

SUPPORTING STATEMENT FOR  
INFORMATION COLLECTIONS CONTAINED IN  
INCORPORATION BY REFERENCE OF AMERICAN SOCIETY  
OF MECHANICAL ENGINEERS CODES AND CODE CASES  
FINAL RULE

10 CFR PART 50

(3150-0011)

REVISION

Description of the Information Collection

The U.S. Nuclear Regulatory Commission (NRC) regulations incorporate by reference American Society of Mechanical Engineers (ASME) codes for nuclear power plants. The ASME periodically revises and updates its codes for nuclear power plants. The final NRC rule which is the subject of this supporting statement is the latest in a series of rulemakings to amend the NRC's regulations to incorporate by reference revised and updated ASME codes for nuclear power plants. This action is intended to maintain the safety of nuclear power plants and to make NRC activities more effective and efficient.

The NRC's regulations in Title 10 of the *Code of Federal Regulations* (10 CFR) Section 50.55a incorporate by reference Division 1 of Section III, "Rules for Construction of Nuclear Facility Components," and Division 1 of Section XI, "Rules for Inservice Inspection of Nuclear Power Plant Components" of the ASME Boiler and Pressure Vessel Code (BPV Code). The NRC's regulations also incorporate by reference the ASME "Operation and Maintenance of Nuclear Power Plants" (OM Code). These rules of the ASME BPV and OM Codes set forth the requirements to which nuclear power plant components are designed, constructed, tested, repaired, and inspected. In developing the final rule, the NRC staff reviewed revisions to the codes and determined the acceptability of each change. The NRC proposes to publish its findings in the final rule which incorporates the codes by reference and states which portions of the codes are mandatory, acceptable, or conditionally acceptable.

The information collection requirements imposed by 10 CFR 50.55a through incorporation by reference of the ASME Codes apply to activities associated with the construction and operation of nuclear power plants. In general, the records prepared are not collected by the NRC, but are retained by the licensee to be made available to the NRC, if requested, at the time of an NRC audit. This rule would apply after the effective date of the final rule for current and future nuclear power plant licensees.

*Overview of Implementation*

The final rule specifies schedule requirements for compliance with the rule for existing operating license holders as well as holders of new reactor construction permits, combined licenses, and applicants for standard design certifications. The following discussion describes the changes to the information collection burden associated with this final rule, as well as implementation expectations for the provisions in this final rule.

### *Inservice inspection and inservice testing program updates*

Licensees of nuclear power plants are required to update their inservice inspection and inservice testing programs every 10 years in accordance with the requirements of the latest edition and addenda of the ASME Code that have been incorporated by reference into 10 CFR 50.55a as of 12 months prior to the start of the next inspection and testing intervals.

This final rule incorporates by reference ASME BPV Code editions and addenda from 2009 to 2013 and ASME OM Code editions and addenda from 2009 to 2012. Licensees will be required to use these editions and addenda for inservice inspection and inservice testing program updates starting 12 months after the effective date of the final rule. The NRC anticipates that there will be a small reduction in the information collection burden associated with the inservice inspection and inservice testing program updates as a result of this final rule.

### *Voluntary use of later codes*

Paragraphs 10 CFR 50.55a(f)(4)(iv) and (g)(4)(iv) require that inservice tests of pumps and valves, inservice examinations of components, and system pressure tests may meet the requirements set forth in subsequent editions and addenda that are incorporated by reference in 10 CFR 50.55a subject to the limitations and modifications listed in 10 CFR 50.55a(b) and subject to Commission approval.

This final rule incorporates by reference editions and addenda from 2009 to 2013. Licensees may use the later editions and addenda if the code of record at their plant is the earlier editions and addenda of the ASME Code. However, licensees are required to request Commission approval via a letter to use these subsequent editions and addenda as discussed in NRC Regulatory Issue Summaries 2004-12 and 2004-16. As discussed in NRC Regulatory Issue Summary 2004-12, the amount of written documentation needed for a request to use a later Code edition and addenda that has been incorporated by reference into 10 CFR 50.55a is significantly less than for a relief request or a request to use an alternative requirement, so the information collection burden associated with a request to use a subsequent edition and addenda is less than the burden associated with an alternative request under 10 CFR 50.55a(z) or a relief request under 10 CFR 50.55a(f)(5)(iii) or (g)(5)(iii).

### *Alternative/relief requests*

Paragraph (z) of 10 CFR 50.55a allows applicants to use alternatives to the requirements of 10 CFR 50.55a paragraphs (b), (c), (d), (e), (f), (g), and (h) when authorized by the NRC. The NRC anticipates that there will be a reduction in the number of alternative and relief requests under 10 CFR 50.55a(z) as a result of the final rule. A review of such requests submitted to the NRC over the last 5 years identified that these submittals ranged from a few pages to several hundred pages with an average of approximately 32 pages with average technical complexity. Therefore, the NRC estimates that a request requires an average of 300 hours of effort to develop the technical justification and an additional 80 hours to perform research, review, approve, process, and submit the document to the NRC for use of alternatives under 10 CFR 50.55a(z). Therefore, the revised total estimated burden is 380 hours per request.

## Requirements

### Substantive provisions in the final rule

The NRC anticipates a decrease in the information collection burden associated with the substantive provisions in the final rule described below:

