



Designation: C 1490 – 01

## Standard Guide for the Selection, Training and Qualification of Nondestructive Assay (NDA) Personnel<sup>1</sup>

This standard is issued under the fixed designation C 1490; 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 ( $\epsilon$ ) indicates an editorial change since the last revision or reapproval.

### 1. Scope

1.1 This guide contains good practices for the selection, training, qualification, and professional development of personnel performing analysis, calibration, physical measurements, or data review using nondestructive assay equipment, methods, results, or techniques. The guide also covers NDA personnel involved with NDA equipment setup, selection, diagnosis, troubleshooting, or repair. Selection, training, and qualification programs based on this guide are intended to provide assurance that NDA personnel are qualified to perform their jobs competently. This guide presents a series of options but does not recommend a specific course of action.

### 2. Referenced Documents

#### 2.1 ASTM Standards:

- C 1030 Test Method for Determination of Plutonium Isotopic Composition by Gamma-Ray Spectrometry<sup>2</sup>
- C 1133 Test Method for Nondestructive Assay of Special Nuclear Material in Low-Density Scrap and Waste by Segmented Passive Gamma-Ray Scanning<sup>2</sup>
- C 1207 Test Method for Nondestructive Assay of Plutonium in Scrap and Waste by Passive Neutron Coincidence Counting<sup>2</sup>
- C 1221 Test Method for Nondestructive Analysis of Special Nuclear Materials in Homogeneous Solutions by Gamma-Ray Spectrometry<sup>2</sup>
- C 1268 Test Method for the Quantitative Determination of Americium 241 in Plutonium by Gamma-Ray Spectrometry<sup>2</sup>
- C 1316 Test Method for Nondestructive Assay of Nuclear Material in Scrap and Waste by Passive-Active Neutron Counting Using a <sup>252</sup>Cf Shuffler<sup>2</sup>
- C 1455 Guide for Nondestructive Assay of Special Nuclear Material Holdup Using Gamma-Ray Spectrometric Methods<sup>2</sup>

<sup>1</sup> This guide is under the jurisdiction of ASTM Committee C26 on Nuclear Fuel Cycle and is the direct responsibility of Subcommittee C26.10 on Non Destructive Assay.

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<sup>2</sup> Annual Book of ASTM Standards, Vol 12.01.

C 1458 Test Method for Non-destructive Assay of Plutonium, Tritium and <sup>241</sup>Am by Calorimetric Assay<sup>2</sup>

#### 2.2 U.S. Government Documents:

- 10 CFR 830.120 Code of Federal Regulations, Title 10, Part 830, Paragraph 120, Quality Assurance Requirements<sup>3</sup>
- DOE Order 5480.20A
- DOE QAPD CAO-94-1012 U.S. Department of Energy, Quality Assurance Program Document
- TWCP-QAPP CAO-94-1010 TRU Waste Characterization Quality Assurance Program Plan

### 3. Significance and Use

3.1 The process of selection, training and qualification of personnel involved with NDA measurements is one of the quality assurance elements for an overall quality NDA measurement program.

3.2 This guide describes an approach to selection, qualification, and training of personnel that is to be used in conjunction with other NDA QA program elements. The selection, qualification and training processes can vary and this guide provides one such approach.

3.3 The qualification activities described in this guide assume that NDA personnel are already proficient in general facility operations and safety procedures. The training and activities that developed this proficiency are not covered in this guide.

3.4 This guide describes a basic approach and principles for the qualification of NDA professionals and technical specialists and operators. A different approach may be adopted by the management organization based on its particular organization and facility specifics. However, if a variation of the approach of this guide is applied, the resulting selection, training, and qualification programs must meet the requirements of the facility quality assurance program and should provide all the applicable functions of Section 4.

3.5 This guide may be used as an aid in the preparation of a Training Implementation Plan (TIP) for the Transuranic Waste Characterization Program (TWCP). Requirements for

<sup>3</sup> Available from the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402.