

VOLUNTEERS NEEDED FOR THE FOLLOWING STANDARDS:

ANS-21:

ANS-58.9, "Single Failure Criteria for Light Water Reactor Safety-Related Fluid Systems"

Scope: This standard provides criteria for the designer which interpret the requirements of Title 10, Code of Federal Regulations, Part 50, "Licensing of Production and Utilization Facilities," Appendix A, "General Design Criteria for Nuclear Power Plants," with respect to design against single failures in safety-related Light Water Reactor (LWR) fluid systems. Means of treating both active and passive failures are addressed for safety-related fluid systems following various initiating events. Current acceptable practice is used as a basis for these criteria.

Failure criteria for the electric power systems and the protection systems are provided in IEEE Std 308-1980 "IEEE Standard Criteria for Class 1E Power Systems for Nuclear Power Generating Stations", IEEE Std 279-1971 "IEEE Standard Criteria for Protection Systems for Nuclear Power Generating Stations" (N42.7-1972), IEEE Std 379-1977 "IEEE Standard for Application of the Single-Failure Criterion to Nuclear Power Generating Station Class IE Systems", and IEEE Std 603-1980 "Standard Criteria for Safety Systems for Nuclear Power Generating Stations." Failures of structural components, such as braces, supports, or restraints, as well as occurrences involving common mode failures, are excluded.

ANS-21:

ANS-58.11, "Design Criteria for Safe Shutdown Following Selected Design Basis Events in Light Water Reactors"

Scope: This standard provides design criteria for systems that perform the safety-related functions necessary to shut down a reactor and maintain it in a safe shutdown condition for selected design basis events; i.e., any design basis events that do not require operation of engineered safety features. For design basis events that require operation of engineered safety features, this standard can be selectively applied because of plant features specifically designed for these conditions. For systems that serve multiple functions, the design criteria associated with the most limiting function shall be applied.

The following safety-related functions are required for safe shutdown and are addressed in this standard:

- (1) Reactor core reactivity control
- (2) Reactor core heat removal
- (3) Reactor coolant pressure boundary integrity provided by:
 - (a) Temperature control
 - (b) Pressure control, and
 - (c) Inventory control.

ANS-22:**ANS-52.1, "Nuclear Safety Criteria for the Design of Stationary Boiling Water Reactor Plants"**

Scope: This standard establishes the nuclear safety criteria and functional design requirements of structures, systems, and components of stationary boiling water reactor (BWR) power plants. Operations, maintenance, and testing requirements are covered only to the extent that they affect design provisions.

A methodology is given for classifying all equipment into one of three Safety Classes according to its importance to nuclear safety or into a Non-Nuclear Safety Class. Another methodology is given for identifying and categorizing into one of five Plant Conditions the normal operations and events for which the plant shall be designed. Acceptance criteria are given for each Plant Condition.

Specific design requirements are given for each major system in a typical plant. These requirements are related to other, more specific design standards and are intended to amplify the criteria given in the Code of Federal Regulations, Title 10, "Energy," Part 50, "Licensing of Production and Utilization Facilities," Appendix A, "General Design Criteria for Nuclear Power Plants."

ANS-22:**ANS-55.1, "Solid Radioactive Waste Processing System for Light-Water-Cooled Reactor Plants"**

Scope: This standard sets forth the design, construction, and performance requirements for a solid radioactive waste processing system for light-water-cooled reactor plants. For the purposes of this standard, the solid radioactive waste processing system begins at the interface with the liquid radioactive waste processing system boundary and at the inlets to the spent resin, filter sludge, evaporator concentrate, and phase separator tanks. In addition, this standard pertains to dry active waste, mixed waste, and other solid radioactive waste forms that are generated as part of the operation and maintenance of light-water-cooled reactor plants. The system includes facilities for temporary (up to 30 days of anticipated normal waste generation) on-site storage of packaged waste but terminates at the point of loading the filled drums and other containers on a vehicle for shipping off-site to a licensed disposal site or transfer to interim (up to 5 yr.) on-site storage facilities. The solid radioactive waste processing system is not a safety-class system as defined by American National Standard Nuclear Safety Criteria for the Design of Stationary Pressurized Water Reactor Plants, ANSI/ANS-51.1-1983 (R1988) or as defined in American National Standard Nuclear Safety Criteria for the Design of Stationary Boiling Water Reactor Plants, ANSI/ANS-52.1-1983 (R1988).

ANS-22:**ANS-55.4, "Gaseous Radioactive Waste Processing Systems for Light Water Reactor Plants"**

Scope: This standard sets forth minimum design, construction, and performance requirements, with due consideration for operation, for gaseous radioactive waste processing systems (GRWPS) for light water reactor (LWR) plants. It is applicable for routine operation, design basis fuel leakage, and other design basis occurrences.

