U.S. NUCLEAR REGULATORY COMMISSION

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Pre-Decisional Version for the Advisory Committee on Reactor Safeguards

ACCEPTABLE ASME SECTION XI INSERVICE INSPECTION CODE CASES FOR 10 CFR PART 72

A. INTRODUCTION

Purpose

This regulatory guide (RG) describes methods and procedures acceptable to the U.S. Nuclear Regulatory Commission (NRC) staff that were developed by the American Society of Mechanical Engineers (ASME) in ASME Boiler and Pressure Vessel Code (ASME Code), Section XI, "Inservice Inspection" (ASME Section XI) (Ref. 1), Code Cases. The NRC staff has determined these Code Cases to be acceptable for use by specific licensees for independent spent fuel storage installations (ISFSIs), general licensees, and certificate of compliance (CoC) holders licensed under 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. 2).

Applicability

This RG applies to applicants for renewal of CoCs and specific ISFSI licenses, and to holders of CoCs and specific and general licenses subject to the regulatory requirements for spent fuel storage renewals in 10 CFR Part 72.

Applicable Regulations

- 10 CFR Part 72 contains 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 waste, and other radioactive materials associated with spent fuel storage in an ISFSI, as well as the terms and conditions under which the NRC will issue these licenses. The regulations in this part also establish requirements, procedures, and criteria for the issuance of CoCs approving spent fuel storage cask designs.
    - 10 CFR 72.42, "Duration of license; renewal," provides requirements for the duration of ISFSI specific licenses and for applications for license renewal, including requirements for time-limited aging analyses (TLAAs) and aging management programs (AMPs)

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Written suggestions regarding this guide may be submitted through the NRC's public website 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 website 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.) ML24225A160. The regulatory analysis may be found in ADAMS under Accession No. ML24093A012. The associated draft guide (DG)-3058, may be found in ADAMS under Accession No. ML24093A010, and the staff responses to the public comments on DG-3058 may be found under ADAMS Accession No. ML24225A162.

10 CFR 72.240, "Conditions for spent fuel storage cask renewal," provides requirements for applications for the renewal of CoCs for spent fuel storage cask designs, including requirements for TLAAs and AMPs.

Related Guidance

- NUREG-1927, "Standard Review Plan for Renewal of Specific Licenses and Certificates of Compliance for Dry Storage of Spent Nuclear Fuel," issued June 2016 (Ref. 3), provides guidance for the NRC's safety review of renewal applications for ISFSI specific licenses and CoCs for spent fuel storage cask designs.

- NUREG-2214, "Managing Aging Processes in Storage (MAPS) Report," issued July 2019 (Ref. 4), provides a generic technical basis for renewal of ISFSI specific licenses and CoCs for spent fuel storage cask designs.

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.). This information collection was 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 email 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.

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 specific licensees for ISFSIs, general licensees, and CoC holders licensed under 10 CFR Part 72 by identifying ASME Section XI Code Case N-860 that the NRC staff has determined to be acceptable for use. This guidance is applicable to codes and standards for inservice inspection of confinement boundary components and aging management activities associated with the renewals of ISFSI licenses and CoCs for spent fuel storage systems.

Background

The NRC's regulatory requirements for ISFSI and storage system CoC renewals are contained in 10 CFR Part 72. In addition to the regulations, the NRC has developed implementing guidance for specific ISFSI license and CoC renewals. The following paragraphs summarize the regulatory requirements, guidance, and other applicable documents for specific ISFSI license and storage system CoC renewals related to this RG.

10 CFR Part 72 Regulatory Requirements

The regulations in 10 CFR Part 72 include the requirements to obtain and renew (1) a specific ISFSI license and (2) a storage system CoC. In addition, the regulations in 10 CFR Part 72 include the requirements for a general licensee's use of a storage system CoC. The safety review conducted for a specific license or CoC is primarily based on the information the applicant provides in a safety analysis report to show that the design and operation meet the appropriate requirements in 10 CFR Part 72. The renewal of a specific ISFSI license requires the submittal of a renewal application at least 2 years before the expiration of the license, in accordance with the requirements of 10 CFR 72.42(b). To renew a CoC, an applicant (i.e., CoC holder, user, or user's representative) must submit a renewal application at least 30 days before the expiration of the associated CoC, in accordance with the requirements of 10 CFR 72.240(b). The NRC may renew a specific license or a CoC for a term not to exceed 40 years, in accordance with 10 CFR 72.42(a), or 10 CFR 72.240(a), respectively.

