

**POLICY ISSUE
NOTATION VOTE**

January 31, 2014

SECY-14-0016

FOR: The Commissioners

FROM: Mark A. Satorius
Executive Director for Operations

SUBJECT: ONGOING STAFF ACTIVITIES TO ASSESS REGULATORY
CONSIDERATIONS FOR POWER REACTOR SUBSEQUENT
LICENSE RENEWAL

PURPOSE:

The purpose of this paper is to inform the Commission of ongoing staff activities to prepare for the anticipated receipt and review of subsequent license renewal applications that, if approved, could extend operation of power reactors beyond 60 years. The paper also requests Commission approval to initiate the rulemaking process to update the regulatory framework in Title 10 of the *Code of Federal Regulations* (10 CFR) Part 54, "Requirements for Renewal of Operating Licenses for Nuclear Power Plants," to prepare for subsequent power reactor license renewal applications. This paper does not address any new commitments or specific rulemaking proposals.

SUMMARY:

The staff has begun a regulatory framework and technical justification review of the operating power reactor license renewal process to be prepared for anticipated subsequent license renewal applications that will request approval to renew a facility's operating license beyond 60 years. The staff believes the license renewal process and regulations are sound and can support subsequent license renewal; however, the staff has identified several areas that should be modified in the existing rule to allow for a more predictable review process. These changes are presented in this paper in four options. Option 1 proposes no changes to the existing

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regulations. Option 2 recommends minor editorial changes to 10 CFR Part 54 to add alternate fracture toughness requirements and clarify how existing recordkeeping requirements apply to newly identified systems, structures, and components. Option 3, which includes Option 2, recommends an expansion in scope of 10 CFR Part 54 to include equipment associated with 10 CFR 50.54(hh)(2) and adds a provision to address timely renewal so that a licensee must implement aging-management activities before the expiration of its current license. Option 4, which includes Options 2 and 3, recommends additional considerations to address lessons learned from the first license renewal reviews. Specifically, this option involves the exploration of potential requirements to assess the timing of submittal of applications for subsequent license renewal and the effectiveness of aging-management activities and operating experience. This option also discusses how the assessment of issues related to the Japan Lessons-Learned Project Directorate (JLD) will be coordinated with reviews of subsequent license renewal applications.

The staff recommends Option 4, which also includes the implementation of Options 2 and 3, to enhance the agency's readiness to conduct subsequent license renewal reviews effectively and efficiently. This paper does not include an expansive discussion of the requirement proposed in Option 4, since such details would be developed as part of the public rulemaking process. Commission approval of the staff's recommendations would allow the staff to proceed with such effort.

During the development of this paper, a non-concurrence was filed to request an option that requires applicants to upgrade their plants' probabilistic risk assessment (PRA) as part of the applications for subsequent license renewal. As discussed in a later section of this paper, the staff ultimately did not include the option to require PRA updates because the issue was not shown to be uniquely relevant to operation during the renewal term as explained in the 1995 statements of consideration (SOC) for 10 CFR Part 54. In addition, as discussed in the 1995 SOC, the existing rule allows for license renewal applicants to risk-inform their aging-management activities and is consistent with the Commission Policy Statement on use of PRA.

BACKGROUND:

The staff has renewed 73 reactor operating licenses to date, with another 18 units currently under review. The first license renewal application was submitted to the U.S. Nuclear Regulatory Commission (NRC) in April 1998, and the last application for a first renewal is scheduled to be submitted in 2018. Of those units with a renewed license, as of December 31, 2013, 20 units have entered the period of extended operation (i.e., for operation from 40 to 60 years). The existing license renewal review process follows the guidance established in NUREG-1800, "Standard Review Plan for Review of License Renewal Applications for Nuclear Power Plants" (SRP-LR) (Agencywide Documents Access and Management System (ADAMS) Accession No. ML012070413). The SRP-LR references NUREG-1801, "Generic Aging Lessons Learned (GALL) Report" (ADAMS Accession No. ML012060392) which documents the staff's generic basis for determining the adequacy of the existing aging-management programs (AMPs), the existing AMPs that should be augmented for license renewal, and the areas that require new AMPs, along with information related to the results of aging-management reviews and time-limited aging analyses (TLAAs). The GALL Report and the SRP-LR have been revised on two occasions based on the experience gained by the staff through the review of license renewal applications, and may be further revised as needed in the future.

