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An American National Standard

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

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1. Scope

1.1 This guide provides a listing and description of the fields that are recommended for inclusion in a digital radiological test data base to facilitate the transfer of such data. This guide sets guidelines for the format of data fields for computerized transfer of digital images 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 test 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 test systems that appear useful in relation to this guide include radioscopic systems as described in Guide E 1000, Practices E 1255 and E 1411, and radiographic systems as described in Guide E 94 and Practices E 748. Many of the terms used are defined in Terminologies E 1013 and E 1316.

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:*

E 94 Guide for Radiographic Testing[2]

E 748 Practices for Thermal Neutron Radiography of Materials[2]

E 1000 Guide for Radioscopy[2]

E 1013 Terminology Relating to Computerized Systems[3]

E 1255 Practice for Radioscopy[2]

E 1316 Terminology for Nondestructive Examinations[2]

E 1411 Practice for Qualification of Radioscopic Systems[2]

E 1416 Test Method for Radioscopic Examination of Weldments[2]

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 E-7 on Nondestructive Testing and is the direct responsibility of Subcommittee E07.01on Radiology (X and Gamma) Method.

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[2] *Annual Book of ASTM Standards*, Vol 03.03.

[3] *Annual Book of ASTM Standards*, Vol 14.01.

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 inspection 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 inspection 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