Both the specific license ISFSI and the CoC renewal applications must contain requirements and operating conditions (e.g., fuel storage, surveillance and maintenance) for the ISFSI or dry storage system that address aging mechanisms and effects that could affect structures, systems, and components (SSCs) relied upon for the safe storage of spent fuel. General licensees incorporate the CoC renewal requirements through 10 CFR 72.212, "Conditions of general license issued under § 72.210." Renewal applications must include (1) TLAAs, if applicable, that demonstrate that SSCs important to safety will continue to perform their intended function for the requested period of extended operation, and (2) AMPs for the management of issues associated with aging that could adversely affect SSCs important to safety.

NRC Guidance

NUREG-1927 provides NRC guidance on 10 CFR Part 72 renewals for the general information, scoping evaluation information, and aging management information that should be included in a renewal application. The guidance provides information on TLAAs and AMPs, including learning AMPs that consider and respond to operating experience. It also provides guidance on considerations for CoC renewals and the general license framework, including information on general licensees' implementation of AMPs.

NUREG-1927, section 3.6, provides detailed guidance on AMPs for renewal applications. The purpose of an AMP is to monitor and control the degradation of SSCs within the scope of renewal so that aging effects will not result in loss of intended functions during the period of extended operation. As noted in NUREG-1927, an AMP includes all activities that are credited for managing aging mechanisms or effects for specific SSCs, including activities conducted during the initial storage period. An effective AMP prevents, mitigates, or detects the aging effects and provides for the prediction of the extent of the effects of aging and timely implementation of corrective actions before there is a loss of intended function. AMPs should be informed, and enhanced, when necessary, based on the ongoing review of both site-specific and industrywide operating experience, including relevant international and nonnuclear operating experience.

The NRC guidance in NUREG-1927 was augmented by NUREG-2214, the MAPS Report, which evaluates known aging degradation mechanisms to determine whether they could affect the ability of dry storage system components to fulfill their safety functions in the 20- to 60-year period of extended operation. The MAPS Report also provides examples of AMPs that are considered generically acceptable to address the credible aging mechanisms to ensure that the design bases of dry storage systems will be maintained. An applicant for a renewed license or CoC may reference the information in the MAPS Report to support its aging management review and proposed AMPs.

ASME Code Cases

Provisions of the ASME Code have been used since 1971 as one part of the framework to establish the necessary design, fabrication, construction, testing, and performance requirements for SSCs important to safety in nuclear power applications. A broad spectrum of stakeholders participates in the consensus codes and standards development process, including the development of Code Cases and revisions to the ASME Code. This broad participation helps to ensure that the various stakeholder interests are considered.

This RG is similar to other RGs for power reactors (NRC RGs for Division 1) that address acceptable and unacceptable ASME Section III (Ref. 5) Code Cases, including RG 1.84, "Design, Fabrication, and Materials Code Case Acceptability, ASME Section III" (Ref. 6), and RG 1.193, "ASME Code Cases Not Approved for Use" (Ref. 7). In addition, RG 1.147, "Inservice Inspection Code Case Acceptability, ASME Section XI, Division 1" (Ref. 8), lists the acceptable and conditionally acceptable ASME Section XI Code Cases applicable to NRC licenses under 10 CFR Part 50, "Domestic Licensing of Production and Utilization Facilities" (Ref. 9). In particular, this RG is similar to RG 1.147 but is specifically focused on ASME Section XI Code Cases applicable to 10 CFR Part 72 licensees, which the RGs listed above do not address.

ASME Code Case N-860

The ASME Board of Nuclear Codes and Standards approved ASME Code Case (CC) N-860, "Inspection Requirements and Evaluation Standards for Spent Nuclear Fuel Storage and Transportation Containment System," issued 2019 (Ref. 10), in July 2020. ASME CC N-860 presumes that chloride-induced stress corrosion cracking (CISCC) is the most credible and bounding degradation mechanism that might challenge the confinement integrity of spent nuclear fuel storage and transportation containment systems, based on current knowledge and operating experience. ASME CC N-860 is an ASME Section XI, Division 1, Code Case that provides rules for inservice inspection of dry storage canisters and standardizes the methodology for the number of systems inspected, the basis for which systems are selected for inspection, the initial frequency of inspection, the methodology for increasing inspection frequency if aging effects are found, and the criteria required to decrease inspection frequency.