The staff also conducts an environmental review during the license renewal review process following the guidance in NUREG-1437, "Generic Environmental Impact Statement for License Renewal of Nuclear Plants" (hereinafter referred to as "GEIS," ADAMS Accession Nos. ML13106A241, ML13106A242, and ML13106A244). The GEIS describes the most common environmental impacts to nuclear power facilities and allows applicants and the NRC to focus on important environmental issues specific to each site pursuing license renewal. The staff revised the GEIS in June 2013, and believes that the update is adequate for a future subsequent license renewal application.

Based on discussions with the nuclear industry, the staff believes the first application for subsequent license renewal may be submitted as early as 2017. To support such an application, the nuclear industry must provide the necessary technical basis, along with the associated research and engineering activities, to justify long-term operation. The staff is currently performing confirmatory reviews of relevant technical issues for long-term operation and will summarize these efforts in several research reports. The staff has also evaluated the experience gained during the reviews of applications for the initial license renewal period to propose modifications to the existing regulatory infrastructure in order to enhance the efficiency and effectiveness of future reviews of applications for subsequent license renewal, as described below. Additional information on the background and history of license renewal, including the basis of existing requirements and the use of generic guidance, along with a discussion of the technical considerations for subsequent license renewal, can be found in [Enclosure 1](#).

DISCUSSION:

To prepare for the anticipated subsequent license renewal applications, the staff has been reviewing the existing rule and associated guidance to determine the appropriate subsequent license renewal framework. This process has included an extensive review of the technical issues associated with subsequent license renewal, as well as the current license renewal regulatory framework. Implementation of the subsequent license renewal framework will include developing the subsequent license renewal rule changes and drafting the guidance for subsequent license renewal, including the following:

- updates or revisions to NUREG-1801, "GALL Report";
- NUREG-1800, "SRP-LR"; and
- regulatory guides, inspection procedures, and any necessary guidance associated with any approved rule changes.

In fiscal year (FY) 2015, the staff will publish for public comment a draft of the GALL Report and the SRP-LR for subsequent license renewal. Following the public comment period, the final guidance documents, along with the associated technical bases for the changes, will be published in FY 2016 to support an anticipated application in 2017. In addition to the necessary guidance updates, which are needed whether or not the rule is changed and regardless of the option selected by the Commission, the staff has identified several areas where rule changes are warranted, as highlighted below. To allow adequate public involvement and to be prepared for an application in 2017, the staff is requesting Commission approval to begin the rulemaking process in the near term. Both the technical guidance and the proposed regulation changes will

require public interaction and agency resources. Additional details on the planned staff effort and the efforts completed to date can be found in [Enclosure 1](#).

Regulatory Framework Considerations for Subsequent License Renewal

In anticipation of subsequent license renewal applications, the staff undertook a comprehensive review of the bases and assumptions for the original (see *Federal Register* (FR) notice 56 FR 64943; December 13, 1991) and amended (60 FR 22461; May 8, 1995) license renewal rule in 10 CFR Part 54. Although the staff's review was initiated in preparation for anticipated subsequent license renewal applications, the staff used the opportunity to conduct a review of the entire license renewal process, building on lessons learned and experience gained during the first license renewal period. The documents reviewed included the SOC for the 1991 rule and the 1995 amendment, the regulatory analyses, the analyses of public comments, previously issued Commission papers, and staff requirements memoranda. The staff also assessed the lessons learned from the review and implementation of AMPs. Categories of items considered during this review included, but were not limited to, the following:

- the need to verify whether certain design input parameters have changed over time and what impact these changes might have on the current licensing basis (CLB);
- use of PRA to risk-inform scoping and management of aging effects;
- the scope of the rule and whether or not aging-management should continue to focus on "long-lived," passive components;
- insights from international periodic safety reviews (PSRs);
- management of license renewal programs during the period of extended operation (i.e., operation beyond 40 years);
- the duration of the renewed license and the timing of application submittals; and
- necessary guidance updates.