ANS-22:**ANS-55.6, "Liquid Radioactive Waste Processing System for Light Water Reactor Plants"**

Scope: This standard sets forth minimum design, construction, and performance requirements, with due consideration for operation, of the Liquid Radioactive Waste Processing System (LRWPS) for light water reactor (LWR) plants for design basis inputs. It is applicable to routine operation, including design basis fuel leakage and other design basis occurrences.

ANS-22:**ANS-58.14, "Safety and Pressure Integrity Classification Criteria for Light Water Reactors"**

Scope: This standard specifies criteria for the safety classification of items (structures, systems, components, and parts (including consumables) in a light water reactor (LWR) nuclear power plant as either safety-related (Q), supplemented grade (S), or non-safety-related (N). Criteria are also provided to establish a procurement subclassification within Class Q, called commercial grade (C). In addition, pressure integrity classification criteria are provided for the assignment of Classes 1,2,3,4, or 5 to the pressure retaining portion of items.

ANS-22:**ANS-59.3, "Nuclear Safety Criteria for Control Air Systems"**

Scope: This standard provides criteria for the control air system that furnishes compressed air to nuclear safety-related components and other equipment that could affect any nuclear safety-related function in nuclear power plants.

This standard provides:

- (1) the system nuclear safety design requirements and the non-nuclear safety design recommendations for equipment, piping, instruments, and controls that constitute the control air system; and
- (2) the nuclear safety design requirements and the non-nuclear safety design recommendations to accommodate the testing and maintenance necessary to ensure adequate performance of the control air system.

This standard applies only to the control air system and does not apply to air-operated devices or the emergency diesel generator starting air system.

ANS-22:**ANS-59.52, "Lubricating Oil Systems for Safety-Related Emergency Diesel Generators"**

Scope: This standard provides functional, performance, and design requirements for lubricating oil systems for diesel generators that provide emergency onsite power for light water reactor nuclear power plants. The standard addresses all mechanical equipment associated with the lubricating oil system, with the exception of engine mounted components. These components, which are mounted directly to engine structure itself, are excluded, except to define interface requirements. This standard also includes the lubricating oil system instrumentation and control functional requirements. It excludes motors, motor control centers, switchgear, cables, and other electrical equipment used in the operation of the lubricating oil system, except to define interface requirements.

ANS-23:**ANS-41.2, "Criteria for Remote Sensing Techniques for Site Characterization in Environmental Remediation"**

Scope: No scope listed.

ANS-24:**ANS-5.4, "Method for Calculating the Fractional Release of Volatile Fission Products from Oxide Fuel"**

Scope: This standard provides an analytical method for calculating the release of volatile fission products from oxide fuel pellets during normal reactor operation. When used with nuclide yields, this method will give the so-called "gap activity," which is the inventory of volatile fission products that could be available for release from the fuel rod if the cladding were breached.

The standard considers high-temperature (up to the melting point) and low-temperature (where temperature-independent processes dominate) releases and distinguishes between short-halflife (half-life less than one year) and long-halflife (half-life greater than one year) nuclides. This standard requires that releases for nuclides of interest be calculated with both the high-temperature and the low-temperature models, and the larger of the two calculated releases is to be taken as the result.

ANS-24:**ANS-56.4, "Pressure and Temperature Transient Analysis for Light Water Reactor Containments"**

Scope: This standard provides criteria and guidance for the analysis of postulated pressure and temperature transients for light water reactor (LWR) containments, including ECCS minimum backpressure analysis. Criteria and guidance are presented for the formulation of input parameters to ensure a suitably conservative design. Interfaces with passive and active systems governing the analysis, such as Emergency Core Cooling Systems (ECCS), structural heat sinks, containment fan coil units, containment spray systems, and water pressure suppression systems are identified.

ANS-25:**ANS-2.8, "Determining Design Basis Flooding at Power Reactor Sites"**

Scope: This document presents criteria to establish design basis flooding for nuclear safety-related features at power reactor sites. Methodology is described to evaluate the flood having virtually no risk of exceedance that can be caused by precipitation and snowmelt and any resulting dam failures; seismically induced dam failures; surge or seiche and attendant wind-generated wave activity; or a reasonable combination of these events.

ANS-25:**ANS-2.9, "Evaluation of Ground Water Supply for Nuclear Power Sites"**

Scope: This standard presents guidelines for the determination of the availability of ground water supplies for nuclear power plant operations with respect to both safety and non-safety related aspects.

ANS-25:**ANS-2.17, "Evaluation of Radionuclide Transport in Ground Water for Nuclear Power Sites"**

Scope: This standard presents guidelines for the determination of the concentration of radionuclides in the ground water resulting from both postulated accidental and routine releases from nuclear power plants.

