Overview

Los Alamos National Laboratory (LANL) has nearly 60 years of experience in developing and implementing Nondestructive Assay (NDA) technologies in support of nuclear safeguards, security, and nonproliferation.

The Safeguards and Security Technology Training Program (SSTTP) at LANL provides NDA training using nuclear material, specialized equipment, and subject-matter expert instructors. The SSTTP's modular training materials can be readily customized to meet customer's needs.

Facility Description & Capabilities

- The training and research facility at LANL's Technical Area 66 (TA-66) provides easy and safe access to sealed items including uranium and plutonium. These materials are used for teaching nuclear material measurements techniques and for research and development of new safeguards and security technologies.
- The 8,600 sq. ft. facility provides ample room for lectures and hands-on training, with two classrooms, a series of interconnected hands-on laboratory spaces, and meeting rooms for up to 24 participants. In addition to training, the facility is used for testing and evaluation of new safeguards technologies with certified nuclear material reference materials.
- Other areas at LANL, representative of actual nuclear fuel cycle facilities, are available for the development and training of nuclear security and safeguards approaches in a realistic environment. These locations in combination with the TA-66 facility yield a safe, secure, flexible, and realistic teaching environment to meet the needs of our domestics and international partners.
- This facility offers testing and evaluation of new safeguards technologies with significant quantities of NM. Certified reference materials are available for measurement campaigns, detector comparisons, and system characterization.

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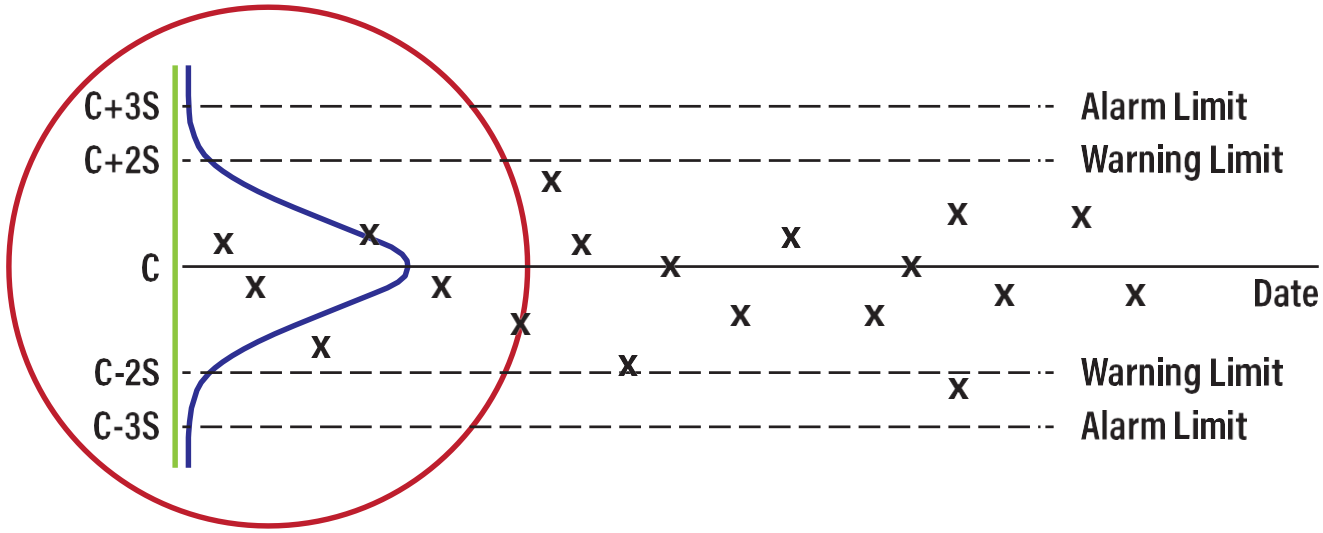
Los Alamos NATIONAL LABORATORY

Statistical Concepts in Nuclear Safeguards



Course Description

- This course prepares participants to understand how statistical methods are used to evaluate materials accounting data and to assess safeguards effectiveness.
- A primary focus of this course is to understand how uncertainties in the various measurement techniques (destructive assay and various nondestructive assay techniques) are determined and how those uncertainties are incorporated into the facility accountancy.
- The course is composed of lectures that describe the statistical concepts, followed by laboratory exercises on counting statistics. In addition, classroom exercises will provide first- hand experience on propagation of variance and statistical methods used in material accountancy.



NDA Concepts Covered:

- Fundamental statistical principles
- Propagation of variance techniques
- Statistics methods applied to destructive and nondestructive measurement techniques
- Control charts and measurement control
- Statistical concepts applied to nuclear safeguards of plutonium



Course Objective

To provide students with statistical techniques for analyzing materials accounting data, shipper-receiver differences, and for evaluating measurement methods and detecting undeclared activities.

Additional Information

Course Length: 2.5 days

Target Audience: Safeguards professionals who need to understand how statistical methods are used to assess safeguards effectiveness, and those involved in the control and accountability of nuclear materials as part of an overall safeguards program.