Final OMB Supporting Statement Related to Final Rule:

Alternate Fracture Toughness Requirements for
Protection Against Pressurized Thermal Shock Events
(10 CFR 50.61 and 50.61a)
(3150-0011)

RIN 3150-AI01
[NRC-2007-0008]

DESCRIPTION OF THE INFORMATION COLLECTION

The pressurized thermal shock (PTS) proposed rule was published in the *Federal Register* on October 3, 2007 (72 FR 56275). A supplemental proposed rule was also published in August 11, 2008 (73 FR 46557). The supplemental proposed rule was issued to request stakeholders' feedback on modifications made to the rule language as a result of public comments received on the October 2007 publication. The information collection requirements issued in October 2007 were updated with the information contained in the supporting statement issued for the supplemental proposed rule. The Nuclear Regulatory Commission (NRC) has decided to adopt the PTS final rule. The final rule incorporates the modifications described in the supplemental proposed rule. Therefore, the information collection requirements of this supporting statement remain unchanged from those issued in the supporting statement for the supplemental proposed rule.

PTS events are system transients in a pressurized water reactor (PWR) in which severe overcooling occurs coincident with high pressure. The thermal stresses are caused by rapid cooling of the reactor vessel inside surface combined with the stresses caused by high pressure. The aggregate effect of these stresses is an increase in the potential for fracture if a pre-existing flaw is present in a material susceptible to brittle failure. The ferritic, low alloy steel of the reactor vessel beltline adjacent to the core, where neutron radiation gradually embrittles the material over the lifetime of the plant, can be susceptible to brittle fracture.

The PTS rule, described in Title 10 of the *Code of Federal Regulations* Section 50.61 (10 CFR 50.61), "Fracture Toughness Requirements for Protection Against Pressurized Thermal Shock Events," adopted on July 23, 1985 (50 FR 29937), establishes screening criteria below which the potential for a reactor vessel to fail due to a PTS event is deemed to be acceptably low. The screening criteria effectively define a limiting level of embrittlement beyond which operation cannot continue without further plant-specific evaluation. Regulatory Guide (RG) 1.154, "Format and Content of Plant-Specific Pressurized Thermal Shock Analysis Reports for Pressurized Water Reactors," indicates that reactor vessels that exceed the screening criteria in 10 CFR 50.61 may continue to operate provided they can demonstrate a mean through-wall crack frequency (TWCF) from PTS-related events of no greater than 5×10^{-6} per reactor year.

Any reactor vessel with materials predicted to exceed the screening criteria in 10 CFR 50.61 may not continue to operate without implementation of compensatory actions or additional plant-specific analyses unless the licensee receives an exemption from the requirements of the rule. Acceptable compensatory actions are neutron flux reduction, plant modifications to reduce PTS event probability or severity, and reactor vessel annealing, which are addressed in

10 CFR 50.61(b)(3), (b)(4), and (b)(7); and 10 CFR 50.66, "Requirements for Thermal Annealing of the Reactor Pressure Vessel."

Currently, no operating PWR reactor vessel is projected to exceed the 10 CFR 50.61 screening criteria before the expiration of its 40 year operating license. However, several PWR reactor vessels are approaching the screening criteria, while others are likely to exceed the screening criteria during their first license renewal periods.

The NRC's Office of Nuclear Regulatory Research (RES) developed a technical basis that supports updating the PTS regulations. This technical basis concluded that the risk of through-wall cracking due to a PTS event is much lower than previously estimated. This finding indicated that the screening criteria in 10 CFR 50.61 are unnecessarily conservative and may impose an unnecessary burden on some licensees. Therefore, the NRC created a new rule, 10 CFR 50.61a, "Alternate Fracture Toughness Requirements for Protection against Thermal Shock Events," which provides alternate screening criteria and corresponding embrittlement correlations based on the updated technical basis. The NRC decided that providing a new section containing the updated screening criteria and updated embrittlement correlations would be appropriate because the Commission directed the NRC staff, in a staff requirements memorandum (SRM), "Staff Requirements - SECY-06-0124 - Rulemaking Plan to Amend Fracture Toughness Requirements for Protection against Pressurized Thermal Shock Events (10 CFR 50.61)," dated June 30, 2006, to prepare a rulemaking which would allow current PWR licensees to implement the new requirements of 10 CFR 50.61a or continue to comply with the current requirements of 10 CFR 50.61. Alternatively, the NRC could have revised 10 CFR 50.61 to include the new requirements, which could be implemented as an alternative to the current requirements. However, providing two sets of requirements within the same regulatory section was considered confusing and/or ambiguous as to which requirements apply to which licensees.

