U.S. NUCLEAR REGULATORY COMMISSION

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WEATHER-RELATED ADMINISTRATIVE CONTROLS AT INDEPENDENT SPENT FUEL STORAGE INSTALLATIONS

A. INTRODUCTION

Purpose

This regulatory guide (RG) describes an approach that is acceptable to the staff of the U.S. Nuclear Regulatory Commission (NRC) to meet regulatory requirements, for limited purposes, for specific or general licensees (licensees) of an independent spent fuel storage installation (ISFSI) and certificate of compliance (CoC) holders to comply with protection against environmental conditions and natural phenomena as required by Title 10 of the *Code of Federal Regulations* (10 CFR) Part 72, "Licensing Requirements for the Independent Storage of Spent Nuclear Fuel, High-Level Radioactive Waste, and Reactor-Related Greater than Class C Waste" (Ref. 1).

Specifically, the RG explains the limited time and circumstances when licensees can use administrative controls as one method to demonstrate compliance with the requirements that structures, systems, and components (SSCs) important to safety (ITS) are designed to withstand the effects of weather-related wind and tornado natural phenomena without impairing their capability to perform their intended design functions during outdoor dry storage system (DSS) handling activities (ODHAs).

It endorses, with clarifications and an exception, Nuclear Energy Institute (NEI) 22-02, Revision 2, "Guidelines for Weather-Related Administrative Controls for Short Duration Outdoor Dry Cask Storage [DCS] Operations," submitted to the NRC in November 2022 for review and endorsement (Ref. 2).

Applicability

This RG applies to all applicants and licensees that are subject to 10 CFR Part 72, including applicants and holders of CoCs, and in one narrow instance, to holders of operation licenses and combined operating licenses under 10 CFR Part 50, "Domestic Licensing of Production and Utilization Facilities" (Ref. 3), and 10 CFR Part 52, "Licenses, Certifications, and Approvals for Nuclear Power Plants," (Ref. 4).

Written suggestions regarding this guide may be submitted through the NRC's public Web site in the NRC Library at https://www.nrc.gov/reading-rm/doc-collections/reg-guides/index.html, under Document Collections, in Regulatory Guides, at https://www.nrc.gov/reading-rm/doc-collections/reg-guides/contactus.html, and will be considered in future updates and enhancements to the "Regulatory Guide" series. During the development process of new guides suggestions should be submitted within the comment period for immediate consideration. Suggestions received outside of the comment period will be considered if practical to do so or may be considered for future updates.

Electronic copies of this RG, previous versions of RGs, and other recently issued guides are also available through the NRC's public web site in the NRC Library at https://www.nrc.gov/reading-rm/doc-collections/reg-guides/index.html/ under Document Collections, in Regulatory Guides. This RG is also available through the NRC's Agencywide Documents Access and Management System (ADAMS) at http://www.nrc.gov/reading-rm/adams.html, under ADAMS Accession Number (No.) ML23192A535. The regulatory analysis may be found in ADAMS under Accession No. ML23089A014. The associated draft guide DG-3057, Revision 0, may be found in ADAMS under Accession No. ML23089A012, and the staff responses to the public comments on DG-3057 may be found under ADAMS Accession No. ML23192A534.

Applicable Regulations

- 10 CFR Part 50, "Domestic Licensing of Production and Utilization Facilities," governs the licensing of nuclear power plants.

- 10 CFR Part 52, "Licenses, Certifications, and Approvals for Nuclear Power Plants," governs the issuance of early site permits, design certifications, combined operating licenses, standard design approvals, and manufacturing licenses for nuclear power facilities licensed under certain statutory provisions.

- 10 CFR Part 72 provides requirements, procedures, and criteria for the issuance of licenses to receive, transfer, and possess power reactor spent fuel, power-reactor-related greater than Class C (GTCC) waste, and other radioactive materials associated with spent fuel storage in an ISFSI, as well as the terms and conditions under which the Commission will issue these licenses. The NRC authorizes the storage of spent nuclear fuel (SNF) at ISFSIs under a site-specific or general license. The regulations in this part also establish requirements, procedures, and criteria for the issuance of CoCs approving spent fuel storage cask designs.

- 10 CFR Part 72, Subpart F, "General Design Criteria," establishes general design criteria for both site-specific and general licensees and includes 10 CFR 72.122, "Overall requirements," which establishes requirements for protection against environmental conditions and natural phenomena.