The staff held public meetings in May and November of 2012, to solicit comments for consideration on the regulatory framework. These comments have been considered in the formulation of this paper and will continue to be considered during the ongoing review. The staff will continue to solicit feedback from external stakeholders throughout the staff's preparation for subsequent license renewal.

Based on its initial review, the staff identified regulatory items that warrant additional analysis and further consideration for rulemaking. The items requiring additional review address unique regulatory challenges to plant operation beyond 60 years. Many of the items from the staff's initial review were not further considered for proposed rule changes because there are existing processes in place to address them outside of license renewal. A detailed discussion of the options for updating the 10 CFR Part 54 regulatory safety framework can be found in [Enclosure 2](#).

Options for Updating the 10 CFR Part 54 Regulatory Safety Framework

License renewal relies on the existing regulatory process to ensure adequate protection of public health and safety, and specifically focuses only on issues that are uniquely relevant to public health and safety during the period of extended operation. Based on its review of the regulatory safety framework, the staff believes that the current and subsequent license renewal philosophy is sound; however, the staff identified a few areas where rulemaking should be considered. These areas are consistent with the underlying principles of license renewal, as discussed in the 1995 SOC. In this proposed rulemaking, the staff recommends only additional requirements that address issues uniquely relevant to license renewal; issues that do not meet these criteria can be addressed through the existing regulatory processes. For example, during its review the staff considered such changes as requiring PRA updates, mandating replacement of passive components, and reviewing emergency planning for subsequent renewal. However, in keeping with the underlying principles of license renewal discussed above, the staff does not recommend such changes to the rule in this paper because they are not uniquely relevant to the period of extended operation and the existing regulatory process can adequately address them.

The staff recommends rulemaking for subsequent license renewal to enhance the agency's readiness to review subsequent license renewal applications effectively and efficiently. The changes recommended involve clarifying the intent of the rule with minor editorial changes; updating the rule to expand the scope of the regulations; addressing timely renewal; and considering new requirements specific to subsequent license renewal. Specifically, the development of the regulatory framework for the subsequent license renewal rulemaking will require the licensee to maintain the effectiveness of aging-management activities, define the timing of subsequent license renewal activities, and verify whether certain design input parameters in the CLB have changed over time. The details of the regulatory framework in these areas for the subsequent license renewal will be developed during the public rulemaking process.

Several options for proceeding with rulemaking, along with the advantages and disadvantages of each option, are summarized below. A detailed discussion of Options 2 through 4 is provided in [Enclosure 2](#). The staff does not recommend updating the environmental regulatory framework under 10 CFR Part 51, "Environmental Protection Regulations for Domestic Licensing and Related Regulatory Function," because environmental issues can be adequately addressed by the existing GEIS and through future GEIS revisions.

Option 1: No change to the existing 10 CFR Part 54 regulations

The existing license renewal rule allows a previously renewed operating license to be subsequently renewed with no additional requirements imposed and no limit on the number of times a license can be subsequently renewed provided that it is justified and that safety is ensured. Therefore, the existing regulation could continue to be used for subsequent renewals without modification.

The NRC staff has relicensed 73 reactor operating licenses and has developed guidance for review under the existing license renewal rule. In addition, stakeholders from industry and the staff participate in the existing process and understand it well. The advantage of this option is that it provides for the least change in the current process. Technical issues related to subsequent renewal would be addressed through revisions of guidance such as the GALL

Report and the SRP-LR. If an applicant cannot successfully address technical issues and demonstrate that a plant can be operated safely for an additional 20 years, the NRC will not renew the license. In addition, within the current process, the NRC already has the flexibility to grant a renewed license for any amount of time less than 20 years if the staff believes that is appropriate. This option would have the smallest impact on the resources needed to enhance infrastructure for subsequent license renewal.

The disadvantage of Option 1 is that it provides a less efficient regulatory framework for the review of subsequent license renewal applications. Modifying the framework for subsequent license renewal will enhance regulatory clarity. If the current license renewal rules are not changed, certain issues would have to be addressed on a case-by-case basis when they are identified during the subsequent license renewal review. This would reduce the efficiency and stability of the subsequent license renewal process and will affect the NRC staff review resources and schedules. In addition, a less clear regulatory framework is likely to require additional oversight to ensure that aging-management activities are effectively accomplished.

