DICOM Correction Item

Correction Number	CP-249

Log Summary: Add Presentation LUT Shape to General Image Module	

Type of Modification	Name of Standard
Addition	PS 3.3-2000

Rationale for Correction
The Ultrasound single and multi-frame IOD predate the introduction DICOM Standard Grayscale Display Function. As a result, ultrasound devices that comply with the grayscale display function cannot explicitly convey that its pixel values are P-values, without an associated Presentation State IOD. In ultrasound, there is no usage of Presentation State since grayscale pixels do not exceed 8 bits of grayscale information. The only relevant presentation LUT is an identity transformation. This CP remedies this situation in the same manner taken by the DX IOD: through the use of Presentation LUT Shape (2050,0020). By including this attribute in the General Imaging Module, other modalities can also use this attribute for the same purpose. Therefore, images this attribute do not require an associated GSPS Instances merely to specify the pixel value interpretation is in P-Value units. Images that are not in P-values must not include this Element, and should create GSPS Instances to convey a transformation to P-values. Though the Grayscale Standard Display Function does not apply to color, it can apply to the grayscale portion of color images. For example, colorflow ultrasound images typically contain a grayscale component as well as the color component. Images with grayscale data encoded in any color photometric interpretation can therefore use this attribute to specify the grayscale display response according to the grayscale presentation standard..

Sections of documents affected
PS 3.3 C.8.5.6 Table C.8-18

Correction Wording:
 Add the following row to Table C.7-7 General Image Module Attributes:

Presentation LUT Shape	(2050,0020)	3	When present, specifies an identity transformation for the Presentation LUT such that the output of all grayscale transformations, if any, are defined to be in P-Values.
			Enumerated Values are:
			IDENTITY - output is in P-Values - shall be used if Photometric Interpretation (0028,0004) is MONOCHROME2 or any color photometric interpretation.
			INVERSE - output after inversion is in P-Values - shall be used if Photometric Interpretation (0028,0004) is MONOCHROME1.
			When this attribute is used with a color photometric interpretation then the luminance component is in P-Values.