- 10 CFR Part 72, Subpart K, "General License for Storage of Spent Fuel at Power Reactor Sites," establishes the process for issuance and requirements for generally licensed ISFSIs and includes 10 CFR 72.212, "Conditions of general license issued under § 72.210."

- 10 CFR Part 72, Subpart L, "Approval of Spent Fuel Storage Casks," establishes requirements for CoC holders regarding the approval of spent fuel storage casks to be used at ISFSIs under a general license and includes 10 CFR 72.236, "Specific requirements for spent fuel storage cask approval and fabrication."

Related Guidance

- NUREG-2215, "Standard Review Plan for Spent Fuel Dry Storage Systems and Facilities—Final Report," issued April 2020 (Ref. 5), provides licensing guidance governing weather-related protection for ISFSIs.

- NUREG-0800, "Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants: LWR Edition" (Ref. 6), provides licensing guidance governing weather-related protection for nuclear power plants.

Purpose of Regulatory Guides

The NRC issues RGs to describe methods that are acceptable to the staff for implementing specific parts of the agency's regulations, to explain techniques that the staff uses in evaluating specific issues or postulated events, and to describe information that the staff needs in its review of applications for permits and licenses. Regulatory guides are not NRC regulations and compliance with them is not required. Methods and solutions that differ from those set forth in RGs are acceptable if supported by a basis for the issuance or continuance of a permit or license by the Commission.

Paperwork Reduction Act

This RG provides voluntary guidance for implementing the mandatory information collections in 10 CFR Part 72 that are subject to the Paperwork Reduction Act of 1995 (44 U.S.C. 3501 et seq.). These information collections were approved by the Office of Management and Budget (OMB), under control number 3150-0132. Send comments regarding this information collection to the FOIA, Library, and Information Collections Branch (T6-A10M), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by e-mail to Infocollects.Resource@nrc.gov, and to the OMB reviewer at: OMB Office of Information and Regulatory Affairs, (3150-0132), Attn: Desk Officer for the Nuclear Regulatory Commission, 725 17th Street, NW, Washington, DC, 20503; e-mail: oira_submissions@omb.eop.gov.

Public Protection Notification

The NRC may not conduct or sponsor, and a person is not required to respond to, a collection of information unless the document requesting or requiring the collection displays a currently valid OMB control number.

B. DISCUSSION

Reason for Issuance

This RG provides guidance to the NRC staff and the industry for one way to comply with and implement certain requirements in 10 CFR Part 72. It endorses, with clarifications and exceptions, NEI 22-02, Revision 2, submitted to the NRC in November 2022 for review and endorsement. The NEI document includes guidance on the use of administrative controls during ODHAs as one method to demonstrate compliance with the regulatory requirements that SSCs ITS are designed to withstand the effects of weather-related wind and tornado natural phenomena without impairing their capability to perform their intended design functions.

Background

The NRC authorizes the storage of SNF at an ISFSI facility under a site-specific or general license. Subpart F of 10 CFR Part 72 sets forth the design, inspection, testing, and operational requirements of SSCs ITS for ISFSIs. For both site-specific and general licensees, 10 CFR 72.122(b)(1) and (2) require, in part, that SSCs ITS for ISFSIs must be designed to accommodate and withstand the effects of natural phenomena, including tornadoes, without impairing their capability to perform their intended design functions. The design bases for these SSCs must reflect, in part, appropriate consideration of the most severe of the natural phenomena reported for the site and surrounding area.

Separately, Subpart L of 10 CFR Part 72 sets forth the CoC holder requirements for approval of spent fuel storage casks to be used by ISFSI general licensees. For CoC holders, 10 CFR 72.236 requires, in part, that the spent fuel storage cask and its systems ITS must be evaluated, by appropriate tests or by other means acceptable to the NRC, to demonstrate that they will reasonably maintain confinement of radioactive material under normal, off-normal, and credible accident conditions.

Additionally, 10 CFR 72.212(b)(6) requires, in part, that a general licensee review the final safety analysis report (FSAR) referenced in the CoC, as amended, and the related NRC safety evaluation report, before use of its general license to determine whether or not the reactor site parameters, including analyses of earthquake intensity and tornado missiles, are enveloped by the cask design bases considered in these reports.