- Maintenance of Quality Assurance Program Description. The final 10 CFR 50.55a rule that incorporates by reference the 2008 Edition and the 2009-1a Addenda of NQA-1 is optional for licensees to implement. The existing 10 CFR 50.54(a)(3) regulations allow licensees to make changes to a previously accepted quality assurance program description (QAPD) included or referenced in the Safety Analysis Report without prior NRC approval, provided the change does not reduce the commitments in the program description as accepted by the NRC. Regulations in 10 CFR 50.54(a)(4) state that the licensees who make changes to the QAPD that reduce the commitments, must submit these changes to the NRC for review and approval prior to implementation. Therefore, the implementation of the final rule does not incur additional information collection burden because it is already required under existing § 50.54(a)(4) requirements.
- Concrete Containment Examinations. The NRC proposes to add paragraph (b)(2)(viii)(H) to specify the information that must be provided in the ISI Summary Report required by IWA-6000, when inaccessible concrete surfaces are evaluated under the new code provision IWL-2512. This new condition would replace the existing condition (b)(2)(viii)(E) when using the 2007 Edition with the 2009 Addenda through the 2013 Edition of Subsection IWL. Because licensees already perform equivalent actions under existing condition (b)(2)(viii)(E) when using the 2007 Edition this change has negligible impact. The proposed condition in 10 CFR 50.55a(b)(2)(viii)(I) imposes a condition on the technical evaluation requirements in the new article IWL-2512(b), for consistency with NUREG-1801, Revision 2, “Generic Aging Lessons Learned (GALL) Report” with regard to aging management of below-grade concrete. This condition applies only to holders of renewed licenses under 10 CFR 54 during the period of extended operation (i.e., beyond the expiry date of the original 40-year license) of a renewed license when using IWL-2512(b) of the 2007 Edition with 2009 Addenda through the 2013 Edition of Subsection IWL. Forty-six sites will make the concrete containment examination procedure updates by 2019, and the two new sites will be required in 2057. Forty-seven sites will have examinations bi-annually beginning in 2020 with the five new sites beginning in 2070.
- Nondestructive Examination Personnel Certification. The proposed condition in 10 CFR 50.55a(b)(2)(xviii)(D) prohibits applicants and licensees from using the ultrasonic examination nondestructive examination (NDE) personnel certification requirements in Section XI, Appendix VII and subarticle VIII-2200 of the 2011 Addenda and 2013 Edition of the ASME BPV Code and prohibits the use of an accelerated Appendix VII training process for certification of ultrasonic examination personnel based on training and prior experience. Instead, the NRC requires applicants and licensees to use Table VII-4110-1 in the 2010 Edition, and VIII-2200, Appendix VIII prerequisites for ultrasonic examination personnel requirements in the 2010 Edition. There is no significant recordkeeping or reporting burden associated with this requirement.

- Control the Use of Mechanical Clamping Devices. The proposed condition in 10 CFR 50.55a(b)(2)(xxxi) prohibits the use of mechanical clamping devices on Class 1 piping and portions of piping systems that form the containment boundary. In the 2010 Edition of the ASME BPV Code, a change was made to include mechanical clamping devices under the small items exclusion rules of IWA-4131. Currently in the 2007 Edition/2008 Addenda of Section XI under IWA-4133, “Mechanical Clamping Devices Used as Piping Pressure Boundary,” mechanical clamping devices may be used only if they meet the requirements of Mandatory Appendix IX of Section XI of the ASME BPV Code. There is no significant recordkeeping or reporting burden associated with this requirement.
- Summary Report Preparation and Submittal. The proposed condition in 10 CFR 50.55a(b)(2)(xxxii) requires licensees using the 2010 Edition and later editions and addenda of Section XI to continue to submit Summary Reports as required in IWA-6240 of the 2009 Addenda, which is consistent with current timeframes. There is no significant recordkeeping or reporting burden associated with this requirement.
- Prohibit Use of Risk-Informed Allowable Pressure Methodology. The proposed condition in 10 CFR 50.55a(b)(2)(xxxiii) prohibits the use of Appendix G, Paragraph G-2216 in ASME BPV Code, Section XI, which was included for the first time in the 2011 Addenda of the ASME BPV Code, and requires the continued use of the deterministic methodology of Section XI, Appendix G to generate P-T limits. There is no significant recordkeeping or reporting burden associated with this requirement.
- Nonmandatory Appendix U. The proposed conditions in 10 CFR 50.55a(b)(2)(xxxiv) require that when using the 2013 Edition of the ASME BPV Code, Section XI, ASME BPV Code repair or replacement activity temporarily deferred under the provisions of Nonmandatory Appendix U must be performed during the next scheduled outage and the mandatory appendix in Code Case N-513-3 be used in lieu of the appendix referenced in paragraph U-S1-4.2.1(c) of Appendix U (which was inadvertently omitted from Appendix U). These conditions provide necessary consistency in requirements between Code Case N-513-3 and do not result in any significant recordkeeping or reporting burdens.
- Procedure Revision to Specify Use of Reference Temperature (RT) in the  $K_{Ia}$  and  $K_{Ic}$  Equations. The proposed condition in 10 CFR 50.55a(b)(2)(xxxv) specifies that when licensees use the 2013 Edition of the ASME BPV Code, Section XI, Appendix A, paragraph A-4200, if  $T_0$  is available, then  $RT_{T_0}$  may be used in place of  $RT_{NDT}$  for applications using the  $K_{Ic}$  equation and the associated  $K_{Ic}$  curve, but not for applications using the  $K_{Ia}$  equation and the associated  $K_{Ia}$  curve. This proposed insertion is consistent with Code Case N-629, “Use of Fracture Toughness Test Data to Establish Reference Temperature for Pressure Retaining Materials,” which was accepted by the NRC without conditions. There is no significant recordkeeping or reporting burden associated with this requirement.
- Fracture Toughness of Irradiated Material Requirements. The proposed condition in 10 CFR 50.55a(b)(2)(xxxvi) requires licensees using ASME BPV Code, Section XI, 2013 Edition, Appendix A, paragraph A-4400, to obtain NRC approval prior to using irradiated

$T_0$  and the associated  $RT_{T_0}$  in establishing fracture toughness of irradiated materials. Eleven sites will make this procedural change by 2019.

