><td>rom the imag</td><td>ges&gt;</td></copied>	rom the imag	ges>
Referring			Name of the set	iont's refersion			
Name	(0008.0090)	2	physician	ient steleffing	<copied f<="" td=""><td>rom the ima</td><td>ges&gt;</td></copied>	rom the ima	ges>
Study ID	(0020,0010)	2	User or equipme Study identifier.	nt generated	<copied f<="" td=""><td>rom the imag</td><td>ges&gt;</td></copied>	rom the imag	ges>
			A RIS generated	number that			
Accession Number	(0008 0050)	2	identifies the ord	er for the	<conied f<="" td=""><td>rom the ima</td><td>265&gt;</td></conied>	rom the ima	265>
Study	(0008 1020)	2	Institution-gener description or cla the Study (compo	rated ssification of onent)	conied f	rom the ime	<u></u>
			performed.			ioni the ima	552
Attribute		BUIES					
Name	Тад	Туре	Attribute Descri	ption	Value		

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Admitting				
Diagnoses			Description of the admitting	<diagnosis for="" string="" td="" the<=""></diagnosis>
Description	(0008,1080)	3	diagnosis (diagnoses)	examination>6
			A sequence that conveys the	
Admitting			admitting diagnosis (diagnoses).	
Diagnoses Code			One or more Items may be	
Sequence	(0008,1084)	3	included in this Sequence.	<one diagnosis="" item="" per=""></one>
>Code Value	(0008,0100)	1	See Section 8.1.	
>Coding				
Scheme	(0000 0100)			
Designator	(0008,0102)	1	See Section 8.2.	ELEKTA GAMIMAPLAN
			See Section 8.2. Required if the	
			Value of Couling Scheme	
			sufficient to identify the Code	
>Coding			Value (0008 0100)	
Scheme			unambiguously May be present	
Version	(0008.0103)	10	otherwise.	1.0
	(0000,0100)			
>Code Meaning	(0008,0104)	1	See Section 8.3.	
<b>RT SERIES MODU</b>	LE			
ATTRIBUTES				
Attribute	_	_		
Name	Тад	Туре	Attribute Description	Value
			Type of equipment that	
			originally acquired the data.	
			Enumerated Values:	
			RTIMAGE = RTIMage	
			RIDUSE = RI Dose	
			RTSTRUCT - RT Structure Set	
			RTRECORD - RT Treatment	
			Record	
Modality	(0008 0060)	1	See C 8 8 1 1	RTDOSE/RTSTRUCT/RTPLAN
Series Instance	(0000,0000)	-		
UID	(0020.000F)	1	Unique identifier of the series	<generated uid=""></generated>
	(====0,0002)		A number that identifies this	
Series Number	(0020,0011)	2	series.	<null></null>
FRAME OF REFER				
ATTRIBUTES		n		
Attribute				
Name	Tag	Туре	Attribute Description	Value
			Uniquely identifies the frame of	
			reterence for a Series. See	
Frame of	(0000 0000)		C.7.4.1.1.1 for further	
Reference UID	(0020,0052)	1	explanation.	<copied from="" images="" the=""></copied>
			Part of the patient's anatomy	
			used as a reference, such as the	
			illac crest, orbital-medial,	
			sternal notch, symphysis publs,	
Position			avtornal auditory meature See	
Reference			C 7 A 1 1 2 for further	
Indicator	(0020.1040)	2	explanation.	<copied from="" images="" the=""></copied>

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GENERAL EQUIP	MENT MODULE						
ATTRIBUTES							
Attribute	Taa	Turne	Attuikute Descuintion	Value			
Name	Tag	туре	Attribute Description	value			
			Manufacturer of the				
Manufacturar	(0008 0070)	2	somposite instances	Elekta			
Manufacturer	(0008,0070)	2	composite instances.	Elekta			
			Manufacturer's model name of				
Manufacturer's			the equipment that produced				
Model Name	(0008,1090)	3	the composite instances.	GammaPlan			
			Manufacturer's designation of				
			software version of the				
			equipment that produced the				
Software			composite instances. See				
Versions	(0018,1020)	3	Section C.7.5.1.1.3.	<ntps number="" version=""></ntps>			
APPROVAL MOD	ULE						
ATTRIBUTES							
Attribute							
Name	Tag	Туре	Attribute Description	Value			
			Approval status at the time the				
			SOP Instance was created.				
			Enumerated Values:				
			APPROVED = Reviewer recorded				
			that object met an implied				
			criterion				
			UNAPPROVED = No review of				
			obiect has been recorded				
			REJECTED = Reviewer recorded				
			that object failed to meet an				
Approval Status	(300E,0002)	1	implied criterion	UNAPPROVED/APPROVED/REJECTED			
			Date on which object was				
			roviewed Required if Approval				
			Status (2005 0002) is				
Poviow Data	(2005 0004)	20					
Review Date	(300E,0004)	20	APPROVED OF REJECTED.				
			Time at which object was				
			reviewed. Required if Approval				
			Status (300E,0002) is				
Review Time	(300E,0005)	2C	APPROVED or REJECTED.	<null></null>			
			Name of person who reviewed				
			object. Required if Approval				
			Status (300E,0002) is				
Reviewer Name	(300E,0008)	2C	APPROVED or REJECTED.	<user approver="" entered="" name=""></user>			
		BUTES		· ·			
Attribute							
Name	Тад	Type	Attribute Description	Value			
		- 772	Uniquely identifies the SOP				
			Class See C 12.1.1.1 for further				
		1	ovaluation Secular DS 2.4				
SUP CIASS UID	(0008,0016)	1	explaination. See also PS 3.4.				
			Uniquely identifies the SUP				
			further evelopeting. Courts 20				
SUP Instance			Turther explanation. See also PS				
UID	(0008,0018)	1	3.4.	<generated uid=""></generated>			

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Specific Character Set	(0008,0005)	1C	Character Set that expands or replaces the Basic Graphic Set. Required if an expanded or replacement character set is used. See C.12.1.1.2 for Defined Terms.	<copied fr<="" th=""><th>om the images&gt;</th><th></th></copied>	om the images>	
Instance Creation Date	(0008,0012)	3	Date the SOP Instance was created.	<date of<="" td=""><td>creation&gt;</td><td></td></date>	creation>	
Instance Creation Time	(0008.0013)	3	Time the SOP Instance was created.	<time of<="" td=""><td>creation&gt;</td><td></td></time>	creation>	