NUREG-2215 contains the current licensing guidance governing weather-related protection. Section 4.5.5 describes the design-basis loads caused by normal and off-normal winds. Section 4.5.3.3.3 and section 4.5.3.3.4 describe the design-basis loads caused by accident winds and accident tornado missiles, respectively, and section 16.5.2.9 describes the means to evaluate these loads on SSCs ITS. This guidance generally specifies that SSCs ITS should demonstrate, by engineering analysis, that they will continue to perform their intended safety functions during the maximum credible loads.

ODHAs are necessary at many sites to accomplish moving SNF from wet to dry storage. These activities begin when the DSS with SNF leaves the indoor reactor facility and end when the DSS is placed in its storage location at the ISFSI. Additionally, ODHAs may be necessary to accomplish infrequently performed maintenance or inspection of the DSS and ISFSI. ODHAs are performed as expeditiously as possible considering safety, personnel dose, and time in an appropriate balance. Completion of ODHAs normally takes no longer than a single work shift but may take a maximum of 24 hours.

NRC requirements in 10 CFR 72.122 and 10 CFR 72.236 do not differentiate between protection during storage operations and ODHAs. Further, NUREG-2215, section 4.5.3.3, provides the existing staff

guidance:

The NRC does not accept the presumption that there will be sufficient warning of tornadoes so that operations, such as transfer between the fuel transfer facility and storage site, may never be exposed to tornado effects ... Ensure that the SAR [safety analysis report] shows that the cask system will continue to perform its intended safety functions (i.e., criticality, radioactive material release, heat removal, radiation exposure, and retrievability).

Therefore, historically, the NRC has required ISFSI licensees and CoC holders to conduct engineering analyses to demonstrate that SSCs ITS will continue to perform their intended design functions during normal, off-normal, and credible accident conditions.

With this guidance, ISFSI licensees and CoC holders may, instead of conducting engineering analysis, use administrative controls during ODHAs as one method to demonstrate compliance with the regulatory requirements that SSCs ITS are designed to withstand the effects of weather-related wind and tornado natural phenomena without impairing their capability to perform their intended design functions.

The NRC is making this change due to the increased reliability and accuracy of weather forecasting and detailed licensee implementation of administrative controls.

In the United States, the National Weather Service (NWS) is an agency under the National Oceanic and Atmospheric Administration, within the U.S. Department of Commerce. NWS weather forecasting is recognized as being accurate and reliable in the windows of time associated with planning and carrying out ODHAs. Due to the higher reliability of shorter term weather forecasting, administrative controls can be relied upon to help ensure safety of 10 CFR Part 72 SSCs ITS when a transfer activity occurs. These administrative controls would include provisions to (1) preclude ODHAs during periods of actual adverse weather events or when adverse weather is predicted to occur and (2) provide compensatory measures to place SSCs ITS in an analyzed condition, through engineering analysis, to maintain confinement of radioactive material during ODHAs.

As such, this RG provides the parameters by which ISFSI licensees and CoC holders may choose to use administrative controls, rather than engineering analysis, to demonstrate that SSCs ITS will withstand the effects of weather-related wind and tornado natural phenomena without impairing their capability to perform their intended design functions during ODHAs.

Accordingly, the staff has determined that, in limited circumstances, namely during ODHAs, formally documented administrative controls form an appropriate basis for demonstrating compliance with 10 CFR 72.122(b) and 10 CFR 72.236(l) in lieu of solely using an engineering analysis for weather-related wind and tornado events.

Consideration of International Standards

The International Atomic Energy Agency (IAEA) works with member states and other partners to promote the safe, secure, and peaceful use of nuclear technologies. The IAEA develops Safety Requirements and Safety Guides for protecting people and the environment from harmful effects of ionizing radiation. This system of safety fundamentals, safety requirements, safety guides, and other relevant reports, reflects an international perspective on what constitutes a high level of safety. To inform its development of this RG, the NRC considered IAEA Safety Requirements and Safety Guides pursuant to the Commission's International Policy Statement (Ref. 7) and Management Directive and Handbook 6.6, "Regulatory Guides" (Ref. 8). The NRC staff did not identify any IAEA Safety Requirements or Guides with information related to the topic of this RG.

