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REGULATORY GUIDE

DIRECTORATE OF REGULATORY STANDARDS

REGULATORY GUIDE 5.3

STATISTICAL TERMINOLOGY AND NOTATION FOR SPECIAL NUCLEAR MATERIALS CONTROL AND ACCOUNTABILITY

A. INTRODUCTION

Part 70 of Title 10 of the Code of Federal Regulations requires certain AEC special nuclear material licensees to establish and maintain sufficient written material control and accounting procedures to enable the licensee to account for the special nuclear material in his possession. Part 70 also requires applicants for certain AEC licenses for special nuclear material to submit to the Commission as part of the application a full description of such procedures, including recording, reporting, physical inventory, and measurement procedures for special nuclear material. Essential to satisfactory material control and accounting procedures are measurement and statistical controls. This guide identifies acceptable terminology and notation concerning statistical analyses of accountability data for special nuclear material control purposes.

B. DISCUSSION

Statistical techniques have been developed for and applied to special nuclear materials control and accountability systems to enable licensees of fuel processing and fuel fabrication facilities to account for the special nuclear material they possess and to localize losses when they occur. Because of the diverse yet overlapping applications of statistical controls, it is desirable that a uniform terminology be used to improve comprehension and communication and to assure effective implementation of special nuclear materials control and accountability programs. The standardization of statistical terminology is desirable in

describing material protection systems for controlling special nuclear material. Among these systems are process control, sampling, error propagation, quality assurance, measurement, estimation, data recording, reporting, and inventory control as well as verification, auditing, and inspection of special nuclear materials. All entail varying degrees of statistical evaluation and each interacts with the others. In recognition of the need for standardizing statistical terminology, the American National Standards Institute (ANSI) Subcommittee N15-3, Statistics, has developed a standard for statistical terminology and notation for nuclear materials management.

C. REGULATORY POSITION

The terminology and notation contained in ANSI N15.5-1972 "Statistical Terminology and Notation for Nuclear Materials Management" approved May 24, 1972, are generally acceptable for use in written special nuclear material control procedures. Further clarification of one term is provided as follows: the AEC Regulatory staff has construed "Limit of Error" as the uncertainty component used to construct a 95% confidence interval associated with a quantity when the effect of any recognized bias has been accounted for or otherwise eliminated by the user. The uncertainty component should include systematic as well as random errors.

¹Copies may be obtained from the American National Standards Institute, Inc., 1430 Broadway, New York, New York 10018.

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