

DICOM Correction Proposal

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Person Assigned	Ulrich Busch (ulrich.busch@varian.com)
Submitter Name	Ulrich Busch (ulrich.busch@varian.com)
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Correction Number	CP1630
Log Summary:	Clarify Changes in Control Point Meterset Values
Name of Standard	PS 3.3 2016c
Rationale for Correction:	<p>The Control Point Index (300A,0112) is specified as starting with Index 0.</p> <p>However, it is not explicitly specified, that the control points index shall increase as the Cumulative Meterset Weight (300A,0134) increases. In exact terms, the Cumulative Meterset Weight (300A,0134) of a Control Point with a some index shall have a value equal or greater than a Control Point with a lower index.</p> <p>The examples in C.8.8.14.5 Control Point Sequence specify this behavior already. No system would be able to deal with any other approach, since it would ask for removing delivered Radiation.</p> <p>Yet it is indicated to specify that condition explicitly strengthen the specification on the use of Control Points.</p>
Correction Wording:	

In PS 3.3, modify the Section C.8.8.14 RT Beams Module as follows.

C.8.8.14 RT Beams Module

The RT Beams Module contains information defining equipment parameters for delivery of external radiation beams.

Table C.8-50. RT Beams Module Attributes

Attribute Name	Tag	Type	Attribute Description
Beam Sequence	(300A,00B0)	1	Sequence of treatment beams for current RT Plan. One or more items shall be included in this sequence.
>Beam Number	(300A,00C0)	1	Identification number of the Beam. The value of Beam Number (300A,00C0) shall be unique within the RT Plan in which it is created. See Note 1.
>Beam Name	(300A,00C2)	3	User-defined name for Beam. See Note 1.
...			
>Control Point Sequence	(300A,0111)	1	Sequence of machine configurations describing treatment beam. Two or more items shall be included in this sequence.

Attribute Name	Tag	Type	Attribute Description
			See Section C.8.8.14.5 and Section C.8.8.14.6.
>>Control Point Index	(300A,0112)	1	Index of current Control Point, starting at 0 for first Control Point.
>>Cumulative Meterset Weight	(300A,0134)	2	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 shall always be equal to Final Cumulative Meterset Weight. See Section C.8.8.14.1.
...			

C.8.8.14.5 Control Point Sequence

The DICOM RT Beams Module uses a single beam model to handle static, arc, and dynamic delivery of external beam radiation by a medical accelerator or gamma beam therapy equipment (cobalt unit). All applicable parameters shall be specified at Control Point 0, with the exception of couch positions (see [Section C.8.8.14.6](#)). All parameters that change at any control point of a given beam shall be specified explicitly at all control points (including those preceding the change). No assumptions are made about the behavior of machine parameters between specified control points, and communicating devices shall agree on this behavior outside the current standard.

The Cumulative Meterset Weight (300A,0134) values in a Control Point Sequence (300A,0111) shall be monotonically increasing in the order of increasing Control Point Index (300A,0112).

Gantry Rotation Direction (300A,011F), Beam Limiting Device Rotation Direction (300A,0121), Patient Support Rotation Direction (300A,0123), and Table Top Eccentric Rotation Direction (300A,0126) are defined as applying to the segment following the control point, and changes to these parameters during treatment may be specified without use of a "non-irradiation" segment. All other Control Point Sequence attributes are defined only at the control point. To unambiguously encode changes in discrete-valued attributes such as Wedge Position (300A,0118) and Nominal Beam Energy (300A,0114), a non-irradiation segment where Cumulative Meterset Weight (300A,0134) does not change, shall be used.