

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

10 CFR PART 50

(RIN-3150-AJ74)

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 proposed 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 this proposed rule, the NRC staff reviewed revisions to the codes and determined the acceptability of each change. The NRC proposes to publish its findings in this proposed 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.

The following discussion describes the changes to the information collection burden associated with this proposed rule.

Inservice inspection and inservice testing program updates

Licensees of nuclear power plants are required to update their inservice inspection (ISI) and inservice testing (IST) 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 proposed rule incorporates by reference ASME BPV Code editions from 2015-2017 and

ASME OM Code editions from 2015-2017. In this proposed rule, the NRC proposes to extend the time schedule to satisfy the latest edition and addenda of the ASME OM Code from the current 12 months to 18 months for the initial 120-month IST interval.

Allowing licensees 6 additional months to prepare for the initial 120-month IST interval in order to meet the latest edition and addenda of the ASME OM Code would result in some savings and efficiencies, from personnel availability to avoiding scheduling conflicts. The NRC estimates that this schedule relaxation would provide a small incremental reduction in information collection burden and was not quantified.

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 proposed rule incorporates by reference editions from 2015-2017. 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 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 requests under 10 CFR 50.55a(z) as a result of this proposed rule.

Relief requests

The NRC does not anticipate that there will be a change in the number of relief requests under 10 CFR 50.55a(f)(5)(iii) or (g)(5)(iii) as a result of this proposed rule.

Substantive provisions in the proposed rule

The NRC does not anticipate any significant change in information collection burden associated with the substantive provisions in the proposed rule briefly described below:

- Section III Condition: Visual examination of bolts, studs and nuts. The NRC proposes to add a new paragraph 50.55a(b)(1)(x) with two new conditions for the visual examination of bolts, studs and nuts.

- The NRC proposes to add 50.55a(b)(1)(x)(A) which specifies that when applying the provisions of NB-2582, NC-2582, ND-2582, NE-2582, NF-2582, NG-2582 in the 2017 Edition of Section III, the visual examinations are required to be performed in accordance with procedures qualified to NB-5100, NC-5100, ND-5100, NE-5100, NF-5100, and NG-5100 and performed by personnel qualified in accordance with NB-5500, NC-5500, ND-5500, NE-5500, NF-5500, and NG-5500. The 2015 edition of the ASME code contains this requirement. The 2017 Edition does not require these visual examinations to be performed in accordance with NX-5100 and NX-5500.
- The NRC proposes to add 50.55a(b)(1)(x)(B) to condition the provisions of NB-2582, NC-2582, ND-2582, NE-2582, NF-2582, NG-2582 in the 2017 Edition of Section III, to require that the acceptance criteria from NB-2582, NC-2582, ND-2582, NE-2582, NF-2582, NG-2582 in the 2015 Edition of Section III be used.

The removal of the above requirements is new in the 2017 Edition of the ASME code. Therefore there is no significant change in recordkeeping or reporting burden associated with these conditions

- Mandatory Appendix XXVI Conditions. The NRC proposes to add a new paragraph with conditions on the use of ASME Section III, Appendix XXVI for installation of high density polyethylene (HDPE) pressure piping. This Appendix is new in the 2015 Edition of Section III, since it is the first time the ASME Code has provided rules for the use of polyethylene piping. The conditions that follow in § 50.55a(b)(1)(xi)(A) through (b)(1)(xi)(E) have been determined to be necessary by the NRC to utilize polyethylene piping in Class 3 safety-related applications. These conditions will result in a recordkeeping or reporting burden to licensees as discussed below.
- Mandatory Appendix XXVI: Butt Fusion Joint Fusing Procedure Specification. The NRC proposes to add a new paragraph 50.55a(b)(1)(xi)(A), which specifies the essential variables to be used in qualifying fusing procedures for butt fusion joints in polyethylene piping installed in accordance with ASME Section III, Mandatory Appendix XXVI. The NRC does not endorse the use of a Standardized Fusing Procedure Specification. A Fusion Procedure Specification will need to be generated for each butt fusion joint with the essential variables as listed. The same variables will be listed for Performance Qualifications. The NRC has assumed that approximately one site per year would install HDPE piping for a total of 3 HDPE installations by year 2021.
- Mandatory Appendix XXVI: Testing Fusing Procedures. The NRC proposes to add a new paragraph 50.55a(b)(1)(xi)(B), which will require both bend tests and High Speed Tensile Impact Testing to qualify fusing procedures for butt fusion joints in polyethylene piping installed in accordance with ASME Section III, Mandatory Appendix XXVI. The NRC requires both bend tests and High Speed Tensile Impact Testing (HSTIT) to qualify the fusion procedures. There is data that suggests that HSTIT may not distinguish between an acceptable and unacceptable HDPE butt fusion joint and therefore should not be considered as a stand-alone test. This condition will result in a recordkeeping or reporting burden from performing the additional bend tests. The NRC has assumed that approximately one site per year would install HDPE piping for a total of 3 HDPE installations by year 2021.
- Mandatory Appendix XXVI: Electrofusion Joint Fusing Procedure Specification. The NRC proposes to add a new paragraph 50.55a(b)(1)(xi)(C), which specifies the essential

variables to be used in qualifying fusing procedures for electrofusion fusion joints in polyethylene piping installed in accordance with ASME Section III, Mandatory Appendix XXVI. The NRC does not endorse the use of a Standardized Fusing Procedure Specification. A Fusion Procedure Specification will need to be generated for each butt fusion joint with the essential variables as listed. The same variables will be listed for Performance Qualifications. This condition will result in a recordkeeping or reporting burden to licensees from generating these specific fusing procedures. The NRC has assumed that approximately one site per year would install HDPE piping for a total of 3 HDPE installations by year 2021.

- Mandatory Appendix XXVI: Testing Fusing Procedures. The NRC proposes to add a new paragraph 50.55a(b)(1)(xi)(D), which will require both crush test and electrofusion bend test to qualify fusing procedures for electrofusion joints in polyethylene piping installed in accordance with 2017 edition of ASME BPV Code Section III, Mandatory Appendix XXVI. The NRC requires both crush test and electrofusion bend test to qualify the electrofusion procedures. The operating experience data on electrofusion joints is extremely limited which also indicates some failures. In order to ensure structural integrity of electrofusion joints in safety related applications, the NRC requires that both crush test and electrofusion bend test be performed to demonstrate an acceptable HDPE electrofusion joint test. This condition will result in a recordkeeping or reporting burden from performing the additional bend tests. The NRC estimates that buried piping has approximately 20 joints, and that testing each joint takes approximately 3 hours. Due to the low failure rate of HDPE, the staff expects one site would need to perform the testing required by this condition by 2021.
- Mandatory Appendix XXVI: Electrofusion Saddle Fittings. The NRC proposes to add a new paragraph 50.55a(b)(1)(xi)(E), which prohibits the use of electrofusion saddle fittings and electrofusion saddle joints. The NRC believes that the failure electrofusion saddle joints can result in a gross structural rupture leading to loss of safety function for the system where such joint is present. Consequently, only full 360° seamless sleeve electrofusion couplings are permitted. Because ASME Section III, Appendix XXVI on the use of HDPE is new in the 2015 Edition of the ASME code, there is no significant change in recordkeeping or reporting burden associated with this condition.
- Certifying Engineer. The NRC proposes to add a new paragraph 50.55a(b)(1)(xii), which would not allow applicants and licensees to use a Certifying Engineer in lieu of a Registered Professional Engineer for code related activities that are applicable to U.S. nuclear facilities regulated by the U.S. NRC. In the 2017 Edition of ASME BPV Code, Section III, Subsection NCA, the following Subsections were updated to replace the term “Registered Professional Engineer,” with term “Certifying Engineer” to be consistent with ASME BPV Code Section III Mandatory Appendix XXIII. The use of the term “Certifying Engineer” is new to the ASME code. Therefore this there is no significant change in recordkeeping or reporting burden associated with this condition.
- Effective Edition and Addenda of Subsection IWE and Subsection IWL. The NRC proposes to remove existing condition § 50.55a(b)(2)(vi). A final rule was published in the *Federal Register* (61 FR 41303) on August 8, 1996, which incorporated by reference for the first time the ASME Code, Section XI, Subsection IWE and Subsection IWL. The associated statements of consideration for that rule identified the 1992 Edition with 1992 Addenda of Subsection IWE and Subsection IWL as the earliest version the NRC finds

acceptable. A subsequent rule published on September 22, 1999 (64 FR 51370), included the 1995 Edition with the 1996 Addenda as an acceptable Edition of the ASME Code. The statements of consideration for a later rule published on September 26, 2002 (67 FR 60520), noted that the 1992 Edition with the 1992 Addenda, or the 1995 Edition with the 1996 Addenda of Subsection IWE and IWL, must be used when implementing the initial 120-month interval for the ISI of Class MC and Class CC components, and that successive 120-month interval updates must be implemented in accordance with § 50.55a(g)(4)(ii). Now that there is an existing framework in place for containment examinations in accordance with Subsection IWE and IWL there is no need for a condition specific to the initial examination interval. The examinations conducted during the initial interval can be conducted in accordance with the existing guidance in § 50.55a(g)(4). The removal of this condition will result in no incremental change in recordkeeping or reporting burden, as the 2015 Edition maintains the status quo of this condition.