The NRC published the alternate PTS proposed rulemaking for public comment in the *Federal Register* on October 3, 2007 (72 FR 56275). The proposed rule provided an alternative to the current rule in 10 CFR 50.61, which further prompted the NRC to keep the current, mandatory requirements separate from the new requirements. As a result, the proposed rule retained the current requirements in 10 CFR 50.61 for PWR licensees choosing not to implement the less restrictive screening limits, and presented new requirements in 10 CFR 50.61a as a relaxation for PWR licensees.

During the development of the PTS final rule, the NRC determined that several significant changes to the proposed rule language would be needed to adequately address stakeholders' comments, including concerns related to the applicability of the rule. The NRC considered the adoption of these provisions as an alternative to the provisions previously noticed in the *Federal Register*. Because these modifications were significant changes to the proposed rule language on which external stakeholders did not have an opportunity to comment, the NRC concluded that obtaining stakeholder feedback on these provisions through the use of a supplemental proposed rule is appropriate. The supplemental proposed rule was published in August 11, 2008 (73 FR 46557). Consequently, the information collection requirements from the proposed rule were updated in its entirety with the information collection requirements provided in the supporting statement for the supplemental proposed rule.

The NRC has decided to adopt the PTS final rule. The final rule incorporates the modifications described in the supplemental proposed rule. Therefore, the information collection requirements of this supporting statement remain unchanged from those issued in the supporting statement for the supplemental proposed rule.

The technical basis for this rulemaking is documented in the following reports: (1) "Statistical Procedures for Assessing Surveillance Data for 10 CFR Part 50.61a," (Agencywide Documents Access and Management System (ADAMS) Accession No. ML081290654), (2) "A Physically Based Correlation of Irradiation Induced Transition Temperature Shifts for RPV Steel," (ADAMS Accession No. ML081000630), (3) NUREG-1806, "Technical Basis for Revision of the Pressurized Thermal Shock (PTS) Screening Limits in the PTS Rule (10 CFR 50.61): Summary Report," (ADAMS Accession No. ML061580318), (4) NUREG-1874, "Recommended Screening Limits for Pressurized Thermal Shock (PTS)" (ADAMS Accession No. ML070860156), and (5) Memorandum from Elliot to Mitchell, dated April 3, 2007, "Development of Flaw Size Distribution Tables for Draft Proposed Title 10 of the Code of Federal Regulations (10 CFR) 50.61a," (ADAMS Accession No. ML070950392). These reports summarize and reference several additional reports on the same topics.

The updated technical basis indicates that, after 60 years of operation, the risk of reactor vessel failure due to a PTS event is much lower than previously estimated. The updated analyses were based on information from three currently operating PWRs. Because the severity of the risk-significant transient classes (e.g., primary side pipe breaks, stuck open valves on the primary side that may later re-close) is controlled by factors that are common to PWRs in general, the NRC concluded that the TWCF results and resultant reference temperature-based screening criteria developed from the analysis of three plants can be applied with confidence to the entire fleet of operating PWRs. This conclusion is based on an understanding of characteristics of the dominant transients that drive their risk significance and on an evaluation of a larger population of high embrittlement PWRs. This evaluation revealed no design, operational, training, or procedural factors that could credibly increase either the severity of these transients or the frequency of their occurrence in the general PWR population above the severity and frequency that was characteristic of the three plants that were modeled in detail.

