



Designation: E1817 – 08 (Reapproved 2022)

## Standard Practice for Controlling Quality of Radiological Examination by Using Representative Quality Indicators (RQIs)<sup>1</sup>

This standard is issued under the fixed designation E1817; 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 ( $\epsilon$ ) indicates an editorial change since the last revision or reapproval.

### 1. Scope

1.1 This practice covers the radiological examination of unique materials or processes, or both, for which conventionally designed image quality indicators (IQIs), such as those described in Practices E747 and E1025, may be inadequate in controlling the quality and repeatability of the radiological image.

1.2 Where appropriate, representative image quality indicators (RQIs) may also represent criteria levels of the acceptance or rejection of images of discontinuities.

1.3 This practice is applicable to most radiological methods of examination.

1.4 *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, health, and environmental practices and determine the applicability of regulatory limitations prior to use.*

1.5 *This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.*

### 2. Referenced Documents

2.1 ASTM Standards:<sup>2</sup>

E543 Specification for Agencies Performing Nondestructive Testing

E747 Practice for Design, Manufacture and Material Grouping Classification of Wire Image Quality Indicators (IQI) Used for Radiology

E1000 Guide for Radioscopy

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

E1316 Terminology for Nondestructive Examinations

E1441 Guide for Computed Tomography (CT)

2.2 ASNT Standards:<sup>3</sup>

SNT-TC-1A Recommended Practice for Personnel Qualification in Nondestructive Testing

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

2.3 Aerospace Industries Association Document:

NAS 410 Certification and Qualification of Nondestructive Testing Personnel<sup>4</sup>

### 3. Terminology

3.1 *Definitions*—For definitions of terms used in this practice, refer to Terminology E1316.

3.2 *Definitions of Terms Specific to This Standard:*

3.2.1 *representative quality indicator (RQI)*—a real part, or a fabrication of similar geometry in radiologically similar material to a real part, that has features of known characteristics that represent those features of interest for which the parts to be purchased are being examined.

### 4. Summary of Practice

4.1 The information from an RQI image may be used to control all of the parameters necessary for production examination images (which look essentially like the RQI images) and is particularly effective in the practice of radioscopy and tomographic techniques. Refer to Guides E1000 and E1441, respectively.

4.2 The designer may also use the RQI, when in compliance with the requirements set out in this practice, to set accept or reject criteria, as applicable, to that part design.

### 5. Significance and Use

5.1 The use of RQIs is a significant departure from normal practice in industrial radiology because it is not a standard

<sup>1</sup> This practice 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.

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<sup>2</sup> For referenced ASTM standards, visit the ASTM website, [www.astm.org](http://www.astm.org), or contact ASTM Customer Service at [service@astm.org](mailto:service@astm.org). For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

<sup>3</sup> Available from American Society for Nondestructive Testing (ASNT), P.O. Box 28518, 1711 Arlington Ln., Columbus, OH 43228-0518, <http://www.asnt.org>.

<sup>4</sup> Available from Aerospace Industries Association of America, Inc. (AIA), 1000 Wilson Blvd., Suite 1700, Arlington, VA 22209-3928, <http://www.aia-aerospace.org>.