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## **Environmental Assessment And Finding of No Significant Impact Supporting Final Rule: Non-Power Production or Utilization Facility License Renewal**

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**U.S. Nuclear Regulatory Commission  
Office of Nuclear Reactor Regulation**

**[Insert Date]**



UNITED STATES NUCLEAR REGULATORY COMMISSION  
FINAL ENVIRONMENTAL ASSESSMENT AND FINDING OF  
NO SIGNIFICANT IMPACT

## INTRODUCTION

The U.S. Nuclear Regulatory Commission (NRC) is considering issuance of a final rule (referred to throughout as the final rule) to amend its regulations that govern the license renewal process for certain production or utilization facilities. The NRC collectively refers to these facilities as non-power production or utilization facilities (NPUFs). This document presents the environmental assessment (EA) of the final rule.

Currently, 31 NPUFs are operating in the United States. In addition, in recent years, the NRC has issued two construction permits for new NPUFs. The final rule affects Class 103 facilities (reactors used for commercial or industrial purposes) and Class 104a and c facilities (reactors used for medical therapy and research and development activities), as defined in the Atomic Energy Act of 1954, as amended (AEA).

The final rule does the following:

- defines “non-power production or utilization facility” and revises the definitions for “non-power reactor,” “research reactor,” and “testing facility”
- eliminates license terms for facilities, other than testing facilities, licensed under Title 10 of the *Code of Federal Regulations* (10 CFR) Section 50.21(a) or (c)
- defines the license renewal process for testing facilities licensed under 10 CFR 50.21(c) and all NPUFs licensed under 10 CFR 50.22, “Class 103 licenses; for commercial and industrial facilities”
- requires all NPUF licensees to submit an updated final safety analysis report (FSAR) and subsequent FSAR updates to the NRC at intervals not to exceed 5 years

- amends the current timely renewal provision under 10 CFR 2.109, “Effect of timely renewal application,” allowing NPUFs licensed under 10 CFR 50.22 and testing facilities licensed under 10 CFR 50.21(c) or 10 CFR 50.22 to continue operating under an existing license past its expiration date if the facility submits a license renewal application at least 2 years before the current license expiration date
- provides an accident dose criterion of 1 Roentgen equivalent man (rem) (0.01 sieverts [Sv]) total effective dose equivalent (TEDE) for NPUFs other than testing facilities
- extends the applicability of 10 CFR 50.59, “Changes, tests and experiments,” to NPUFs regardless of their decommissioning status
- clarifies the requirements for NPUFs to meet the existing provisions of 10 CFR 51.45, “Environmental report”
- eliminates the requirement to submit financial qualification information with license renewal applications under 10 CFR 50.33(f)(2)

The NRC prepared a draft EA and finding of no significant impact (FONSI), which were noticed in the *Federal Register* (FR) on March 30, 2017, with a 75-day comment period (82 FR 15643; Agencywide Documents Access and Management System (ADAMS) Accession No. ML17068A035). The NRC did not receive any substantive public comments on the draft EA or draft FONSI. However, the NRC did receive comments on the proposed rule and considered them in the preparation of this final EA and FONSI. In accordance with 10 CFR 51.21, 51.30, and 51.33, the NRC has prepared this final EA and FONSI for the proposed action to issue a final rule to streamline the license renewal process for NPUFs. This EA is available at ADAMS Accession No. ML18031A004 and on [www.regulations.gov](http://www.regulations.gov) under Docket ID NRC-2011-0087.

Under the National Environmental Policy Act of 1969, as amended (NEPA), and the NRC’s regulations in Subpart A, “National Environmental Policy Act—Regulations Implementing Section 102(2),” of 10 CFR Part 51, “Environmental Protection Regulations for Domestic

Licensing and Related Regulatory Functions," the NRC staff has determined that this final rule will not be a major Federal action significantly affecting the quality of the human environment. Therefore, the NRC staff has determined that preparation of an environmental impact statement (EIS) is not required. Based on the following EA, the NRC staff is issuing a FONSI.