- Section XI references to OM Part 4, OM Part 6, and OM Part 10 (Table IWA-1600-1). The NRC proposes to remove the condition found in § 50.55a(b)(2)(vii) of the current regulations. This paragraph describes the editions and addenda of the OM Code to be used with the Section XI references to OM Part 4, OM Part 6, and OM Part 10 in Table IWA-1600-1 of Section XI when Section XI, Division 1, 1987 Addenda, 1988 Addenda, or 1989 Edition are used. Paragraph 50.55a(g)(4)(ii) requires that licensee's successive 120-month inspection intervals comply with the requirements of the latest edition and addenda of the code incorporated by reference in § 50.55a(b)(2). Licensees are no longer using these older editions and addenda of the code referenced in this paragraph therefore this condition can be removed. § 50.55a(b)(2)(vii) would be designated as [Reserved]. The removal of this condition results in no change in recordkeeping or reporting burden because licensees are no longer using these older editions and addenda.
- Metal Containment Examinations. The NRC proposes to revise § 50.55a(b)(2)(ix), to require compliance with the new condition in § 50.55a(b)(2)(ix)(K). The NRC specifies the application of this condition to all Editions and Addenda of Section XI, Subsection IWE and IWL, of the ASME BPV Code that are incorporated by reference in paragraph (b) of 10 CFR 50.55a. The proposed condition will ensure containment leak-chase channel systems are properly inspected in accordance with the NRC staff expectations. Regulations in 10 CFR 50.55a, "Codes and Standards," paragraph (g), "Inservice Inspection Requirements," require that licensees implement the inservice inspection program for pressure retaining components and their integral attachments of metal containments and metallic liners of concrete containments in accordance with Subsection IWE of Section XI of the applicable edition and addenda of the ASME Code, incorporated by reference in paragraph (b) of the section and subject to the applicable conditions in paragraph (b)(2)(ix). Based on the operating experience, and the industry feedback, the NRC staff has determined a new condition is necessary in § 50.55a(b)(2)(ix) to clarify the NRC staff's expectations and to ensure steel containment shells and liners receive appropriate inspections. There is no estimated incremental change in recordkeeping or reporting burden associated with these conditions, which are clarifications of the current NRC regulations.
- Reconciliation of Quality Requirements for Replacement Items. The NRC proposes to remove the condition found in § 50.55a(b)(2)(xvii) from the current regulations. When using the 1995 Addenda through 1998 Edition of Section XI, this condition mandated

replacement items be purchased in accordance with the licensee's quality assurance program description required by 10 CFR 50.34(b)(6)(ii), in addition to the reconciliation provisions of IWA-4200. The NRC has accepted without conditions the content of IWA-4200 in versions of the Code since the 1999 Addenda of Section XI. Paragraph 50.55a(g)(4)(ii) requires that licensee's successive 120-month inspection intervals comply with the requirements of the latest edition and addenda of the code incorporated by reference in § 50.55a(b)(2). As a result, licensees are no longer using these older editions and addenda of the code referenced in this paragraph therefore this condition can be removed. The paragraph § 50.55a(b)(2)(xvii) would be designated as [Reserved]. The removal of this condition results in no change in recordkeeping or reporting burden because licensees are no longer using these older editions and addenda.

- NDE Personnel Certification: Fourth Provision The NRC proposes to amend paragraph (b)(2)(xviii)(D) to extend the applicability to users of the latest edition incorporated by reference in paragraph (a)(1)(ii) of this section of ASME BPV Code, Section XI. This condition prohibits licensees using ASME BPV Code, Section XI, 2011 Addenda through the latest edition incorporated by reference in paragraph (a)(1)(ii) from using Appendix VII, Table VII-4110-1 and Appendix VIII, Subarticle VIII-2200. Licensees and applicants using these versions of Section XI must use the prerequisites for ultrasonic examination personnel certifications in Appendix VII, Table VII-4110-1 and Appendix VIII, Subarticle VIII-2200 in the 2010 Edition. This modified condition is a continuation of an existing requirement and therefore results in no change in recordkeeping or reporting burden.
- System Leakage Tests: Second Provision. The NRC proposes to amend the condition found in § 50.55a(b)(2)(xx)(B) to clarify NRC expectations related to the nondestructive examination (NDE) required when a system leakage test is performed in lieu of a hydrostatic test, following repair and replacement activities performed by welding or brazing on a pressure retaining boundary. This is being proposed to address confusion expressed by industry stakeholders regarding what code edition/addenda was required by the current regulation concerning the requirements for NDE and pressure testing. The NRC is proposing to modify the condition to clarify that the nondestructive examination method (e.g. surface, volumetric, etc.) and acceptance criteria of the 1992 or later of Section III shall be met. This condition was first put in place by the NRC in a final rule which became effective October 10, 2008 (73 FR 52730). The NRC determined that the condition was necessary because the ASME code eliminated the requirement to perform the Section III NDE when performing a system leakage test in lieu of a hydrostatic test, following repairs and replacement activities performed by welding or brazing on a pressure retaining boundary in the 2003 Addenda of Section XI. This modified condition is a clarification of existing requirements and therefore results in no change in recordkeeping or reporting burden.
- System Leakage Tests: Third Provision. The NRC proposes to add § 50.55a(b)(2)(xx)(C) to place two conditions on the use of the alternative BWR Class 1 system leakage test described in IWA-5213(b)(2), IWB-5210(c) and IWB-5221(d) of the 2017 Edition of ASME Section XI. The first condition on the alternative BWR Class 1 system leakage test prohibits the use of nuclear heat to conduct the BWR Class 1 system leakage test (i.e. the reactor must be in a non-critical state), except during refueling outages in which the ASME Section XI Category B-P pressure test has already been performed, or at the end of mid-cycle maintenance outages fourteen (14) days or

less in duration. The second condition on the alternative BWR Class 1 system leakage test requires a 1 hour hold time once reaching the test pressure prior to performing the VT-2 visual examination for leakage on non-insulated components. This modified condition is a continuation of an existing requirement and therefore results in no change in recordkeeping or reporting burden.

- Removal of Condition on Table IWB-2500-1 examination requirements. The NRC proposes to remove the condition found in § 50.55a(b)(2)(xxi)(A) because the inspection of pressurizer and steam generator nozzle inner radii is no longer needed. The requirements for examinations of inner nozzle radii in several components were developed in the ASME Code in reaction to the discovery of thermal fatigue cracks in the inner-radius section of boiling water reactor feedwater nozzles in the late 1970's and early 1980's. However, feedwater nozzle inner radius cracking has not been detected since the plants changed operation of the low flow feedwater controller. The redesign of safe end/thermal sleeve configurations and feedwater spargers, coupled with changes in operating procedures, has apparently been effective to date. No further occurrences of nozzle fatigue cracking have been reported for PWRs or BWRs. The NRC staff finds that the complete absence of cracking since the operational change provides reasonable assurance that the observed cracking was the result of discontinued operational practices. Therefore, based on the design changes, operating experiences, and analysis done by industry and the NRC, the NRC proposes to remove 10 CFR 55.55a (b)(2)(xxi)(A), which requires the inspection of pressurizer and steam generator nozzle inner radii. The removal of this condition results in a reduction of the licensee's recordkeeping or reporting burden. The analysis estimates 23 labor hours for the procedure change at each of 34 operating PWRs would be incurred by year 2019. The analysis estimates 175 labor hours at 62 operating PWRs would be averted by the elimination of the recordkeeping and reporting burden of documenting the inspections and preparing relief requests for the inspections.
- Addition of Condition on Table IWB-2500-1 examination requirements. The NRC proposes to add § 50.55a(b)(2)(xxi)(B) that will place conditions on the use of the provisions of IWB-2500(f) and (g) and Notes 6 and 7 of Table IWB-2500-1 of the 2017 Edition of ASME Section XI. These provisions allow BWRs to reduce the number of Item Number B3.90 and B3.100 examined from all to 25%. The proposed conditions would require licensees using the provisions of IWB-2500(f) to maintain the evaluations that determined the plant satisfied the criteria of IWB-2500(f) as records in accordance with IWA-1400. The conditions would also prohibit use of the provisions for BWR nuclear power plants with a renewed operating licenses or a renewed combined licenses in accordance with 10 CFR 54. The final condition would not allow the use of these provisions to eliminate preservice or inservice volumetric examinations of plants with a Combined Operating License pursuant to 10 CFR Part 52, or a plant that receives its operating license after October 22, 2015. The addition of these provisions is the incorporation of Code Case N-702, "Alternative Requirements for Boiling Water Reactor (BWR) Nozzle Inner Radius and Nozzle-to-Shell Welds," into Section XI, Division 1 of the Code. These conditions are consistent with those proposed for Regulatory Guide (RG) 1.147. Therefore NRC estimates no change in recordkeeping or reporting burden because these approaches are consistent with those currently used.
- 10 CFR 50.55a(b)(2)(xxv) Section XI condition: Mitigation of defects by modification. The NRC proposes to amend the condition found in § 50.55a(b)(2)(xxv) to allow the use of IWA-4340 of Section XI, 2011 Addenda through 2017 Edition with conditions. The

modification of 50.55a(b)(2)(xxv) will include the addition of a paragraph (A) which will continue the prohibition of IWA-4340 for Section XI editions and addenda prior to the 2011 Addenda and the addition of a paragraph (B) which will contain the three conditions the NRC proposes to place on the use of IWA-4340 of Section XI, 2011 Addenda through 2017 Edition.