Option 2: Minor clarifications to existing 10 CFR Part 54 regulations for current and subsequent renewals

The staff's review of 10 CFR Part 54 noted two areas where clarifications to existing requirements could be pursued. This option includes an editorial update to the scope of 10 CFR 54.4(a)(3) to add 10 CFR 50.61a when referring to fracture toughness requirements for protection against pressurized thermal shock events. This option also provides clarification of the intended purpose of 10 CFR 54.37(b) regarding how the additional records and recordkeeping requirements apply to newly identified SSCs. A detailed discussion of Option 2 can be found in [Enclosure 2](#).

The advantage of Option 2 is that it makes the rule more consistent with existing regulatory guidance and current practices and enhances the clarity and transparency of our regulations to the staff, the public, and the industry.

The disadvantage of this approach is that the rule changes only provide limited regulatory clarity. One of the changes is an editorial change and the other clarifies the intent of 10 CFR 54.37(b), that the staff has addressed in a Regulatory Issue Summary. These changes alone may not warrant resource allocation to conduct the rulemaking process.

Option 3: Update 10 CFR Part 54 regulations for current and subsequent renewals and pursue Option 2 clarifications

The staff's review of the 10 CFR Part 54 requirements identified several areas where updates could be made to improve the current license renewal rule. This option would include the clarifications discussed in Option 2, expanding the scope of the rule to include equipment associated with the requirements of 10 CFR 50.54(hh)(2), and to define the expectations of timely renewal. Specifically, this option considers adding a provision to define the expectation of licensees entering "timely renewal" under 10 CFR 2.109, "Effect of Timely Renewal Application," to clarify that a licensee must implement aging-management activities before the expiration of its current license. The rulemaking would also consider including any equipment required by licensees to comply with the strategies adopted in response to the Fukushima

Dai-ichi nuclear power plant accident. A detailed discussion of Option 3 can be found in [Enclosure 2](#).

The advantage of Option 3 is that it updates 10 CFR Part 54 so that the regulation reflects relevant changes in the regulatory environment based on the experience and lessons learned from the 73 reactor operating licenses that have been renewed to date. These changes would further clarify the expectations for plants in timely renewal and update the scope of the rule to ensure that license renewal continues to focus on SSCs that provide substantial additional protection to the public health and safety, as discussed in the 1995 SOC. Although the proposed changes would alter the scope of the rule, the intent of the rule would not be altered.

The disadvantage of this approach, in addition to the disadvantage of Option 2, is that the changes would create an additional administrative burden for those applicants submitting license renewal applications (current and subsequent) before promulgation of the rule as the applicants attempt to anticipate the final outcome of the rulemaking process. However, the staff believes this impact will be minimized through the staff's public engagement throughout the rulemaking process.

Option 4: Pursue rulemaking for subsequent renewal-specific changes and Option 2 and 3 changes

This option includes the rulemaking considerations discussed in Options 2 and 3, and would also involve the consideration of rulemaking specific to subsequent renewal. As discussed above, Option 2 includes minor editorial clarifications to the rule and Option 3 updates the rule to expand the scope of the regulations for current and subsequent license renewals. Additionally, Option 4 would include the following requirements for subsequent license renewal regarding:

- more explicitly requiring the maintenance of the effectiveness of aging-management activities; and
- defining the timing of subsequent license renewal applications.

The consideration of rulemaking for specific subsequent renewal requirements would address unique aspects of subsequent renewal and would only apply to licensees seeking a subsequent license renewal. Under this option, the staff would develop a more explicit requirement for maintaining the effectiveness of aging-management activities and a new requirement for reporting aging-related degradation after a license is renewed. This option also includes a proposal to explore reducing the time that a licensee may submit an application for subsequent license renewal before the expiration of an existing license. Additionally, this option discusses how the staff will seek assurance that changes over time to site parameters that may affect the CLB are understood and addressed, both in terms of aging concerns and the broader agency perspective of ensuring continued safe plant operations.

The subsequent license renewal rulemaking process would require licensees to report aging-related degradation and maintain the effectiveness of aging-management activities. The reporting of aging-related degradation would create a "feedback" mechanism to ensure that the industry and the NRC remain up to date on aging mechanisms and effective aging-management, as well as reduce the burden of additional oversight and inspection resources for

the NRC. Currently, new findings in degradation are below the threshold of what the NRC receives as operating experience. As plants age, such information becomes increasingly important to ensure that agency guidance and oversight activities are timely and appropriately modified.

