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NUCLEAR REGULATORY COMMISSION  
OFFICE OF NUCLEAR REACTOR REGULATION  
OFFICE OF NEW REACTORS  
WASHINGTON, DC 20555-0001

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**NRC REGULATORY ISSUE SUMMARY 2012-XX  
CLARIFICATION OF SUBMISSION OF REQUESTS FOR RELIEF OR ALTERNATIVES  
UNDER 10 CFR 50.55a**

**ADDRESSEES**

All holders of a construction permit and an operating license for a nuclear power reactor under Title 10 of the *Code of Federal Regulations* (10 CFR) Part 50, "Domestic Licensing of Production and Utilization Facilities," except those who have permanently ceased operations and have certified that fuel has been permanently removed from the reactor vessel.

All holders of and applicants for a combined license (COL), standard design certification, standard design approval, or manufacturing license under 10 CFR Part 52, "Licenses, Certifications, and Approvals for Nuclear Power Plants."

**INTENT**

The U.S. Nuclear Regulatory Commission (NRC) is issuing this regulatory issue summary (RIS) to provide information on requests for alternatives to and relief from the requirements of 10 CFR 50.55a, "Codes and Standards," which incorporates by reference the American Society of Mechanical Engineers, *Boiler and Pressure Vessel Code* (ASME BPV Code) and *Code for Operation and Maintenance of Nuclear Power Plants* (OM Code) for ASME Code Class 1, 2, and 3 components,<sup>1</sup> and Class MC and CC pressure-retaining components and their integral attachments. Specifically, this RIS provides clarification when relief is requested by licensees and applicants pursuant to 10 CFR 50.55a(f)(5)(iii) and 10 CFR 50.55a(g)(5)(iii) where ASME Code requirements are determined impractical, and when proposed alternatives to the regulations in 10 CFR 50.55a are submitted to the NRC under 10 CFR 50.55a(a)(3)(i) or 10 CFR 50.55a(a)(3)(ii).

This RIS requires no action or written response on the part of an addressee.

**BACKGROUND INFORMATION**

NRC requirements for the application and use of industry codes and standards applicable to nuclear power plants are set forth in 10 CFR 50.55a, *Codes and Standards*. Paragraph (b) of 10 CFR 50.55a lists the NRC-approved ASME BPV Codes and Addenda, OM Codes, and ASME Code Cases that are approved or mandated for use (together with applicable NRC-

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<sup>1</sup> Incoming inservice inspection requirements of Class MC components in accordance with ASME Section XI, Subsection IWE and Class CC components in accordance with Subsection IWL.

imposed conditions on their use). Paragraphs (c) through (g) set forth the specific regulatory requirements mandating or approving the application and use of ASME BPV and OM Codes.

Section 50.55a also provides two separate regulatory processes for applicants or licensees to request NRC approval to depart from the requirements of these codes and standards. The *general* process for seeking NRC approval for use of an *alternative* to one or more provisions of a code or standard listed in 10 CFR 50.55a (which includes Codes other than the various ASME Codes and Code Cases) is set forth in 10 CFR 50.55a(a)(3). The *specific* process for NRC grants of *relief* from inservice testing (IST) and inservice inspection (ISI) requirements because of impracticality is set forth in 10 CFR 50.55a(f)(5)(iii) and (g)(5)(iii), respectively. The term, “relief request,” is commonly misused to address the request for NRC approval of alternatives under 10 CFR 50.55a(a)(3), as opposed to the correct usage with respect to claims of IST and ISI impracticality.

For new reactors licensed under 10 CFR Part 52, when a COL holder finds during plant construction that compliance with ASME Code, Section III, or Institute of Electrical and Electronics Engineers (IEEE) Standard 603 requirements would result in hardship or unusual difficulty, or when they would like to use a different approach for meeting construction<sup>2</sup> requirements of the ASME BPV Code, Section III, or the IEEE Standard 603, it must submit a proposed alternative to (1) the construction requirements of Section III of the ASME BPV Code for ASME Code Class 1, 2 and 3 components, or (2) the requirements of IEEE Standard 603 for protection and safety systems for authorization by the NRC in accordance with 10 CFR 50.55a(a)(3)(i) or 10 CFR 50.55a(a)(3)(ii). The alternative is required to be submitted before its implementation. The timing for submission of alternatives and relief requests are discussed later in this RIS.

