Designation: E1034 – 95 (Reapproved 2013)

Standard Specification for Nuclear Facility Transient Worker Records[1]

This standard is issued under the fixed designation E1034; 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.

INTRODUCTION

There is a high degree of concern in the nuclear industry regarding the ability of present records keeping practices to adequately monitor the cumulative radiation doses of individual transient workers. This concern arises from the fact that the transient worker moves rapidly among the nuclear facilities, in some cases working at as many as four or more facilities within one calendar quarter. The accurate monitoring of a transient worker's cumulative radiation dose depends, in part, on the individual worker's ability (and willingness) to provide a correct record of his occupational radiation exposure. At nuclear facilities licensed by the U.S. Nuclear Regulatory Commission (NRC), these data presently are supplied by the worker on forms NRC-4 and NRC-5. Similar procedures are followed at other nuclear facilities (see Note 1). Accurate occupational radiation exposure data are required to ensure that the radiation doses that an individual transient worker will receive are within regulatory limits.

Another problem confronting the owners of nuclear facilities is how to in-process large numbers of temporary workers efficiently. These workers may be required for such activities as the decontamination and decommissioning of a nuclear facility, the annual refueling of a nuclear power plant, or a major special modification to an operating nuclear facility. In-processing involves determining a worker's occupational radiation exposure history, security clearance, health status, ability to wear and use respiratory protective equipment, and training and qualification for work in controlled areas. In-processing is the responsibility of the licensee, and depends on the cooperation of the worker and the worker's present and past employers and other past contracting licensees.

In-processing is complicated by the fact that different facilities keep the required information on different forms in varying degrees of detail. In-processing one worker often can take several days and result in a loss of productive time as well as increased staffing costs for the facility operator.

One possible solution to these problems is a cooperative effort within the nuclear industry to develop a common or central data base that can be accessed to obtain pertinent historical data on a worker. A central record keeping system (CRS) is envisioned for this purpose. Such a system could help reduce in-processing time for temporary workers.

However, some degree of standardization is necessary before a centralized record keeping system is possible. This specification standardizes the necessary content of transient worker records.

1. Scope

1.1 This specification covers the required content and provides retention requirements for records needed for in-processing of nuclear facility transient workers.

1.2 This specification applies to records to be used for in-processing only.

1.3 This specification is not intended to cover specific skills records (such as equipment operating licenses, ASME inspection qualifications, or welding certifications).

1.4 This specification does not reduce any regulatory requirement for records retention at a licensed nuclear facility.

NOTE 1—Nuclear facilities operated by the U.S. Department of Energy (DOE) are not licensed by the U.S. Nuclear Regulatory Commission (NRC), nor are other nuclear facilities that may come under the control of

[1] This specification is under the jurisdiction of ASTM Committee E10 on Nuclear Technology and Applicationsand is the direct responsibility of Subcommittee E10.03 on Radiological Protection for Decontamination and Decommissioning of Nuclear Facilities and Components.

Current edition approved Jan. 1, 2013. Published January 2013. Last previous edition approved in 2008 as E1034-95(2008). DOI: 10.1520/E1034-95R13.

the U.S. Department of Defense (DOD) or individual agreement states. The references in this specification to licensee, the U.S. NRC Regulatory Guides, and Title 10 of the U.S. Code of Federal Regulations are to imply appropriate alternative nomenclature with respect to DOE, DOD, or agreement state nuclear facilities. This distinction does not alter the required content of records needed for in-processing of nuclear facility transient workers.

NOTE 2—This specification does not define the form of the required worker records (such as a passport or central computerized record keeping system).