## ENVIRONMENTAL ASSESSMENT

### *Identification of the Proposed Action:*

The proposed action, if approved, is the NRC's issuance of a final rule to amend its regulations that govern the license renewal process for NPUFs. The NPUFs are relatively low-power facilities primarily used for research, training, and development. The final rule affects Class 103 facilities (for commercial or industrial purposes) and Class 104a or 104c facilities (for medical therapy and research and development activities), as defined in the AEA. As part of its oversight of NPUFs, the NRC administers an initial licensing process, which has included license terms defined under 10 CFR 50.51(a), followed by a license renewal process for licensees that seek to continue operating beyond their initial license term. In 2008, the NRC recognized a need to identify and implement efficiencies in the NPUF license renewal process to streamline the process while ensuring that adequate protection of public health and safety is maintained. Four issues primarily drove this need for improvement in the reliability and efficiency of the process: (1) historic NRC staffing and emergent issues, (2) limited licensee resources, (3) inconsistent existing license infrastructure, and (4) regulatory requirements and the broad scope of the renewal process.

To streamline the license renewal process for NPUFs, the NRC is taking the following actions:

- Establish a regulatory framework for the license renewal process for testing facilities licensed under 10 CFR 50.21(c) and NPUFs licensed under 10 CFR 50.22.
- Eliminate license terms for NPUFs, other than testing facilities, licensed under 10 CFR 50.21(a) or (c).

- Require all NPUF licensees to submit updated FSARs and subsequent FSAR updates at intervals not to exceed 5 years.
- Extend the timely renewal provision from 30 days to at least 2 years for testing facilities licensed under 10 CFR 50.21(c) and NPUFs licensed under 10 CFR 50.22.

To achieve these objectives, the final rule amends various sections of 10 CFR Parts 2, 50, and 51, as follows:

- **Section 2.109—“Effect of timely renewal application.”** Before the final rule, NPUF licensees were permitted to submit license renewal applications as late as 30 days before the expiration of the existing license. The final rule requires the submittal of license renewal applications at least 2 years before license expiration for testing facilities licensed under 10 CFR 50.21(c) and NPUFs licensed under 10 CFR 50.22.
- **Section 50.2—“Definitions.”** The final rule adds a definition for the term “non-power production or utilization facility” to mean a non-power reactor or other production or utilization facility, licensed under 10 CFR 50.21(a), 50.21(c), or 50.22, that is not a nuclear power reactor or a production facility as defined under paragraphs (1) and (2) of the definition of “production facility” in 10 CFR 50.2. In addition, the final rule revises the definitions for “non-power reactor,” “research reactor,” and “testing facility.” The revised definition of “testing facility” uses a postulated accident dose as a risk-informed approach to distinguish between a research reactor and testing facility, in place of reactor power level.
- **Section 50.33—“Contents of applications; general information.”** Non-power production or utilization facility license renewal applications (i.e., applications for renewal of licenses for facilities licensed under 10 CFR 50.22 and testing facilities) are no longer required to include the financial qualification information that is required in the initial license application.

- **Section 50.34—“Contents of applications; technical information.”** The final rule establishes an accident dose criterion for NPUFs, other than testing facilities subject to 10 CFR Part 100, “Reactor Site Criteria.” Before the final rule, the NRC used 10 CFR Part 20, “Standards for Protection against Radiation,” for NPUF accident dose criteria. Although the new accident dose criterion specified in 10 CFR 50.34(a)(1)(i) is higher than the current dose limit to members of the public in 10 CFR 20.1301(a)(1), the final accident dose criterion aligns with the early phase Protective Action Guides published by the U.S. Environmental Protection Agency and provides adequate protection of the public from unnecessary exposure to radiation.
- **Section 50.51—“Continuation of license.”** The final rule modifies 10 CFR 50.51(a) to include an exception to license terms for eligible NPUFs and adds 10 CFR 50.51(c) to eliminate license terms for eligible NPUFs.
- **Section 50.59—“Changes, tests, and experiments.”** The final rule modifies the applicability of this section to include NPUFs that have permanently ceased operations and no longer have fuel (e.g., they have returned their fuel to the U.S. Department of Energy).
- **Section 50.71—“Maintenance of records, making of reports.”** The final rule requires each NPUF to submit an updated FSAR and subsequent FSAR updates at intervals not to exceed 5 years. The final rule also makes conforming changes to 10 CFR 50.71(e)(3) and (e)(4) to explicitly identify the applicability of existing requirements to power reactors.
- **Section 50.82—“Termination of license.”** The final rule makes conforming changes to this section to modify existing termination of license requirements so that they refer to “non-power production or utilization facility” licensees and not to “non-power reactor” licensees, and makes conforming changes to reflect non-expiring license terms for qualifying NPUFs (i.e., currently operating research reactors).