Mitigation of Defects by Modification: First Provision.

Paragraph (A) will continue the prohibition of IWA-4340 for Section XI editions and addenda prior to the 2011 Addenda. IWA-4340 as originally incorporated into Section XI, subsubarticle IWA-4340 did not include critical requirements incorporated into later editions of Section XI such as: (a) characterization of the cause and projected growth of the defect; and (b) verification that the flaw is not propagating into material credited for structural integrity; prohibition of repeated modifications where a defect area grew into the material required for the modification; and pressure testing. Therefore, the NRC prohibited the use of IWA-4340 in its original form. Therefore NRC estimates no change in recordkeeping or reporting burden associated with the continuation of these existing prohibitions.

Mitigation of Defects by Modification: Second Provision

Paragraph (B) will allow the use of IWA-4340 of Section XI, 2011 Addenda through 2017 Edition with three conditions. The conditions and the basis for each are as follows:

- The first proposed condition would prohibit the use of IWA-4340 on crack-like defects or those associated with flow accelerated corrosion. The design requirements and potentially the periodicity of follow-up inspections might not be adequate for crack-like defects that could propagate much faster than defects due to loss of material. Therefore, the NRC's proposes to prohibit the use of IWA-4340 on crack-like defects. Loss of material due to flow accelerated corrosion is managed by licensee plant-specific programs based on industry standards. The periodicity of follow-up inspections for loss of material due to flow accelerated corrosion is best managed by these plant-specific programs. In addition, subparagraph IWA-4421(c)(2) provides provisions for restoring minimum required wall thickness by welding or brazing including loss of material due to flow accelerated corrosion
- The second proposed condition would require the design of a modification that mitigates a defect to incorporate a loss of material rate either two times the actual measured corrosion rate in that pipe location or four times the estimated maximum corrosion rate for the piping system. Corrosion rates are influenced by local conditions (e.g., flow rate, discontinuities). The condition is consistent with ASME Code Cases N-786 1, "Alternative Requirements for Sleeve Reinforcement of Class 2 and 3 Moderate Energy Carbon Steel Piping," and N 789, "Alternative Requirements for Pad Reinforcement of Class 2 and 3 Moderate Energy Carbon Steel Piping for Raw Water Service." The staff has concluded that these multipliers are appropriate if the wall thickness measurements in the vicinity of the defect were only obtained once. In contrast, if wall thickness measurements were obtained in two or more refueling outage cycles, the staff has concluded that there is a sufficient span of time to be able to trend the localized corrosion rate into the future. This conclusion is based in part on the follow-up wall thickness measurements that are conducted subsequent to installation of the modification.
- The third proposed condition would require the licensee to perform a wall thickness examination in the vicinity of the modification and relevant pipe base metal during each refueling outage cycle to detect propagation of the flaw into the material

credited for structural integrity of the item, unless the examinations in the two refueling outage cycles subsequent to the installation of the modification are capable of validating the projected flaw growth. The staff has concluded that the provision allowed by subparagraph IWA 4340(g) to conduct follow-up wall thickness measurements only to the extent that they demonstrate that the defect has not propagated into the material credited for structural integrity is not sufficient because it does not provide a verification of the projected flaw growth. Subparagraph IWA 4340(h) might appear to address the staff's concern; however, it allows for projected flaw growth to be based on "prior Owner or industry experiences with the same conditions" instead of specific measurements in the location of the modification. The condition allows for only conducting examinations in the two refueling outages subsequent to the installation of the modification, consistent with subparagraph IWA 4340(g), if the measurements are capable of projecting the flaw growth. The NRC analysis estimates that the recordkeeping and reporting cost associated with relief requests of 173 hours per year would be incurred with the implementation of these three conditions.

- Clarification of Condition on Pressure Testing Class 1, 2, and 3 Mechanical Joints. The NRC proposes to amend the condition found in § 50.55a(b)(2)(xxvi) to clarify NRC expectations related to the pressure testing of ASME Code Class 1, 2, and 3 mechanical joints disassembled and reassembled during the performance of a Section XI activity. Industry stakeholders have expressed confusion with the current regulation requirements regarding when a pressure test is required and in which year of the code the pressure testing should be in compliance. The NRC proposes to modify the condition to clarify that all mechanical joints in Class 1, 2, and 3 piping and components greater than NPS-1 which are disassembled and reassembled during the performance of a Section XI activity shall be pressure tested in accordance with IWA-5211(a). This clarification of the requirements of the condition will result in no incremental costs to industry and therefore results in no change in recordkeeping or reporting burden.
- Summary Report Submittal. The NRC proposes to amend the condition found in § 50.55a(b)(2)(xxxii) to address the use of Owner Activity Reports. Through the 2013 Edition of Section XI, owners were required to prepare Summary Reports of preservice and inservice examinations and repair and replacement activities. This condition was added when the 2013 Edition was incorporated by reference because of a change in the wording of the requirement in the code. Up until that time owners were required to submit these reports to the regulatory authority having jurisdiction at the plant site. The NRC is proposing to amend the condition to require submittal of Summary Reports (pre-2015) and Owner Activity Reports (2015). As this modification of the condition concerns only the title of the reports affected by the existing condition, it results in no change in recordkeeping or reporting burden.
- Nonmandatory Appendix U. The NRC proposes to amend the requirements in current paragraph (b)(2)(xxxiv) to make the condition applicable to the latest edition incorporated by reference in paragraph (a)(1)(ii) of this section. The current condition in paragraph (b)(2)(xxxiv)(A) requires repair and replacement activities temporarily deferred under the provisions of Nonmandatory Appendix U to be performed during the next scheduled refueling outage. This condition was added when the 2013 Edition was incorporated by reference. The NRC's concern was not addressed in the publication of the 2015 Edition or 2017 Edition. Therefore, the NRC is proposing to extend this condition to the latest edition incorporated by reference in paragraph (a)(1)(ii) of this section.

The current condition in paragraph (b)(2)(xxxiv)(B) requires a mandatory appendix in ASME Code Case N-513-3 be used as the referenced appendix for paragraph U-S1-4.2.1(c). This condition was also added when the 2013 Edition was incorporated by reference. The omission that made this condition necessary was remedied in the 2017 Edition. Therefore, the NRC is proposing to extend this condition to the 2015 Edition. These modified conditions are a continuation of an existing requirement and therefore results in no change in recordkeeping or reporting burden.

- Correction of Equation: Use of RT_{T_0} in the K_{Ia} and K_{Ic} equations. The NRC proposes to re-designate the requirements in current paragraph (b)(2)(xxxv), which concerns the use of 2013 Edition of ASME Section XI, Appendix A, paragraph A-4200, as (b)(2)(xxxv)(A). The ASME Code has addressed the NRC concern related to this condition in the 2015 Edition; however, it is still relevant to anyone using the 2013 Edition and remains in effect. The NRC proposes to add a new paragraph (b)(2)(xxv)(B) which would condition the use of 2015 Edition of ASME Section XI, Appendix A, paragraph A-4200(c), to define $RT_{K_{Ia}}$ in equation (a) as " $RT_{K_{Ia}} = T_0 + 90.267 \exp(-0.003406T_0)$ " in lieu of the equation shown in the code. This condition ensuring the correct equation is used results in no change in recordkeeping or reporting burden.
- Fracture Toughness of Irradiated Materials. The NRC proposes to amend the condition found in § 50.55a(b)(2)(xxxvi) to extend the applicability to use of the 2015 Edition of Section XI. This current condition requires licensees using ASME BPV Code, Section XI, 2013 Edition, Appendix A, paragraph A-4400, to obtain NRC approval before establishing fracture toughness of irradiated materials using irradiated T_0 and the associated RT_{T_0} . This condition was added when the 2013 Edition was incorporated by reference because the NRC believed that the newly introduced A-4200(b) may mislead the users of Appendix A into adopting methodology not accepted by the NRC. The NRC's concern was not addressed in the publication of the 2015 Edition or the 2017 Edition. Therefore, the NRC is proposing to extend this condition to the 2017 Edition. As this condition already exists, no change in recordkeeping or reporting burden results from the extension of this condition.
- Cast Austenitic Stainless Steel Inspection Condition: ASME Code Section XI Appendix III Supplement 2
The NRC proposes to add 10 CFR 50.55a(b)(2)(xxxviii) to condition ASME Code Section XI Appendix III Supplement 2. Supplement 2 is closely-based on ASME Code Case N-824, which was incorporated by reference with conditions in 10 CFR 50.55a(b)(2)(xxxvii). The conditions on ASME Code Section XI Appendix III Supplement 2 are consistent with the conditions on ASME Code Case N-824, published in June, 2017.
The conditions are derived from research into methods of inspecting cast austenitic stainless steel (CASS) components, published in NUREG/CR-6933, "Assessment of Crack Detection in Heavy-Walled Cast Stainless Steel Piping Welds Using Advanced Low-Frequency Ultrasonic Methods", March 2007 (NRC, 2007a), and NUREG/CR-7122, "An Evaluation of Ultrasonic Phased Array Testing for Cast Austenitic Stainless Steel Pressurizer Surge Line Piping Welds," March 2012 (NRC, 2012). These reports show that 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 low ultrasonic frequencies and a sufficient number of inspection angles.