ASME CC N-860 differs from traditional ASME Code Cases that typically provide alternatives to the existing code requirements. Instead, ASME CC N-860 provides the code requirements for inservice inspection of canisters that are not provided elsewhere in the ASME Code.

ASME CC N-860, Subarticle-2700, "Evaluate Inspection Interval and Inspection Populations," provides the requirements for inspection intervals and populations following both the initial inspection after entering the storage period of operation and subsequent inspections at specified intervals. The requirements can be modified based on the susceptibility of ISFSI sites to CISCC, which is determined using the methodology described in Electric Power Research Institute (EPRI)-3002005371, "Susceptibility Assessment Criteria for Chloride-Induced Stress Corrosion Cracking (CISCC) of Welded Stainless Steel Canisters for Dry Cask Storage Systems," issued 2015 (Ref. 11). For ISFSI sites with a CISCC susceptibility ranking of 7 and below, increases in the inspection intervals and decreases in populations are allowed, depending on the results of the screening examination described in ASME CC N-860, Subarticle-2200, "Screening Examination (VT-3)," with the stipulation that the maximum inspection interval is 20 years, and the minimum inspection population is one canister per ISFSI site.

However, Subarticle-2700 does not allow increases in the inspection interval or decreases in the inspection population for ISFSI sites that have a ranking of 8 and above.

Many specifically licensed ISFSIs and CoCs obtained renewals before the development of CC N-860 and thus have NRC approved AMPs. For ISFSIs and CoCs that use welded stainless steel canister-based systems, the NRC approved AMPs are based on inspections to identify aging effects and include specific details on inspection methods, personnel qualifications, inspection frequency, and acceptance criteria that overlap with the rules in ASME CC N-860. These approved AMPs provide reasonable assurance of adequate protection for the important to safety SSCs, and the use of ASME CC N-860 is not required to meet the requirements in 10 CFR 72.42 and 10 CFR 72.240.

Nonetheless, the NRC staff believes that adoption of ASME CC N-860 could be beneficial to NRC licensees, CoC holders, and the industry as a whole by standardizing inspection guidance and the technical bases for canister selection and inspection frequency. The NRC licensees and CoC holders could use the evaluation criteria in 10 CFR 72.48 to determine whether ASME CC N-860 could be adopted without an amendment. In addition, applicants for renewed ISFSI licenses and CoCs could use ASME CC N-860 in their applications.

NRC RG 3.76 and NEI 14–03, Revision 2

NRC RG 3.76, "Implementation of Aging Management Requirements for Spent Fuel Storage Renewals" (Ref. 12), endorses, with clarifications, Nuclear Energy Institute (NEI) 14-03, Revision 2, "Format, Content and Implementation Guidance for Dry Cask Storage Operations-Based Aging Management," issued December 2016 (Ref. 13). NEI 14-03 provides an operations-based learning approach to aging management for the storage of spent fuel, which builds on the lessons learned from the industry's experience with aging management for reactors. Specifically, NEI 14-03 provides a framework for sharing operating experience through an industry-developed database called the ISFSI Aging Management Institute of Nuclear Power Operations Database (AMID). NEI 14-03 also includes a framework for learning AMPs through the use of "tollgates," which offer a structured approach for periodically assessing operating experience and data from applicable research and industry initiatives. The AMID database provides operating experience information and a basis to support licensees' future changes to AMPs. The AMID database and tollgates are considered key elements in ensuring the effectiveness of aging management activities and the continued safe storage of spent fuel during the period of extended operation.

ISFSI Operating Experience and Examination Results

To fulfill the requirements of AMPs included in renewed ISFSI licenses and dry storage system CoCs, examinations of welded austenitic stainless steel dry storage system canisters have been conducted at ISFSI sites with a range of CISCC susceptibility rankings. To date, examinations of welded austenitic stainless steel canisters have found no evidence of CISCC or localized corrosion, such as pitting or crevice corrosion, at any site.

For most ISFSI sites, the lack of any observed indications for localized corrosion or CISCC is consistent with expectations because the majority of operating ISFSI sites are not located in close proximity to a source of chloride salts such as a marine coastline, a cooling tower, or a roadway that is treated with deicing salts. In addition, these sites are typically characterized as having low or average absolute humidity values. These sites of low CISCC susceptibility have a CISCC susceptibility ranking of less than 4.