The updated technical basis uses many different models and parameters to estimate the yearly probability that a PWR will develop a through-wall crack as a consequence of PTS loading. One of these models is a revised embrittlement correlation that uses information on the chemical composition and neutron exposure of low alloy steels in the reactor vessel's beltline region to estimate the resistance to fracture of these materials. Although the general trends of the embrittlement models in 10 CFR 50.61 and those in the final rule are similar, the form of the revised embrittlement correlation in the final rule differs substantially from the correlation in the existing 10 CFR 50.61. The correlation in the final rule has been updated to more accurately represent the substantial amount of reactor vessel surveillance data that has accumulated since the embrittlement correlation was last revised during the 1980s.

A. JUSTIFICATION

1. Need for the Collection of Information

Maintaining the structural integrity of the reactor pressure vessel of light-water-cooled reactors is a critical concern related to the safe operation of nuclear power plants. To assure the structural integrity of reactor vessels, the NRC has developed regulations, including 10 CFR 50.61 and 10 CFR 50.61a, and regulatory guides, including Regulatory Guide 1.99, Revision 2, "Radiation Embrittlement of Reactor Vessel

Materials," and Regulatory Guide 1.190, "Calculational and Dosimetry Methods for Determining Pressure Vessel Neutron Fluence," to provide analysis and measurement methods and procedures to establish that the reactor vessel has adequate safety margin for continued operation. The fracture toughness of the vessel materials varies with time. As the plant operates, neutrons escaping from the reactor core impact the vessel beltline materials causing embrittlement of those materials. The information collection requirements in 10 CFR 50.61 and the final 10 CFR 50.61a, as well as those in 10 CFR 50.60 and 10 CFR Part 50, Appendices G and H, provide estimates of the extent of the embrittlement, and evaluations of the consequences of the embrittlement, in terms of the structural integrity of the vessel. The NRC requires this information to ensure that no reactor, susceptible to the effects of PTS, will continue to operate without the licensee putting in place other mitigating measures.

Specific requirements for reporting and recording in the final rule are identified below.

10 CFR 50.61a(c) requires that each PWR licensee submit a license amendment to request NRC approval to use the requirements of 10 CFR 50.61a three years before exceeding the screening criteria in 10 CFR 50.61. The specific requirements for this amendment are described in paragraphs (c)(1), (c)(2), and (c)(3).

10 CFR 50.61a(c)(1) requires licensees to project the values of $RT_{MAX\text{-}X}$ for each reactor vessel beltline material for the expiration date of the operating license fluence of the material. The assessment must (1) use the calculation procedures specified in 10 CFR 50.61a paragraphs (f) and (g); (2) specify the bases for the projected value, including the assumptions regarding core loading patterns; and (3) specify the copper, phosphorus, manganese and nickel contents and the neutron flux and fluence values and full power cold leg temperature used in the calculation for each beltline material.

10 CFR 50.61a(c)(2) requires licensees to assess the flaws in the reactor vessel beltline in accordance with paragraph (e). This assessment is required to be completed at least three years before values of $RT_{MAX\text{-}X}$ are projected to exceed the 10 CFR 50.61 screening criteria.

10 CFR 50.61a(c)(3) requires licensees to compare the projected $RT_{MAX\text{-}X}$ values with the screening criteria to evaluate the vessel's susceptibility to fracture due to a PTS event.

10 CFR 50.61a(d)(1) requires licensees to submit a re-assessment of $RT_{MAX\text{-}X}$ values upon any significant change in the projected values of $RT_{MAX\text{-}X}$, or upon a request for a change in the expiration date for operation of the facility. The specific requirements for this assessment are described in paragraphs (c)(1) and (c)(3).

10 CFR 50.61a(d)(2) requires licensees to submit a re-analysis demonstrating a TWCF of less than $1x10^{-6}$ per reactor year using the assessment requirements in paragraphs (e)(1), (e)(2), and (e)(3). If licensees are required to perform assessments under paragraphs (e)(4), (e)(5), and (e)(6), a report must be submitted to the NRC.