- **Section 51.45—“Environmental report.”** The final rule modifies 10 CFR 51.45(a) to reference new 10 CFR 51.56, “Environmental report—non-power production or utilization facility,” described below.

The final rule adds a new section to 10 CFR Part 50—10 CFR 50.135, “Renewal of non-power production or utilization facility licenses issued under § 50.22 and testing facility licenses,” which establishes the license renewal process for testing facilities licensed under 10 CFR 50.21(c) and NPUFs licensed under 10 CFR 50.22. The new 10 CFR 50.135 does not change the current license renewal application process but provides the NRC with a regulatory framework specific to the NPUF license renewal process. A framework specific to this process did not exist before the final rule. The final rule also adds a new section to 10 CFR Part 51—10 CFR 51.56, which specifies the environmental reporting requirements for NPUF licensees and applicants. Similar to the new 10 CFR 50.135, this new section does not change current requirements, but instead clarifies the existing requirements for applicants to submit environmental reports. Environmental reports must include the information specified in 10 CFR 51.45, but applicants pursuing license renewal that have previously submitted an environmental report to the NRC will be permitted to reference, update, or supplement the information previously submitted to reflect any significant environmental change resulting from operational experience, changes in operations, or proposed decommissioning activities.

Where appropriate, the final rule adds, corrects, or standardizes terminology and definitions (e.g., replacing the term “test reactor” with “testing facility” in 10 CFR 171.15, “Annual fees: Reactor licenses and independent spent fuel storage licenses”). Additionally, the final rule standardizes the terminology in other parts of the regulations, where appropriate, to modify the intended scope of regulations citing “research and test reactors” to be “non-power production or utilization facilities,” such as in Appendix E, “Emergency Planning and Preparedness for Production and Utilization Facilities,” to 10 CFR Part 50, “Domestic Licensing of Production and Utilization Facilities.” Where appropriate, the final rule changes the terms “testing facility,” “research reactor,” and “non-power reactor” to reference only one definition in

the part where that definition is used most, unless the specific meaning is needed and different for a given part. These changes increase clarity by defining all NPUF-related terms where used in the regulations, while removing the possibility of unintended consequences of errors caused by variations in definitions.

**The Need for the Proposed Action:**

The purpose of the proposed action is to streamline the NPUF license renewal process through rulemaking and make it less burdensome for both license renewal applicants and the NRC staff, consistent with the minimum regulation standard established in Section 104 of the AEA, while continuing to protect public health and safety, promote the common defense and security, and protect the environment.

In addition, more specific dose criteria in accident analyses for NPUFs, other than those NPUFs subject to 10 CFR Part 100, are needed. Before January 1, 1994, the NRC had generally found acceptable accident doses that were less than 0.5 rem (0.005 Sv) whole body and 3 rem (0.03 Sv) thyroid for members of the public. On May 21, 1991, the NRC amended 10 CFR Part 20 to lower the dose limit to a member of the public to 0.1 rem (0.001 Sv) TEDE (56 FR 23360), with an implementation date of January 1, 1994. Since January 1, 1994, for applicants applying for an initial or renewed NPUF license, other than for testing facilities, the NRC has compared the results from the accident analyses submitted in initial or renewed license applications with the standards in 10 CFR Part 20.