In addition to examinations of welded austenitic stainless steel dry storage system canisters, deposits on the canisters have been collected and analyzed. The collection methodology and analysis results of the collected samples are publicly available in the following Sandia National Laboratories (SNL) reports from the website of the U.S. Department of Energy, Office of Scientific and Technical Information (www.osti.gov):

- SAND2020–13674, "Analysis of Dust Samples Collected from an Inland ISFSI Site ('Site A')," issued December 2020 (Ref. 14)
- SAND2020–14144, "Analysis of Dust Samples Collected from an Inland ISFSI Site ('Site B')," issued December 2020 (Ref. 15)
- SAND2022–10884, "Analysis of Dust Samples Collected from a Near-Marine East Coast ISFSI Site ('Site C')," issued August 2022 (Ref. 16)

The evaluations concluded that the risk of CISCC at these sites is low based on the minimal surface concentrations of chloride salts. In addition, when combined with relatively high concentrations of nitrate (that acts as a corrosion inhibitor) at the sites, the risk of canister cracking from CISCC may be very low.

Conditions for CISCC

A combination of a susceptible material, sufficient applied or residual tensile stresses, and an environment where chloride ions are present is necessary to induce CISCC. The NRC staff determined that CISCC was a potential aging mechanism for dry storage system designs that use welded austenitic stainless steel canisters and that may be exposed to a range of environments. The staff documented nuclear industry operational experience with CISCC of nuclear power plant piping systems and tanks in NRC Information Notice 2012-20, "Potential Chloride-Induced Stress Corrosion Cracking of Austenitic Stainless Steel and Maintenance of Dry Cask Storage System Canisters," dated November 14, 2012 (Ref. 17).

The CISCC operational experience documented in NRC Information Notice 2012-20 is limited to events in which austenitic stainless steel components were exposed to marine shoreline atmospheric conditions. While the NRC staff considered CISCC of welded austenitic stainless steel canisters to be a credible aging mechanism in sheltered environments, the staff recognized that not all ISFSI sites would

have the required combination of chloride-containing salts that could be deposited on passively cooled canisters and sufficient humidity for deliquescence of the deposited chloride salt to form an aqueous solution with chloride ions.

A wide variety of compounds may be deposited on the surface of a passively cooled storage canister. Non-chloride-containing salts such as nitrate or sulfate-containing species are common and may also be deposited on the canisters or may form through the chemical transformation of deposited sea salt aerosols. However, Chi, et al. (2015) (Ref. 18), showed that, as sea salt aerosols age, the aerosols are chemically transformed from a chloride-rich composition to a combination of sodium sulfate and sodium nitrate with the original chloride completely removed. In addition, nitrate and sulfate are known to inhibit localized corrosion of stainless steels in chloride environments (Refs. 19–22). Previous testing conducted in high temperature, concentrated, magnesium chloride solutions has also shown that sodium nitrate is an effective inhibitor for chloride stress corrosion cracking of stainless steels (Refs. 23–25). These factors limit the effects of the deposits on the canisters.

The available information for susceptibility of canisters includes the characterization of salts deposited on canisters at a range of ISFSI sites, the known evolution of sea salt deposits with time, extensive CISCC testing of austenitic stainless steels, and ISFSI operating experience. The sum of this information conclusively shows that CISCC of welded austenitic stainless steel canisters at low-ranked ISFSI sites is very unlikely.

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. 26) and Management Directive and Handbook 6.6, "Regulatory Guides" (Ref. 27).

Although the NRC does not endorse the following IAEA safety standard and guide, this RG incorporates similar guidelines and is consistent with the basic safety principles provided in them:

- Specific Safety Requirements No. SSR-4, "Safety of Nuclear Fuel Cycle Facilities," issued 2017 (Ref. 28), includes the requirements that address implementation of an AMP to manage the aging of items important to safety so that the required safety functions are fulfilled over the entire operating lifetime of the nuclear fuel cycle facility.

- Specific Safety Guide No. SSG-15, "Storage of Spent Nuclear Fuel," issued 2020 (Ref. 29), includes guidance for the SSR-4 requirements on the implementation of AMPs for items important to safety.

Documents Discussed in Staff Regulatory Guidance

This RG endorses the use of ASME Code Cases applicable to NRC licensees under 10 CFR Part 72. The ASME Code Cases 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 the ASME Code Case in Table 1 as generally acceptable for use in complying with the requirements in 10 CFR 72.42 and 10 CFR 72.240.