10 CFR 50.61a(d)(3) requires consideration of submission and anticipated approval by the NRC of detailed plant-specific analyses submitted to demonstrate acceptable risk with $RT_{MAX\text{-}X}$ above the screening limit due to plant modifications, new information, or

new analysis techniques, in conjunction with implementing flux reduction programs that are reasonably practical to avoid exceeding the screening criteria.

10 CFR 50.61a(d)(4) requires licensees, for which the analysis required by paragraph (d)(3) indicates that no reasonably practical flux reduction program will prevent RT_{MAX-X} from exceeding the screening criteria, to submit a safety analysis to determine what, if any, modifications to equipment, systems, and operation are necessary to prevent potential failure of the reactor vessel as a result of postulated PTS events if continued operation beyond the screening criteria is allowed. This analysis must be submitted at least three years before RT_{MAX-X} is projected to exceed the screening criteria.

10 CFR 50.61a(d)(6) states that if NRC concludes that operation of the facility with RT_{MAX-X} in excess of the screening criteria cannot be approved on the basis of the licensee's analyses submitted under paragraphs (d)(3) and (d)(4), the licensee shall request a license amendment and receive approval by NRC prior to any operation beyond the screening criteria.

10 CFR 50.61a(e) requires licensees to verify that the screening criteria and calculation methodology are applicable to that particular reactor vessel. The analysis to be provided is based on results of the ASME Code volumetric examination. The record-keeping requirements for this verification are described in paragraphs (e)(1), through (e)(4).

10 CFR 50.61a(e)(1) requires licensees to verify that the flaw density and size do not exceed the screening criteria.

10 CFR 50.61a(e)(2) requires licensees to identify flaws that are equal to or greater than 0.075 inches and verify that they do not open to the inside surface of the vessel.

10 CFR 50.61a(e)(3) requires licensees to verify that all flaws between the clad-to-base metal interface and three-eights of the reactor vessel thickness from the interior surface are within the allowable values.

10 CFR 50.61a(e)(4) requires licensees to perform analyses to demonstrate that the reactor vessel will have a TWCF of less than $1x10^{-6}$ per reactor year.

10 CFR 50.61a(f) requires licensees to calculate RT_{MAX-X} values in accordance with the requirements of paragraphs (f)(1) through (f)(6).

10 CFR 50.61a(f)(4) requires licensees to obtain approval from the NRC if they use a method other than the one specified to calculate $RT_{NDT(U)}$.

10 CFR 50.61a(f)(6)(vi) requires that PWR licensees submit an evaluation of the surveillance data and propose ΔT_{30} and RT_{MAX-X} values if the criteria described in paragraph (f)(6)(v) are not satisfied. These evaluations shall be submitted for NRC approval at the time of the initial application. The licensees shall submit the analysis required by (e)(6) for each surveillance capsule removed from the reactor vessel after the submittal of the initial application for NRC approval.

10 CFR 50.61a(f)(7) requires PWR licensees to report to NRC any information believed to significantly influence the RT_{MAX-X} values. The burden is included in the estimates for RT_{MAX-X} assessment in item 12 of this supporting statement.

Note that this rulemaking makes no changes to the requirements in 10 CFR 50.61, although paragraph (b)(1) of this section is revised to include the option of complying with 10 CFR 50.61a. However, the effect of 10 CFR 50.61a is to shift some of the information collection burden from 10 CFR 50.61 to 10 CFR 50.61a. This shift in burden is discussed in item 12 of this supporting statement.

2. Agency Use of the Information

The information and analyses required by 10 CFR 50.61a will be reported on the plant's docket pursuant to the provisions of 10 CFR 50.4 and reviewed by the NRC to ensure the requirements of the regulation are met. The information collection requirements described above involve a safety issue. By reviewing the submittals from the PWR licensees, the NRC will verify that licensees are aware of (a) the potential threat to the integrity of their reactor vessel from PTS events, and (b) the need to consider additional compensatory measures in order to remain below the screening criterion.