The NRC determined that the public dose limit of 0.1 rem (0.001 Sv) TEDE is unduly restrictive to be applied as an accident dose criterion for NPUFs.<sup>1</sup> However, the NRC considers the accident dose criteria in 10 CFR Part 100 (25 rem (0.25 Sv) whole body and 300 rem (3 Sv) to the thyroid) applicable to accident consequences for power reactors and testing facilities, for which an accident has greater potential consequences, to be too high for NPUFs other than

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<sup>1</sup> The NRC Atomic Safety and Licensing Appeal Board stated that the standards in 10 CFR Part 20 are unduly restrictive as accident dose criteria for research reactors (Trustees of Columbia University in the City of New York, ALAB-50, 4 AEC 849, 854–855 (May 18, 1972)).

testing facilities. For these reasons, the final rule modifies 10 CFR 50.34 to add an accident dose criterion of 1 rem (0.01 Sv) TEDE for NPUFs not subject to 10 CFR Part 100.

The final rule revises the definition of “testing facility” to use a postulated accident dose, in place of reactor power level, as a risk-informed approach to distinguish between a research reactor and testing facility. The NRC received a public comment from the National Institute of Standards and Technology on the definition of “testing facility” in 10 CFR 50.2 and “research reactor” in 10 CFR 171.11(b)(2). The commenter recommended that the NRC revise the definitions of “testing facility” and “research reactor” to “remove the arbitrary 10MW(t) threshold, and apply instead a risk-based approach to its regulation of a testing facility.” Further, the commenter stated, “This risk is best quantified by accident analyses performed under a licensing safety analysis” and linked the recommended definition to the NRC’s accident dose criterion of 1 rem (0.01 Sv) in the proposed rule.

The technical basis associated with the 10-megawatt (thermal) (MW(t)) threshold, while generally based on safety significance, is not documented. Similarly, the technical basis for the 1-MW(t) threshold under the current definition for “testing facility” is also not documented. These prescriptive power thresholds do not account for the safety features that are engineered into the facility design and those barriers that must be breached during an accident before a release of radioactive material to the environment can occur. Therefore, these thresholds do not accurately represent the risk associated with a particular facility. For these reasons, the use of a postulated accident dose is a more risk-informed, performance-based approach than using the power level of the reactor for distinguishing between types of NPUFs, such as research reactors and testing facilities. As a result of this public comment, the NRC is revising the definitions of “testing facility” and “research reactor” to reflect this risk-informed approach.

*Environmental Impacts of the Proposed Action:*

The NRC evaluated the potential environmental and radiological impacts unique to each site for currently licensed NPUFs at the time of initial licensing and again for the NPUFs that have undergone license renewal, considering nearby facilities and residences, site safety evaluations, technical specifications of the reactors, and exposure limits. Through this process, the NRC staff determined that the continued operation of existing licensed NPUFs does not pose a significant environmental impact. This proposed action to issue a final rule does not alter the characteristics of any particular NPUF site, does not authorize or directly result in operational changes at any NPUF site, and therefore does not change the findings of previously conducted EAs and associated FONSIs or EISs. The final rule does not increase the likelihood of accidents or increase their impacts, in the very unlikely event that an accident does occur.

The final rule eliminates the license renewal process for NPUFs licensed under 10 CFR 50.21(a) or (c), other than testing facilities. As a consequence, the final rule eliminates the opportunity for the NRC to conduct an EA at the time of license renewal for NPUFs licensed under 10 CFR 50.21(a) or (c), other than testing facilities, as there would be no agency action and, hence, no requirement to conduct an environmental review. The final rule does not change the license renewal process for NPUFs licensed under 10 CFR 50.22 or testing facilities.<sup>2</sup> The final rule requires an updated FSAR and subsequent FSAR update submissions, which will give the NRC updated information about the safety conditions of each facility. The FSAR submissions enhance the information currently available to the NRC and may help parties identify safety issues sooner, thereby decreasing the potential for environmental impacts.

This EA considers the potential environmental impacts associated with the final rule changes affecting: (1) NPUFs licensed under 10 CFR 50.22 and testing facilities and (2) NPUFs licensed under 10 CFR 50.21(a) or (c) other than testing facilities.

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<sup>2</sup> While the AEA does not establish a fixed license term for testing facilities, these facilities are currently subject to additional requirements because of their higher power levels (e.g., review by the Advisory Committee on Reactor Safeguards, preparation of EISs). Therefore, the NRC is continuing license renewal for testing facilities because of their higher environmental risk compared to other NPUFs licensed under 10 CFR 50.21(a) or (c).

