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Solid Radioactive Waste Processing System for Light- Water-Cooled Reactor Plants

An American National Standard

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American Nuclear Society
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**American National Standard
Solid Radioactive Waste
Processing System for Light-
Water-Cooled Reactor Plants**

Secretariat
American Nuclear Society

Prepared by the
**American Nuclear Society
Standards Committee
Working Group ANS-55.1**

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Foreword

(This foreword does not contain any requirements of American National Standard “Solid Radioactive Waste Processing System for Light-Water-Cooled Reactor Plants,” ANSI/ANS-55.1-2021, but is included for informational purposes.)

A key aspect for the further development of nuclear technology is the effective management of low-level radioactive waste generated during facility operation. Fundamental to the effective management of radioactive waste is the design, construction, and operation of radioactive waste processing systems. This standard was originally issued to provide design guidance for in-plant solid radwaste systems. In 2001, the U.S. Nuclear Regulatory Commission (NRC) granted design relief in Regulatory Guide 1.143 (Rev. 2), “Design Guidance for Radioactive Waste Management Systems, Structures, and Components Installed in Light-Water-Cooled Nuclear Power Plants,” when it allowed ANSI/ASME B31.3, “Process Piping,” as an option to ANSI/ASME B31.1, “Power Piping,” to be used for radioactive waste systems.

The revision of this standard incorporates the design relief granted by the NRC in 2001 and to service continued operation at nuclear facilities and new nuclear facility construction.

It is the purpose of this standard to provide requirements for the design and operation of in-plant solid low-level radioactive waste processing systems. It is the intent of this standard to identify a basis for establishing uniform practices and minimum requirements for the design, fabrication, and operation of those systems as applied to nuclear facility operations (e.g., power plants, institutions, and laboratories that generate wastes approved for disposal under *Code of Federal Regulations* (CFR) Title 10, “Energy,” Part 61, “Licensing Requirements for Land Disposal of Radioactive Waste”). This standard’s scope does not address systems used to process waste from nuclear facilities that potentially contain fissile material in sufficient quantities to require controls to avoid criticality, i.e., wastes containing quantities of fissile or long-lived radionuclides that are classified as high-level or transuranic radioactive waste atypical of NRC-licensed commercial facilities and beyond the scope of 10 CFR 61. Systems applicable to non-low-level waste that use this standard might have to meet additional requirements beyond the scope of this standard. This standard addresses the technical practices and requirements necessary for solid radioactive waste processing operations while maintaining consideration for reducing radiation exposures to the environment, the public, and facility operating personnel.

This standard might reference documents and other standards that have been superseded or withdrawn at the time the standard is applied. A statement has been included in the references section that provides guidance on the use of references.

This standard does not incorporate the concepts of generating risk-informed insights, performance-based requirements, or a graded approach to quality assurance. The user is advised that one or more of these techniques could enhance the application of this standard.

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