Generally, relief and alternative requests do not involve license amendments. Instead, the NRC staff issues a letter with a safety evaluation on the licensee’s or applicant’s request to authorize the alternative to, or grant relief from, an ASME BPV Code (Section III or XI) or OM Code requirement. However, there are times when relief requests or alternatives might involve changes to plant technical specifications or changes to Tier 2\* information associated with a design certification (note that Tier 2\* information is defined in 10 CFR Part 52, Appendices A through D). In these cases, a license amendment would also be needed. In addition, the NRC may authorize an alternative to an ASME Code design requirement in the context of an application to certify a standard design.

## **SUMMARY OF ISSUE**

The NRC staff is issuing this RIS to address the following specific issues associated with submittals under 10 CFR 50.55a:

- the content of IST-related or ISI-related requests for relief or alternatives under 10 CFR 50.55a
- the timing of alternatives submitted in accordance with 10 CFR 50.55a(a)(3)

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<sup>2</sup> The term “construction” is an all-inclusive term comprising materials, design, fabrication, examination, testing, inspection, and certification, as defined in the ASME BPV Code, Section III, Article NCA-9000.

- the timing of relief requests submitted in accordance with 10 CFR 50.55a(f)(5) or 10 CFR 50.55a(g)(5)

The Content of IST-Related or ISI-Related Requests for Relief or Alternatives Under 10 CFR 50.55a

Licenseses requesting relief from the requirements of 10 CFR 50.55a(f)(6)(i) and 10 CFR 50.55a(g)(6)(i) due to impracticality must demonstrate that ASME Code requirements are impractical within the limitations of design, geometry, and materials of construction. In addition, the NRC staff may impose alternative requirements and may grant the relief only if it determines that granting the relief is authorized by law, will not endanger life or property or the common defense and security, and is otherwise in the public interest giving due consideration to the burden upon the licensee that could result if the requirements were imposed on the facility. In doing this, the NRC staff assesses the limitations of the examination or testing, evaluates the susceptibility to known degradation, mechanisms or failure modes, the consequences of a failure at the location where the test or examination is impractical, and if any other inspections or tests should be implemented to compensate for the impracticality.

Licenseses and applicants proposing alternatives in accordance to 10 CFR 50.55a(a)(3)(i) or 10 CFR 50.55a(a)(3)(ii) must demonstrate that (1) the proposed alternatives would provide an acceptable level of quality and safety, or (2) compliance with the specified requirements would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety.

Many initial requests for alternatives to or relief from IST or ISI requirements in the ASME BPV Code and OM Code submitted by licenseses and applicants have not been supported by adequate descriptive and detailed technical information, thus necessitating requests for additional information. Based on whether the submittal involves a relief or alternative request, detailed information is necessary: (1) to document the impracticality of the ASME BPV or OM Code requirements because of the limitations of design, geometry, or materials of construction of components, and to allow the NRC to make a finding on plant safety where an ASME BPV Code or OM Code requirement is determined to be impractical; or (2) to determine whether the use of a proposed alternative will provide an acceptable level of quality and safety or whether compliance with the specified ASME Code requirements would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety.

Licenseses and applicants should consider the information needed for the NRC to make a finding to grant relief or to authorize an alternative when preparing the request submittal. For example, relief requests submitted with a justification that the requirements are “impractical,” that the component is “inaccessible,” or requests that use any other categorical basis should provide information to permit an evaluation of that relief request.

The guidance in this section illustrates the extent of the information necessary for the NRC to make a proper evaluation and to adequately document in a safety evaluation the basis for granting relief from or authorizing an alternative to the ASME BPV Code or OM Code. Requests for additional information and delays in completing the review can be considerably reduced if the initial submittal by the licensee or applicant provides this information.

Each submittal for a relief or alternative request should include the following, with adequate information so that it can serve as a standalone document:

- Provide the start and end date of the current or past 10-year IST or ISI interval and the applicable edition or addendum of the ASME BPV or OM Codes from which the relief or alternative is requested.
- If the licensee received an approval to update to a later edition or addendum of the ASME BPV or OM Codes for the current or past 10-year IST or ISI interval, provide the date of the NRC safety evaluation.
- Provide the ASME BPV or OM Code examination or test requirements for the pump(s), valve(s), weld(s), or component(s) for which the relief or alternative is requested.
- State the number of items associated with the requested relief or alternative.
- Identify the specific ASME BPV Code or OM Code requirement that has been determined to be impractical or will be replaced by the alternative.
- For relief from or an alternative to the ASME BPV Code ISI examination requirements, provide an itemized list of the specific pump(s), valve(s), weld(s), or component(s) for which the relief or alternative is requested. List the type of valve(s) or pump(s) or the ASME BPV Code specification of base metal and weld material in weld joints piping, components (e.g., tees, elbows), nozzles, and vessels.
- For relief from or an alternative to the ASME BPV Code ISI examination requirements, estimate the percentage of the examination coverage required under the ASME BPV Code that has been completed for each of the individual existing weld(s) or component(s) associated with the relief or alternative.
- Submit information to support the determination that the requirement is impractical (i.e., state and explain the basis for requesting relief) or the basis for the alternative request. If the licensee cannot perform the examination or testing required by the ASME BPV or OM Codes because of a limitation or obstruction, describe or provide drawings showing the specific limitation or obstruction and the achievable examination coverage or testing that can be performed.
- For an alternative request, identify the alternative test or nondestructive examination methods and techniques proposed (1) in lieu of the requirements of the ASME BPV or OM Codes, or (2) to supplement partial ASME OM Code testing or ASME BPV Code examinations performed or special processes.
- Discuss the failure consequences of the weld joint(s) or component(s) that would not receive the examination specified in the ASME BPV Code. Discuss any changes expected in the overall level of plant safety if the licensee performs the proposed alternative examination in lieu of the examination specified in the ASME BPV Code.