**1. Non-power production or utilization facilities licensed under 10 CFR 50.22**

**(Class 103 NPUFs) and testing facilities licensed under 10 CFR 50.21(c) (certain**

**Class 104(c) NPUFs:** These NPUFs experience no changes in the license renewal process. As a result, there is no change in environmental impacts from the final rule. The final rule does not eliminate the license renewal process for these facilities, and therefore, the NRC will still complete either an EA or an EIS before determining whether to approve a license renewal application for this type of facility. As described in the final rule, applicants for new licenses or license renewals must submit certain information to the NRC in the form of an environmental report or a supplement to an environmental report as specified in the new 10 CFR 51.56.

**2. Facilities licensed under 10 CFR 50.21(a) or (c) (Class 104 NPUFs), other than**

**testing facilities:** Under the final rule, these facilities are eligible for non-expiring license terms, and therefore, the NRC will perform an environmental review, such as an EA, only at the time of initial licensing (because the environmental review has already been performed for existing licensees). After initial licensing, the NRC will perform an environmental review for these NPUFs only upon submittal of an application for a license amendment or a request for an exemption. The NRC will prepare an EA as required by 10 CFR 51.21, "Criteria for and identification of licensing and regulatory actions requiring environmental assessments," and in accordance with the requirements of 10 CFR 51.30, "Environmental assessment," or the staff will document its determination that the requested change qualifies for a categorical exclusion under 10 CFR 51.22, "Criterion for categorical exclusion; identification of licensing and regulatory actions eligible for categorical exclusion or otherwise not requiring environmental review." As discussed in this EA, the NRC staff has concluded that the indefinite extension of the license term does not pose significant environmental impacts because: (1) the consequences of

analyzed accidents at currently licensed NPUFs are not significant and (2) aging-related issues do not pose a potential for environmental impacts at currently licensed NPUFs.

The NRC staff based the analysis and conclusions discussed below on Appendix 12.1, "Environmental Considerations Regarding the Licensing of Research Reactors and Critical Facilities," to NUREG-1537, "Guidelines for Preparing and Reviewing Applications for the Licensing of Non-Power Reactors," Part 2, "Standard Review Plan and Acceptance Criteria," issued February 1996 (ADAMS Accession No. ML042430048), which documents the environmental considerations associated with licensing low-power NPUFs. The EAs that have been performed since issuance of these environmental considerations in 1996 indicate that there is no new information on environmental findings for operating NPUFs.

Consideration of Potential Environmental and Accident Consequences.

Compared to power reactors, the NPUFs licensed under 10 CFR 50.21(a) or (c), other than testing facilities, operate at low power levels (as identified in Table 1), temperatures, and pressures, and have a small inventory of fission products in the fuel. Therefore, they present a lower potential radiological risk to the environment and the public.

**Table 1. List of Non-Power Production or Utilization Facilities with Operating Licenses under 10 CFR 50.21(a) or (c), Other Than Testing Facilities**

Facility Name	Power Level kW(t)	Last License Renewal or Issuance Date
Aerotest	250	7/2/1965
Armed Forces Radiobiology Research Institute	1,100	11/30/2016
Dow Chemical Company	300	6/18/2014
GE Hitachi	100	4/21/2001
Idaho State University	0.005	8/14/2006
Kansas State University	1,250	3/13/2008
Massachusetts Institute of Technology	6,000	11/1/2010
Missouri University of Science and Technology	200	3/30/2009

<b>Facility Name</b>	<b>Power Level kW(t)</b>	<b>Last License Renewal or Issuance Date</b>
North Carolina State University	1,000	4/30/1997
Ohio State University	500	6/18/2008
Oregon State University	1,100	9/10/2008
Pennsylvania State University	1,000	11/20/2009
Purdue University	12	10/31/2016
Reed College	250	4/25/2012
Rensselaer Polytechnic Institute	0.1	6/27/2011
Rhode Island Atomic Energy Commission	2,000	1/5/2017
Texas A&M University (AGN)	0.005	8/26/1957
Texas A&M University (TRIGA)	1,000	10/1/2015
U.S. Geological Survey	1,000	2/24/1969
University of California/Davis	2,300	8/13/1998
University of California/Irvine	250	7/8/2016
University of Florida	100	3/31/2017
University of Maryland	250	12/22/2016
University of Massachusetts/Lowell	1,000	11/21/1985
University of Missouri/Columbia	10,000	1/4/2017
University of New Mexico	0.005	2/18/2011
University of Texas	1,100	1/17/1992
University of Utah	100	10/30/2011
University of Wisconsin	1,000	3/25/2011
Washington State University	1,000	9/30/2011

