

American National Standard Performance Specifications for Reactor Emergency Radiological Monitoring Instrumentation

Secretariat for N42

Institute of Electrical and Electronics Engineers, Inc

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American National Standard

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Foreword

(This Foreword is not a part of ANSI N320-1979, American National Standard Performance Specifications for Reactor Emergency Radiological Monitoring Instrumentation.)

This standard was prepared under the joint sponsorship of the American National Standards Committee N42 on Radiation Instrumentation and the American National Standards Committee N13 on Radiation Protection. The members of both N42 and N13 reviewed and approved this standard.

The performance specifications herein were developed by Battelle Northwest Laboratory through collaboration with principal manufacturers and industry as well as with acknowledged experts in principal government laboratories. The work was performed under USAEC contract.

At the time it approved this standard, the American National Standards Committee on Radiation Instrumentation had the following personnel:

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American National Standard Performance Specifications for Reactor Emergency Radiological Monitoring Instrumentation

1. Scope

This standard defines, for various types of instrumentation, the essential performance parameters, and general placement for monitoring the release of radionuclides associated with a postulated serious accident at a reactor facility. *This standard does not specify which of the instruments or systems are required nor does it consider the number or specific locations of such instruments.* This standard also does not address *single failure criteria* associated with nuclear safety instrumentation. For the purpose of this standard, the predominant consideration in the assessment of radiation emergencies is the measurement of fission products promptly enough to permit timely emergency decisions to be made.

Where instruments utilized for routine operations fulfill the criteria herein, they need not be duplicated in order to have separate emergency instrumentation. Dual purpose instrumentation must meet the requirements of this standard.

1.1 Introduction

Regulatory agencies require the development of comprehensive emergency plans for nuclear reactor facilities. Such plans must include the provision of adequate radiological instrumentation to detect and quantify accidental releases of radioactivity from these facilities. This standard presents performance criteria for instrumentation for detecting and quantifying such release of radioactive materials. The criteria are based on estimates of the quantity and characterization of radioactive material that could escape as a result of a postulated accident at a reactor facility (see definitions for auxiliary building(s), calibrate, and check). Throughout these criteria, three verbs have been used to indicate the degree of rigor intended by the specific criterion. The word *shall* is used to denote a requirement, the word *should* to denote a recommendation, and the word *may* to denote permission, neither a requirement nor a recommendation.

It is important that instruments, systems, or individual components intended for emergency application be:

- 1) Qualified for use under extreme conditions
- 2) Preoperationally tested over the entire range of operation
- 3) Periodically checked and calibrated according to an appropriate calibration program