- Ultrasonic Examination Using Code Case N-824 Techniques. The proposed condition in 10 CFR 50.55a(b)(2)(xxxvii) allows licensees to use the provisions of ASME Code Case N-824, "Ultrasonic Examination of Cast Austenitic Piping Welds From the Outside Surface Section XI, Division 1," as conditioned, when implementing inservice examinations in accordance with the ASME BPV Code, Section XI requirements. The current regulatory requirements for the examination of CASS, provided in 10 CFR 50.55a, do not provide sufficient guidance to assure that the CASS components are being inspected adequately. For this reason, over the past several decades, licensees have been unable to perform effective inspections of welds joining CASS components. To allow for continued operation of their plants, licensees have submitted hundreds of requests for relief from the ASME Code requirements for inservice inspection of CASS components to the NRC, resulting in a significant regulatory burden. Based on the improvements in ultrasonic inspection technology and techniques for CASS components, the ASME approved Code Case N-824 (N-824) on October 16, 2012, which describes how to develop a procedure capable of meaningfully inspecting welds in CASS components. Using this technology and techniques, CASS materials less than 1.6 inches thick can be reliably inspected for flaws 10 percent through-wall or deeper if encoded phased-array examinations are performed using proper ultrasonic frequencies, inspection angles, and inspection unit probe sizes. Additionally, for thicker welds, flaws greater than 30 percent through-wall in depth can be detected using low frequency encoded phased array ultrasonic inspections. This is an optional provision. The NRC estimates that approximately 23 PWR sites will incorporate this provision by 2019. Twenty-three operating sites will make the relief requests and weld examinations in 2020 and then again in 2030.
- Mandatory Appendix III Inservice Testing of Motor-Operated Valves. The proposed condition in 10 CFR 50.55a(b)(3)(ii) imposes three supplemental requirements on the use of Mandatory Appendix III, "Preservice and Inservice Testing of Active Electric Motor Operated Valve Assemblies in Light-Water Reactor Power Plants," in the 2009 Edition of the ASME OM Code. Mandatory Appendix III represents the incorporation of ASME OM Code Case OMN-1, "Alternative Rules for Preservice and Inservice Testing of Active Electric Motor Operated Valve Assemblies in Light-Water Reactor Power Plants," and Code Case OMN 11, "Risk-Informed Testing for Motor-Operated Valves," into the OM Code. The three supplemental requirements proposed in 10 CFR 50.55a(b)(3)(ii) are (A) MOV diagnostic test interval, (B) MOV testing impact on risk, and (C) MOV risk categorization. Sixty-seven operating plants will make these procedural revisions by 2019. Seventy-three operating sites and two new sites will avert the quarterly tests but add biannual tests and 10-year diagnostic tests for the remaining life of the reactor starting in 2019.
- ASME OM Code Supplemental Requirements Testing for New Reactors. The proposed condition in 10 CFR 50.55a(b)(3)(iii) imposes four supplemental requirements on the use of the provisions in the ASME OM Code for new reactors. These requirements involve (A) periodic verification of the design-basis capability of power-operated valves (POVs) other than MOVs already addressed in Appendix III to the ASME OM Code, (B) bi-directional testing of check valves, (C) monitoring flow-induced vibration from

hydrodynamic loads and acoustic resonance to identify potential adverse flow effects, and (D) assessment of the operational readiness of pumps, valves, and dynamic restraints within the scope of regulatory treatment of non-safety systems (RTNSS) for applicable reactor designs. The five new plants will begin making these procedural revisions in 2020.

- ASME OM Code Requirements for Squib Valve Surveillance for New Reactors. Subsection ISTC in the 2012 Edition of the ASME OM Code supplements the preservice and inservice surveillance requirements in the previous editions and addenda of the ASME OM Code for squib valves in new reactors. The combined licenses for Vogtle Units 3 and 4 and V.C. Summer Units 2 and 3 include conditions for preservice and surveillance requirements for their squib valves. The supplemental provisions for squib valves in new reactors in Subsection ISTC in the 2012 Edition of the ASME OM Code are consistent with the license conditions currently imposed on Vogtle Units 3 and 4 and V.C. Summer Units 2 and 3. Therefore, the incorporation by reference of the supplemental squib valve provisions in 2012 Edition of the ASME OM Code into 10 CFR 50.55a will not result in new technical requirements for those reactors. This provision would only apply for a hypothetical new reactor.
- Subsection ISTB (2011 Edition) Testing. The proposed condition in 10 CFR 50.55a(b)(3)(vii) prohibits the use of Subsection ISTB in the 2011 Addenda of the OM code because the addenda expanded the acceptable range of a pump comprehensive test but did not require a pump periodic verification program as specified in Mandatory Appendix V in the 2012 Edition of the OM Code. There is no significant recordkeeping or reporting burden associated with this requirement because licensees may use Subsection ISTB in the 2012 Edition of the OM Code.
- Mandatory Appendix V on Pump Periodic Verification Tests. The 2012 Edition of the ASME OM Code specifies the use of Mandatory Appendix V, "Pump Periodic Verification Test Program." Mandatory Appendix V establishes the requirements for implementing a pump periodic verification test. The test verifies that pumps that are in a licensee's inservice testing program can meet the required (differential or discharge) pressure as applicable, at its highest design basis accident flow rate. The test, if required, must be performed once every two years. If a pump does not have a specific design basis accident flow rate in the licensee's credited safety analysis, or if a pump's comprehensive test flow rate and (differential or discharge) pressure bound the pump's design basis accident flow rate and (differential or discharge) pressure, a pump periodic verification test is not required. Fifty-five sites (all PWR sites) will make this procedural change by 2019, and the two new PWR sites will make the change in 2020. Approximately 17 operating plants and one of the new plants will perform these tests every refueling outage (approximately every 2 years) starting in 2019 for operating plants and in 2020 for new plants.
- Subsection ISTE (2012 Edition) for Risk-Informed Inservice Testing of Pumps and Valves. The proposed condition in 10 CFR 50.55a(b)(3)(viii) requires that licensees may not implement the risk-informed approach for inservice testing of pumps and valves specified in Subsection ISTE, "Risk-Informed Inservice Testing of Components in Light-Water Reactor Nuclear Power Plants," in the ASME OM Code, without first obtaining

NRC authorization to use Subsection ISTE as an alternative to the applicable IST requirements in the ASME OM Code pursuant to 10 CFR 50.55a. One operating reactor will request this authorization in 2019 and one new reactor in 2019.

