



Standard Test Method for Radioscopic Examination of Weldments¹

This standard is issued under the fixed designation E 1416; 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 test method covers a uniform procedure for radiosopic examination of weldments. Requirements expressed in this test method are intended to control the quality of the radiosopic images and are not intended for controlling acceptability or quality of welds.

1.2 This test method applies only to the use of equipment for radiosopic examination in which the image is finally presented on a television monitor for operator evaluation. The examination may be recorded for later review. It does not apply to fully automated systems where evaluation is automatically performed by computer.

1.3 The radiosopic extent, the quality level, and the acceptance criteria to be applied shall be specified in the contract, purchase order, product specification, or drawings.

1.4 This test method can be used for the detection of discontinuities. This test method also facilitates the examination of a weld from several directions, such as perpendicular to the weld surface and along both weld bevel angles. The radiosopic techniques described in this test method provide adequate assurance for defect detectability; however, it is recognized that, for special applications, specific techniques using more stringent requirements may be needed to provide additional detection capability. The use of specific radiosopic techniques shall be agreed upon between purchaser and supplier.

1.5 The values stated in inch-pound units are to be regarded as the standard. The SI units given in brackets are for information only.

1.6 *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.* Specific precautionary statements are given in Section 7.

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 July 1, 2004. Published July 2004. Originally approved in 1991. Last previous edition approved in 1996 as E 1416 - 96.

2. Referenced Documents

2.1 ASTM Standards:²

E 94 Guide for Radiographic Examination

E 543 Practice for Agencies Performing Nondestructive Testing

E 747 Practice for Design, Manufacture, and Material Grouping Classification of Wire Image Quality Indicators (IQI) Used for Radiology

E 1000 Guide for Radioscopy

E 1025 Practice for Design, Manufacture, and Material Grouping Classification of Hole-Type Image Quality Indicators (IQI) Used for Radiology

E 1255 Practice for Radioscopy

E 1316 Terminology for Nondestructive Examinations

2.2 ASNT Standards:³

ASNT Recommended Practice No. SNT-TC-1A Personnel Qualification and Certification in Nondestructive Testing
ANSI/ASNT CP-189-ASNT Standard for Qualification and Certification of Nondestructive Testing Personnel

2.3 National Aerospace Standard:⁴

NAS 410 Certification and Qualification of Nondestructive Personnel

3. Terminology

3.1 Definitions:

3.1.1 Definitions of terms applicable to this test method may be found in Terminology E 1316.

4. Apparatus

4.1 *Radiation Source (X-ray or Gamma-ray)*—Selection of the appropriate source is dependent upon variables regarding the weld being examined, such as material composition and thickness. The suitability of the source shall be demonstrated

² 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.

³ Available from The American Society for Nondestructive Testing (ASNT), P.O. Box 28518, 1711 Arlinggate Ln., Columbus, OH 43228-0518.

⁴ Available from U.S. Government Printing Office Superintendent of Documents, 732 N. Capitol St., NW, Mail Stop: SDE, Washington, DC 20401.