3. Reduction of Burden Through Information Technology

There are no legal obstacles to reducing the burden associated with this information collection. The NRC encourages respondents to use information technology when it would be beneficial to them. NRC issued a regulation on October 10, 2003 (68 FR 58791), consistent with the Government Paperwork Elimination Act, which allows its licensees, vendors, applicants, and members of the public the option to make submissions electronically via CD-ROM, e-mail, special Web-based interface or other means. It is estimated that approximately 90 percent of the potential responses are filed electronically.

4. Effort to Identify Duplication and Use Similar Information

There is no duplication of requirements. NRC has in place an ongoing program to examine all information collections with the goal of eliminating all duplication and/or unnecessary information collections. There are no other NRC or Federal government requirements regarding analyses for flux reduction or plant PTS safety analyses.

5. Effort to Reduce Small Business Burden

The requirements in this rule 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 this information was not collected, the NRC could not verify that each reactor pressure vessel has an adequate safety margin for continued safe operation.

7. Circumstances Which Justify Variations from OMB Guidelines

There are no variations from OMB guidelines in this collection of information.

8. Consultations Outside the NRC

The NRC extended the period for comments on the information collection requirements in November 21, 2007 (72 FR 65470). The NRC received a total of 54 comments for the notices published in October and November 2007.

Opportunity for public comment on the proposed rule was published in the *Federal Register* on October 3, 2007 (72 FR 56275). The NRC published a notice in the *Federal Register* in November 21, 2007 (72 FR 65470) to increase the period for comment on the information collection requirements originally published in October 2007 from 30 days to 75 days. The period for comments for both the proposed rule and the information collection requirements closed on December 17, 2007. The NRC received a total of 54 comments for the notices published in October and November 2007. The NRC also published a supplemental proposed rule on August 11, 2008 (73 FR 46557) and received 5 comments.

For the proposed rule, NRC considered comments submitted by representatives of the nuclear industry including the Nuclear Energy Institute, the Pressurized Water Reactors Owners Group (PWROG), the Electric Power Research Institute (EPRI), the Strategic Teaming and Resource Sharing Alliance and Duke Energy.

The commenters requested that the NRC eliminate from the proposed rule the reporting requirements for embedded flaws violating the sizing criteria because this information is already evaluated and reported to the NRC in the vessel inspection summary reports that are issued to fulfill the requirements of ASME Code, Section XI.

The NRC considered these comments and concluded that the reporting requirements should remain unchanged. The NRC understands that some of the information required to be submitted by the rule may be provided in some, but not all, inservice inspection summary reports to the NRC. For example, the inservice inspection summary report does not necessarily include information about flaw sizes and locations when the flaw sizes are less than the reportable sizes. In addition, the NRC needs to know the size and location of all flaws that exceed the screening criteria in the rule to evaluate the licensee's assessment of the impact of these flaws. If these reporting requirements would be eliminated, the licensee would have to provide to the NRC a flaw-by-flaw reference to the information previously submitted in the inservice inspection summary reports. The NRC has determined that it would require the same level of effort to provide the actual description of each flaw as it would take to provide the flaw-by-flaw reference information. Further, eliminating the time needed for the NRC to search through different summary reports will also increase the efficiency of the NRC evaluation process. Since the rule requires the licensee to provide flaw assessments on vessels that exceed the limits, the additional requirement to identify flaw size and location is a minimal, if not a negligible, additional burden.

In the supplemental proposed rule, the information collection requirements were updated in its entirety. The NRC considered comments submitted by representatives of the nuclear industry including PWROG, EPRI, and FirstEnergy Nuclear Operating Company. There were no significant comments related to the information collection requirements.

9. Payment or Gift to Respondents

Not applicable.

10. Confidentiality of Information

Proprietary or confidential information is protected in accordance with NRC regulations described in 10 CFR 2.390(b) and 10 CFR 9.17(a).

11. Justification for Sensitive Questions

No sensitive information is requested in this rule.