- Subsection ISTF, OM Code Pump Testing for New Reactors. Subsection ISTF, “Inservice Testing of Pumps in Light-Water Reactor Nuclear Power Plants – Post 2000 Plants,” OM Code, 2011 Addenda specifies IST requirements for pumps within the scope of the ASME OM Code for post-2000 plants. The term “post-2000 plants” refers to nuclear power plants that were issued (or will be issued) a construction permit, or combined license for construction and operation, on or following January 1, 2000. Subsection ISTF provides essentially the same IST requirements as existing Subsection ISTB for pumps in current operating nuclear power plants with one exception. In particular, pumps in new reactors will undergo an inservice test every quarter rather than Group A or B tests every quarter and comprehensive tests every 2 years as performed at current operating plants. There is no significant recordkeeping or reporting burden associated with this requirement.
- Code Case OMN-20 Time Period Extension. The proposed condition allows the use of Code Case OMN-20 prior to incorporation into the next update of Regulatory Guide 1.192, and incorporation by reference into 10 CFR 50.55a. The Code Case is an optional provision that allows time periods fewer than two years to be extended by up to 25 percent for any given pump or valve inservice test. Time periods greater than or equal to two years may be extended by up to six months for any given pump or valve inservice test. Currently a licensee must submit one relief request for every ten-year inservice test interval in order to use Code Case OMN-20 for the pumps and valves in their program. Providing this time period extension is a benefit because the OM Code does not have extension provisions for pump or valve inservice tests that align to plant Technical Specification extension provisions. All operating reactors will make this time period extension request in 2020 and again in 2030, and all new reactors in 2030 and then every 10 years thereafter.
- Subsection ISTC, OM Code Inservice Testing of Valves in Light-Water Reactors. The proposed condition clarifies the requirements to specify that when implementing paragraph ISTC-3700, “Position Verification Testing,” licensees shall supplement the ASME OM Code provisions as necessary to verify that valve operation is accurately indicated. This proposed revision clarifies the current requirements, and is considered to be consistent with the meaning and intent of the current requirements, and therefore is not considered to result in a change in requirements. There is no significant recordkeeping or reporting burden associated with this requirement.
- Program Revision to Inservice Testing Requirements. The proposed change to revise 10 CFR 50.55a(f)(3)(iii)(A) and (B) for Class 1 pumps and valves, 10 CFR 50.55a(f)(3)(iv)(A) and (B) for Class 2 and 3 pumps and valves, and 10 CFR 50.55a(f)(4) for inservice testing standards requirement for operating plants is to align the scope of pumps and valves for inservice testing with the scope defined in the ASME OM Code and in NRC Standard Review Plan (SRP) Section 3.9.6, “Functional Design, Qualification, and Inservice Testing Programs for Pumps, Valves, and Dynamic Restraints.” This clarification provides necessary consistency in scope of pumps and

valves defined in the inservice testing program, in the ASME OM Code, and in SRP Section 3.9.6. There is no significant recordkeeping or reporting burden associated with this requirement.

- Cast Austenitic Stainless Steel Material Examination Requirements. This proposed condition adds 10 CFR 50.55a(g)(6)(ii)(F)(11) to address examination requirements through cast stainless steel materials and to establish a deadline of January 1, 2022, for requiring the use of Appendix VIII qualifications to meet the inspection requirements of paragraph -2500(a) of ASME Code Case N-770-2. The requirements for volumetric examination of butt welds through cast stainless steel materials are currently being developed as Supplement 9 to the ASME BPV Code, Section XI, Appendix VIII. In accordance with Appendix VIII for supplements that have not been developed, the requirements of Appendix III apply. Appendix III requirements are not equivalent to Appendix VIII requirements. For the volumetric examination of ASME Class 1 welds, the NRC proposes to require the use of an Appendix VIII qualified procedure to meet the examination requirements of paragraph -2500(a) of ASME Code Case N-770-2 for examinations of ASME Code Class 1 piping and vessel nozzle butt welds through cast stainless steel materials. Thirty-seven PWR sites will make the procedural updates, and the vendor will develop the six training modules and mockups, in 2019 and 2020 respectively. Inspector training will occur in 2021.
- Examination Coverage Requirements for Butt Welds Joining Cast Stainless Steel Material. This proposed condition adds 10 CFR 50.55a(g)(6)(ii)(F)(12) to clarify the examination coverage requirements allowed under Appendix I of ASME Code Case N-770-2 for butt welds joining cast stainless steel material. Under current ASME BPV Code, Section XI, Appendix VIII requirements, the volumetric examination of butt welds through cast stainless steel materials is under Supplement 9. The ASME BPV Code Committee is still developing Supplement 9 rules. Therefore, it is currently impossible to meet the requirement of Paragraph I.5.1 for butt welds joining cast stainless steel material. The material of concern is the weld material susceptible to PWSCC adjoining the cast stainless steel material for Class 1 PWR Piping and Vessel Nozzle Butt Welds. Appendix VIII qualified procedures are available to perform the inspection of the susceptible weld material, but they are not qualified to inspect the cast stainless steel materials. Therefore, this provision would allow licensees to implement a stress-improvement mitigation technique for butt welds joining cast stainless steel material with use of an examination volume that is qualified by Appendix VIII procedures to the maximum extent practical; including 100 percent of the susceptible material volume. This technique would remain applicable until an Appendix VIII qualified procedure for the inspection through cast stainless steel materials is available in accordance with condition § 50.55a(g)(6)(ii)(F)(11). There is no significant recordkeeping or reporting burden associated with this requirement.
- Encoding of Ultrasonic Volumetric Examinations. This proposed condition adds 10 CFR 50.55a(g)(6)(ii)(F)(13) to address the encoding of specific ultrasonic volumetric examinations at PWRs. This proposed condition addresses a human performance gap in which inspections using a conventional non-encoded examination missed flaws in ASME Class 1 dissimilar metal welds and in weld overlays. The recent examinations that failed to identify significant flaws can be avoided by the use of encoded ultrasonic examinations. Encoded ultrasonic examinations electronically store both the positional

and ultrasonic information from the inspections. Encoded examinations allow the inspector to evaluate the data and search for indications outside of a time-limiting environment to assure that the inspection was conducted properly and to allow sufficient time to analyze the data. Additionally, the encoded examination would allow for an independent review of the data by other inspectors or an independent third party. This proposed condition would require that all ultrasonic volumetric examinations of non-mitigated or cracked mitigated dissimilar metal butt welds in the reactor coolant pressure boundary, within the scope of ASME Code Case N-770-2, have encoded examinations. Approximately three welds per year at 33 units will require encoding beginning in 2020 through the remaining life of the reactor.

