



Standard Practice for Computed Radiology (Photostimulable Luminescence Method)¹

This standard is issued under the fixed designation E2033; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ϵ) indicates an editorial change since the last revision or reapproval.

1. Scope

1.1 This practice² covers application details for computed radiology (CR) examination using a process in which photostimulable luminescence is emitted by the penetrating radiation detector, a storage phosphor imaging plate (SPIP). Because the techniques involved and the applications for CR examination are diverse, this practice is not intended to be limiting or restrictive, but rather to address the general applications of the technology and thereby facilitate its use. Refer to Guides E94 and E2007, Terminology E1316, and Practices E747 and E1025, and 21 CFR 1020.40 and 29 CFR 1910.96 for additional information and guidance.

1.2 The general principles discussed in this practice apply broadly to penetrating radiation CR systems. However, this document is written specifically for use with X-ray and gamma-ray systems. Other CR systems, such as those employing neutrons, will involve equipment and application details unique to such systems.

1.3 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.* For specific safety statements, see Section 10 and 21 CFR 1020.40 and 29 CFR 1910.96.

2. Referenced Documents

2.1 ASTM Standards:³

E94 Guide for Radiographic Examination

E747 Practice for Design, Manufacture and Material Group-

ing Classification of Wire Image Quality Indicators (IQI) Used for Radiology

E1025 Practice for Design, Manufacture, and Material Grouping Classification of Hole-Type Image Quality Indicators (IQI) Used for Radiology

E1316 Terminology for Nondestructive Examinations

E1453 Guide for Storage of Magnetic Tape Media that Contains Analog or Digital Radioscopic Data

E1475 Guide for Data Fields for Computerized Transfer of Digital Radiological Examination Data

E1817 Practice for Controlling Quality of Radiological Examination by Using Representative Quality Indicators (RQIs)

E2007 Guide for Computed Radiography

2.2 ASNT Standards:

SNT-TC-1A Recommended Practice for Personnel Qualification and Certification in Nondestructive Testing⁴

ANSI/ASNT-CP-189 Standard for Qualification and Certification of Nondestructive Testing Personnel⁴

2.3 Federal Standards:

Title 21, CFR 1020.40 Safety Requirements of Cabinet X-Ray Systems⁵

Title 29, CFR 1910.96 Ionizing Radiation⁵

2.4 AIA Standard:

NAS-410 Certification and Qualification of Nondestructive Testing Personnel⁶

3. Summary of Practice

3.1 A CR examination system can be used for a wide variety of applications. A typical CR examination system consists of a radiation source, a storage phosphor imaging plate detector, a plate reader, an electronic imaging system, a digital image processor, a monitor display, a digital image archiving system, and, if desired, equipment for producing hard copy analog images. This practice establishes the basic parameters for the application and control of the CR method.

¹ This test method is under the jurisdiction of ASTM Committee E07 on Nondestructive Testing and is the direct responsibility of Subcommittee E07.01 on Radiology (X and Gamma) Method.

Current edition approved June 1, 2013. Published June 2013. Originally approved in 1999. Last previous edition approved in 2006 as E2033 - 99 (2006). DOI: 10.1520/E2033-99R13.

² For ASME Boiler and Pressure Code applications, see related Practice SE-2033 in Section II of that code.

³ For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

⁴ Available from American Society for Nondestructive Testing, 1711 Arlingate Plaza, P.O. Box 28518, Columbus, OH 43228-0518.

⁵ Available from Standardization Documents Order Desk, Bldg. 4 Section D, 700 Robbins Ave., Philadelphia, PA 19111-5094, Attn: NPODS.

⁶ Available from Aerospace Industries Association of America, Inc., 1250 Eye St. NW, Washington, D.C. 20005.