American Nuclear Society

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id radioactive waste processing system for light water cooled reactor plants

an American National Standard

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American National Standard for Solid Radioactive Waste Processing System for Light Water Cooled Reactor Plants

Secretariat
American Nuclear Society

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Working Group ANS-55.1

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Abstract

This standard establishes minimum requirements and provides recommendations and guidelines for the design, construction, and performance with due consideration for operation of solid radioactive waste processing systems for commercial nuclear power reactors. Design requirements and recommendations as well as quality requirements are presented. Various process steps and alternate methods of handling and disposing of input quantities of solid radioactive waste are discussed along with sizing, capacity, arrangements, and redundancy of the system. Instrumentation and control requirements are also provided, as well as operating guidance, to assure that the performance, safety, and operational objectives of this standard are met.

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Foreword

(This Foreword is not a part of American National Standard for Solid Radioactive Waste Processing System for Light Water Cooled Reactor Plants, ANSI/ANS-55.1-1979)

A major aspect of nuclear power plant operation is management of the solid radioactive waste generated as a by-product of commercial nuclear power. The development of facilities and equipment to handle and process solid radioactive waste has provided the nuclear industry with the capability to assure that shipments of radioactive solid wastes are within applicable regulatory requirements.

It is the purpose of this standard to establish uniform practices and minimum requirements for design, construction, and performance, with due consideration for operation of solid radioactive waste processing systems, to reduce radiation exposures to operating personnel and to reduce the probability of releases of radioactivity from accidents. It is not the intent of this standard to develop a "standard system" for processing solid radioactive waste; it is clearly recognized that there is a wide variety of systems and equipment in use and others are continually being developed.

A number of designs, concepts, operating system histories, and practices were reviewed in preparation of this standard. In addition, applicable Nuclear Regulatory Commission (NRC) Regulatory Guides were considered in the development of this standard. It is not intended that this standard should limit the development or application of alternate methods of processing provided that such alternate methods meet the design and performance requirements of this standard.

Various quantities of solid radioactive waste are generated by operation and maintenance activities and are dependent upon several factors, including design conditions, type of equipment, equipment arrangements, and operating philosophy. The origin (input sources), the normal expected (averages) and maximum (short-term) quantities, method of handling, processing, and disposing of these wastes are the subjects of this standard.

The requirements of this standard consider that the solid radioactive waste processing systems are operated on a level commensurate with other facility operations. This standard establishes the minimum quality requirements for the design, construction, and performance of the system.

This standard employs a technique using a discrimination device called "boxing." This technique indicates those statements which are nuclear safety related. The term "nuclear safety" includes those requirements that are felt by the writing group to arise from official and implied NRC policies (including regulations, regulatory guides, branch positions, the Standard Review Plan, and past practice on applications) *as well as* other requirements the group believes are related to nuclear safety. Non-nuclear safety related requirements include the following types of needs as they exclusively apply to areas not considered to be nuclear safety related: conventional safety, equipment reliability, plant availability, good engineering practice, and contractual (commercial) requirements.

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