12. Estimated Industry Burden and Burden Hour Cost

Currently Operating Pressurized Water Reactors

The requirements in 10 CFR 50.61a will only apply to those licensees that choose compliance with this section as an alternative to compliance with the requirements specified in 10 CFR 50.61. Of the 69 currently operating PWRs, the NRC projects that eight reactor vessels could exceed the screening criteria specified in 10 CFR 50.61 during their extended lifetimes (i.e., 60 years of operation). The NRC expects that each of these licensees will elect to apply the less stringent embrittlement correlations and screening criteria in 10 CFR 50.61a rather than applying the compensatory measures of 10 CFR 50.61(b)(3) through (b)(7). Because it could take approximately up to 3 years to prepare the package for initial submittal to the NRC, the NRC estimates that only one licensee is expected to apply during the initial 3 year clearance period. The NRC assumes that, 3 years subsequent to the effective date of the final rule, one operating reactor licensee per year will choose to comply with 10 CFR 50.61a for the following eight years. Thus, in the three years following the effective date of this rule, one operating reactor would be affected by the RT_{MAX-X} assessment and inservice testing and none would perform the flux reduction analyses nor the reactor vessel thermal annealing. Therefore, the estimated number of annual respondents is expected to be 0.333 per year and each respondent would provide two responses (i.e., one for the RT_{MAX-X} assessment and one for the analysis of ASME Code inservice ultrasonic testing results).

The NRC staff estimates through their experience that the cumulative burden per licensee complying with 10 CFR 50.61a will be 1,600 hours. In accordance with the information collection estimates currently approved for 10 CFR 50.61; 90 percent of the burden is attributable to record-keeping requirements and 10 percent to the reporting requirements. In accordance with the information provided in the supplemental proposed rule, the NRC estimates that the reporting requirements in 10 CFR 50.61a would be greater than those in 10 CFR 50.61, as the alternate PTS rule would require the licensees to report flaw distributions, inservice inspection data, enhanced surveillance data analysis, and material properties, among others. Therefore, the NRC estimates that from these 1,600 hours, 70 percent would be attributable to record-keeping requirements and 30 percent to the reporting requirements. Additionally, the NRC estimates that from these 1,600 hours, 1,000 hours would be associated to the initial submittal to the NRC and the remainder burden would be associated to subsequent submittals to be made during the remainder of their lifetimes (e.g., 20 years or 30 hours per year).

(1) RT_{MAX-X} assessment - The record-keeping burden is estimated to be approximately 70 percent of the total burden. For RT_{MAX-X} assessment, the record-keeping burden for the initial submittal it is estimated to be 350 staff hours per plant for the three year period. Thus the annualized initial submittal burden over three years would be 1 plant x 350 hours per plant ÷ 3 years, or 116 staff hours per year. An additional 10.5 hours of record-keeping burden per year are required for subsequent submittals to be made during the remainder of the plant's lifetime.

The reporting burden is expected to be approximately 30 percent of the total burden. For RT_{MAX-X} assessment, the reporting burden for the initial submittal is estimated to be 1 plant x 150 hours per plant ÷ 3 years or 50 staff hours per year. An additional 4.5 hours per year are required for reporting required for subsequent submittals to be made during the remainder of the plant's lifetime. Therefore, the total burden is 181 hours (116 + 10.5 + 50 + 4.5 hours). (The burden for RT_{MAX-X} assessments is captured under sections 50.61a(c), (c)(1), (c)(2), (c)(3), (d)(1), (d)(3), (f), (f)(4), (f)(6) and (f)(7).)

(2) Flux reduction analyses - None expected. (The burden for flux reduction analyses is captured under sections 50.61a(d)(3) and(d)(6).)

(3) Safety analysis - None expected. (The burden for safety analysis is captured under sections 50.61a(d)(4) and (d)(6).)

(4) Reactor vessel thermal annealing - None expected. (The burden for reactor vessel thermal annealing is captured under section 50.61a(d)(4).)