The current submission includes the following changes from the proposed rule, made in response to public comments:

- Nonmandatory Appendix U
  - Proposed rule referenced an appendix of Appendix U that was inadvertently omitted
  - NRC staff and members of the public discovered the omission and in the final rule language, the proposed conditions in 10 CFR 50.55a(b)(2)(xxxiv) require that when using the 2013 Edition of the ASME BPV Code, Section XI, ASME BPV Code repair or replacement activity temporarily deferred under the provisions of Nonmandatory Appendix U must be performed during the next scheduled outage and the mandatory appendix in Code Case N-513-3 be used in lieu of the appendix referenced in paragraph U-S1-4.2.1(c) of Appendix U.
- Inservice Testing Standards Requirement for Operating Plants
  - Proposed rule did not provide a means for pumps and valves within the scope of the ASME OM Code but not Class 1, 2, or 3 to satisfy requirements without relief requests
  - Commenters asked that there be an option for these pumps and valves to be in compliance without relief requests
  - Final rule allowed such pumps and valves to be part of an augmented IST program provided that:
    - The basis for such deviations from the ASME OM code demonstrate acceptable levels of quality and safety, or
    - Implementation of the Code provisions would result in hardship or unusual difficulty without an appropriate increase in safety and quality

#### *Number of nuclear power plants*

This final rulemaking considers 102 nuclear power plants that are licensed to operate in 2017 and 97 reactor units in 2019, and 5 future nuclear power plants in the licensing process. The NRC assumes that Clinton (2017), Quad Cities Units 1 and 2 (2018), and Oyster Creek (2019) Nuclear Generating Stations will close based on Exelon Corporation's announcements. The NRC staff assumes that James A. Fitzpatrick will close in 2017 and Pilgrim in 2019 based on Entergy Nuclear Operations, Inc.'s announcement. Ft. Calhoun's board of directors voted on 6/16/2016 to prematurely shutdown that plant by 12/31/2016. The operating nuclear power plants include Vogtle Electric Generating Plant, Units 3 and 4, assumed to begin operations in 2019 and 2020, respectively; and Virgil C. Summer Nuclear Station, Units 2 and 3, assumed to

begin operations in 2019 and 2020, respectively. The 4 units under construction at Vogtle Electric Generating Plant and Virgil C. Summer Nuclear Station have been issued combined operating licenses under Part 52. Table 1 below summarizes the number of nuclear power plants affected by this rule during the expected clearance period of 2017 – 2019. The number of operating reactors used is 97 under the assumption by the NRC Staff that reactors planning to cease operations will not perform the actions of the final rule.

TABLE 1  
NUMBER OF NUCLEAR POWER PLANTS

Year	Number of Operating Reactors	Number of New (Future) Reactors
2017	97	5
2018	97	5
2019	97	5

A. JUSTIFICATION

1. Need for the Collection of Information

The ASME BPV and OM Codes provide listings of information required and specific forms to assist in documenting required information. In general, Section III records are needed to provide documentation that construction procedures have been properly implemented. ASME BPV Code, Section XI, and ASME OM Code records are needed to document the plans for and results of inservice inspection and inservice testing programs. The information is generally not collected, but is retained by the licensee to be made available to the NRC in the event of an NRC inspection or audit. ASME BPV and OM Code requirements are incorporated in 10 CFR 50 to avoid the need for writing equivalent NRC requirements.

2. Agency Use of Information

The records are generally historical in nature and provide data on which future activities can be based. The practical utility of the information collection for NRC is that appropriate records are available for auditing by NRC personnel to determine if ASME BPV and OM Code provisions for construction, inservice inspection, repairs, and inservice testing are being properly implemented in accordance with 10 CFR 50.55a of the NRC regulations, or whether specific enforcement actions are necessary.

3. Reduction of Burden Through Information Technology

There are no legal obstacles to reducing the burden associated with this information collection. The NRC encourages respondents to use information technology when it would be beneficial to them. NRC issued a regulation on October 10, 2003 (68 FR 58792), consistent with the Government Paperwork Elimination Act, which allows its licensees, vendors, applicants, and members of the public the option to make submissions electronically via CD-ROM, e-mail, special Web-based interface, or other means. It is estimated that approximately 100% of the potential responses are filed electronically.

4. Effort to Identify Duplication and Use Similar Information

No sources of similar information are available. There is no duplication of requirements. NRC has in place an ongoing program to examine all information collections with the goal of eliminating all duplication and/or unnecessary information collections.

5. Effort to Reduce Small Business Burden

The provisions of this regulation do not affect small businesses.

6. Consequences to Federal Program or Policy Activities if the Collection Is Not Conducted or Is Conducted Less Frequently

The information generally is not collected but is retained by the licensee to be made available to the NRC in the event of an NRC audit.

7. Circumstances Which Justify Variation from OMB Guidelines

ASME BPV Code, Section XI, and ASME OM Code requirements for ISI and IST programs, and 10 CFR 50.55a specify that records and reports must be maintained for the service lifetime of the component or system. Such lifetime retention of the records is necessary to ensure adequate historical information of the design, examination, and testing of components and systems to provide a basis for evaluating degradation of these components and systems at any time during their service lifetime.

8. Consultations Outside the NRC

Opportunity for public comment on the information collection requirements for this clearance package was published in the Federal Register on September 18, 2015 (80 FR 56820). The NRC received over 200 comments from 27 separate commenters over the public comment period. A full summary of comments and responses related to information collection has been included as Supplement 1, "2017 Final Rule (10 CFR 50.55a) American Society of Mechanical Engineers Codes and Code Cases Analysis of Public Comments."

