DICOM Correction Proposal

STATUS	Letter Ballot
Date of Last Update	2019/05/24
Person Assigned	Ulrich Busch (ulrich.busch@varian.com)
Submitter Name	Christof Schadt christof.schadt@brainlab.com
Submission Date	2018/10/31

Correction Number CP1879
Log Summary: Retire Beam Dose Specification Point
Name of Standard PS3.3, PS3.6
Rationale for Correction: The Referenced Beam Sequence within the Fraction Group Sequence contains the Beam Dose Specification Point (300A,0082) and is defined as “Coordinates (x,y,z) of point at which Beam Dose is specified in the Patient-Based Coordinate System” and for the Beam Dose (300A,0084) “Dose (in Gy) at Beam Dose Specification Point (300A,0082) due to current Beam for one treatment fraction.” With the Beam Dose mainly representing a nominal value that will be used for dose tracking and/or billing, the necessity of a corresponding coordinate at which this does is present becomes questionable, in actual practice sometimes even not reachable as the coordinate may not even reside inside the target volume (although this requirement is not defined by the Standard). But as this attribute represents an outdated concept it is proposed to retire the Beam Dose Specification Point (300A,0082) to minimize confusion.
Correction Wording: <include proposed change below, following guidelines for formatting of changes in supplements>

PS3.3, Annex C

C.8.8.13 RT Fraction Scheme Module

The RT Fraction Scheme Module contains Attributes that describe a single or multiple scheme of dose descriptions. Each Sequence Item contains dose specification information, fractionation patterns, and either beam or brachytherapy application setup specifications. The design of the RT Fraction Scheme Module allows a beam or brachytherapy application setup to be used in multiple fraction schemes.

Table C.8-49. RT Fraction Scheme Module Attributes

Attribute Name	Tag	Type	Attribute Description
Fraction Group Sequence	(300A,0070)	1	Sequence of Fraction Groups in current Fraction Scheme. One or more Items shall be included in this Sequence.
…			
>Referenced Beam Sequence	(300C,0004)	1C	Sequence of treatment beams in current Fraction Group.

Attribute Name	Tag	Type	Attribute Description
			One or more Items shall be included in this Sequence. Required if Number of Beams (300A,0080) is greater than zero.
>>Referenced Beam Number	(300C,0006)	1	Uniquely identifies Beam specified by Beam Number (300A,00C0) within Beam Sequence (300A,00B0) in RT Beams Module or within Ion Beam Sequence (300A,03A2) in RT Ion Beams Module.
~~>>Beam Dose Specification Point~~	~~(300A,0082)~~	~~3~~	~~Coordinates (x,y,z) of point at which Beam Dose is specified in the Patient-Based Coordinate System described in Section C.7.6.2.1.1 (mm). See Note 3.~~
>>Referenced Dose Reference UID	(300A,0083)	3	Identifies the Dose Reference specified by Dose Reference UID (300A,0013) in the Dose Reference Sequence (300A,0010) in the RT Prescription Module which specifies the primary target for the current Beam. If present shall have a value that is present in the Dose Reference Sequence.
>>Beam Dose	(300A,0084)	3	Dose (in Gy) ~~at Beam Dose Specification Point (300A,0082)~~ due to current Beam for one treatment fraction. **See Note 9.**
>>Beam Dose Type	(300A,0090)	1C	Type of Dose of the Beam Dose (300A,0084). Enumerated Values: PHYSICAL EFFECTIVE Shall not have the same value as Alternate Beam Dose Type (300A,0092). Required if Alternate Beam Dose (300A,0091) is present. May be present otherwise.
>>Alternate Beam Dose	(300A,0091)	3	Alternate Dose (in Gy) ~~at Beam Dose Specification Point (300A,0082)~~ according to the Alternate Beam Dose Type (300A,0092). **See Note 9.**
>>Alternate Beam Dose Type	(300A,0092)	1C	Type of Dose of the Alternate Beam Dose (300A,0091). Enumerated Values: PHYSICAL EFFECTIVE Shall not have the same value as Beam Dose Type (300A,0090). Required if Alternate Beam Dose (300A,0091) is present.

Attribute Name	Tag	Type	Attribute Description
>>Beam Meterset	(300A,0086)	3	Machine setting to be delivered for current Beam, specified in Monitor Units (MU) or minutes as defined by Primary Dosimeter Unit (300A,00B3) (in RT Beams Module) for referenced Beam. See Note 4.
…			

Note

1. An RT Dose IOD …
2. The fractionation pattern …
3. The ~~**Beam Dose Specification Point (300A,0082) and**~~ Brachy Application Setup Dose Specification Point (300A,00A2) contain**s** the coordinates of the single point used for dose normalization. This point is distinct from ~~**the Referenced Dose Reference Sequence (300C,0050) in the RT Beams Module and**~~ the Brachy Referenced Dose Reference Sequence (300C,0055) in the RT Brachy Application Setups Module, which are used for plan evaluation and dose tracking.
4. The Meterset at a given Control Point (see RT Beams Module) is equal to Beam Meterset (300A,0086) multiplied by the Cumulative Meterset Weight (300A,0134) for the Control Point, divided by the Final Cumulative Meterset Weight (300A,010E).
5. …
6. …
7. …
8. The Beam Dose Verification Control Point Sequence was previously included and has been retired. See PS 3.3 2017c. The information is now described in the Referenced Dose Reference Sequence (300C,0050) in the Section C.8.8.14 RT Beams Module.
9. **The Beam Dose Specification Point (300A,0082) was previously included in this module as a means to specify a single point at which dose contributions of different beams could be specified. This attribute has been retired as it no longer reflects clinical practice. Along with this, the semantics of the Beam Dose (300A,0084) and Alternate Beam Dose (300A,0091) have been adapted to reflect the absence of the Beam Dose Specification Point. In order to refer to an Item in the Dose Reference Sequence (300A,0010) it is recommended to utilize the Referenced Dose Reference UID (300A,0083) and the Dose Reference UID (300A,0013) respectively.**

PS3.6, Chapter 6

Table 6-1. Registry of DICOM Data Elements

Tag	Name	Keyword	VR	VM	
…					
(300A,0082)	*Beam Dose Specification Point*	*BeamDoseSpecificationPoint*	*DS*	*3*	***RET***
…					