(5) Analysis of ASME Code inservice ultrasonic testing results. For the purpose of this supporting statement, the NRC is assuming that the record-keeping and reporting burden for this requirement is the same as for the burden requirements for the RT_{MAX-X} assessment (i.e., 116 hours per year for recordkeeping and 50 hours per year for reporting) for the one current licensee expected to implement the new rule over the next three years. In addition, 10.5 hours for record-keeping and 4.5 hours for reporting are required for any subsequent submittals to be made during the remainder of the plant's lifetime. (The burden for analysis of ASME BPV inservice ultrasonic testing is captured under sections 50.61a(c), (c)(2), (d)(2), (e), (e)(1), (e)(2), (e)(3), and (e)(4).)

The total estimated annual industry burden for record-keeping would be approximately 253 hours or \$60,214 (i.e., 253 hours x \$238 per hour) per year over the next 3 years. The total estimated annual industry burden for reporting would be approximately 110 hours or \$26,180 (i.e., 110 hours x \$238 per hour) per year over the next 3 years. Please see Tables 1, 2 and 3 for further clarification.

If licensees elect to apply the less stringent embrittlement correlations and screening criteria in 10 CFR 50.61a, the compensatory measures of 10 CFR 50.61(b)(3) through (b)(7) would not have to be implemented. Therefore, the information collection burden in 10 CFR 50.61 will be reduced.

In the next three years, if one licensee elects to use the alternate screening criteria in 10 CFR 50.61a; the total estimated annual industry burden in 10 CFR 50.61 would be reduced by 840 hours per year, for a net savings of 477 hours per year. In accordance with the information collection estimates for 10 CFR 50.61; 90 percent of the burden is attributable to recordkeeping (i.e., 756 hours), and 10 percent is associated to the reporting requirements (i.e., 84 hours). Hence, in 10 CFR 50.61, the estimated annual recordkeeping burden is reduced to 1,512 hours (i.e., 2,268 - 756), the estimated annual reporting burden is reduced to 168 hours (i.e., 252 - 84), for an annual estimated burden of 1,680 hours (i.e., 2,520 - 840).

New PWRs or PWR applicants

The NRC is limiting the use of 10 CR 50.61a to licensees whose construction permits were issued prior to the effective date of the final rule and whose reactor vessels were designed and fabricated to the American Society of Mechanical Engineers Boiler and Pressure Vessel Code (ASME Code), 1998 Edition or earlier. Therefore, there is no expected burden for new PWRs or PWR applicants.

13. Estimate of Other Additional Costs

The quantity of records to be maintained is roughly proportional to the record-keeping burden and therefore can be used to calculate approximate records storage costs. Based on the number of pages maintained for a typical clearance, the records storage cost has been determined to be 0.0004 times the record-keeping burden cost. Therefore, the storage cost of this clearance is negligible (i.e., 253 record-keeping hours x $238 per hour x 0.0004 = $24).

14. Estimated Annualized Cost to the Federal Government

Licensee submittals will be evaluated by the staff at the estimated cost given below:

(1) RT_{MAX-X} assessment: The staff estimates that reevaluations of RT_{MAX-X} values will be submitted by 1 PWR licensee within the 3-year clearance period. On average, 45 hours are estimated for the review of each submittal. Total review time is estimated at 45 staff hours at an estimated cost of x $10,710 (i.e., 1 submittals x 45 hours per submittal x $238 per hour) over the 3-year clearance period. Thus, the estimated annualized burden is 45 hours at a cost of $3,570.

(2) It is estimated that no licensee will submit an analysis for implementation of a flux reduction program, and thus no staff resources are assumed for this effort.

(3) It is estimated that no licensee will submit an analysis for plant modifications, and thus no staff resources are assumed for this effort.

(4) It is estimated that no licensee will implement reactor vessel thermal annealing, and thus no staff resources are assumed for this effort.

(5) The estimated total annual federal cost, which is the sum of items (1) through (4) above, is $3,570. Please see Table 4 for further clarification.

15. Reasons for Changes in Burden or Cost

There is change in burden that will be incurred by those licensees choosing to implement 10 CFR 50.61a, which includes an additional evaluation of ASME Code inservice volumetric testing results.

If licensees elect to apply the less stringent embrittlement correlations and screening criteria in 10 CFR 50.61a, the compensatory measures of 10 CFR 50.61 would not have to be implemented. Therefore, the information collection burden in 10 CFR 50.61 will be reduced.