An overview of the comments received, and the NRC responses, is as follows:

- Concrete Containment Examination Provision: Comments stated that the new condition is unnecessary, the intent can be accomplished by extending the applicability of IWL Condition E, and there were questions as to the intended application to inaccessible areas. The NRC disagreed in part, since the provision now includes reporting requirements. However, the NRC agrees with the rest of the comment and has revised the condition to clarify the applicability. Other comments indicated the 10-year examination interval was appropriate but there was no need for the 5-year interval for extended operation, but the NRC disagrees with the latter part, which is aligned with current NRC guidance for license renewal.

- Inservice Inspection Interval Provisions: Several commenters stated that § 50.55a(g)(6)(ii)(F)(9) seems to contradict (F)(8) in deferral circumstances where overlay installation would result in examination in less than 10 years. The NRC disagrees, stating that without the second condition, it would be possible for such a deferral to result in up to 20 years passing before the first inspection, a situation the NRC deems unacceptable. Hence the second condition is necessary
- Position Verification Testing: Commenters asked for revisions to the implementation timeline due to procedural updates. The NRC agreed and made a change to the rule language. Commenters further asked for an additional 24 months to submit relief requests for licensees still updating to ASME 2012. The NRC disagreed with these commenters as this is a long-standing practice for ASME rulemaking, and there are other options available for licensees to delay their updates.
- Section XI Appendix VIII: Comments stated that allowing licensees to use the latest edition and addenda of ASME Code Section XI Appendix VIII incorporated by reference without the need for a relief request will allow licensees and PDI to coordinate effectively to maintain compliance with ASME Code and 10 CFR 50.55a requirements. The NRC agreed with these comments.
- Section XI BPV Code: ASME recommends that this condition specifically reference paragraph IWA-6240 where the report submittal provisions are stated in Section XI. The NRC agreed with this comment and made changes to the rule language.
- IST Program: Commenters stated that revisions to 10 CFR 50.55a(f)(4) could be misinterpreted and result in unintended paperwork burden to align the scope between the ASME OM code and 10 CFR 50.55a. The NRC agreed and has made changes to the rule language.

In addition to the public comment period associated with the proposed rule, a public webinar was held on March 2, 2016, to discuss specific conditions in the proposed rulemaking for 10 CFR 50.55a. The discussions from that public webinar are also included in Supplement 1, the analysis of public comments.

#### 9. Payment or Gift to Respondents

Not applicable.

#### 10. Confidentiality of Information

Confidential and proprietary information is protected in accordance with NRC regulations at 10 CFR 9.17(a) and 10 CFR 2.390(b). However, no information normally considered confidential or proprietary is requested.

## 11. Justification for Sensitive Questions

This regulation does not request sensitive information.

## 12. Estimate of Annualized Burden and Burden Hour Cost

Due to the change in the number of nuclear power plants and the NRC's revised estimate of the burden associated with developing alternative requests, the reporting burden for 10 CFR 50.55a has changed. The estimated burden to prepare and submit an alternative request to the NRC for authorization has changed from 80 to 380 hours.

The NRC estimates that each operating plant site would submit an alternative/relief request, if this final rule is not approved, per year for a reporting burden of 21,660 hours (1 request for alternatives per site × 380 hours per request × 57 sites = 21,660 hours).

During the clearance period, there are a total of 102 respondents to the information collection:

- 97 power reactors responding to several of the provisions in the final rule
- 5 license applicants responding to some of those same provisions, and some provisions specifically for new reactors

In the first three years after the effective date of the rule (the clearance period covered by this supporting statement):

- An expected 46 sites will perform concrete containment examination procedure updates
- An expected 11 sites will perform fracture toughness examination procedure updates
- An expected 23 sites will perform Code Case N-824 procedure updates
- An expected 67 units will perform MOV diagnostic test procedure updates and begin the new MOV testing protocols
- An expected two units will seek Subsection ISTE authorization
- An expected 55 units will perform Appendix V program revisions
- An expected 37 sites will perform Cast Stainless Steel Material Examination Procedure updates
- An expected six training modules will be created for Cast Stainless Steel Material Examinations

Therefore, the burden estimated in this supporting statement reflects just those portions of the implementation costs estimated to occur in the 3-year clearance period. Additional MOV testing, relief/alternative requests, and other forms of testing will occur after the clearance period, as indicated in the tables below. Therefore, additional burden will be incurred during those years.

The burden estimate is shown in the attached tables. The burden estimates are based on the number of respondents during the first three years of the collection, according to the expected implementation of the requirements. These costs are undiscounted for the purpose of this document, and the annual fee rate of \$265 is used for all costs. The total annual burden reduction for Industry is 8,659 hours and \$2,294,547 (8,659 hrs ×

\$265/hr). The one-time reporting burden results in 1,868 hours per year (\$495,108). Annualized reporting burden in the clearance period is estimated to decrease by 9,677 hours and \$2,564,405. There is a decrease in annualized recordkeeping burden due to the reduction in alternative/relief requests. The annual recordkeeping burden over the full term of the rule is estimated to decrease by 850 hours (\$225,250).

### 13. Estimate of Other Additional Costs

NRC has determined that the records storage cost is roughly proportional to the recordkeeping burden cost. Based on a typical clearance, the recordkeeping storage cost has been estimated to be equal to .0004 percent of the recordkeeping burden. Therefore, the additional recordkeeping storage savings for 10 CFR Part 50 is estimated to be \$90 (850 recordkeeping hours × \$265 × .0004).

### 14. Estimated Annualized Cost to the Federal Government

The NRC will avert burden from review and approval of the submitted Code Case relief requests, and incur burden from review and approval OMN-20 alternative requests, as the major drivers of NRC burden. The current annualized cost to the Federal government for Part 50 is \$87,478,560. The annualized one-time savings to the Federal government resulting from this final rule is \$1,869,133 (7,053 staff hours × \$265/hr fee rate). The annualized recurring cost to the Federal government resulting from this final rule is a savings of \$448,910 (1,694 staff hours × \$265/hr fee rate). The total annualized cost to the government for Part 50 will be (\$87,478,560) - \$1,869,133 - \$448,910 = \$85,160,517.