Table 1. Acceptable Section XI Code Cases for 10 CFR Part 72 Licensees and CoC holders

Code Case Number	Code Case Title	Date
N-860	Inspection Requirements and Evaluation Standards for Spent Nuclear Fuel Storage and Transportation Containment Systems Section XI, Division 1; Section XI, Division 2	7/6/2020

ASME Code Case N-860

The NRC staff endorses ASME CC N-860 as generally acceptable for use in complying with the requirements in 10 CFR 72.42 and 10 CFR 72.240.

The NRC staff provides an additional alternative to ASME CC N-860, Subarticle-2700, Subsubarticle-2720, "Changes to Inspection Interval." Specifically, for ISFSI sites meeting the conditions below, the canister inspection interval may be increased to a maximum of 40 years without meeting the requirements in ASME CC N-860, Subsubparagraphs-2720(a)(1) and -2720(a)(3), which state that three consecutive inspections must be completed with consistent results. For this alternative, the ISFSI sites should meet all the following criteria:

(1) The ISFSI site should have a CISCC susceptibility ranking of 3 or below as determined using the criteria in EPRI-3002005371.

(2) The most recent inspection was conducted in accordance with ASME CC N-860 article -2000, "Inservice Inspection."

(3) The results of the previous inspection should satisfy the conditions of ASME CC N-860, Subparagraph-2720(a), which are either (1) the screening examinations conclude no visual anomalies are present [as described in ASME CC N-860 -2710(a) and -2222(a)], or (2) the visual anomalies that are present are consistent with prior results and there is no prior history of stress corrosion cracking at the site.

(4) The inservice inspection results are documented in accordance with ASME Code Case N-860, subarticle -3130, "Canister Inservice Inspection Report."

(5) Revisions to inspection intervals are documented in accordance with the requirements in ASME Code Case N-860, subarticle -3120, "Inservice Inspection Plans and Schedules."

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," and as described in NRC Management Directive 8.4, "Management of Backfitting, Forward Fitting, Issue Finality, and Information Requests" (Ref. 30). 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. The backfitting and forward fitting considerations in 10 CFR 72.62 and NRC Management Directive 8.4 apply to holders of general and specific licenses for ISFSIs and monitored retrievable storage installations issued under 10 CFR Part 72. However, the backfitting and forward fitting considerations in 10 CFR 72.62 and NRC Management Directive 8.4 do not apply to CoC holders. 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.

REFERENCES [1]

1. American Society of Mechanical Engineers (ASME), Boiler and Pressure Vessel (B&PV) Code, Section XI, "Rules for Inservice Inspection of Nuclear Power Plant Components," New York, New York.[2]

2. *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."

3. U.S. Nuclear Regulatory Commission (NRC), NUREG-1927, "Standard Review Plan for Renewal of Specific Licenses and Certificates of Compliance for Dry Storage of Spent Nuclear Fuel," Washington, DC, June 2016.

4. NRC, NUREG-2214, "Managing Aging Processes In Storage (MAPS) Report," Washington, DC, July 2019.

5. ASME B&PV Code, Section III, "Rules for Construction of Nuclear Facility Components," ASME, New York, New York.

6. NRC, Regulatory Guide 1.84, "Design, Fabrication, and Materials Code Case Acceptability, ASME Section III," Washington, DC.

7. NRC Regulatory Guide 1.193, "ASME Code Cases Not Approved for Use," Washington, DC.

8. NRC Regulatory Guide 1.147, "Inservice Inspection Code Case Acceptability, ASME Section XI, Division 1," Washington, DC.

9. CFR, "Domestic Licensing of Production and Utilization Facilities," Part 50, Chapter 1, Title 10, "Energy."

10. ASME Code Case N-860, "Inspection Requirements and Evaluation Standards for Spent Nuclear Fuel Storage and Transportation Containment Systems," Section XI, Division 1; Section XI, Division 2, ASME Boiler and Pressure Vessel Code Cases: Nuclear Components, Supplement 6, New York, New York, 2019.

[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.

[2] Copies of American Society of Mechanical Engineers (ASME) standards may be purchased from ASME, Two Park Avenue, New York, New York 10016-5990; telephone (800) 843-2763. Purchase information is available through the ASME web-based store at http://www.asme.org/Codes/Publications/.

11. Electric Power Research Institute (EPRI), EPRI-3002005371, "Susceptibility Assessment Criteria for Chloride-Induced Stress Corrosion Cracking (CISCC) of Welded Stainless Steel Canisters for Dry Cask Storage Systems," Palo Alto, California, 2015.[3]

12. NRC, Regulatory Guide 3.76, "Implementation of Aging Management Requirements for Spent Fuel Storage Renewals," Washington, DC.

