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**INFORMATION COLLECTION REQUIREMENT**

DRAFT SUPPORTING STATEMENT  
FOR

INFORMATION COLLECTIONS CONTAINED IN  
THE APPENDIX H TO 10 CFR PART 50  
REACTOR VESSEL MATERIAL SURVEILLANCE PROGRAM  
PROPOSED RULE

(OMB Clearance No. 3150-0011)

REVISION

Description of the Information Collection

Appendix H, "Reactor Vessel Material Surveillance Program Requirements" (Appendix H), to Title 10 of the *Code of Federal Regulations* (10 CFR Part 50), "Domestic Licensing of Production and Utilization Facilities," requires light-water nuclear power reactor licensees to have a reactor vessel material surveillance program to monitor changes in the fracture toughness properties of the reactor vessel materials adjacent to the reactor core. Unless it can be shown that the end of design life neutron fluence is below certain criteria, the NRC requires licensees to implement a reactor vessel material surveillance program that periodically tests irradiated material specimens that are located in surveillance capsules in the reactor vessels. The program evaluates changes in material fracture toughness, and thereby assesses the integrity of the reactor vessel. Appendix H to 10 CFR Part 50 also specifies that the test results of each capsule withdrawn must be the subject of a summary technical report to be submitted to the NRC within 1 year of the capsule withdrawal, unless an extension is granted by the Director, Office of Nuclear Reactor Regulation.

The U.S. Nuclear Regulatory Commission (NRC or Commission) is proposing to amend its regulations in Appendix H to 10 CFR Part 50. The NRC proposes to change the information collection requirements associated with those regulations, as discussed in this supporting statement. The NRC expects a reduction in burden on respondents due a change in the periodicity for submitting the summary technical report as described below.

*Testing Specimens.* When Appendix H to 10 CFR Part 50 was established as a requirement in 1973 (38 FR 19012), limited information and data were available on the subject of reactor vessel embrittlement. Thus, Appendix H to 10 CFR Part 50 required the inclusion of a comprehensive collection of specimen types representing the reactor vessel beltline materials in each surveillance capsule. Since 1973, a significant number of surveillance capsules have been withdrawn and tested. Analyses of these results have led to an extensive understanding of embrittlement mechanisms. One outcome of this effort was that some specimen types were found to contribute to the characterization of reactor vessel embrittlement, while others did not. Therefore, the NRC determined that these latter types were unnecessary to meet the objectives of Appendix H to 10 CFR Part 50 and should no longer be required. This revision would have no effect on public health and safety.

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*Reporting Surveillance Test Results.* In 1983, Appendix H to 10 CFR Part 50 was again revised to require licensees to submit test results to the NRC within 1 year of the date of capsule withdrawal, unless an extension is granted by the Director, Office of Nuclear Reactor Regulation (48 FR 24008). As stated in the 1983 rulemaking, the primary purposes of the requirement are timely reporting of test results and notification of any problems. At that time, there was still a limited amount of data from irradiated materials from which to estimate embrittlement trends of reactor vessels at nuclear power plants; thus, making it crucial for timely reporting of test results.

Licensees that participate in an integrated surveillance program have found it burdensome to meet this 1-year requirement.<sup>1</sup> This occurs because an integrated surveillance program requires significant coordination among the multiple licensees participating in the program. A significant number of test specimens have been analyzed since 1983, resulting in an extensive understanding of embrittlement mechanisms. As a result, there is a reduced need for prompt reporting of the test results. Based on this finding, the NRC determined that the reporting requirement in Appendix H to 10 CFR Part 50 should be revised. Extending the periodicity for submitting the summary technical report from 1 year to 18 months would result in a reduction in information collection; with the objective of eliminating the need for licensees to prepare and submit extension requests, and the use of NRC resources to review the requests. This revision would have no effect on public health and safety.

In summary, the proposed rule would amend Appendix H to 10 CFR Part 50 to provide licensees with a nonmandatory burden reduction by (1) reducing the testing of certain specimens and (2) extending the periodicity for submitting the summary technical report from 1 year to 18 months. Because the proposed revisions would be nonmandatory, licensees can continue to follow the current testing and reporting requirements (i.e., licensees can continue to submit surveillance test results within 1 year of the date of capsule withdrawal). Existing and future licensee are expected to take advantage of the revised testing and reporting requirements to maximize the reduction in regulatory burden.

