

DICOM Change Proposal

STATUS	Assigned
Date of Last Update	2025/01/30
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Change Number	CP-2504
Log Summary:	Add Scan Spot Gantry and Patient Support Angle to Ion Beam Record
Name of Standard	PS3.3
Rationale for Change:	<p>Arc Treatment technique is being actively developed for Ion Radiation Therapy. Reporting gantry angle or patient support angle for each delivered scan spot is important for post-treatment QA applications.</p> <p>This CP adds the Scan Spot Gantry Angles and Scan Spot Patient Support Angles attributes to RT Ion Beams Session Record Control Points.</p>
Change Wording:	

Modify PS3.3 Section C.8.8.26 RT Ion Beams Session Record Module as indicated

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Table C.8.8.26-1. RT Ion Beams Session Record Module Attributes

Attribute Name	Tag	Type	Attribute Description
>...			
>Ion Control Point Delivery Sequence	(3008,0041)	1	<p>Sequence of beam control points for current ion treatment beam.</p> <p>One or more Items shall be included in this Sequence.</p> <p>The number of Items shall be identical to the value of Number of Control Points (300A,0110).</p> <p>See Section C.8.8.21.1.</p>
>>...			
>>Scan Spot Position Map	(300A,0394)	1C	<p>A data stream of (x,y) pairs that define the coordinates of the scan spots as projected onto the machine isocentric plane in the IEC GANTRY coordinate system (mm). Required if Scan Mode (300A,0308) is MODULATED or MODULATED_SPEC. Contains 2N values where N is the Number of Scan Spot Positions (300A,0392). See Section C.8.8.25.8.</p>
<u>>>Scan Spot Gantry Angles</u>	<u>(gggg,eeee)</u>	<u>3</u>	<p><u>A set of treatment machine gantry angles, i.e., orientation of IEC GANTRY coordinate system with respect to IEC FIXED REFERENCE coordinate system (degrees) for each delivered spot. The value of each</u></p>

Attribute Name	Tag	Type	Attribute Description
			<p><u>gantry angle shall be within the interval of the current control point and the following control point Gantry Angle (300A,011E).</u></p> <p><u>The order of values matches the order of positions in Scan Spot Position Map (300A,0394).</u></p> <p><u>The number of values shall equal the value of Number of Scan Spot Positions (300A,0392).</u></p>
<u>>>Scan Spot Patient Support Angles</u>	<u>(gggg,eee1)</u>	<u>3</u>	<p><u>A set of patient support angles, i.e., orientation of IEC PATIENT SUPPORT coordinate system with respect to IEC FIXED REFERENCE coordinate system (degrees) for each delivered spot. The value of each patient support angle shall be within the interval of the current control point and the following control point Patient Support Angle (300A,0112).</u></p> <p><u>The order of values matches the order of positions in Scan Spot Position Map (300A,0394).</u></p> <p><u>The number of values shall equal the value of Number of Scan Spot Positions (300A,0392).</u></p>
>>Scan Spot Metersets Delivered	(3008,0047)	1C	<p>A set of Meterset values delivered to the scan spot positions. The order of Metersets matches the positions in Scan Spot Position Map (300A,0394). The sum contained in all Metersets shall match the difference of the Delivered Meterset of the current control point to the following control point. Required if Scan Mode (300A,0308) is MODULATED or MODULATED_SPEC. See Section C.8.8.25.8.</p>
>>Scan Spot Time Offset	(300A,038F)	3	<p>A set of time offsets (in microseconds). Each offset is the time from the Treatment Control Point Time (3008,0025) until both the beam has reached the X,Y position recorded in the Scan Spot Position Map (300A,0394) and ion delivery has started at this position.</p> <p>The order of values matches the order of positions in Scan Spot Position Map (300A,0394).</p> <p>The number of values shall equal the value of Number of Scan Spot Positions (300A,0392).</p>
>>Scan Spot Sizes Delivered	(300A,0399)	3	<p>A data stream of (x,y) pairs that define the delivered spot sizes using the Full Width Half Maximum (FWHM) as measured by the delivery monitoring system. Specified by a numeric pair where the sizes are projected in air to the isocenter in IEC GANTRY X direction followed by the size in the IEC GANTRY Y direction (mm).</p> <p>The order of values shall match the order of positions in the Scan Spot Position Map (300A,0394) and contain 2N values where N is the Number of Scan Spot Positions (300A,0392).</p>

In PS 3.6, section 6. Registry of DICOM Data Elements, add the following

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Table 6-1. Registry of DICOM Data Elements

Tag	Name	Keyword	VR	VM	
(gggg,eeee)	Scan Spot Gantry Angles	ScanSpotGantryAngles	FL	1-n	
(gggg,eee1)	Scan Spot Patient Support Angles	ScanSpotPatientSupportAngles	FL	1-n	