13. Nuclear Energy Institute (NEI), NEI 14–03, Revision 2, "Format, Content and Implementation Guidance for Dry Cask Storage Operations-Based Aging Management," Washington, DC. December 2016, Agencywide Documents Access and Management System (ADAMS) Accession No. ML16356A210.[4]

14. Sandia National Laboratories (SNL), SAND2020-13674, "Analysis of Dust Samples Collected from an Inland ISFSI Site ('Site A')," December 2020.[5]

15. SNL, SAND2020-14144, "Analysis of Dust Samples Collected from an Inland ISFSI Site ('Site B')," December 2020.

16. SNL, SAND2022-10884, "Analysis of Dust Samples Collected from a Near-Marine East Coast ISFSI Site ('Site C')," August 2022.

17. NRC, Information Notice 2012-20, "Potential for Chloride-Induced Stress Corrosion Cracking of Austenitic Stainless Steel and Maintenance of Dry Cask Storage Systems," Washington, DC, November 14, 2012.

18. Chi, J.W., W.J. Li, D.Z. Zhang, J.C. Zhang, Y.T. Lin, X.J. Shen, J.Y. Sun, J.M. Chen, X.Y. Zhang, Y.M. Zhang, and W.X. Wang, "Sea salt aerosols as a reactive surface for inorganic and organic acidic gases in the Arctic troposphere," *Atmospheric Chemistry and Physics*, Vol. 15, pp. 11341–11353, 2015.

19. Leckie, H.P., and H.H. Uhlig, "Environmental factors affecting the critical potential for pitting in 18-8 stainless steel," Journal of the Electrochemical Society, Vol. 113, pp. 1262–1267, 1966.

20. Sedriks, A.J., "Corrosion of Stainless Steels," Second Edition, John Wiley, New York, New York, 1996.

21. Szklarska-Smialowska, Z., "Pitting and Crevice Corrosion," NACE International, Houston, Texas, 2005.

[3] Copies of Electric Power Research Institute (EPRI) standards and reports may be purchased from EPRI, 3420 Hillview Ave., Palo Alto, California 94304; telephone (800) 313-3774; fax (925) 609-1310.

[4] Publications from the Nuclear Energy Institute (NEI) are available at its website: http://www.nei.org/ or by contacting the headquarters at Nuclear Energy Institute, 1201 F Street NW, Suite 1100, Washington, DC 20004-1218, Phone: 202-739-8000, Fax: 202-785-4019.

[5] Sandia National Laboratories (SNL) reports are available electronically via the U.S. Department of Energy (DOE) Office of Scientific and Technical Information website (www.osti.gov).

22. Cook, A.J.M.C., C. Padovani, and A.J. Davenport, "Effect of Nitrate and Sulphate of Atmospheric Corrosion of 304L and, 316L Stainless Steels," *Journal of the Electrochemical Society*, Vol. 164(4), pp. C148–C163, 2017.

23. Rideout, S., and R. Mittelberg, "Factors Controlling Chloride Stress Corrosion of Type 304 Stainless Steel," U.S. Atomic Energy Commission, Report CONF-778-3, 1964.

24. Uhlig, H.H., and E.W. Cook, Jr., "Mechanism of Inhibiting Stress Corrosion Cracking of 18-8 Stainless Steel in MgCl2 by Acetates and Nitrates," Journal of The Electrochemical Society, Vol. 116(2), pp. 173–177, February 1969.

25. Bryant, R.E., and J.B. Greer, "Inhibition of chloride stress corrosion cracking of stainless alloys," Materials Protection and Performance, Vol. 9, No. 11, pp. 19–23, November 1970.

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

27. NRC, Management Directive 6.6, "Regulatory Guides," Washington, DC.

28. International Atomic Energy Agency (IAEA), IAEA Safety Standards, Specific Safety Requirements No. SSR-4, "Safety of Nuclear Fuel Cycle Facilities," Vienna, Austria, 2017.[6]

29. IAEA, IAEA Safety Standards, Specific Safety Guide SSG-15, "Storage of Spent Nuclear Fuel," Vienna, Austria, 2020.

30. NRC, Management Directive 8.4, "Management of Backfitting, Forward Fitting, Issue Finality, and Information Requests," Washington, DC.

[6] Copies of International Atomic Energy Agency (IAEA) documents may be obtained through its website: WWW.IAEA.Org/ or by writing the International Atomic Energy Agency, P.O. Box 100 Wagramer Strasse 5, A-1400 Vienna, Austria.