2. Referenced Documents

2.1 *ASTM Standards:*[2]

E1168 Guide for Radiological Protection Training for Nuclear Facility Workers

2.2 *ANSI Standards:*

ANSI N13.6 American National Standard Practice for Occupational Radiation Exposure Records Systems[3]

2.3 *Nuclear Regulatory Commission Documents:*

Regulatory Guide 8.7, Instructions for Recording and Reporting Occupational Radiation Exposure Data[4]

Regulatory Guide 8.15, Acceptable Programs for Respiratory Protection[4]

NUREG/CR-0041, Manual of Respiratory Protection Against Airborne Radioactive Materials[4]

2.4 *CFR Documents:*

Notices, Instructions, and Reports to Workers; Inspections, 10CFR, Part 19[4]

Standards for Protection Against Radiation, 10CFR, Part 20[4]

2.5 *American Nuclear Insurers Documents:*

ANI/MAELU Information Bulletin 80-1A, Nuclear Liability Insurance Records Retention[5]

3. Terminology

3.1 *Definitions of Terms Specific to This Standard:*

3.1.1 *absorbed dose(D), n*—for purposes of records maintained in accordance with this specification, absorbed dose is the energy absorbed per unit mass at a specific place in a material.

3.1.1.1 *Discussion*—The SI unit of absorbed dose is the gray (Gy), equal to 1 J/kg (10,000 ergs/g). The traditional unit of absorbed dose is the rad. One Gy = 100 rad. As used in this specification, "absorbed dose" stands for the absorbed dose in soft tissue.

3.1.2 *committed dose equivalent (CDE), n*— dose equivalent to organs or tissues of reference that will be received from an intake of radioactive material by an individual during the 50-year period following the intake.

3.1.3 *committed effective dose equivalent (CEDE), n*—the sum of the committed dose equivalents to various tissues in the body, each multiplied by its weighting factor. It does *not* include contributions from external dose.

3.1.4 *controlled area, n*—an area of a nuclear facility encompassed by physical barriers to which access is controlled.

3.1.4.1 *Discussion*—This definition is equivalent to the *restricted area* definition for NRC and Agreement State Licensees. It is not the same as the *controlled area* definition with which NRC and Agreement State Licensees are familiar.

3.1.5 *deep dose equivalent (DDE), n*—dose equivalent delivered to tissue at a depth of 1.0 cm or more from the surface.

3.1.6 *dose equivalent (H), n*—the product of D, Q, and N, at the point of interest in tissue, where D is the absorbed dose, Q is the quality factor, and N is the product of any other modifying factors.

3.1.6.1 *Discussion*—The SI unit of dose equivalent is the sievert (equal to 1 J/kg). The traditional unit of dose equivalent is the rem. One Sv = 100 rem.

3.1.7 *employer, n*—a person or concern that employs persons for wages or salary. Note that a worker may have more than one employer at a given time.

3.1.8 *estimated dose, n*—dose data supplied by the licensee to the worker prior to the determination of the official record dose (see section 10CFR Part 19 or equivalent).

3.1.8.1 *Discussion*—Estimated doses are provided at the worker's request and generally when the worker is terminating a work assignment involving radiation exposure at a licensee's facility.

3.1.9 *external dose equivalent, n*—dose equivalent due to radiation sources located outside the body.

3.1.10 *extremity, n*—hands and arms below the elbow or feet and legs below the knee (see 3.1.23).

3.1.11 *extremity dose, n*—the external (shallow/deep) dose to the extremities.

3.1.12 *eye dose equivalent, n*—dose equivalent to the lens of the eye from external radiation sources is taken as the dose equivalent at a tissue depth of 0.3 cm (300 mg/cm^2).

3.1.13 *in-processing, n*—the determination, prior to starting work, of a worker's previous occupational radiation exposure history, security clearance, health status, ability to wear and use respiratory and other personal protective equipment, and training and qualification for work in controlled areas.

3.1.14 *nuclear facility, n*—a facility whose operations involve (or involved) radioactive materials in such form and quantity that a nuclear hazard potentially exists (or existed) to the employees and the general public. Included are facilities that are (or were) used to produce, process, or store radioactive materials (see Note 1). Some examples are: nuclear reactor (power or research), fuel fabrication plant, fuel reprocessing plant, uranium or thorium mill, UF_6 production plant, radiochemical laboratory, and radioactive waste disposal site.

3.1.15 *occupational radiation exposure, n*— radiation exposure resulting from, and received in, the course of an individual's employment.

[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 American National Standards Institute (ANSI), 25 W. 43rd St., 4th Floor, New York, NY 10036, http://www.ansi.org..

[4] Available from the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402.

[5] Available from American Nuclear Insurers, 95 Glasterburg Boulevard, Suite 300, Glasterburg, CT 06033-453.