- For an alternative request, provide a basis to demonstrate that (1) the proposed alternative would provide an acceptable level of quality and safety, or (2) compliance with the specified requirements would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety.
- State when the proposed alternative testing or examination would be implemented and performed.
- State when the request for relief or alternative would apply during the inspection or testing period or interval (e.g., that it would occur during the refueling outage or the remainder of interval, or that the request is to defer an examination or testing to some other time).
- State the time period for which the requested relief or alternative is needed.
- For a performance-based IST relief or alternative request, discuss the aggregate risk associated with proposed relief or alternative based on the results of a comprehensive risk analysis. Also, discuss how the failure of the affected components would impact core damage frequency and large early release frequency.
- Licensees should submit a technical justification or data to support the relief or alternative request. Stating without substantiation that a change will not affect the level of quality is unsatisfactory (e.g., stating that a licensee does not agree with an ASME BPV or OM Code requirement is not considered adequate justification for granting relief or authorizing an alternative). If the licensee is requesting relief or an alternative because of issues with component inaccessibility, the request should include a detailed description or drawing that depicts the inaccessibility.

For the NRC staff to make a determination for an alternative for hardship regarding radiation exposure during an examination or test, the licensee should submit specific information as noted below:

Radiation exposures received by test personnel when accomplishing the testing or examinations prescribed in the ASME BPV or OM Codes can be an important factor in determining whether, or under what conditions, a test or examination must be performed. The licensee must submit for NRC staff approval such a request for an alternative in the manner described above as a case of hardship because of radiation exposure.

Some of the radiation considerations will only be known at the time of the examinations or tests. However, based on experience at operating facilities, the licensee generally is aware of those areas for which relief or an alternative may be necessary. In addition to the general requirements given above, the licensee should submit the following additional information about the relief or alternative request:

- the total estimated person-rem (roentgen equivalent man) exposure involved in the test or examination after as low as reasonably achievable aspects are factored into the planning of the job;

- the radiation levels at the test or examination area and the time and number of personnel who will be required in this area;
- flushing or shielding capabilities that might reduce radiation levels;
- a discussion of the considerations involved in remote inspections; and
- the amount of worker radiation exposure that resulted from any previous ISI for the component weld examinations for which the relief or alternative is being requested.

The Timing of Alternatives Submitted in Accordance with 10 CFR 50.55a(a)(3)

10 CFR 50.55a(a)(3) states:

Proposed alternatives to the requirements of paragraphs (c), (d), (e), (f), (g), and (h) of this section, or portions thereof, may be used when authorized by the Director of the Office of Nuclear Reactor Regulation or the Director of the Office of New Reactors, as appropriate. Any proposed alternatives must be submitted and authorized prior to implementation.

As required by 10 CFR 50.55a(a)(3), licensees and applicants must submit proposed alternatives to the NRC and obtain NRC authorization **before implementing the alternatives**. For operating nuclear power plants, the licensee must submit the alternative request to allow the NRC staff ample time (generally less than 1 year) to review and prepare a safety evaluation before performing an alternative examination, pressure test, or operational readiness test. This is particularly important when the licensee plans to use the proposed alternative to justify the use of a different examination or test or to demonstrate compliance of a particular component with the ASME BPV or OM Code requirements in support of facility restart from an otherwise safe-plant configuration (i.e., shutdown condition). Alternative examination techniques or tests may be demonstrated in the field for the feasibility of the proposed alternative. NRC authorization of alternatives should be factored into the planning schedule as follows: (1) for design modifications and physical modifications to the plant, prior to reliance on the components associated with the alternative to be available to perform their safety function, (2) for tests, prior to performing the alternative test, and (3) for examinations, prior to crediting the alternative examination to satisfy an ASME Code or 10 CFR 50.55a requirement.

