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Standard Guide for In-Plant Performance Evaluation of Automatic Pedestrian SNM Monitors[1]

This standard is issued under the fixed designation C 993; 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 is affiliated with Guide C 1112 on applying special nuclear material (SNM) monitors, Guide C 1169 on laboratory performance evaluation, Guide C 1189 on calibrating pedestrian SNM monitors, and Guides C 1236 and C 1237 on in-plant evaluation. This guide to in-plant performance evaluation is a comparatively rapid way to verify whether a pedestrian SNM monitor performs as expected for detecting SNM or SNM-like test sources.

1.1.1 In-plant performance evaluation should not be confused with the simple daily functional test recommended in Guide C 1112. In-plant performance evaluation takes place less often than daily tests, usually at intervals ranging from weekly to once every three months. In-plant evaluations are also more extensive than daily tests and may examine both a monitor's nuisance alarm record and its detection sensitivity for a particular SNM or alternative test source.

1.1.2 In-plant performance evaluation also should not be confused with laboratory performance evaluation. In-plant evaluation is comparatively rapid, takes place in the monitor's routine operating environment, and its results are limited to verifying that a monitor is operating as expected, or to disclosing that it is not and needs repair or recalibration.

1.2 In-plant evaluation is one part of a program to keep SNM monitors in proper operating condition. Every monitor in a facility is evaluated. There are two applications of the in-plant evaluation: one used during routine operation and another used after calibration.

1.2.1 *Routine Operational Evaluation*—In this form of the evaluation, nuisance alarm records for each monitor are examined, and each monitor's detection sensitivity is estimated during routine operation. The routine operational evaluation is intended to reassure the plant operator, and his regulatory agency, that the monitor is performing as expected during routine operation. This evaluation takes place without pre-testing, recalibration, or other activity that might change the monitor's operation, and the evaluation simulates the normal use of the monitor.

1.2.2 *Post-Calibration Evaluation*—This form of the evaluation is part of a maintenance procedure; it should always follow scheduled monitor recalibration, or recalibration connected with repair or relocation of the monitor, to verify that an expected detection sensitivity is achieved. Nuisance alarm data do not apply in this case because the monitor has just been recalibrated. Also, having just been calibrated, the monitor is likely to be operating at its best, which may be somewhat better than its routine operation.

1.3 The values stated in SI units are to be regarded as standard.

1.4 *This standard does not purport to address the safety problems, 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 The guide is based on ASTM standards that describe application and evaluation of SNM monitors, as well as technical publications that describe aspects of SNM monitor design and use.

2.2 *ASTM Standards:*

C 859 Terminology Relating to Nuclear Materials[2]

C 1112 Guide for Application of Radiation Monitors to the Control and Physical Security of Special Nuclear Material[2]

C 1169 Guide for Laboratory Evaluation of Automatic Pedestrian SNM Monitor Performance[2]

C 1189 Guide to Procedures for Calibrating Automatic Pedestrian SNM Monitors[2]

C 1236 Guide for In–Plant Performance Evaluation of Automatic Vehicle SNM Monitors[2]

C 1237 Guide to In–Plant Performance Evaluation of Hand–Held SNM Monitors[2]

[1] This guide is under the jurisdiction of ASTM Committee C26 on Nuclear Fuel Cycle and is the direct responsibility of Subcommittee C26.12 on Safeguard Applications.

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[2] *Annual Book of ASTM Standards*, Vol 12.01.

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