Additionally for thicker welds, flaws greater than 30 percent through-wall in depth can be detected using low frequency encoded phased-array ultrasonic inspections.

Using NUREG/CR-6933 and NUREG/CR-7122, the NRC has determined that sufficient technical basis exists to condition ASME Code Section XI Appendix III Supplement 2. These reports show that CASS materials produce high levels of coherent noise and that the noise signals can be confusing and mask flaw indications. Use of encoded inspection data allows the inspector to mitigate this problem through the ability to electronically manipulate the data, which allows for discrimination between coherent noise and flaw indications. The NRC finds that encoding CASS inspection data provides significant detection benefits. This is reflected in proposed condition 10 CFR 50.55a(b)(2)(xxxix)(A). The use of dual element phased-array search units showed the most promise in obtaining meaningful responses from flaws, which is reflected in proposed condition 10 CFR 50.55a(b)(2)(xxxix)(B).

As this condition already exists in Code Case N-824, the incremental recordkeeping and reporting burden from this condition will incur after the Code Case lifetime has expired (6 years), with the first inspections occurring in FY 2030. In addition, there is no recordkeeping or reporting implementation costs associated with this condition because the code case is already active.

- Defect Removal. The NRC proposes to add § 50.55a(b)(2)(xxxix) to place conditions on the use of ASME BPV Code, Section XI, IWA-4421(c)(1) and IWA-4421(c)(2) for defect removal. The condition in 10 CFR 50.55a(b)(2)(xxxix)(A) establishes that the final configuration of the item will be in accordance with the original construction Code, later editions and addenda of the construction Code, or a later different construction Code, as well as meeting the owner's requirements or revised owner's requirements. In this regard, welding, brazing, fabrication, and installation requirements, as well as design requirements for material, design or configuration changes are consistent with the construction Code and owner's requirements. This condition retains the intent of the revision to Section XI that: (a) replacements in kind are acceptable; (b) replacements with alternative configurations are acceptable as long as construction Code and owner's requirements are met; and (c) defect removal is required; however, this can be accomplished by replacing all or a portion of the item containing the defect.

The NRC proposes to add 10 CFR 50.55a(b)(2)(xxxix)(B) to place conditions on the use of ASME BPV Code, Section XI, IWA-4421(c)(2). The inclusion of subparagraph IWA-4421(c)(2) is intended to address wall thickness degradation where the missing wall thickness is restored by weld metal deposition. This repair activity restores the wall thickness to an acceptable condition; however, it does not "remove" the degraded wall thickness (i.e., the defect). Restoration of wall thickness by welding or brazing results in the need to remove the defect being moot. However, increasing the wall thickness of an item to reclassify a crack to a flaw in lieu of a defect (i.e., a flaw (imperfection or unintentional discontinuity) of such size, shape, orientation, location, or properties as to be rejectable) is not considered acceptable because there are no provisions in subparagraph IWA-4421(c)(2) for analyses and ongoing monitoring of potential crack growth. This condition would likely result in relief requests from industry, in circumstances where licensees would want to use the provisions of IWA-4421 to repair such defects. The NRC analysis estimates that the recordkeeping and reporting cost

associated with relief requests of 173 hours per year would be incurred with the implementation of these two conditions.

- Prohibitions on Use of IWB-3510.4(b). The NRC proposes to add § 50.55a(b)(2)(xi) to prohibit the use of ASME BPV Code, Section XI, Subparagraphs IWB-3510.4(b)(4), and IWB-3510.4(b)(5). This proposed condition does not change the current material requirements because the testing to meet the material requirements for the two prohibited materials would be performed. As such, there is no additional recordkeeping or reporting burden associated with this condition.
- Preservice Volumetric and Surface Examinations Acceptance. The NRC proposes to add § 50.55a(b)(2)(xli) to prohibit the use of ASME BPV Code, Section XI, Subparagraphs IWB-3112(a)(3) and IWC 3112(a)(3) in the 2013 Edition of Section XI through the latest edition and addenda incorporated by reference in paragraph (a)(1)(ii). The proposed condition is consistent with the NRC 's current prohibition of these items discussed in RG 1.193 in the discussion of ASME Code Case N-813. As such, there is no additional recordkeeping or reporting burden associated with this condition.
- Steam Generator Nozzle-to-Component welds and Reactor Vessel Nozzle-to-Component welds. The NRC proposes to add § 50.55a(b)(2)(xlii) to provide conditions for Examination Category B-F, Item B5.11 and Item B5.71 in the 2011 Addenda through the latest edition and addenda incorporated by reference in previous paragraphs (a)(1)(ii) of this section. The proposed conditions are consistent with the conditions on ASME Code Case N-799 in RG 1.147. As such, there is no additional recordkeeping or reporting burden associated with this condition.
- Motor-Operated Valve (MOV) testing. The NRC proposes to amend § 50.55a(b)(3)(ii) to specify that the condition applies to the latest edition and addenda of the ASME OM Code incorporated by reference in § 50.55a(a)(1)(iv). This will allow future rulemakings to revise § 50.55a(a)(1)(iv) to incorporate the latest edition and addenda of the ASME OM Code without the need to revise § 50.55a(b)(3)(ii). There is no significant change in recordkeeping or reporting burden associated with this condition.
- Reference and Outdated Condition Removal for Check valves (Appendix II). The NRC proposes to amend § 50.55a(b)(3)(iv) to accept the use of Appendix II, "Check Valve Condition Monitoring Program," in the 2017 Edition of the ASME OM Code without conditions based on its updated provisions. The NRC also proposes to update § 50.55a(b)(3)(iv) to apply Table II to Appendix II of the ASME OM Code, 2003 Addenda through the 2015 Edition. Further, the NRC proposes to remove the outdated conditions in paragraphs (A) through (D) of § 50.55a(b)(3)(iv) based on their application to older editions and addenda of the ASME OM Code that are no longer applied at nuclear power plants, and because those conditions have been incorporated in recent editions and addenda of the ASME OM Code. There is no significant change in recordkeeping or reporting burden associated with this condition.
- Subsection ISTE. The NRC proposes to amend § 50.55a(b)(3)(viii) to specify that the condition applies to the latest edition and addenda of the ASME OM Code incorporated by reference in § 50.55a(a)(1)(iv). There is no significant change in recordkeeping or reporting burden associated with this condition.

Mandatory Appendix V and Subsection ISTF. The NRC proposes to amend § 50.55a(b)(3)(ix) to specify that licensees applying Subsection ISTF in the 2015 Edition of the ASME OM Code shall satisfy the requirements of Mandatory Appendix V, “Pump Periodic Verification Test Program,” of the ASME OM Code. This requirement is in addition to the current requirement to satisfy Appendix V when applying Subsection ISTF in the 2012 Edition of the ASME OM Code. Subsection ISTF in the 2017 Edition of the ASME OM Code has incorporated the provisions from Appendix V such that reference to the 2017 Edition of the ASME OM Code is not necessary in this condition. There is no significant change in recordkeeping or reporting burden associated with this condition.

- Valve Position Indication Applicability Condition. The NRC proposes to amend § 50.55a(b)(3)(xi) for the implementation of Subsection ISTC-3700, “Position Verification Testing,” in the ASME OM Code to apply to the 2012 Edition through the latest edition and addenda of the ASME OM Code incorporated by reference in § 50.55a(a)(1)(iv). This will allow future rulemakings to revise § 50.55a(a)(1)(iv) to incorporate the latest edition and addenda of the ASME OM Code without the need to revise § 50.55a(b)(3)(xi). There is no significant change in recordkeeping or reporting burden associated with this condition.