Of the 30 currently licensed NPUFs eligible for non-expiring licenses, 26<sup>3</sup> have cores that are submerged in tanks or pools of water that provide sufficient passive decay heat removal to prevent overheating of the fuel. Of these 26 licensed facilities, 24 are not required to have emergency core cooling systems (ECCSs) because analysis has shown that air cooling is sufficient to remove decay heat if the water is not present. These NPUFs do not generate enough decay heat, even after extended operation at maximum licensed power, to be a risk for overheating, failure of a fission product barrier,

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<sup>3</sup> The three Aerojet-General Nucleonics (AGN) reactors (University of New Mexico (Docket No. 50-252), Idaho State University (Docket No. 50-284), and Texas A&M University (Docket No. 50-59)), each rated at 5 watts, and the University of Florida Argonaut reactor (Docket No. 50-83), rated at 100 kilowatts, are not considered tank or pool reactors.

or posing a threat to public health and safety, even in a loss-of-coolant accident where water levels drop below the core. Additionally, many of the facilities monitor for leaks using routine inspections, tracking and trending water inventory, and performing surveillance on installed pool-level instrumentation and sensors. Licensees perform analyses for radioisotope identification of primary and, if applicable, secondary coolant by sampling the water periodically. Many facilities sample weekly for gross radioactive material content, which is also used to establish trends to quickly identify fuel or heat exchanger failure. Most of these licensees analyze, in their FSARs, pool and heat exchanger failures and the potential consequences for the safety of the reactor, workers, and public. In general, the radioisotope concentrations in pool or tank water at NPUFs are within the effluent concentration limits specified in 10 CFR Part 20, Appendix B, "Annual Limits on Intake (ALIs) and Derived Air Concentrations (DACs) of Radionuclides for Occupational Exposure; Effluent Concentrations; Concentrations for Release to Sewerage," and therefore are not radiologically significant.

Only two of the NPUFs eligible for non-expiring licenses are required by their safety analyses to have an ECCS. For these NPUFs,<sup>4</sup> the ECCS is needed only to direct flow into the top of the tank or pool to provide cooling for a limited time after reactor shutdown. This period of time depends on the recent operational history of the reactor, which determines the decay heat present at reactor shutdown. After this relatively brief time, air cooling is adequate to remove decay heat even without the ECCS. Additionally, required surveillance and testing of the ECCS at these facilities help ensure the performance of the system. Operation of the facility is not permitted if the ECCS has not been verified to be operational before reactor startup or if the system is deemed inoperable during reactor operation.

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<sup>4</sup> The two facilities are Massachusetts Institute of Technology (Docket No. 50-20) and the University of California/Davis (Docket No. 50-607).

Because of the inherent low risk posed by these NPUFs, the NRC staff concludes that the final rule's elimination of license terms for NPUFs licensed under 10 CFR 50.21(a) or (c), other than testing facilities, does not increase the potential for environmental impacts.

Aging. NPUFs licensed under 10 CFR 50.21(a) or (c), other than testing facilities, are simple in their design and operation, and therefore, the scope of aging-related concerns is limited. The NRC staff has found no significant aging issues that need evaluation at the time of license renewal because the NRC currently imposes aging-related surveillance requirements on NPUFs via technical specifications, as needed. Aging-related issues are specifically addressed in the standard review plan and acceptance criteria used for evaluating license renewal applications (i.e., NUREG-1537, Part 2). Part 1, "Format and Content," issued February 1996 (ADAMS Accession No. ML042430055), and Part 2 of NUREG-1537 document lessons learned and known aging issues from prior reviews. Since NUREG-1537 was published in 1996, NRC reviews and assessments have not revealed any additional issues or need to update the NUREG. Specifically, based on operating experience over the past 60 years and review of license renewal applications over the past 40 years, and as documented in NUREG-1537, Parts 1 and 2, the NRC has determined that for NPUFs, two main areas related to aging could need surveillance because of potential safety concerns: (1) fuel cladding and (2) instrumentation and control features.

