DICOM Correction Item

Correction Number CP- 578	
Log Summary: Clarify pixel intensity relationship for RT Images	
Type of Modification Clarification	Name of Standard PS 3 2004

Rationale for Correction:

In RT images, there are different conventions used for the relationship between X-Ray intensity and image pixel intensity. For instance, simulator images frequently use a 'fluoroscopy' mode where high image pixel values correspond to high X-Ray intensities. Portal images, however, typically use the 'film' mode where high X-Ray intensity corresponds to dark portions in the image.

For patient positioning, it is typically required to compare images from different sources. In order to ensure a consistent and comparable image display, it would be useful if the applications could differentiate between the different modes. Unfortunately, the Photometric Interpretation just indicates how pixel values relate to high or low image brightness, but it does not specify how pixel values relate to x-ray intensity.

The proposal is to use the Pixel Intensity Relationship attributes which are already defined for DX images.

Sections of documents affected

PS3.3, Section C.8.8.2

Correction Wording:

In PS3.3, in Section C.8.8.2 RT Image Module, Table C.8-34—RT IMAGE MODULE ATTRIBUTES, add the following attributes after Photometric Interpretation:

Pixel Intensity Relationship	**(0028,1040)**	**3**	**The relationship between the Pixel sample values and the X-Ray beam intensity.** **Enumerated Values:** **LIN = Linearly proportional to X-Ray beam intensity** **LOG = Logarithmically proportional to X-Ray beam intensity** **See C.8.11.3.1.2 for further explanation.**
Pixel Intensity Relationship Sign	**(0028,1041)**	**1C**	**The sign of the relationship between the Pixel sample values stored in Pixel Data (7FE0,0010) and the X-Ray beam intensity.** **Required if Pixel Intensity Relationship (0028,1040) is present.** **Enumerated Values;** **1 = Lower pixel values correspond to less X-Ray beam intensity** **-1 = Higher pixel values correspond to less X-Ray beam intensity** **See C.8.11.3.1.2 for further explanation.**