Appendix IV on Air Operated Valves. The NRC proposes to add § 50.55a(b)(3)(xii) to require the application of the provisions in Appendix IV of the 2017 Edition of the ASME OM Code, when implementing the 2015 Edition of the ASME OM Code. This condition will provide consistency in the implementation of these two new editions of the ASME OM Code. There is no significant change in recordkeeping or reporting burden associated with this condition

- Relaxing of Time Schedule for IST Code: Initial 120-month interval. During the 10 CFR 50.55a 2009-2013 Draft Rule, NRC received feedback from several stakeholders (through public comments and an NRC/ASME public teleconference) requesting that the time schedule for complying with the latest ASME Code edition and addenda in § 50.55a(f)(4)(i) and (g)(4)(i) for the IST and ISI programs, respectively, be relaxed from the current time period of 12 months to a new time period of 24 months. In preparing this proposed rule, the NRC has determined that relaxation of the time schedule for satisfying the latest edition of the ASME OM Code for the initial 120-month IST interval is appropriate. The NRC considers that a 24-month time schedule would be contrary to the intent of the requirement to apply the latest edition of the ASME OM Code that is published every 24 months. Therefore, the NRC proposes to extend the time schedule to satisfy the latest edition and addenda of the ASME OM Code from the current 12 months to 18 months for the initial 120-month IST interval. Giving the licensees 6 more months to prepare for each 120-month IST interval will likely result in some savings and efficiencies, from personnel availability to scheduling deconfliction. The NRC estimates that this schedule relaxation would provide a small incremental reduction in recordkeeping and reporting burden and was not quantified.
- Relaxing of Time Schedule for IST Code: Successive 120-month intervals. As discussed above, several stakeholders submitted public comments on the 10 CFR 50.55a 2009-2013 Draft Rule requesting that the time schedule for complying with the latest ASME Code edition in § 50.55a(f)(4)(ii) and (g)(4)(ii) for the IST and ISI programs, respectively, be relaxed from the current time period of 12 months to a new time period of 24 months prior to the applicable milestones in those paragraphs. Similarly, the NRC

proposes to extend the time schedule to satisfy the latest edition and addenda of the ASME OM Code from the current 12 months to 18 months for successive 120-month IST intervals. As previously discussed, this relaxation will likely result in some savings and efficiencies. However, this small reduction in recordkeeping or reporting burden is not quantified.

- Inservice Testing Reporting Requirements. The NRC proposes to add § 50.55a(f)(7) to require nuclear power plant applicants and licensees to submit their IST Plans and interim IST Plan updates related to pumps and valves, and IST Plans and interim Plan updates related to snubber examination and testing, to NRC Headquarters, the appropriate NRC Regional Office, and the appropriate NRC Resident Inspector. The ASME OM Code states in paragraph (a) of ISTA-3200, “Administrative Requirements,” that IST Plans shall be filed with the regulatory authorities having jurisdiction at the plant site. However, the ASME is planning to remove this provision from the ASME OM Code in a future edition based on the conclusion that this provision is more appropriate as a regulatory requirement than a Code requirement. This change is proposed in this rulemaking rather than in a future rulemaking so there will not be a period of time where this requirement is not in effect. The NRC staff needs these IST Plans for use in evaluating relief and alternative requests, and deferral of quarterly testing to cold shutdowns and refueling outages. This proposed condition is an administrative change to relocate the provision from the ASME OM Code to 10 CFR 50.55a. Because this condition maintains current requirements, there is no significant change in recordkeeping or reporting burden associated with this condition.
- Augmented ISI requirements: Implementation of Appendix VIII to Section XI. The NRC proposes to remove the condition found in § 50.55a(g)(6)(ii)(C) from the current regulations. This paragraph describes requirements for initial implementation of supplements in ASME BPV Code, Section XI Appendix VIII. Subsequent to this implementation the dates have passed and licensees are no longer using these older editions and addenda of the Code referenced in this paragraph therefore this condition can be removed. There is no change in recordkeeping or reporting burden results from the removal of this condition.
- Augmented ISI requirements: Reactor vessel head inspections. The NRC proposes to update the requirements of § 50.55a(g)(6)(ii)(D) to require licensees of pressurized water reactors to implement ASME BPV Code Case N-729-6, with certain conditions. The NRC conditions have been modified as summarized in the following discussions to address the changes in ASME BPV Code Case N-729-6 from the latest NRC approved ASME Code Case N-729 revision in § 50.55a(g)(6)(ii)(D), revision 4, (N-729-4)
- Implementation. The NRC proposes to revise 10 CFR 50.55a(g)(6)(ii)(D)(1) to change the version of ASME BPV Code Case N-729 from N-729-4 to N-729-6 for the reasons previously set forth. Because of the incorporation of N-729-6, the date to establish applicability for licensed PWRs will be changed to anytime within one year of the effective date of the final rule. This is to allow some flexibility for licensees to implement the requirements. No new inspections are required, therefore this allows licensees to phase in the new program consistent with their needs and outage schedules. The NRC is also including wording to allow licensee’s previous NRC approved alternatives to remain valid. The NRC staff has done a review of the currently effective proposed alternatives and finds that each can remain effective through the update from ASME

Code Case N-729-4 to N-729-6 with the proposed NRC conditions. The NRC estimates there would be a negligible averted recordkeeping and reporting burden cost as a result of this flexibility.

- Appendix I Use. The NRC proposes to revise 10 CFR 50.55a(g)(6)(ii)(D)(2). The NRC has determined that its current condition, that the use of Appendix I is not permitted, is no longer necessary. However, the NRC proposes to establish a new condition that the analyses required by the code case for missed coverage both above and below the J-groove weld include the analysis described in I 3000. The NRC basis for the change in condition is that, based on its reviews of alternatives proposed by licensees related to this issue, over a period in excess of 10 years, it has become apparent to the NRC staff that the I-3000 method produces satisfactory results and is correctly performed by licensees. The NRC staff also notes that the probabilistic approach has not been proposed by licensees and that it has not been evaluated (including the acceptance criteria) by the NRC.
The NRC staff finds the proposed change to the condition will have minimal impact on safety, while minimizing the regulatory burden of NRC review and approval of a standardized method to provide reasonable assurance of structural integrity of a reduced inspection area. The NRC estimates there may be a negligible averted recordkeeping and reporting burden as a result of the removal of the existing condition and replacing with a less restrictive condition consistent with current industry preference.
- Surface Exam Acceptance Criteria. The NRC proposes to revise 10 CFR 50.55a(g)(6)(ii)(D)(4), the current condition on surface examination acceptance criteria, to update the ASME BPV Code Case references from N-729-4 to N-729-6. Therefore, the NRC proposes to modify the condition 10 CFR 50.55a(g)(6)(ii)(D)(4) by changing the versions of the applicable ASME BPV Code Case N-729. The NRC estimates that there is no incremental recordkeeping and reporting burden as a result of this administrative change.
- Peening The NRC proposes to add a new condition in 10 CFR 50.55a(g)(6)(ii)(D)(5) that will allow licensees to obtain full inspection relief for peening of their RPV upper heads in accordance with the latest NRC approved requirements, "Topical Report for Primary Water Stress Corrosion Cracking Mitigation by Surface Stress Improvement," (MRP-335R3-A) (ADAMS Accession No ML16319A282). This document provides guidelines for the NRC approved performance criteria, qualification requirements, inspection frequency, and scope. A licensee may peen any component in accordance with the requirements and limitations of the ASME Code. However, in order to obtain NRC approved inspection relief for a RPV head mitigated with peening as described in MRP-335R3-A, this proposed condition establishes MRP-335R3-A as the requirement for performance criteria, qualifications, and inspections. Otherwise the requirements of an unmitigated RPV upper head inspection program shall apply.
As part of this proposed condition, the NRC staff is removing two of the requirements contained in MRP-335R3-A: (1) the submission of a plant specific alternative to the code case will not be required and (2) Condition 5.4 will not be required. The need for NRC Condition 5.4 on the use of MRP-335R3-A, which required volumetric inspection during the N+1 and N+2 refueling outages for plants with previous indication of cracking in their heads, has been re-evaluated as part of a licensee's proposed alternative to

obtain inspection relief after peening of their RPV upper head nozzles and associated J-groove welds. Therefore, NRC Condition 5.4 is no longer applicable.

Therefore, the NRC proposed condition combines the use of the latest NRC accepted performance criteria, qualification, and inspection requirements in MRP-335R3-A with an allowance for licensees to no longer be required to submit a plant-specific proposed alternative to adopt the inspection frequency of peened RPV head penetration nozzles in MRP-335R3-A, and not be required to adhere to NRC Condition 5.4 of MRP-335R3-A. By removing these requirements in the proposed condition, the NRC alleviates the need to highlight nine areas in N-729-6 that do not conform to the current NRC approved requirements for inspection relief provided under MRP 335R3-A.

The NRC staff estimates these conditions would result in a small incremental averted recordkeeping and reporting burden to licensees, which have not been quantified. By allowing the use of peening, with which the industry and NRC has prior experience, licensees would avoid the need for a more costly unmitigated RPV upper head inspection, as long as the other conditions are followed. The net effect of these conditions upon industry would be a reduction in the planning for and inspection of the unmitigated RPV upper head and a reduction in occupational radiation dose resulting from the lengthier inspection.

