

Nondestructive Assay Holdup Measurements Training for Nuclear Criticality Safety

To Be Offered: **Sept 11-14, 2023**

Location: Safeguards Laboratory at Oak Ridge National Laboratory

Duration: 4 days

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Target Audience

Individuals that perform, oversee, or manage nondestructive assay (NDA) holdup measurements of uranium materials. This course is typically open to Department of Energy employees, government contractors, universities, and members of private industry.

Course Objectives

The primary objective of this training course is to provide participants with knowledge and experience with NDA instrumentation and techniques used to assay special nuclear material (SNM) holdup to support Nuclear Criticality Safety. Informative lectures are supplemented with laboratory sessions to optimize hands-on training experience in holdup measurement techniques. A low student-to-instructor ratio permits a more conducive learning environment.



Instructional Scope

The scope of this course covers NDA basics of using in-field instruments to measure holdup deposits that may have Nuclear Criticality Safety concerns. Laboratory exercises emphasize measurement procedures using calibrated gamma-ray instrumentation on simulated SNM deposits in arrays of pipes and ducts that emulate hardware in operational facilities. Calibration, shielding, attenuation, and geometry effects on measurement techniques are also covered, as well as discussions on the sources of uncertainty in the final calculated ^{235}U mass. Hands-on laboratory experiments are supplemented with instructional lectures on topics related to holdup measurements.

Prerequisites: Previous experience with radiation measurement equipment and familiarity with fundamental physics and mathematical concepts in nuclear radiation strongly suggested.