



Standard Practice for Adjusting the Operational Sensitivity Setting of In-Plant Walk-Through Metal Detectors¹

This standard is issued under the fixed designation C 1269; 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

Nuclear regulatory authorities require personnel entering designated security areas to be screened for concealed weapons. Additionally, in security areas containing specified quantities of special nuclear materials, personnel exiting the facility are required to be screened for metallic nuclear shielding material. Walk-through metal detectors are widely used to implement these requirements. Nuclear regulatory authorities usually specify an assortment of metal detector test objects that must all be detected by walk-through metal detectors. This practice provides a procedure for adjusting the operational sensitivity setting to the lowest setting necessary to detect the least likely to-be-detected test object in its least likely to-be-detected orientation while passing through the detection zone in the weakest known detection path. All other test objects will then be detected at this sensitivity setting anywhere in the detection zone.

1. Scope

1.1 This practice covers a procedure for adjusting the operational sensitivity of in-plant walk-through metal detectors. Performance of this procedure should result with in-plant walk-through metal detectors being adjusted to an initial operational sensitivity setting suitable for performance testing.

1.2 This practice does not set test object specifications or specify specific test objects. These should be specified by the regulatory authority.

1.3 This practice uses information developed by Practice C 1270, or an equivalent procedure, which identifies the critical test object (from a specified set of test objects), its critical orientation, and the critical test path through the detection zone. In the case of Practice C 1270, the information is found on the detection sensitivity map(s) for each in-plant walk-through metal detector.

1.4 This practice is one of several developed to assist operators of nuclear facilities with meeting the metal detection performance requirements of the regulatory authorities (see Appendix).

1.5 This standard practice is neither intended to set performance levels nor limit or constrain technologies.

1.6 This practice does not address safety or operational issues associated with the use of walk-through metal detectors.

1.7 The values stated in SI units are to be regarded as standards. The values given in parentheses are for information only.

2. Referenced Documents

2.1 ASTM Standards:

C 1238 Guide for Installation of Walk-Through Metal Detectors²

C 1270 Practice for Detection Sensitivity Mapping of In-Plant Walk-Through Metal Detectors²

C 1309 Practice for Performance Evaluation of In-Plant Walk-Through Metal Detectors

F 1468 Practice for the Evaluation of Metallic Weapons Detectors for Controlled Access Search and Screening³

3. Terminology

3.1 Definitions of Terms Specific to This Standard:

3.1.1 *clean-tester, n*—a person who does not carry any extraneous metallic objects that would significantly alter the signal produced when the person carries a test object.

3.1.1.1 *Discussion*—Smaller test objects require more complete elimination of metallic objects. By example but not limitation, such extraneous metallic objects may include: metallic belt buckles, metal buttons, cardiac pacemakers, coins, metal frame eyeglasses, hearing aids, jewelry, keys, mechanical pens and pencils, shoes with metal shanks or arch supports, metallic surgical implants, undergarment support metal, metal

¹ This practice 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.

³ *Annual Book of ASTM Standards*, Vol 15.07.