### 15. Reasons for Change in Burden or Cost

The current Part 50 annual burden is 45,202 responses and 4,378,653 hours. The final rule decreases the annual number of responses by 148 and the annual burden hours on Industry by a total of 8,659 hours making the new Part 50 total 4,369,994 hours and 45,054 responses.

The final rule incorporates by reference OM and BPV code cases from ASME, described above, which reduce the burden on industry and the NRC by a reduction in relief and alternative requests submitted and reviewed as a result of aspects of plant operation covered by these code cases. A review of Code alternate requests submitted to the NRC over the last 5 years identified that these submittals ranged from a few pages to several hundred pages with an average of approximately 32 pages with average technical complexity. Therefore, the NRC estimates that a Code Case submittal requires an average of 300 hours of effort to develop the technical justification and an additional 80 hours to perform research, review, approve, process, and submit the document to the NRC for use of alternatives under 10 CFR 50.55a(z). Therefore, the revised total estimated burden is 380 hours per alternative.

The final rule adds procedural updates to concrete containment examinations, fracture toughness provisions, MOV testing, and Cast Austenitic Stainless Steel examinations, which add burden to the industry. The new MOV testing requirements also result in a reduction in burden of the costly quarterly MOV testing currently required.

Overall, the final rule will result in a one-time industry burden of 5,605 hours in the first three years (1,868 annualized hours) to implement the changes that revise the procedures to the new ASME standards. The annual, recurring changes resulting from the final rule represent an overall decrease in burden of 9,677 hours. Following the implementation phase, the industry will see a reduced burden for the aspects of plant operation covered by the code cases in the final rule.

16. Publication for Statistical Use

The collected information is not published for statistical use.

17. Reason for Not Displaying the Expiration Date

The recordkeeping and reporting requirements for this information collection are associated with regulations and are not submitted on instruments such as forms or surveys. For this reason, there are no data instruments on which to display an OMB expiration date. Further, amending the regulatory text of the CFR to display information that, in an annual publication, could become obsolete would be unduly burdensome and too difficult to keep current.

18. Exceptions to the Certification Statement

None.

B. COLLECTIONS OF INFORMATION EMPLOYING STATISTICAL METHODS

Not applicable.

**Table 1: Annualized One-Time Reporting Burden**

<b>Information Collection Section</b>	Number of Respondents	Number of Responses per Respondent	Number of Responses	Burden Hours per Response	Total Annual Burden Hours	Cost @ \$265/hr
<b>10 CFR 50.55a(b)(2)(viii)(I)</b>						
Concrete Containment Examination procedure updates <sup>1</sup>	46	1	46	10	460	\$121,900
<b>10 CFR 50.55a(b)(2)(xxxvi)</b>						
Fracture Toughness procedure updates <sup>2</sup>	11	1	11	40	440	\$116,600
<b>10 CFR 50.55a(b)(2)(xxxvii)</b>						
Code Case N-824 procedure updates <sup>3</sup>	23	1	23	20	460	\$121,900
<b>10 CFR 50.55a(b)(3)(ii)</b>						
MOV Diagnostic Test procedure updates <sup>4</sup>	67	1	67	20	1,340	\$355,100
<b>10 CFR 50.55a(b)(3)(iii)</b>						
Supplemental Requirements procedure updates <sup>5</sup>	5	0	0	20	0	\$0
<b>10 CFR 50.55a(b)(3)(iii)(A)</b>						
Squib Valve Surveillance procedure updates <sup>6</sup>	3	0	0	10	0	\$0
<b>10 CFR 50.55a(b)(3)(viii)</b>						
Obtain Subsection ISTE authorization <sup>7</sup>	2	1	2	1,150	2,300	\$609,500
<b>10 CFR 50.55a(b)(3)(ix)</b>						
Mandatory Appendix V Program revisions <sup>8</sup>	55	1	55	1	55	\$14,575
<b>10 CFR 50.55a(g)(6)(ii)(F)(11)</b>						
Cast Stainless Steel Material Examination procedure updates <sup>9</sup>	37	1	37	10	370	\$98,050
Cast Stainless Steel Material Examination training module creation <sup>9</sup>	6	1	6	30	180	\$47,700
Totals:	255		247		5,605	\$1,485,325
Annualized Totals:	85		82		1,868	\$495,108

**Table 2: Annualized Recurring Reporting Burden**

<b>Information Collection Section</b>	Number of Respondents	Number of Responses per Respondent	Number of Responses	Burden Hours per Response	Total Annual Burden Hours	Cost @ \$265/hr
<b>10 CFR 50.55a(b)(2)(viii)(I)</b>						
Concrete Containment Examinations and Evaluations <sup>10</sup>	0	1	0	2	0	\$0
<b>10 CFR 50.55a(b)(2)(xxxvii)</b>						
N-824 Weld Exams <sup>11</sup>	0	1	0	4	0	\$0
N-824 Code Case Relief Request preparation and submission <sup>11</sup>	0	1	0	345	0	\$0
<b>10 CFR 50.55a(b)(3)(ii)</b>						
Quarterly MOV tests averted <sup>12</sup>	67	-4	-268	10	-2,680	-\$710,200
Biannual MOV tests <sup>12</sup>	33	1	33	5	165	\$43,725
Annualized MOV diagnostic tests <sup>12</sup>	7	1	7	1	7	\$1,855
<b>10 CFR 50.55a(b)(3)(ix)</b>						
Mandatory Appendix V Pump tests <sup>13</sup>	17	1	17	3	51	\$13,515
<b>10 CFR 50.55a(b)(3)(x)</b>						
Averted OMN-20 Time Period Extension Requests <sup>14</sup>	96	0	0	230	0	\$0
<b>10 CFR 50.55a(f) or (g)</b>						
Code Case Relief Request preparation and submission <sup>15</sup>	19	-1	-19	380	-7,220	-\$1,913,300
<b>10 CFR 50.55a(g)(6)(ii)(F)(13)</b>						
Encoding Ultrasonic Volumetric Examinations <sup>16</sup>	0	3	0	10	0	\$0
Totals:	239		-230		-9,677	-\$2,564,405