**A. JUSTIFICATION**

**1. Need For and Practical Utility of the Collection of Information**

Appendix H to 10 CFR Part 50 requires a material surveillance program for each reactor vessel to monitor the changes in the fracture toughness of the reactor vessel beltline materials resulting from their exposure to neutron irradiation and the thermal environment. The material data obtained from the reactor vessel material surveillance program are used by the fracture toughness analyses required by Appendix G, "Fracture Toughness Requirements" (Appendix G), to 10 CFR Part 50; § 50.61, "Fracture Toughness Requirements for Protection Against Pressurized

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<sup>1</sup> Appendix H to 10 CFR Part 50 permits the use of an integrated surveillance program (ISP) as an alternative to a plant-specific surveillance program. In an ISP, the representative materials chosen for surveillance of a reactor vessel are irradiated in one or more other reactor vessels that have similar design and operating features. The data obtained from these test specimens may then be used in the analysis of other plants participating in the program.

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Thermal Shock Events”; and § 50.61a, “Alternate Fracture Toughness Requirements for Protection Against Pressurized Thermal Shock Events.” Thus, the surveillance program for each reactor vessel (1) provides assurance that the plant’s operating limits (e.g., the pressure-temperature limits) continue to be met and (2) monitors changes in fracture toughness properties of the reactor vessel materials through the operating life of the plant to ensure reactor vessel integrity.

Appendix H, Section III.B.1 specifies that for each surveillance capsule withdrawal, the test procedures and reporting requirements must meet the requirements of American Society for Testing and Materials (ASTM) E 185-82, “Standard Practice for Conducting Surveillance Tests for Light-Water Cooled Nuclear Power Reactor Vessels,” to the extent practical for the configuration of the specimens in the capsule. The proposed rule would revise this section to allow the use of optional provisions for the testing of specimens contained in surveillance capsules as provided under new Appendix H, Section III.B.4.

Appendix H, Section III.B.4 would be added to provide optional provisions on ASTM E 185 through the 1982 edition, to allow for the adjustment of the number of specimens included or tested in the surveillance program. Licensees would no longer be required to include, test, or examine capsule specimens that do not provide beneficial surveillance data or support direct regulatory needs to assess and monitor the embrittlement of the reactor vessel. In summary, the proposed rule would:

- Specify that testing weld heat-affected zone specimens is optional.
- Specify that examining thermal monitors is optional
- Reduce the number of tensile specimens that require testing.
- Specify that testing correlation monitor material is optional.

Although the proposed revisions to Appendix H to 10 CFR Part 50 would reduce the number of specimens tested, this change would have no effect on public health and safety. In addition, it would only result in a nominal effect on the amount of data included in the records generated by the surveillance program. Thus, the proposed action would have an overall negligible effect on the cost of recordkeeping and the associated change in burden is not considered further in this supporting statement.

Appendix H, Section IV.A requires that each capsule withdrawal and the test results must be the subject of a summary technical report, submitted to the NRC within 1 year of the date of capsule withdrawal, unless an extension is granted by the Director, Office of Nuclear Reactor Regulation. The proposed rule would revise the periodicity for submitting the summary technical report from 1 year to 18 months. The NRC uses the results from the surveillance program to assess licensee submittals related to pressure-temperature limits in accordance with Appendix G to 10 CFR Part 50, and to assess pressurized water reactor licensee’s compliance with § 50.61 or § 50.61a. Increasing the periodicity for submitting the summary technical report by 6 months would not have an adverse effect on safety based on

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the conservative nature of the calculations used to assess embrittlement of the reactor vessel but would reduce burden on respondents by eliminating the need for an extension request.

The reporting burden on respondents for the information collection under Appendix H, Section IV.A is comprised of the efforts to prepare and submit the (1) summary technical report and (2) request an extension to the periodicity for submitting the summary technical report. Regarding the summary technical report, the burden reduction associated with changes in the number of specimens tested is considered nominal. Therefore, the NRC staff are not anticipating any change in the reporting burden for the summary technical report under Appendix H, Section IV.A. This component of the reporting burden is not considered further in this supporting statement. On the other hand, by extending the periodicity for submitting the summary technical report, respondents would no longer need to request extensions and this component of the reporting burden would be reduced.