Documents Discussed in Staff Regulatory Guidance

This RG endorses, in part, the use of one or more codes or standards developed by external organizations, and other third party guidance documents. These codes, standards and third party guidance documents may contain references to other codes, standards or third party guidance documents ("secondary references"). If a secondary reference has itself been incorporated by reference into NRC regulations as a requirement, then licensees and applicants must comply with that standard as set forth in the regulation. If the secondary reference has been endorsed in a RG as an acceptable approach for meeting an NRC requirement, then the standard constitutes a method acceptable to the NRC staff for meeting that regulatory requirement as described in the specific RG. If the secondary reference has neither been incorporated by reference into NRC regulations nor endorsed in a RG, then the secondary reference is neither a legally-binding requirement nor a "generic" NRC approved acceptable approach for meeting an NRC requirement. However, licensees and applicants may consider and use the information in the secondary reference, if appropriately justified, consistent with current regulatory practice, and consistent with applicable NRC requirements.

C. STAFF REGULATORY GUIDANCE

The NRC staff endorses NEI 22-02, Revision 2, as generally acceptable for use in complying with the requirements in 10 CFR 72.122(b) and 10 CFR 72.236(l). However, the NRC staff provides clarifications and exceptions to specific statements in NEI 22-02, Revision 2, as described below.

1. NEI 22-02, Revision 2, section 2.1, "Short Duration Outdoor DCS Activities," defines, in part, the applicable short-duration outdoor DCS activities covered by NEI 22-02, as follows:

This guidance is applicable to short duration DCS [DSS] operations conducted outdoors that are necessary at many sites to accomplish moving SNF from wet to dry storage. These activities occur between when the cask loaded with SNF leaves the indoor plant facility and when it is in its storage location at the ISFSI.

Section 1, "Introduction," also states that, "Of particular interest is the potential occurrence of a tornado during DCS [DSS] operations occurring outdoors between the time the loaded SNF cask is exposed to outdoor conditions and before it is in its storage location at the ISFSI. The activities of interest are short duration DCS operations that are necessary to transfer the SNF to the ISFSI."

Clarification—In addition to moving SNF from wet to dry storage, ODHAs may also include DSS operations performed outdoors that are associated with infrequently performed maintenance and inspection of a DSS (e.g., aging management inspections).

2. NEI 22-02, Revision 2, section 2.1, states, in part, the following:

The specific types of these activities and ancillary equipment involved vary by DSS design and site facility infrastructure. For these reasons, neither a complete list of all activities and equipment nor a single bounding duration for these activities can be defined. Each licensee must individually determine what, if any, short duration outdoor DCS activities are conducted at its site and the time frames involved.

Exception—With one slight variation noted in the next paragraph, NEI 22-02 applies only to DSS SSCs ITS under the regulatory authority of 10 CFR Part 72. Other than the exception noted, this guidance does not apply to SSCs licensed under 10 CFR Part 50 or 10 CFR Part 52, or to any effect that an SSC ITS licensed under 10 CFR Part 72 may have on an SSC licensed under 10 CFR Part 50 or 10 CFR Part 52. For SSCs licensed under 10 CFR Part 50 or 10 CFR Part 52, the existing 10 CFR Part 50 or 10 CFR Part 52 licensing basis applies.

The only instance in which this guidance applies to DSS SSCs ITS outside of the 10 CFR Part 72 regulatory authority is for GTCC or Class B/C waste casks, which, pursuant to 10 CFR Part 72 regulations are not authorized under a 10 CFR Part 72 general license. Therefore, 10 CFR Part 72 general licensees instead usually store GTCC or Class B/C waste casks under the provisions of a 10 CFR Part 50 or 10 CFR Part 52 license. In those instances where GTCC or Class B/C waste are stored under the provisions of a 10 CFR Part 50 or 10 CFR Part 52 license, this guidance may also apply as long as the casks used to store the GTCC or Class B/C waste possess a shell structural and confinement boundary similar in design to the 10 CFR Part 72 CoC that the cask is based upon; the cask has ODHAs that are similar to those of a 10 CFR Part 72 CoC that the cask is based upon; and the GTCC or Class B/C waste is in a solid and dry form. If these conditions are satisfied, then this guidance may also apply to those GTCC or Class B/C waste casks.