For nuclear power plants that have not started initial operation, applicants or licensees may request authorization of alternatives either during the design stage (e.g., as part of the construction permit, design certification or COL application review) or during the construction stage (e.g., after the construction permit or COL is issued, but prior to plant operation). If an alternative is submitted during the construction stage, it must be authorized by the NRC before the components associated with the alternative are installed in the plant and the ASME Data Report is completed and the Code Symbol Stamp (or Certification Mark) is applied to the associated system. Although applicants and licensees may submit an alternative for authorization after the associated components are fabricated, those applicants and licensees will be proceeding at the risk of the NRC subsequently denying the requested alternative. Combined license holders should also be cautious that the proposed alternative does not adversely impact the successful closure of applicable inspections, tests, analyses and

acceptance criteria (ITAAC) in plants licensed under 10 CFR Part 52. Thus, alternatives should be submitted to the NRC for authorization as early as practicable to avoid impacting final closure of ITAAC, causing potential hardware changes or affecting scheduled plant start-up.

The submittal of alternatives after they were implemented (e.g., within or after 12 months after the end of an inspection interval or after the plant starts or resumes operation) will be evaluated by the NRC staff in accordance with the applicable provision of 10 CFR 50.55a. In addition, they will be forwarded to the appropriate NRC regional office for enforcement consideration to determine whether such action complied with the requirements of 10 CFR 50.55a(a)(3).

#### The Timing of Relief Requests Submitted in Accordance with 10 CFR 50.55a(g)(5) or 10 CFR 50.55a(f)(5)

Regulations in 10 CFR 50.55a(f)(5)(iii) and (g)(5)(iii) require a nuclear power plant licensee to notify the NRC when it has determined that conformance with certain ASME Code requirements related to the IST and ISI programs, respectively, are impractical for its facility, and to submit information to support its determination. The regulations in 10 CFR 50.55a(f)(5)(iv) and (g)(5)(iv) provide requirements for the timeliness of demonstrating the impracticality of ASME Code requirements related to the IST and ISI programs, respectively, for each new 120-month test/inspection interval. These requirements state that licensees must demonstrate to the satisfaction of the NRC the basis for determining that the test/examination was impractical not later than 12 months following the end of that interval in which the test/examination was attempted. Sections 50.55a(f)(6)(i) and (g)(6)(i) state that the NRC will evaluate determinations that ASME Code requirements for IST and ISI programs, respectively, are impractical, and may grant relief and impose such alternative requirements as it determines is authorized by law and that will not endanger life or property or the common defense and security. Such exceptions must be deemed to be in the public interest, giving due consideration to the burden upon the licensee that could result if the requirements were imposed on the facility.

Therefore, licensees should submit requests for relief due to impracticality under 10 CFR 50.55a(g)(5)(iii) for a given 120-month inspection interval after the test or exam has been attempted during that period and prior to 12 months following the termination of that interval. Licensees should not submit requests for relief either before or after this time interval. Requests submitted prior to the acceptable time frame will not be accepted by the NRC staff for review. Requests submitted after the acceptable timeframe will be evaluated by the staff for safety issues but will not be approved. These requests will be forwarded to the appropriate regional office for potential enforcement action.

Requests for relief under 10 CFR 50.55a(f)(5)(iii) related to IST are not subject to the restriction for submittals under 10 CFR 50.55a(g)(5)(iii). However, the NRC staff recommends that licensees and applicants consider the guidance discussed in this RIS regarding the timeliness of submittal of alternative requests when planning their submittal of IST relief requests.

#### **BACKFIT DISCUSSION**

This RIS requires no action or written response and is therefore, not a backfit under 10 CFR 50.109, "Backfitting." Consequently, the staff did not perform a backfit analysis.

**FEDERAL REGISTER NOTIFICATION**

[Discussion to be provided in final RIS.]

**CONGRESSIONAL REVIEW ACT**

[Discussion to be provided in final RIS.]

**PAPERWORK REDUCTION ACT STATEMENT**

This RIS references information collection requirements that are subject to the Paperwork Reduction Act of 1995 (44 U.S.C. 3501 et seq.). The Office of Management and Budget (OMB) approved the existing requirements under OMB approval number 3150-0011.

**PUBLIC PROTECTION NOTIFICATION**

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

DRAFT

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Please direct any questions about this matter to the technical contacts listed below or to the appropriate project manager in the Office of Nuclear Reactor Regulation (NRR).

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