The NRC expects that eight licensees will elect to apply the less stringent embrittlement correlations and screening criteria in 10 CFR 50.61a rather than applying the compensatory measures of 10 CFR 50.61(b)(3) through (b)(7). Because it could take approximately up to 3 years to prepare the package for submittal to the NRC, only one licensee is expected to apply during the initial 3 year clearance period. The NRC assumes that, 3 years subsequent to the effective date of the final rule, one operating reactor licensee per year will choose to comply with 10 CFR 50.61a for the following eight years.

In the three years following the effective date of this rule, only one operating reactor is expected to be affected by the RT_{MAX-X} assessment and inservice testing and none would perform the flux reduction analyses nor the reactor vessel thermal annealing.

The expected annual reduction in burden during the next 3 years for licensees implementing the new section 50.61a is expected to be 477 hours (i.e., 840 - 363 hours).

The base burden cost has also changed from $156 to $238 per hour.

16. Publication for Statistical Use

The collected information is not published for statistical purposes.

17. Reason for Not Displaying the Expiration Date

The requirement is contained in a regulation. Amending the Code of Federal Regulations 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 1a[1]
ANNUAL RECORDKEEPING INFORMATION COLLECTION BURDENS, 10 CFR 50.61a
CURRENTLY OPERATING LICENSEES
RT_{MAX-X} ASSESSMENT

Section	Number of Record-keepers	Burden Hrs Per Record-keeper	Total Hr/Yr
§§ 50.61a(c), (c)(1), (c)(2) and (c)(3)	1	63.25	63.25
§ 50.61a(f)	1	63.25	63.25
§ 50.61a(d)(3)	0	0	0
TOTAL	1		126.5

TABLE 1b[1]
ANNUAL REPORTING INFORMATION COLLECTION BURDENS, 10 CFR 50.61a
CURRENTLY OPERATING LICENSEES
RT_{MAX-X} ASSESSMENT

Section	Number of Respondents	Responses Per Respondent	Total Responses/ yr	Burden Hrs/ Response	Total Burden hr/yr
§ 50.61a(d)(1)	1	0.333	0.333	81.75	27.5
§§ 50.61a(f)(4), (f)(6)(vi) and (f)(7)	1	0.333	0.333	81.75	27.5
§ 50.61a(d)(4)	0	0	0	0	0
§ 50.61a(d)(6)	0	0	0	0	0
TOTALS	1			163.5	55

[1] Burden based on an estimate of 1600 hours per licensee.

TABLE 2a[1]
ANNUAL RECORDKEEPING INFORMATION COLLECTION BURDENS, 10 CFR 50.61a
CURRENTLY OPERATING LICENSEES
ASME CODE INSERVICE ULTRASONIC TESING RESULTS

Section	Number of Record-keepers	Burden Hrs Per Record-keeper	Total Hr/Yr
§§ 50.61a(e), (e)(1), (e)(2), (e)(3) and (e)(4)	1	126.5	126.5
TOTAL	1		126.5

TABLE 2b[2]
ANNUAL REPORTING INFORMATION COLLECTION BURDENS, 10 CFR 50.61a
CURRENTLY OPERATING LICENSEES
ASME CODE INSERVICE ULTRASONIC TESING RESULTS

Section	Number of Respondents	Responses/ Respondent	Total Responses/ yr	Burden Hrs/ response	Total Burden hr/yr
§§ 50.61a(c), (c)(1), and (d)(2)	1	0.333	0.333	163.5	55
TOTALS	1			163.5	55

TABLE 3[2]
TOTAL INFORMATION COLLECTION BURDENS, 10 CFR 50.61a

Section	Number of Respondents	Number of Record-keepers	Total Burden hr/yr
Record-Keeping - RT_{MAX-X}		1	126.5
Record-Keeping - ASME		1	126.5
Reporting	1		55
Reporting	1		55
TOTALS	1	1	363

[2] Burden based on an estimate of 1600 hours per licensee.