ANS-25:

ANS-40.21, "Siting and Operating Commercial Burial Grounds"

Scope: No scope listed.

ANS-26:

Need Working Group Chairs and members for all standards.

ANS-27:

ANS-2.19, "Guidelines for Establishing Site-Related Parameters for Site Selection and Design of an Independent Spent Fuel Storage Installation (Water Pool Type)"

Scope: This standard presents guidelines for establishing site-related parameters for site selection and design of an independent spent fuel storage installation (ISFSI). This installation provides storage of spent light water reactor (LWR) fuel that has aged a minimum of one year after discharge from the reactor core in a water basin type structure. Such an installation may be independent of both a nuclear power station and a reprocessing facility, or located adjacent to these facilities in order to share selected support systems. Aspects considered include flooding, geology, seismology, ground water, foundation engineering, earthwork engineering, and extreme wind conditions. These guidelines identify the basic site-related parameters to be considered in site evaluation, and in the design, construction, and operation of the ISFSI.

ANS-27:

ANS-40.35, "Volume Reduction of Low-Level Radioactive Waste or Mixed Waste"

Scope: This standard sets forth the general design specifications, procurement, and performance requirements for operation of low-level waste (LLW) and mixed waste (MW) volume reduction (VR) processing systems for nuclear power plants and other nuclear facilities. This standard may be applied to the specification of other LLW VR systems (such as government nuclear facilities) if consideration is given to any additional design features required by the hazardous nature of the wastes to be processed by them. For the purpose of this standard, a nuclear facility's LLW VR processing systems begin at the point where treatment of aqueous waste generates a solid waste, or where solid, slurry, or liquid organics wastes are collected, and ends at a waste storage, shipping, or disposal area.

ANS-27:

ANS-40.37, "Mobile Radioactive Waste Processing Systems"

Scope: This standard sets forth design, fabrication, and performance recommendations and requirements for Mobile Low-Level Radioactive Waste Processing (MRWP) systems (including components) for nuclear facilities. The purpose of this standard is to provide guidance to ensure that the MRWP systems are designed, fabricated, installed, and operated in a manner commensurate with the need to protect the health and safety of the public and plant personnel.

For the purpose of this standard, a nuclear facility MRWP system begins at the interface with a permanent plant system, or waste collection area, or both; it terminates at the interface where processed waste, or secondary waste, or both, is either returned to the facility, or removed from the facility, or both.

This standard refers throughout to vendors, system users, facility operators, and owners; however, these references are not intended to assign specific responsibilities of these parties for compliance with the requirements of this standard. These references are for convenience and are based on typical responsibilities of these parties. It is recognized that the facility owner, or operating license holder, or both, is ultimately responsible for compliance with these requirements. The body of this standard identifies both requirements and recommendations/guidelines for systems.

ANS-27:**ANS-57.5, "Light Water Reactors Fuel Assembly Mechanical Design and Evaluation"**

Scope: This standard sets forth a series of design conditions and functional requirements for the design of fuel assemblies for light water cooled commercial power reactors. It includes specific requirements for design, as well as design criteria to ensure adequate fuel assembly performance. The standard establishes a procedure for performing an evaluation of the mechanical design of fuel assemblies. It does not address the various aspects of neutronic or thermal-hydraulic performance except where these factors impose loads or constraints on the mechanical design of the fuel assemblies.

ANS-27:**ANS-57.8, "Fuel Assembly Identification"**

Scope: This standard describes requirements for the unique identification of fuel assemblies utilized in nuclear power plants. It defines the characters and proposed sequence to be used in assigning identification to fuel assemblies.

This standard was developed primarily for commercial light-water reactor fuel, but may be used for any reactor fuel contained in discrete fuel assemblies that can be identified with a serial number as specified by this standard.

Additionally, this standard describes requirements for a matrix system for identification in mapping the location of fuel rods within a fuel assembly. The matrix system establishes unique x-y coordinates for each possible rod location.

ANS-27:**ANS-57.10, "Design Criteria for Consolidation of LWR Spent Fuel"**

Scope: This standard provides design criteria for the process of consolidating LWR spent nuclear fuel in either a wet or a dry environment. It addresses processes for consolidating fuel either horizontally or vertically. The standard sets forth requirements for utilizing equipment and systems to perform consolidation, handle fuel rods and nonfuel-bearing components, and handle broken fuel rods. This standard also contains requirements for facility or installation interfaces, nuclear safety, structural design, thermal design, accountability, safeguards, decommissioning, and quality assurance.

The standard is not concerned with the storage of the spent fuel either before or after the consolidation process. These areas are covered in the following American National Standards:

Design Requirements for Light Water Reactor Spent Fuel Facilities at Nuclear Power Plants, ANSI/ANS-57.2-1992.