**Table 3: Annualized Recurring Recordkeeping Burden**

Information Collection Section	Number of Recordkeepers	Number of Records	Burden Hours per Record	Total Annual Burden Hours	Cost @ \$265/hr
<b>10 CFR 50.55a(b)(2)(xxxvii)</b>					
N-824 Code Case Relief Request preparation and submission <sup>11</sup>	23	0	0	345	0
<b>10 CFR 50.55a(b)(3)(ii)</b>					
Quarterly MOV tests averted <sup>12</sup>	67	-4	-268	3	-804
Biannual MOV tests <sup>12</sup>	33	1	33	3	99
Annualized MOV diagnostic tests <sup>12</sup>	7	1	7	4	28
<b>10 CFR 50.55a(b)(3)(ix)</b>					
Mandatory Appendix V Pump tests <sup>13</sup>	17	1	17	1	17
<b>10 CFR 50.55a(f) or (g)</b>					
Code Case Relief Request preparation and submission <sup>15</sup>	19	-1	-19	10	-190
<b>10 CFR 50.55a(g)(6)(ii)(F)(13)</b>					
Encoding Ultrasonic Volumetric Examinations <sup>16</sup>	0	3	0	1	0
<b>Totals:</b>	<b>166</b>	<b>-230</b>	<b>-230</b>	<b>-850</b>	<b>-\$225,250</b>

Total Burden Hours: -8,659  
 Total Burden Hour Cost: -\$2,294,547  
 Annual Respondents: 102  
 Responses: -148

1. 46 sites will make this procedural change by 2019, the 2 new sites will be required in 2057
2. 11 sites will make this procedural change by 2019
3. This is an optional provision. NRC estimates that approximately 23 PWR sites will incorporate this provision by 2019
4. 67 operating plants will make these procedural revisions by 2019
5. The 5 new plants will begin making these procedural revisions in 2020
6. This provision would only apply for a hypothetical new reactor, for example NuScale's design (this is the only known hypothetical new reactor at this time)
7. One operating reactor will request this authorization in 2019 and one new reactor in 2019.
8. 55 sites (all PWR sites) will make this procedural change by 2019, the 2 new PWR sites in 2020
9. 37 PWR sites will make the procedural updates, and the vendor will develop the 6 training modules and mockups, in 2019 and 2020 respectively. Inspector training in 2021
10. 47 sites will have examinations bi-annually beginning in 2020, the 5 new sites beginning in 2070
11. 23 operating sites will make the relief requests and weld examinations in 2020 and then again in 2030
12. 73 operating sites and 2 new sites will avert the quarterly tests but add biannual tests (37 sites per year, 1 new site per year) and 10-year diagnostic tests (all 73 + 2 Operating and New sites) for remaining reactor life starting in 2019.
13. Approximately 17 operating plants and 1 of the new plants will perform these tests every refueling (2 year approximately) starting in 2019 for operating and 2020 for new
14. All operating reactors will make this time period extension request in 2020 and again in 2030, and all new reactors in 2030 and then every 10 years thereafter
15. If this rule is not promulgated, 19 sites per year will make these relief/alternative requests, starting in 2018
16. Approximately 3 welds per year at 33 units will require encoding beginning in 2020 through remaining reactor life

OR = Operating Reactors; CR = Construction Restart; DC = Design Certifications

**Table 4: Annualized One-Time NRC Review Burden**

Information Collection Section	Number of Respondents	Number of responses per respondent	Number of Responses	Burden Hours per Response	Total Annual Burden Hours	Cost @ \$265/hr
<b>10 CFR 50.55a(b)(2)(xxxvi)</b>						
Review Fracture Toughness Submittals <sup>1</sup>	0	1	0	173	0	\$0
<b>10 CFR 50.55a(b)(2)(xxxvii)</b>						
Review Code Case N-824 relief requests <sup>2</sup>	0	1	0	115	0	\$0
<b>10 CFR 50.55a(b)(3)(viii)</b>						
Review ISTE submittal and issue SER <sup>3</sup>	0	1	0	863	0	\$0
<b>10 CFR 50.55a(b)(3)(x)</b>						
Averted reviews of Code Case OMN-20 Alternative Request submittal and SER <sup>4</sup>	96	-1	-96	230	-22,080	-\$5,851,200
<b>10 CFR 50.55a(b)(4)</b>						
Develop and issue risk informed inservice testing guidance <sup>5</sup>	2	1	2	460	920	\$243,800
Totals:	98		-94		-21,160	-\$5,607,400
Annualized Totals:	33		-31		-7,053	-\$1,869,133.33

**Table 5: Annualized Recurring NRC Review Burden**

Information Collection Section	Number of Respondents	Number of responses per respondent	Number of Responses	Burden Hours per Response	Total Annual Burden Hours	Cost @ \$265/hr
<b>10 CFR 50.55a(f) or (g)</b>						
Averted reviews of Code Case Relief Request <sup>6</sup>	7	-1	-7	242	-1,694	-\$448,910
Totals:	7		-7		-1,694	-\$448,910

1. NRC will review the 11 anticipated submittals in 2020
2. NRC will review the 23 anticipated submittals in 2020 and again in 2030
3. NRC will review the two anticipated submittals in 2020
4. NRC will avoid review of these expected alternative requests from all 96 plants in 2019 and again in 2029, and for the 5 new plants in 2020 and each 10 years thereafter
5. NRC will develop this guidance across 2 years starting in 2019
6. NRC will avoid review of 7 relief requests per year until all 56 sites would have submitted these requests starting in 2019

OR = Operating Reactors; CR = Construction Restart; DC = Design Certifications