- Baseline Examinations. The NRC proposes to add a new condition in 10 CFR 50.55a(g)(6)(ii)(D)(6) to address baseline examinations. Note 7(c) of Table 1 of ASME BPV Code Case N-729-6 requires baseline volumetric and surface examinations for plants with a RPV upper head with less than eight effective degradation years by no later than February 10, 2008. This requirement has been in place since ASME BPV Code Case N-729-1 was first required by this section, and is a carryover requirement from the First Revised NRC Order EA-03-009. However, because any new RPV upper head replacement would be after 2008, this requirement can no longer be met. While it is not expected that a new head using A600 nozzles would be installed, the NRC is conditioning this section to prevent the need for a licensee to submit a proposed alternative for such an event, should it occur. The NRC proposed condition would instead require a licensee to perform a baseline volumetric and surface examination within 2.25 reinspection years not to exceed eight calendar years, as required for the regular interval of inspection frequency. The NRC estimates that there is no recordkeeping or reporting burden as a result of changing the 2008 date to an ongoing requirement as intended by the code case.
- Sister Plants. The NRC proposes to add a new condition in 10 CFR 50.55a(g)(6)(ii)(D)(7) to address the use of the term sister plants for the examinations of RPV upper heads. The use of sister plants under ASME BPV Code Case N-729-6 would allow extension of the volumetric inspection of replaced RPV heads with resistant materials from the current 10-year inspection frequency to a period of up to 40 years. As part of mandating the use of ASME BPV Code Case N-729-6 in this rule, the NRC is approving the ASME Code's extension of the volumetric inspection frequency from every 10 years to every 20 years. The NRC staff finds the documents, "Technical Basis for Reexamination Interval Extension for Alloy 690 PWR Reactor Vessel Top Head Penetration Nozzles (MRP-375)" and "Recommended Factors of Improvement for Evaluating Primary Water Stress Corrosion Cracking (PWSCC) Growth Rates of Thick-Wall Alloy 690 Materials and Alloy 52, 152, and Variants Welds (MRP-386)," provide a sound basis for a 20 year volumetric inspection interval and a 5 year bare metal visual

inspection interval for alloy 690/52/152 materials subject to this code case thereby providing reasonable assurance of the structural integrity of the RPV heads. However, the NRC is proposing a condition to prohibit the concept of sister plants. If used, this concept would increase the inspection interval for plants with sister plants from 20 years to 40 years. The NRC staff is currently evaluating both the definition of sister plants and factors of improvement between the growth of PWSCC in alloys 600/82/182 and 690/52/152.

Currently the NRC staff questions whether the criteria for sister plants (i.e., same owner) are an appropriate criteria. The NRC staff also questions whether other criteria (e.g., environment, alloy heat, and numbers of sisters in a particular group) should be included in the definition.

The NRC staff continues to review information on PWSCC growth rates and factors of improvement for alloy 690/52/152 and 600/82/182 as proposed in MRP-386. While the NRC staff has concluded that crack growth in alloy 690/52/152 is sufficiently slower than in alloy 600/82/182 to support an inspection interval of 20 years, the NRC continues to assess whether the data and analyses support a 40-year interval.

There is no recordkeeping or reporting burden as a result of the condition which prohibits the use of the definition of "sister plants" to justify allowing the second inspection interval to change to 40 years instead of 20 years, in part because this issue will be resolved before the 40-year interval becomes relevant.

- Volumetric Leak Path. The NRC proposes to add a new condition in 10 CFR 50.55a(g)(6)(ii)(D)(8) to substitute a volumetric leak path assessment for the required surface exam of the partial penetration weld of paragraph 3200(b). The NRC found that use of a volumetric leak path assessment is more useful to confirm a possible leakage condition through the J-groove weld than a surface examination of the J-groove weld. While a surface examination may detect surface cracking, it will not confirm that such an indication is a flaw that caused leakage. A positive volumetric leak path assessment will provide a clear confirmation of leakage, either through the nozzle, weld or both. The NRC notes that since all nozzles have had a volumetric examination, a baseline volumetric leak path assessment is available for comparison, and this provides additional assurance of effectiveness of the volumetric leak path assessment technique. Furthermore, the surface examination is a manual process in a high radiation field, and the volumetric leak path is automated and remotely performed. The NRC has been receiving relief requests as a result of these circumstances. As such, to eliminate the need for potential proposed alternatives requiring NRC review and authorization, this condition is proposed to increase regulatory efficiency. Although this condition has no effect on industry implementation costs, this condition would result in averted relief requests from industry. The NRC analysis estimates that the recordkeeping and reporting cost associated with relief requests of 173 hours per year would be averted with the implementation of this condition.
- Augmented ISI requirements: Examination requirements for Class 1 piping and nozzle dissimilar-metal butt welds. The NRC proposes to update the requirements of § 50.55a(g)(6)(ii)(F) to require licensees to implement ASME BPV Code Case N-770-5, with conditions. The previous NRC conditions have been modified as summarized in the following discussions to address the changes in ASME BPV Code Case N-770-5 and to ensure that this regulatory framework will provide adequate protection of public health and safety

- Implementation. The NRC proposes to revise this condition in 10 CFR 50.55a(g)(6)(ii)(F)(1) to mandate the use of ASME BPV Code Case N-770-5, as conditioned by this section, in lieu of the current requirement to mandate ASME BPV Code Case N-770-2. The wording of this condition would allow a licensee to adopt this change anytime during the first year after the rule becomes effective. This is to provide flexibility for the licensee to adapt to the new requirements. Included in this provision is an allowance for all previous NRC approved licensee's alternatives to the requirements of this section to remain valid, regardless of the version of ASME BPV Code Case N-770 they were written against. The NRC staff has reviewed all currently applicable licensee alternatives to this code case and has found that the change from Code Case N-770-2 to N-770-5 required by this proposed regulation neither invalidates nor degrades plant safety associated with the continued use of existing alternatives. Therefore, to provide regulatory efficiency, the NRC staff finds that all previous NRC approved alternatives will remain valid for their specifically NRC approved duration of applicability. The NRC estimates no incremental recordkeeping or reporting burden as a result of this administrative condition.
- Categorization. The NRC proposes to revise this condition in 10 CFR 50.55a(g)(6)(ii)(F)(2) to include the categorization of welds mitigated by peening. This condition currently addresses the categorization for inspection of unmitigated welds and welds mitigated by various processes.

The new section, to this revised condition, is to categorize dissimilar metal butt welds mitigated by peening. The MRP-335, "Topical Report for Primary Water Stress Corrosion Cracking Mitigation by Surface Stress Improvement," is the technical basis summary document for the application of peening in upper heads and dissimilar metal butt welds to address primary water stress corrosion cracking. The NRC staff extensively reviewed this document for generic application. The requirements contained in the NRC approved version of this report, MRP 335R3-A differ in several respects from the requirements contained in ASME BPV Code Case N-770-5. As such, to avoid confusion with multiple conditions, the NRC proposes to accept categorization of welds as being mitigated by peening, if said peening follows the performance criteria, qualification requirements, and inspection guidelines of MRP-335R3-A. Once implemented, the inspection guidelines of MRP-335R3-A provide inspection relief from the requirements of an unmitigated dissimilar metal butt weld. As part of this proposed condition, the NRC staff is removing the need for the licensee to submit a plant specific proposed alternative to implement the inspection relief in accordance with MRP-335R3-A.

The requirements for categorization of all other mitigated or non-mitigated welds remains the same. As noted previously, all of these requirements, except for the categorization of peening, were in the previous conditions for mandated use of ASME BPV Code Cases N-770-2 and N 770-1. The NRC estimates no recordkeeping or reporting burden as a result of this modification, which allows peening as a mitigation technique thereby relaxing existing requirements.
- Baseline Examinations. The NRC proposes to delete the baseline examinations condition in 10 CFR 50.55a(g)(6)(ii)(F)(3). The current condition regarding baseline inspections is unnecessary, as all baseline volumetric examinations are completed. If a baseline examination is required, the licensee would follow the examination requirements in ASME BPV Code Case N-770-5. This condition number is reserved, to maintain the NRC condition numbering from the past rulemaking, and in this way, limit the need for additional updating of current procedures and documentation when no

substantive change has occurred. The NRC estimates there is no recordkeeping or reporting burden change as a result of removing this condition.

- Reporting requirements. The NRC proposes to revise 10 CFR 50.55a(g)(6)(ii)(F)(6) to address the deletion of wording in Paragraph -3132.3(d) of ASME BPV Code Case N-770-5 and relax the requirement for submitting the summary report to the NRC. The purpose of this condition is to obtain timely notification of unanticipated flaw growth in a mitigated butt weld in the reactor coolant pressure boundary. The NRC analysis estimates that the recordkeeping and reporting cost associated with the summary report of 20 hours per year would be averted with the implementation of this condition.
- Deferrals. The NRC proposes to revise NRC Condition (g)(6)(ii)(F)(9) *Deferral* to prohibit the deferral of volumetric inspections of welds mitigated by peening under MRP-335R3-A and the first 10-year inservice inspection examination for welds mitigated by excavate and weld repair, inspection items M-2, N-1 and N-2 only. The NRC estimates no incremental recordkeeping or reporting burden as a result of this clarification and alignment of deferral requirements and categorizations with MRP-335R3-A.
- Cast Stainless Steel. The NRC proposes to amend 50.55a(g)(6)(ii)(F)(11) to provide licensees an alternative to meeting the current condition. The alternative would be to use ASME Code Case N-824 when examining dissimilar metal welds where inspections through a cast austenitic stainless steel component is required. The existing condition requires licensees to have a qualified program in place to inspect dissimilar metal butt welds with CASS materials from the CASS side by 2022. The NRC recognizes that there is no current Supplement 9 inspection guideline that would meet this requirement. At a NRC public meeting on April 17, 2018, the NRC and industry representatives discussed the estimated number of welds that would be covered by the condition. Given this information, the NRC has determined that rather than requiring a full qualification program to be developed within this timeframe, ASME Code Case N-824 would provide an acceptable alternative and provide reasonable assurance of public health and safety. ASME BPV Code Case N-824 incorporates best practices for the inspection of cast stainless steel from NUREG/CR-7122 "title" and NUREG/CR-6933 "title". NUREG/CR-7122 showed that pressurizer surge line sized piping welds may be inspectable with existing dissimilar metal butt weld inspection procedures. NUREG/CR-6933 showed that large-bore cast stainless steel may be inspectable using specialized low-frequency inspection procedures. Therefore, the NRC will modify the condition to allow the use of ASME Code Case N-824, as conditioned in Regulatory guide 1.147, as an option to the development Appendix VIII, Supplement 9 qualifications, or qualifications similar to Appendix VIII, Supplement 2 or 10 using cast stainless steel mockups, when examining dissimilar metal welds where inspections through a cast austenitic stainless steel component is required to obtain volumetric inspection coverage. The NRC estimates no change in recordkeeping or reporting burden as the NRC is not proposing a change to this requirement.
- Encoded ultrasonic examination. The NRC proposes to revise NRC Condition (g)(6)(ii)(F)(13) which requires the encoded examination of unmitigated and mitigated cracked butt welds under the scope of ASME BPV Code Case N-770-5. In particular, the proposed revision is being expanded to address changes in ASME BPV Code Case N-770-5 to include inspection categories B-1, B-2 for cold leg welds, which were previously under the single inspection category B, and the new inspection categories N-