With regard to fuel cladding, the NRC currently requires NPUFs to perform periodic fuel inspections. Through years of operational experience, the NRC staff has found that aging-related fuel failures either do not occur or do not release significant amounts of fission products and are quickly detected by existing monitoring systems and surveillances. If fuel failures are detected, licensees are able to take the facility out of service without delay and remove any failed assemblies from service.

With regard to instrumentation and control, the NRC staff has found that failures in this area result in automatic facility shutdown. Failures reveal themselves to the licensee and do not prevent safe shutdown. Over the past 60 years of operation of these facilities, the potential occurrence of age-related degradation has been successfully mitigated through inspection, surveillance, monitoring, trending, recordkeeping, replacement, and refurbishment. In addition, licensees are required to report preventive and corrective maintenance activities in their annual reports, which are reviewed by the NRC. This allows the NRC to identify new aging issues if they occur. Therefore, the NRC staff concludes that existing requirements and facility design and operational features will address concerns over aging-related issues during a non-expiring license term.

Because the final rule eliminates license renewal for NPUFs licensed under 10 CFR 50.21(a) or (c), other than testing facilities, the opportunity for the NRC to conduct an environmental review under NEPA at the time of license renewal is eliminated for those facilities. However, if a licensee submits a license amendment or exemption request, the NRC is able to invoke 10 CFR 51.41, "Requirement to submit environmental information," and the NRC will perform an environmental review before acting on the licensee's request.

The final rule does not change the requirements for environmental reviews of new license applications, and therefore, any application for a new or renewed NPUF license will undergo a thorough NEPA environmental review culminating in the preparation of an EA or EIS, as appropriate. However, the final rule adds 10 CFR 51.56 to provide a regulatory basis for the NRC to require environmental information from NPUF applicants. Specifically, the section clarifies the existing requirements to meet the provisions of 10 CFR 51.45 for applicants requesting a license to construct or operate an NPUF or requesting renewal of an existing license (for testing facilities and NPUFs

licensed under 10 CFR 50.22). This change improves consistency throughout 10 CFR Part 51 with respect to environmental report submissions required for applicants seeking licensing actions. The inclusion of clear and consistent regulatory requirements for applicants will help to ensure that the NRC effectively and efficiently meets its environmental review requirements consistent with NEPA and the NRC's regulations for implementing NEPA as codified in 10 CFR Part 51.

In summary, the NRC staff concludes that there is no significant environmental impact associated with implementation of the final rule for the following reasons:

- The final requirements to eliminate license terms for NPUFs, other than testing facilities, licensed under 10 CFR 50.21(a) or (c) result in no additional radiological or non-radiological impacts because of the minimal accident consequences of these facilities, existing surveillance and reporting by licensees, and NRC oversight.
- The implementation of the final rule does not affect the NEPA environmental review or analysis requirements for new facilities and facilities applying for and still subject to license renewal.
- The final rule's accident dose criterion applicable to NPUFs, other than testing facilities subject to 10 CFR Part 100, results in no additional radiological or non-radiological impacts because the new accident dose criterion specified in 10 CFR 50.34(a)(1)(i) aligns with the early phase Protective Action Guides published by the U.S.

Environmental Protection Agency and provides reasonable assurance of adequate protection of the public from unnecessary exposure to radiation.

The principal effect of the final rule is to streamline the NPUF license renewal process and to require more frequent updates to FSARs. The final rule also establishes an accident dose criterion for NPUFs and clarifies existing requirements consistent with the rulemaking objectives discussed previously. As none of the revisions affects current

occupational exposure requirements, the NRC staff concludes that this action has no incremental impact on occupational exposure.

The final rule neither significantly increases the probability or consequences of accidents nor results in changes in the types of effluents that may be released off site. As a result, there are no changes in occupational or public radiation exposure.

Given that the final rule does not involve any change in the operation of any NPUFs, and considering the minimal heat load they dissipate to the environment, the NRC staff concludes that the final rule does not have a significant non-radiological impact on the environment.

