



Design Requirements for New Fuel Storage Facilities at Light Water Reactor Plants

An American National Standard

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**American National Standard
Design Requirements for New Fuel Storage
Facilities at Light Water Reactor Plants**

Secretariat
American Nuclear Society

Prepared by the
**American Nuclear Society
Standards Committee
Working Group ANS-57.3**

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Foreword (This foreword is not a part of American National Standard “Design Requirements for New Fuel Storage Facilities at Light Water Reactor Plants,” ANSI/ANS-57.3-2018, but is included for informational purposes.)

This standard establishes minimum design requirements for the designer of new fuel dry storage facilities at water-cooled nuclear power plants. It provides general guidelines and specific design parameters that could assist in both the design and licensing efforts if used. However, the designer is not relieved of the responsibility for complying with specific construction codes referenced herein. U.S. Nuclear Regulatory Commission regulations and guidance exist that contain information useful in designing systems and components. This standard was developed under sponsorship of the American Nuclear Society and was first approved in 1983. In this revision, there have been some significant changes and some reorganization. Of note are simplification of the sections on seismic events and criticality. A new section on quality assurance was added. Also, this standard was revised to address only dry storage of new fuel. Storage of new fuel in a spent fuel pool (wet storage) is covered by ANS-57.2.

This standard was prepared by the ANS-57.3 Working Group of the American Nuclear Society Standards Committee. The ANS-57.3 Working Group had the following membership during its work on this standard:

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Design Requirements for New Fuel Storage Facilities at Light Water Reactor Plants

1 Introduction and scope

1.1 Introduction

Storage and handling of new nuclear fuel requires consideration be given to receipt inspection, prevention of theft or criticality, and protection from sabotage or physical damage.

1.2 Scope

This standard¹⁾ defines the required functions of dry storage facilities for new fuel at light water reactor nuclear power plants. It provides minimum design requirements for safe storage of new nuclear fuel and control components at such plants. The fuel storage facilities covered by this standard are used for receiving, inspecting, and storing fuel containing new and recycled uranium and mixed oxides. The basis of this standard is to ensure that the design of the facility will be performed in an efficient and economical manner to (a) preclude criticality; (b) ensure protection of new fuel assemblies, control components, plant personnel, and the public; and (c) maintain radiation exposures As Low As Reasonably Achievable (ALARA). Storage of new fuel assemblies in a spent fuel pool is covered in ANS-57.2-1983 (withdrawn) [1].²⁾

2 Acronyms and definitions

2.1 Acronyms

ALARA: As Low As Reasonably Achievable

SSCs: structures, systems, and components

SSE: safe shutdown earthquake

2.2 Shall, should, and may

shall, should, and may: The word “shall” is used to denote a requirement; the word “should” is used to denote a recommendation; and the word “may” is used to denote permission, neither a requirement nor a recommendation.

2.3 Definitions

cell: A unit for storage of an individual fuel assembly. It is a subassembly of a storage rack.

¹⁾ The current standard, ANSI/ANS-57.3-2018, is hereinafter referred to as “this standard.”

²⁾ Numbers in brackets refer to corresponding numbers in Sec. 7, “References.”