3. NEI 22-02, Revision 2, section 2.2, "Licensing Basis and Administrative Controls," explains the following:

Dry storage systems (vertical and horizontal) and transfer casks are designed and analyzed for tornado winds and tornado missiles in accordance with 10 CFR 72.122(b).

Clarification—In its description of licensing basis conditions, NEI 22-02 explains that SSCs ITS are designed and analyzed for accident conditions associated with tornado winds and tornado missiles in accordance with 10 CFR 72.122(b). Throughout the remainder of the document, NEI 22-02 focuses on these specific accident conditions.

In 10 CFR 72.122(b), the NRC requires that SSCs ITS be "designed to accommodate the effects of, and to be compatible with, site characteristics and environmental conditions associated with *normal operation, maintenance, and testing of the ISFSI* or MRS [monitored retrievable storage] and to withstand postulated accidents" (emphasis added). Similarly, 10 CFR 72.236(l) states that SSCs ITS "must be evaluated, by appropriate tests or by other means acceptable to the NRC, to demonstrate that they will reasonably maintain confinement of radioactive material under *normal, off-normal,* and credible accident conditions" (emphasis added). Accordingly, 10 CFR 72.122 and 10 CFR 72.236 also include requirements for normal and off-normal conditions.

Normal and off-normal conditions may not be specifically analyzed in detail in the DSS FSAR, as their load condition may be bounded by more limiting accident condition loads described in detail in the FSAR. However, the licensee or CoC holder must continue to ensure compliance with 10 CFR 72.122(b) or 10 CFR 72.236(l).

Accordingly, this regulatory guidance applies to and ensures one way that licensees can continue to comply with weather conditions associated with normal and off-normal operation, maintenance, testing, and accident conditions, including normal and off-normal winds, accident winds, hurricane winds, hurricane missiles, tornado winds, tornado missiles, and tornado pressure drops.

4. NEI 22-02, Revision 2, section 1, defines the term "safe condition and forecast" as follows:

A safe condition and forecast is considered to be the absence of: tornado and severe thunderstorm watches, tornado and severe thunderstorm warnings, and hazardous weather outlook indicating a moderate or high risk of severe thunderstorms for the current date (Day 1).

This definition is reiterated in Section 3.2, "Use of Safe Condition and Forecast to Guide Decision-making."

Section 3.1, "Resources" states, in part, the following:

> The NWS Active Alerts web page has several useful links to determine if a safe condition and forecast is in effect for the site for the upcoming time periods of interest, including:
>
> - Warnings by State
> - Latest Warnings
> - Thunderstorm/Tornado Outlook
> - Hurricanes

Clarification—The term "safe condition and forecast" is clarified as follows.

A safe condition and forecast is considered to be the absence of (1) forecasted weather for wind speeds (gusts or sustained) that could exceed an SSC's ITS design criteria and (2) a hazardous weather outlook indicating a risk of severe storms that could generate at the site, for example, tornado winds, missiles or pressure differentials, or hurricane winds or missiles, that could exceed an SSC's ITS design criteria, for the expected duration of the ODHA.

The presence of a safe condition and forecast ensures that an SSC's ITS design criteria are not exceeded when administrative controls are used in lieu of engineering analysis during an ODHA.

Further, section 3.1 is clarified as follows:

The NWS Active Alerts web page has several useful links to determine if a safe condition and forecast is in effect for the site for the upcoming time periods of interest, including, but not limited to:

- Warnings by State
- Latest Warnings
- Thunderstorm/Tornado Outlook
- Hurricanes

In addition, monitoring of weather conditions below the threshold of severe weather may be necessary to ensure the SSC ITS is not exposed to weather conditions that may exceed its licensing basis.

In determining a "safe condition and forecast" as originally defined (i.e., without NRC clarification) by NEI 22-02, Revision 2, licensees should be aware that, while an acceptance criterion of "tornado and severe thunderstorm watches, tornado and severe thunderstorm warnings, and hazardous weather outlook indicating a moderate or high risk of severe thunderstorms" may protect an SSC ITS from tornado- or hurricane-generated missiles and high-speed winds, it may not alone protect an SSC ITS from all normal and off-normal wind conditions.

Specifically, the NWS defines a severe thunderstorm as any storm that produces one or more of the following elements:

- a tornado,
- damaging winds or speeds of 58 miles per hour (mph) (50 knots) or greater, or
- hail 1 inch in diameter or larger.

