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Standard Guide for Data Fields for Computerized Transfer of Digital Radiological Examination Data[1]

This standard is issued under the fixed designation E1475; 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 guide provides a listing and description of the fields that are recommended for inclusion in a digital radiological examination data base to facilitate the transfer of such data. This guide sets guidelines for the format of data fields for computerized transfer of digital image files obtained from radiographic, radioscopic, computed radiographic, or other radiological examination systems. The field listing includes those fields regarded as necessary for inclusion in the data base: (*1*) regardless of the radiological examination method (as indicated by Footnote C in Table 1), (*2*) for radioscopic examination (as indicated by Footnote E in Table 1), and (*3*) for radiographic examination (as indicated by Footnote D in Table 1). In addition, other optional fields are listed as a reminder of the types of information that may be useful for additional understanding of the data or applicable to a limited number of applications.

1.2 It is recognized that organizations may have in place an internal format for the storage and retrieval of radiological examination data. This guide should not impede the use of such formats since it is probable that the necessary fields are already included in such internal data bases, or that the few additions can easily be made. The numerical listing and its order indicated in this guide is only for convenience; the specific numbers and their order carry no inherent significance and are not part of the data file.

1.3 The types of radiological examination systems that appear useful in relation to this guide include radioscopic systems as described in Guide E1000, Practices E1255, E1411, and E2033, and radiographic systems as described in Guide E94 and Practices E748 and E1742. Many of the terms used are defined in Terminology E1316.

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

2. Referenced Documents

2.1 *ASTM Standards:*[2]

E94 Guide for Radiographic Examination
E748 Practices for Thermal Neutron Radiography of Materials
E1000 Guide for Radioscopy
E1255 Practice for Radioscopy
E1316 Terminology for Nondestructive Examinations
E1411 Practice for Qualification of Radioscopic Systems
E1416 Test Method for Radioscopic Examination of Weldments
E1742 Practice for Radiographic Examination
E2033 Practice for Computed Radiology (Photostimulable Luminescence Method)

3. Significance and Use

3.1 The primary use of this guide is to provide a standardized approach for the data file to be used for the transfer of digital radiological data from one user to another where the two users are working with dissimilar systems. This guide describes the contents, both required and optional for an intermediate data file that can be created from the native format of the radiological system on which the data was collected and that can be converted into the native format of the receiving radiological data analysis system. The development of translator software to accomplish these data format conversions is being addressed under a separate effort; this will include specific items needed for the data transfer, for example, language used, memory requirements, and intermediate specification. This guide will also be useful in the archival storage and retrieval of radiological data as either a data format specifier or as a guide to the data elements which should be included in the archival file.

[1] This guide is under the jurisdiction of ASTM Committee E07 on Nondestructive Testing and is the direct responsibility of Subcommittee E07.11 on Digital Imaging and Communication in Nondestructive Evaluation (DICONDE).

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[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.

TABLE 1 Field Listing

Field Number[A]	Field Name and Description	Category Sets, Values and Units[B]
Header Information:		
1[C,D]	Intermediate file name	Alphanumeric string
2[C,D]	Format revision code	Alphanumeric string
3[C,D]	Format revision date	yy/mm/dd
4[C,D]	Source file name	Alphanumeric string
5	Examination file description notes	Alphanumeric string
6[C,D]	Examining company/location	Alphanumeric string
7[C,D]	Examination date	yy/mm/dd
8	Examination time	hh/mm/ss
9[C,D]	Type of examination	Alphanumeric string
10	Other examinations performed	Alphanumeric string
11[C,D]	Operator name	Alphanumeric string
12[C,D]	Operator identification code	Alphanumeric string
13[C,D]	ASTM, ISO or other applicable standard specification	Alphanumeric string
14	Date of applicable standard	yy/mm/dd
15[C,D]	Acceptance criteria	Alphanumeric string
16	Notes	Alphanumeric string
Examination System Description:		
17	Examination system manufacturer(s)	Alphanumeric string
18	Examination system model	Alphanumeric string
19	Examination system serial number	Alphanumeric string
Source Section:		
20[C,D]	Radiologic source manufacturer	Alphanumeric string
21[C,D]	Radiological source model	Alphanumeric string
22	General source description	Alphanumeric string
23	Last calibration date	Alphanumeric string
24	Notes on source section	Alphanumeric string
Image Receptor Section:		
25[C,D]	Receptor type	Alphanumeric string
26[C,D]	Convertor type	Alphanumeric string
27	Receptor manufacturer	Alphanumeric string
28	Receptor model number	Alphanumeric string
29[C,D]	Notes on receptor section	Alphanumeric string
Exposure Section:		
30[C,D]	Peak radiation energy used, or	kV
31[C,D]	Isotope source (use either 30 or 31)	Alphanumeric string
32	Tube current	mA
33	Radiation dosage rate	mR/min
34	Radiation exposure time	min
35[C]	Source-detector distance (SDD)	m
36[C]	Source-object distance (SOD)	m
37[C]	Image magnification of source side of examination object	%
38[D]	Notes on exposure section	Alphanumeric string
Processing Section (Film/Paper):		
39[E]	Process description	Automated or manual
40[E]	Process method	Wet or dry
41	Processor type	Alphanumeric string
42	Processor model number	Alphanumeric string
43	Notes on processor section	Alphanumeric string
Image Processing Description:		
44[C,D]	Image processing used for image data	Alphanumeric string
45	Image processor hardware manufacturer	Alphanumeric string
46	Image processor hardware model	Alphanumeric string
47	Image processor software source	Alphanumeric string
48	Image processor software version	Alphanumeric string
49[D]	Pixel resolution	Pixels per cm
50	Notes on image processor	Alphanumeric string
Examination Sample or Part Description:		
51[C]	Sample or part name	Alphanumeric string
52	Sample or part name description	Alphanumeric string
53[C]	Sample or part identification code	Alphanumeric string
54[C]	Sample or part material	Alphanumeric string
55	Notes on sample or part	Alphanumeric string
56[C]	Number of image segments for sample	Integer number
57[C]	Reference standard identification	Alphanumeric string
58	Reference standard description	Alphanumeric string
59[C]	Reference standard file name	Alphanumeric string
60	Reference standard file location	Alphanumeric string
Coordinate System and Scan Description:		
61[F]	Machine coordinate system scan axis	Alphanumeric string
62[F]	Machine coordinate system index axis	Alphanumeric string
63[F]	Machine coordinate system *z*-axis	Alphanumeric string
64[F]	Part coordinate system *x*-axis	Alphanumeric string
65[F]	Part coordinate system *y*-axis	Alphanumeric string
66[F]	Part coordinate system *z*-axis	Alphanumeric string