2. Agency Use of Information

This information is needed to ensure that the reactor vessel does not exceed radiation embrittlement limits (i.e., Appendix G to 10 CFR Part 50, § 50.61, and § 50.61a) and meets the requirements of Criterion 31, "Fracture prevention of reactor coolant pressure boundary, and Criterion 32, "Inspection of reactor coolant pressure boundary," as specified in Appendix A, "General Design Criteria for Nuclear Power Plants," to 10 CFR Part 50.

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 50 percent of the 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. The information required by the NRC in reports or records concerning the operation of nuclear power plants does not duplicate other Federal information collection requirements. The NRC has in place an ongoing program to examine all information collections with the goal of eliminating duplication and/or unnecessary information collections.

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5. Effort to Reduce Small Business Burden

No small businesses are affected by this proposed rule.

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

If this information were not collected or collected less frequently, the NRC would be unable to ensure that reactor vessels had not exceeded the radiation embrittlement limits specified by Appendix G to 10 CFR Part 50 and could be subject to failure during operation.

7. Circumstances Which Justify Variation from OMB Guidelines

Appendix H to 10 CFR Part 50 does not specify a period for the retention of records pertaining to the design of the reactor vessel material surveillance program or test results of the surveillance capsules. However, the provisions in § 50.71, "Maintenance of Records, Making of Reports, paragraph (c), require that if a retention period is not specified by a regulation under 10 CFR Parts 50 or 52, the records must be retained until the Commission terminates the license. Also, Criterion 1, "Quality standards and records," in Appendix A, "General Design Criteria for Nuclear Power Plants," to 10 CFR Part 50, requires that "Appropriate records of the design, fabrication, erection, and testing of structures, systems, and components important to safety shall be maintained by or under the control of the nuclear power unit licensee throughout the life of the unit." Therefore, records generated under Appendix H to 10 CFR Part 50, must be maintained for the life of the plant in order to detect reactor vessel material deteriorations or flaws which might affect the health and safety of the public.

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 § 9.17(a) and § 2.390(b). However, no information normally considered confidential or proprietary is requested.

11. Justification for Sensitive Questions

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Not applicable.

**12. Estimated Burden and Burden Hour Cost**

This proposed rule would extend the period from 1 year following a capsule withdrawal to 18 months for a licensee to submit a summary technical report of the test results. The NRC estimates that this action would result in a reduction in the number of licensees requesting an extension to this reporting requirement. This is because licensees in general have only requested an additional 6 months to submit a summary technical report.

The NRC staff estimates that one extension request annually would be averted due to the change in the periodicity to submit the summary technical report from 1 year to 18 months. An extension request requires an estimated 78 hours of licensee effort. As a result, the burden reduction associated with this proposed rule would be 78 hours with a cost reduction of \$21,450 (78 hrs x \$275/hr).

The \$275 hourly rate used in the burden estimates is based on the NRC'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 final rule "Revision of Fee Schedules; Fee Recovery for Fiscal Year 2018," (83 FR 29622; June 25, 2018).

The NRC staff expects that the reduction in the number of fracture toughness specimens that are required to be tested in Section III.B.4 of the proposed rule will not result in a measurable change in the burden to the licensee.

**13. Estimate of Other Additional Costs**

There are no additional costs associated with this rulemaking. The additional costs under 10 CFR Part 50 remain unchanged at \$272,036.

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

As a result of the proposed action, the NRC would review one fewer extension request annually. The NRC estimates that reviewing and approving each extension request takes an estimated 60 hours per request. As a result, the NRC estimates that extending the periodicity for submitting the summary technical report from 1 year to 18 months would result in a savings of \$16,500 (60 hrs/extension request x 1 extension request x \$275/hr).

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

The proposed rule would decrease the burden for 10 CFR Part 50 from 3,731,355 to 3,731,277 hours and would decrease the responses from 43,678 to 43,677, a reduction of 78 hours and 1 response. The proposed rule would reduce burden by extending the periodicity for submitting the summary technical report under Appendix H, Section IV.A, to 10 CFR Part 50, from 1 year to 18 months. The

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objective of this action is to eliminate the need for licensees to prepare and submit extension requests, and the use of NRC resources to review these requests.

16. Publication for Statistical Use

Not applicable.

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

Not applicable.

B. COLLECTIONS OF INFORMATION EMPLOYING STATISTICAL METHODS

Not applicable.

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