Therefore, additional evaluation may be necessary to demonstrate an analyzed wind speed that is appropriate for short-term operations. For example, a crane used for lifting and moving a DSS may only be analyzed for safe operation during wind speeds below 20 mph, which is below the threshold for a severe thunderstorm as defined by the NWS, and therefore a "safe condition and forecast" should include an additional acceptance criterion of wind gusts to be less than 20 mph.

The NRC staff recognizes that the licensing basis of some systems may include design of SSCs ITS with significant safety factors, and the licensing basis may specifically indicate that wind analyses of equipment designed to those codes are not necessary. Accordingly, general licensees may continue to

follow their current licensing basis and not expand to new analyses not required in the original licensing basis, provided that the original licensing basis remains unchanged.

The staff cautions, however, that in instances other than those where the licensing basis specifically indicates that wind analyses is not necessary, a change to the licensing basis could occur if administrative controls are added to an SSC ITS that was not analyzed in the licensing basis for normal wind speeds because it was bounded by accident wind speeds. In such an instance, where, for example, the SSC ITS were only analyzed for accident wind speeds, a change to use administrative controls would constitute a change to the original licensing basis and require the necessary evaluation pursuant to 10 CFR 72.122 or 72.212, as applicable, to determine whether the SSCs ITS that administrative controls are being applied to would require protection below the accident wind speed threshold.

5. NEI 22-02, Revision 2, section 3.1, states, in part, the following:

Licensees should use the NWS's hazardous weather outlook information unless another resource for the site is already used or can be justified as providing equivalent information in terms of timeliness and accuracy.

Clarification—The staff clarifies this statement as follows.

Licensees should use the NWS's hazardous weather outlook and forecast information for the site. Licensees can use other resources that can be justified as providing information that is equivalent to or more representative for the site than the NWS's information in terms of timeliness and accuracy.

NEI 22-02 identifies that licensees may use weather resources for the site that are already in use. NEI 22-02 does not require that these resources provide an equivalent level of information similar to the NWS in terms of timeliness and accuracy, which does not ensure that these sources of information provide a quality forecast. Accordingly, if a licensee uses these resources, it must demonstrate that they provide an equivalent level of information in terms of timeliness and accuracy to that of the NWS. However, these resources may be used as supplementary weather resources in addition to those clarified above.

6. NEI 22-02, Revision 2, section 3.3, "Implementation," states, in part, the following:

The procedures or instructions should require a check for any active weather conditions that would be contrary to a safe condition and forecast before outdoor DCS activities commence. The expectation is that unless the weather forecast is acceptable for the entire duration of short duration outdoor activities, such activities will not commence. Even though near-term weather forecasts are highly reliable, the procedures or instructions should also include checking the future radar projections for the plant site.

Depending on the expected duration of the DCS activity, the procedures or instructions should include additional checks of the weather forecast one or more times during the activity. Licensees should decide if, and how frequently, additional weather forecast checks should be performed and include that frequency in procedures or instructions.

Section 3.5, "Specific Implementation Guidance for General Licensees," states, in part, the following:

Implementing procedures or instructions should contain specific steps to document the satisfactory execution of the weather forecast check before and, if required, periodic checks during the

outdoor activity.

Clarification—The licensee's procedures requiring a check for a safe condition and forecast should occur immediately before the start of ODHAs. Additionally, the licensee should determine the expected "duration of short duration outdoor activities" by benchmarking, dry runs, operating experience, or a combination of these. The ODHA duration should be assessed based upon operating experience, including equipment malfunctions, and expected delays, before each DSS loading campaign.

In establishing the frequency of any weather checks performed during the activity, the licensee should also consider the time required to perform "response actions" to place the DSS in an analyzed condition before the severe weather occurs.

D. IMPLEMENTATION

The NRC staff may use this regulatory guide as a reference in its regulatory processes, such as licensing, inspection, or enforcement. However, the NRC staff does not intend to use the guidance in this regulatory guide to support NRC staff actions in a manner that would constitute backfitting as that term is defined in 10 CFR 72.62, "Backfitting," as the term is defined in 10 CFR 50.109, "Backfitting," and as described in NRC Management Directive 8.4, "Management of Backfitting, Forward Fitting, Issue Finality, and Information Requests" (Ref. 9) nor does the NRC staff intend to use the guidance to affect the issue finality of an approval under 10 CFR Part 52, "Licenses, Certifications, and Approvals for Nuclear Power Plants." The staff also does not intend to use the guidance to support NRC staff actions in a manner that constitutes forward fitting as that term is defined and described in Management Directive 8.4. If a licensee believes that the NRC is using this regulatory guide in a manner inconsistent with the discussion in this Implementation section, then the licensee may file a backfitting or forward fitting appeal with the NRC in accordance with the process in Management Directive 8.4.