Accordingly, the NRC staff concludes that there is no significant environmental impact associated with the final rule.

Alternatives to the Proposed Action:

The NRC considered four options to fulfill the need for action: a no-action alternative (Option 1), two rulemaking alternatives (Options 2 and 3), and a non-rulemaking alternative (Option 4). The NRC staff recommends Option 3.

The no-action alternative would not change the existing license terms or renewal process as described in current regulations and guidance and, therefore, would not incorporate any lessons learned from previous license renewal application reviews and would fail to satisfy the NRC's objectives and Commission direction in Staff Requirements Memorandum (SRM) SRM-M090811, "Briefing on Research and Test Reactor (RTR) Challenges," dated August 2009, to "establish a more efficient, effective, and focused regulatory framework."

Under Option 2, the NRC would undertake a rulemaking to require FSAR updates and to revise the timely renewal provision. This option would require a licensee to submit an updated FSAR and subsequent FSAR updates at an interval not to exceed 5 years to ensure that a licensee's licensing basis is kept current. Option 2 would also extend the timely renewal provision to at least 2 years ahead of license expiration for facilities licensed under

10 CFR 50.22 and testing facilities licensed under 10 CFR 50.21(c), so that the NRC has adequate time to conduct a thorough acceptance review of the license renewal application. The current regulatory framework of 30 days is not sufficient for the NRC to complete a comprehensive acceptance review. Additional time would streamline the overall license renewal process by addressing the adequacy of an application before addressing the technical content of the application. However, Option 2 would maintain the current license renewal process for all NPUFs, which would continue to impose significant burden on licensees and the NRC.

Option 3 is a rulemaking to require FSAR updates; revise the timely renewal provision for testing facilities and NPUFs licensed under 10 CFR 50.22; and eliminate license terms for NPUFs, other than testing facilities, licensed under 10 CFR 50.21(a) or (c). All NPUFs would be required to submit FSAR updates at intervals not to exceed 5 years. Option 3 is expected to reduce the burden on NPUFs, other than testing facilities, licensed under 10 CFR 50.21(a) or (c) by foregoing the license renewal process. Option 3 would address all of the NRC's regulatory objectives by streamlining the license renewal process.

Non-rulemaking alternatives, such as issuing a new regulatory guide and updating NUREG-1537, were considered under Option 4. However, non-rulemaking approaches would not be responsive to the Commission's direction to "establish a more efficient, effective, and focused regulatory framework." As a result, non-rulemaking alternatives cannot achieve the NRC's objectives.

**Alternative Use of Resources:**

The final rule does not involve the use of any resources not previously considered by the NRC in past environmental documents, statements for issuance of operating licenses, or license

renewals for the facilities that will be affected by this final rule. The NRC staff has determined that there are no irreversible commitments of resources associated with the final rule.

*Agencies and Persons Consulted:*

The NRC staff developed the final rule and this EA. The NRC will provide a copy of the final rule, including the EA, to designated liaison officials for each State. No other agencies will be consulted.

FINAL FINDING OF NO SIGNIFICANT IMPACT

The NRC prepared this final EA and FONSI as part of its review of the final rule. On the basis of this final EA, the NRC staff finds that there are no significant environmental impacts from implementation of the final rule because the final rule does not entail any changes in the operation of any NPUFs. This finding is based on NPUF operating experience over the past 60 years and the NRC's experience reviewing license renewal applications over the past 40 years. Therefore, the NRC staff concludes that the final rule does not have a significant effect on the quality of the human environment and that the preparation of an EIS is not warranted. Accordingly, the NRC staff determined that this FONSI is appropriate.

Documents may be examined and/or copied for a fee, at the NRC's Public Document Room, located at One White Flint North, 11555 Rockville Pike (first floor), Rockville, MD 20852. You may obtain publicly available documents online in the ADAMS Public Documents collection at <http://www.nrc.gov/reading-rm/adams.html>.

Dated at Rockville, Maryland, this XXxx day of Month, Year.

For the Nuclear Regulatory Commission.

Louise Lund, Director  
Division of Licensing Projects  
Office of Nuclear Reactor Regulation

Pre-decisional