1, N-2 and O for cracked welds mitigated with the excavate and weld repair technique. The inclusion of these weld categories is in line with the previous basis for this condition. Further, the NRC proposes to relax the requirement for 100 percent of the required inspection volume to be encoded. The new requirement would allow essentially 100 percent of the required inspection volume to be encoded under the definition of essentially 100 percent in ASME BPV Code Case N-460. This code case allows the reduction to 90 percent coverage only if a physical limitation or impediment to full coverage is encountered during the inspection. The NRC finds this relaxation appropriate given the potential that the physical size of the encoding equipment may reduce attainable coverage when compared to manual techniques. The NRC estimates no change in recordkeeping or reporting burden as a result of this condition.

- Excavate and weld repair cold leg. The NRC proposes to add a new condition (g)(6)(ii)(F)(14) to address the initial inspection of cold leg operating temperature welds after being mitigated by the excavate and weld repair technique. The excavate and weld repair technique is a new mitigation category introduced in ASME BPV Code Case N-770-5. The first inspection requirement for inspection item M-2, N-1 and N-2 welds, after being mitigated, is during the first or second refueling outages after mitigation. The NRC finds that the ASME BPV Code Case N-770-5 language does not provide separate inspection programs between the cold and hot leg temperature for the first volumetric inspection. The NRC determines that, at hot leg temperatures, one fuel cycle is sufficient for a preexisting, non-detectable, crack to grow to detectable size (10% through wall), however, at cold leg temperatures crack growth is sufficiently slow that preexisting, undetected, cracks are unlikely to reach detectable size in a single fuel cycle. Therefore, in order to ensure the effectiveness of the initial volumetric examination to verify no unanticipated flaw growth in the mitigated weld prior to extending the inspection frequency to 10 years or beyond, the NRC proposes a condition to require the first examination be performed during the second refueling outage following mitigation for cold leg operating temperature welds. The NRC estimates a small incremental recordkeeping and reporting burden change, which was not quantified, as a result of this condition that mandates that the inspection occur in the second refueling outage as opposed to licensees having a choice between the first and second outages.
- Cracked excavate and weld repair. The NRC proposes to add a new condition (g)(6)(ii)(F)(15) to address the long term inspection frequency of cracked welds mitigated by the excavate and weld repair technique, i.e. inspection category N-1. The long term volumetric inspection frequency for the cracked N-1 welds under ASME BPV Code Case N-770-5 is a 25 percent sample each 10-year inspection interval. In comparison, the NRC notes that the long-term volumetric inspection frequency of a non-cracked weld mitigated with excavate and weld repair without stress improvement (inspection category M-2) is 100% each 10-year inspection interval. Due to not attaining surface stress improvement, M-2 welds could potentially have cracking initiate at any time over the remaining life of the repair. Therefore, a volumetric inspection frequency of once per 10-year inspection frequency is warranted to verify weld structural integrity. However, every N-1 categorized weld already has a pre-existing crack, but Code Case N-770-5 would allow a 25 percent sample inspection frequency each 10-year inservice inspection interval. This could allow some N-1 welds with preexisting flaws to not be volumetrically inspected for the remainder of plant life. The NRC finds that there is an insufficient technical basis to support the difference in inspection frequency between N-1 and M-2 welds. Therefore, the NRC proposes a condition on N-1 inspection category welds that

would require the same long term inspection frequency as determined acceptable by the ASME BPV Code Case N-770-5 for M-2 welds, i.e., non-cracked 360 degree excavate and weld repair with no stress improvement credited. The NRC estimates that there are no incremental industry recordkeeping and reporting burden associated with this condition that aligns the N-1 inspection frequency with M-2 requirements.

- Partial arc excavate and weld repair. The NRC proposes to add a new condition(g)(6)(ii)(F)(16) to prevent the use of the inspection criteria for partial arc excavate and weld repair technique contained in ASME BPV Code Case N-770-5. The NRC staff notes that ASME BPV Code Case N-847 which describes the process of installing an excavate and weld repair has not been included in Regulatory Guide 1.147 and has not been incorporated by reference into 10 CFR 50.55a. As a result, licensees must propose an alternative to the ASME Code to make an excavate and weld repair. Therefore, preventing the use of the inspection criteria contained in ASME BPV Code Case N-770-5 proposes no recordkeeping or reporting burden as a result of this condition which modifies the contents of alternative requests that are already being submitted by licensees.

Number of nuclear power plants

- Operating reactor units. This proposed rule considers 98 nuclear power plants that are licensed to operate in 2019, 96 units licensed to operate in 2020 and 95 units licensed to operate in 2021. The NRC staff assumes that Pilgrim (2019), Three Mile Island (2019), and Davis Besse (2020) will close based on recent licensee announcements.
- Future operating reactor units. The proposed rule also considers five future operating light-water nuclear power reactor units. The future nuclear power reactors considered in this analysis include Vogtle Electric Generating Plant, Units 3 and 4. As of May 2018, eight power reactors that have no published construction schedule hold combined licenses (COLs). These reactors are Enrico Fermi Nuclear Plant, Unit 3; North Anna Power Station, Unit 3; South Texas Project, Units 3 and 4; William States Lee III Nuclear Station, Units 1 and 2, and Turkey Point Nuclear Generating, Units 6 and 7. Because of this schedule uncertainty, including all of these plants in this analysis is too speculative, so the staff made an assumption that the new code editions will affect three of the eight reactors that have not started construction for a total of five future reactors included in the analysis.

Table 1 below summarizes the number of nuclear power plants affected by this rule during the expected clearance period of 2019 – 2021. The number of operating reactors used decreases under the assumption that reactors that have ceased operations will not perform the actions of the proposed rule.

TABLE 1
NUMBER OF NUCLEAR POWER PLANTS

Year	Number of Operating Reactors	Number of Affected Combined Operating Licenses
2019	98	5
2020	96	5
2021	95	5

A. JUSTIFICATION

1. Need For and Practical Utility of 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. The NRC has issued [Guidance for Electronic Submissions to the NRC](#) which provides direction for the electronic transmission and submittal of documents to the NRC. Electronic transmission and submittal of documents can be accomplished via the following avenues: the Electronic Information Exchange (EIE) process, which is available from the NRC's "Electronic Submittals" Web page, by Optical Storage Media (OSM) (e.g. CD-ROM, DVD), by facsimile or by e-mail. 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.

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

If the information is not collected, NRC will not be in a position to assess whether licensees are operating within the specific safety requirements applicable to the design, construction, test, repair and inspection of nuclear power plant components. The information and required frequency from licenses is essential to NRC's determination that such safety requirements are met throughout the life of the license in order to protect public health and safety. If the information is not collected, or collected less frequently, the NRC could be unaware for an extended period of time that the design, construction, test, repair and inspection of a nuclear power plant's components is no longer adequate to protect the health and safety of the public and the environment.

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 has been published in the *Federal Register*.

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

The estimated burden to prepare and submit an alternative request to the NRC for authorization is 380 hours.

A review of past submittals of Code alternative requests has determined that plant owners / COL holders submit Code alternative requests that cover multiple units and multiple plant sites. Under the proposed rule, a licensee of a nuclear power plant would need to submit a fewer number of the aforementioned Code alternative requests under 10 CFR 50.55a(z), which would provide a net benefit (i.e., averted cost) to the licensee. The staff analyzed alternative request submittals across

multiple years and based on an assumption that the final rule would be issued by 2019, determined that, the implementation of the proposed rule would result in the industry's avoidance of an estimated 24 Code alternative submittals (and their associated preparation) each year under 10 CFR 50.55a(z). The NRC estimates a annual reporting burden reduction of 9120 hours for alternative requests. (See Table 2, Annualized Reporting Burden- Alternative Requests). As summarized in Table 2, The overall number of averted alternative requests responses is 72 over the clearance period covered by this supporting statement.