GLOSSARY

Accident Condition. The extreme level of an event or condition that has a specified resistance, limit of response, and requirement for a given level of continuing capability that exceeds off-normal events or conditions. Accident conditions include both design-basis accidents and conditions caused by natural and human-made phenomena. These conditions include events that are Design Events III and IV in American National Standards Institute/American Nuclear Society (ANSI/ANS) 57.9, "Design Criteria for an ISFSI (Dry Storage Type)." (Ref. 5)

Certificate of Compliance (CoC) User. The general licensee that has loaded a DSS, or purchased a DSS and plans to load it, in accordance with a CoC issued under 10 CFR Part 72. (Reference 10 CFR 72.3)

Confinement Boundary. In a DSS for SNF, the outer boundary of the confinement system that prevents the release of radioactive material to the environment. (Ref. 5)

Current Licensing Basis (Licensing Basis). The set of NRC requirements applicable to a specific plant and a licensee's written commitments for ensuring compliance with and operation within applicable NRC requirements and the plant-specific design bases (including all modifications and additions to such commitments over the life of the license) that are docketed and in effect. The current licensing basis includes the NRC regulations contained in 10 CFR Parts 2, 19, 20, 21, 26, 30, 40, 50, 51, 52, 54, 55, 70, 72, 73, and 100 and appendices thereto; orders; license conditions; exemptions; and technical specifications. It also includes the plant-specific design-basis information in 10 CFR 50.2, "Definitions," as documented in the most recent FSAR as required by 10 CFR 50.71, "Maintenance of records, making of reports," and the licensee's commitments remaining in effect that were made in docketed licensing correspondence such as licensee responses to NRC bulletins, generic letters, and enforcement actions, as well as licensee commitments documented in NRC safety evaluations or licensee event reports. (Ref. 5)

Design Bases. That information that identifies the specific functions to be performed by an SSC of a facility or of a spent fuel storage cask and the specific values or ranges of values chosen for controlling parameters as reference bounds for design. These values may be restraints derived from generally accepted state-of-the-art practices for achieving functional goals or requirements derived from analysis (based on calculation or experiments) of the effects of a postulated event under which an SSC must meet its functional goals. The values for controlling parameters for external events include—

(1) Estimates of severe natural events to be used for deriving design bases that will be based on consideration of historical data on the associated parameters, physical data, or analysis of upper limits of the physical processes involved; and

(2) Estimates of severe external man-induced events to be used for deriving design bases that will be based on analysis of human activity in the region, taking into account the site characteristics and the risks associated with the event. (Reference 10 CFR 72.3)

Design Criteria. The criteria the facility or cask designer uses to show that the design meets all of the requirements in 10 CFR Part 72. Design criteria can include, but are not limited to, safety margins, maximum stresses, maximum or minimum material temperatures, dose rates, and k-effective (k_{eff}). (Ref. 5)

Dry Storage System (DSS). A system that typically uses a cask or canister in an overpack as a component in which to store SNF in a dry environment. A DSS provides confinement, radiological shielding, subcriticality control, structural support, and passive cooling of its SNF during normal, off-normal, and accident conditions. (Ref. 5)

General License. Authorizes the storage of SNF in an ISFSI at power reactor sites to persons (i.e., general licensees) authorized to possess or operate nuclear power reactors under 10 CFR Part 50 or 10 CFR Part 52. The general license is limited to (1) that SNF which the general licensee is authorized to possess at the site under the specific 10 CFR Part 50 or 10 CFR Part 52 license for the site, and (2) storage of SNF in casks approved under the provisions of 10 CFR Part 72, Subpart L. See 10 CFR 72.210, "General license issued," and 10 CFR 72.212(a)(1)–(2). (Reference 10 CFR 72.3)