In addition, as summarized in Tables 3 and 4, in the first three years after the effective date of the rule (the clearance period covered by this supporting statement):

- An expected 34 sites will perform procedure updates to address removal of Table IWB-2500-1 examination requirements (Table 3)
- An expected 62 reactors will perform averted PWR relief requests for pressurizer weld inspections (Table 3)
- An expected 3 sites will seek to specify HDPE Fusing Procedures and perform HDPE joint tests (Tables 3 and 4)
- An expected 3 sites will seek mitigation of defects by modification relief requests
- An expected 3 sites will seek IWA-4421 relief requests (Table 4)
- An expected 3 relief requests for reactor vessel head inspection volumetric leak path assessments will be averted (Table 4)
- An expected 3 summary reports for class 1 piping and nozzle dissimilar metal butt weld inspections will be averted. (Table 4)

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 relief/alternative requests, and other documentation of testing and reporting will occur after the clearance period, as indicated in the tables below.

The burden estimate for the industry is shown in Tables 2 to 5. 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 \$263 is used for all costs. The total annualized burden reduction for Industry is 12,640 hours and \$3,324,320 (12,640 hrs. × \$263/hr.). The annualized one-time reporting burden reduction results in 3446 hours per year (\$906,298). There is a decrease in annualized recordkeeping burden due to the reduction in alternative and relief requests. The annualized recordkeeping burden is estimated to decrease by 231 hours (\$60,753).

The \$263 hourly rate used in the burden estimates is based on the Nuclear Regulatory Commission's fee for hourly rates as noted in 10 CFR 170.20 "Average cost per professional staff-hour." For more information on the basis of this rate, see the *Federal Register* notice at: 82 FR 30682; June 30, 2017.

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 \$24.30 (231 recordkeeping hours × \$263 × .0004).

14. Estimated Annualized Cost to the Federal Government

The staff has developed estimates of annualized costs to the Federal Government related to the conduct of this collection of information. These estimates are based on staff experience and subject matter expertise and include the burden needed to review, analyze, and process the collected information and any relevant operational expenses.

The burden estimate is shown in Table 6 and Table 7. The NRC will avert burden from review and approval of 24 Code and Code Case alternative requests per year and avert burden from review of steam generator weld inspection relief requests. The NRC will incur burden from review and approval of mitigation of defects by modification and IWA-4421 relief requests. The current annualized cost to the Federal government for Part 50 is \$65,369,402. The total annualized cost savings to the Federal government resulting from this proposed rule is \$1,581,857 (6015 staff hours × \$263/hr. fee rate). The total annualized cost to the government for Part 50 will be \$65,369,402 - \$1,581,858 = \$63,787,545

15. Reasons for Change in Burden or Cost

The current Part 50 annual burden is 43,623 responses and 3,708,530 hours. The proposed rule reduces the annual number of responses by 53 and the annual burden hours on industry by a total of 12,640 hours.

The change in burden is due to a decrease in the number of operating nuclear power plants from 99 plants now to 95 plants at the end of the expected clearance period in 2021, contributing to the estimated decrease in the estimated number of alternative and relief requests being submitted.

The proposed rule incorporates by reference OM and BPV codes and 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 codes and code cases. A recent review of Code alternate requests submitted to the NRC over a 5 year span identified that 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 total estimated burden is determined to be 380 hours per alternative.

The proposed rule adds procedural updates to HDPE joints and testing, defect mitigation by modification, and steam generator weld inspections, which add burden to the industry. The removal of steam generator and pressurizer weld inspection requirements result in a reduction in burden from the inspections currently required.

Overall, the proposed rule will result in an annualized industry burden reduction of 10338 hours in the first three years (3446 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 157 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 proposed rule.

16. Publication for Statistical Use

This information will not be 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 2
ANNUALIZED RECURRING REPORTING BURDEN-ALTERNATIVE REQUESTS

Section	Year	No. of Respondents	Responses per Respondent	Total No. of Responses	Burden Hours per Response	Total Annual Reporting Burden (Hrs.)	Cost @ \$263/hr.
50.55a(z): Averted Alternative Requests submitted by power reactor plants	2019	24	-1	-24	380	-9,120	-\$2,398,560
	2020	24	-1	-24	380	-9,120	-\$2,398,560
	2021	24	-1	-24	380	-9,120	-\$2,398,560
TOTAL				-72		-27,360	-\$7,195,680
Annualized Totals				-24		-9120	-\$2,398,560

TABLE 3
ANNUALIZED ONE-TIME REPORTING BURDEN

Information Collection Section	Number of Respondents	Number of Responses per respondent	Number of Responses	Burden Hours per Response	Total Annual Reporting Burden (Hrs.)	Cost @ \$263/hr.
50.55(e) Create a Butt Fusion or Electrofusion Joint Procedure Specification per 10 CFR 50.55a(b)(1)(xi)(A) and (C)	1	1	1	80	80	\$ 21,040
50.55(e) Update procedure to remove Table IWB-2500-1 examination requirements procedure per 10 CFR 50.55a(b)(2)(xxi)	34	1	34	23	782	\$ 205,666
50.55(a) Averted Inspection documentation of steam generator welds per 10 CFR 50.55a(b)(2)(xxi)	62	-1	-64	2	-128	-\$ 33,664
50.55a(g)(5) Averted PZR Weld inspection Relief Requests Preparation and Submission	62	-1	-64	173	-11072	-\$ 2,911,936
Totals	159		-89	278	-10338	-\$ 2,718,894
Annualized Totals	53		-30		-3446	-\$ 906,298

TABLE 4

ANNUALIZED RECURRING REPORTING BURDEN

Information Collection Section	Number of Respondents	Number of Responses per respondent	Number of Responses	Burden Hours per Response	Total Annual Reporting Burden (Hrs.)	Cost @ \$263/hr.
<u>50.55(e)</u> Create Butt Fusion or Electrofusion Testing Procedures per 10 CFR 50.55a(b)(1)(xi)(A) and (C)	1	1	1	4	4	\$ 1052
<u>50.55a(g)(5)</u> Mitigation of Defects by Modification Relief Requests per 10 CFR 50.55a(b)(2)(xxv)(B)	1	1	1	173	173	\$ 45,499
<u>50.55a(g)(5)</u> IWA-4421 Relief Requests per 10 CFR 50.55a(b)(2)(xxxix)(B)	1	1	1	173	173	\$ 45,499
<u>50.55a(g)(5)</u> Averted Augmented ISI Requirements- Reactor Vessel Head Inspections Volumetric Leak Path Relief Requests per 10 CFR 50.55a(g)(6)(D)(8)	1	-1	-1	173	-173	-\$ 45,499
<u>50.55(a)</u> Averted Augmented ISI Requirements- Class 1 Piping and nozzle dissimilar metal butt welds Summary Report per 10 CFR 50.55a(g)(6)(F)(6)	1	-1	-1	20	-20	-\$ 5,260
Totals	5		1		157	-\$41,291

TABLE 5
ANNUALIZED RECURRING RECORDKEEPING BURDEN

Information Collection Section	Number of Record keepers	Number of Records per Recordkeeper	Number of Records	Burden Hours per Record	Total Annual Reporting Burden (Hrs.)	Cost @ \$263/hr.
50.55(e) Create Butt Fusion or Electrofusion Testing Procedures per 10 CFR 50.55a(b)(1)(xi)(A) and (C)	1	1	1	1	1	\$ 263
50.55a(g)(5) Mitigation of Defects by Modification Relief Requests per 10 CFR 50.55a(b)(2)(xxv)(B)	1	1	1	10	10	\$ 2,630
50.55a(g)(5) IWA-4421 Relief Requests per 10 CFR 50.55a(b)(2)(xxxix)(B)	1	1	1	10	10	\$ 2,630
50.55a(g)(5) Averted Augmented ISI Requirements- Reactor Vessel Head Inspections Volumetric Leak Path Relief Requests	1	-1	-1	10	-10	-\$ 2,630
50.55(a) Averted Augmented ISI Requirements- Class 1 Piping and nozzle dissimilar metal butt welds Summary Report per 10 CFR 50.55a(g)(6)(F)(6)	1	-1	-1	2	-2	-\$ 526
10 CFR 50.55a(z) Code Alternative Request preparation and submission	24	-1	-24	10	-240-	-\$ 63,120
Totals	29		-23		-231	-\$ 60,753

Total Industry Burden Hours	-12640
Total Industry Burden Hour Cost	-\$3,324,320
Annual Potential Respondents	101
Responses	-53

TABLE 6
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 Reporting Burden (Hrs.)	Cost @ \$263/hr.
50.55(a) Averted Review of PZR Weld inspection Relief Requests related to 10 CFR 50.55a(b)(2)(xxi)	62	-1	-62	10	-620	(\$163,060)
Totals	62		-62		-620	(\$163,060)
Annualized Totals	21		-21		-207	(\$54,353)