Normal Events and Conditions. Conditions that are intended operations, planned events, and environmental conditions that are known or reasonably expected to occur with high frequency during storage operations. "Normal" refers to the maximum level of an event or condition that is expected to routinely occur (similar to Design Event I in ANSI/ANS 57.9). The DSS SSCs are expected to remain fully functional and to experience no temporary or permanent degradation of that functionality from normal operations, events, and conditions. Specific normal conditions to be addressed are evaluated for the DSS or dry storage facility and are documented in the safety analysis report for that system or facility. (Ref. 5)

Off-Normal Events or Conditions. An event or condition that, although not occurring regularly, can be expected to occur with moderate frequency and for which there is a corresponding maximum specified resistance, limit of response, or requirement for a given level of continuing capability. Off-normal events and conditions are similar to Design Event II in ANSI/ANS 57.9. The DSS and dry storage facility SSCs are expected to experience off-normal events and conditions without permanent degradation of the capability to perform their full function (although operations may be suspended or curtailed during off-normal conditions) over the full storage term (the license period for a specific license facility or the storage period equivalent to the certificate term for a DSS). Off-normal events or conditions are referred to as anticipated occurrences in 10 CFR 72.104, "Criteria for radioactive materials in effluents and direct radiation from an ISFSI or MRS." (Ref. 5)

Structures, Systems, and Components (SSCs) Important to Safety (ITS). Those features of the ISFSI, monitored retrievable storage, and spent fuel storage cask whose functions are—

(1) To maintain the conditions required to store spent fuel, high-level radioactive waste, or reactor related GTCC waste safely;

(2) To prevent damage to the spent fuel, the high-level radioactive waste, or reactor-related GTCC waste container during handling and storage; or

(3) To provide reasonable assurance that spent fuel, high-level radioactive waste, or reactor-related GTCC waste can be received, handled, packaged, stored, and retrieved without undue risk to the health and safety of the public. (Reference 10 CFR 72.3)

REFERENCES[1]

1. *U.S. Code of Federal Regulations* (CFR), "Licensing Requirements for the Independent Storage of Spent Nuclear Fuel, High-Level Radioactive Waste, and Reactor-Related Greater than Class C Waste," Part 72, Chapter I, Title 10, "Energy."

2. Nuclear Energy Institute (NEI), NEI 22-02, Revision 2, "Guidelines for Weather-Related Administrative Controls for Short Duration Outdoor Dry Cask Storage Operations," Washington, DC, November 2022. (Agencywide Document Access and Management System (ADAMS) Accession No. ML22339A035)[2]

3. CFR, "Domestic Licensing of Production and Utilization Facilities," Part 50, Chapter I, Title 10, "Energy."

4. CFR, "Licenses, Certifications, and Approvals for Nuclear Power Plants," Part 52, Chapter I, Title 10, "Energy."

5. U.S. Nuclear Regulatory Commission (NRC), NUREG-2215, "Standard Review Plan for Spent Fuel Dry Storage Systems and Facilities—Final Report," Washington, DC, April 2020. (ML20121A190)

6. NRC, NUREG-0800, "Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants: LWR Edition," Washington, DC.

7. NRC, "Nuclear Regulatory Commission International Policy Statement," *Federal Register*, Vol. 79, No. 132, pp. 39415–39418, Washington, DC, July 10, 2014.

8. NRC, Management Directive 6.6, "Regulatory Guides," Washington, DC, May 2, 2016. (ML18073A170)

9. NRC Management Directive 8.4, "Management of Backfitting, Forward Fitting, Issue Finality, and Information Requests," Washington, DC, September 20, 2019. (ML18093B087)

1 Publicly available NRC published documents are available electronically through the NRC Library on the NRC's public website at http://www.nrc.gov/reading-rm/doc-collections/ and through the NRC's Agencywide Documents Access and Management System (ADAMS) at http://www.nrc.gov/reading-rm/adams.html. For problems with ADAMS, contact the Public Document Room staff at 301-415-4737 or (800) 397-4209, or email pdr.resource@nrc.gov. The NRC Public Document Room (PDR), where you may also examine and order copies of publicly available documents, is open by appointment. To make an appointment to visit the PDR, please send an email to PDR.Resource@nrc.gov or call 1-800-397-4209 or 301-415-4737, between 8 a.m. and 4 p.m. eastern time (ET), Monday through Friday, except Federal holidays.

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