Under this option, the staff would reduce the time when an applicant can submit an application (i.e., less than 20 years prior to the expiration of its renewed operating license) to ensure applicants have adequate experience with aging-management activities prior to submitting a subsequent renewal application to the NRC. This will facilitate a more efficient and effective review of the subsequent license renewal application, as applications that contain ample results from the implementation of aging-management activities will likely preclude exhaustive inquiries and debates about operating experience during the review.

In considering issues for subsequent license renewal, the staff identified that certain site parameters that support the CLB, as described in Chapter 2, "Site Characteristics," of the Updated Final Safety Analysis Report, may change over time. For operation beyond 60 years, the staff seeks assurance that changes to these parameters would be adequately understood and addressed to ensure continued safe plant operations. The staff is currently evaluating and assessing the need for additional requirements regarding natural phenomena, severe weather, and external hazards for all operating plants as part of its Fukushima lessons learned effort and the 2011 Consolidated Appropriations Act. In addition to these ongoing evaluations, the staff is also developing a rulemaking plan to evaluate an additional requirement to periodically reassess external hazards in the future. The development of any new requirements in 10 CFR Part 50 "Domestic Licensing of Production and Utilization Facilities" resulting from these efforts will support the agency decision making on subsequent license renewal. A detailed discussion of Option 4 can be found in [Enclosure 2](#).

The advantages of this option, in addition to advantages provided in Options 2 and 3, are that they provide the NRC additional assurance that effective aging-management activities, appropriately informed by relevant experience, will be effectively implemented. This added assurance provides regulatory clarity, stability, transparency and efficiency and does so without changing the underlying premise of the license renewal rule. These regulatory advantages are achieved by defining requirements at the outset of the subsequent license renewal process rather than on a case-by-case basis during license renewal reviews. This approach thus represents a resource savings to both the NRC and the applicants. The increased rule clarity will also allow for improved efficiency in the oversight process by providing a clearer regulatory baseline. The changes recommended in Option 4, by maintaining the effectiveness of the rule, will also contribute to public confidence in the license renewal process.

The disadvantage of Option 4, in addition to those associated with Options 2 and 3, is that the consideration for rulemaking for specific subsequent renewal requirements is expected to be of high complexity due to the need to define specific rule language and will necessitate additional staff resources during the rulemaking process. The staff would evaluate the costs and benefits during the rulemaking process.

NON-CONCURRENCE

A non-concurrence was filed during the development of this paper. The non-concurrence requests that the staff provide the Commission with an option that requires applicants for

subsequent license renewal to include an upgraded PRA assessment in the subsequent license renewal application. The non-concurrence states that such a requirement would be consistent with the Commission's Policy Statement on use of PRA (60 FR 42622) and the licensing practices of 10 CFR Part 52 "Licenses, Certifications, and Approvals for Nuclear Power plants." The details regarding the non-concurrence on this paper are included in [Enclosure 4](#).

Although the current license renewal rule does not require the same PRA information as required for licensees under 10 CFR Part 52, it allows applicants to risk inform their aging-management activities, as described in the 1995 SOC for 10 CFR Part 54, and therefore, is consistent with the intent of the Commission Policy Statement on the use of PRA. With respect to the argument regarding maintaining consistency with the practices of 10 CFR Part 52, the staff also did not find it compelling to require PRA information, as the inconsistency exists today between licensees under 10 CFR Part 52, licensees under 10 CFR Part 50, and licensees under 10 CFR Part 54, without impacts to the safe operation of the plants. Also, the proposal set forth in the non-concurrence did not present information to show that the requirement for PRA is an issue uniquely relevant to license renewal (e.g., there is no compelling evidence to show that the requirement is needed for subsequent renewal but not for current operation).

In addition, the SOC published when enacting 10 CFR 50.71(h)(3), which requires 10 CFR Part 52 licensees to develop a PRA covering all modes and initiating effects, states that "The requirements to develop and maintain [in all mode] PRA by the time of license renewal application is intended only to establish a timing requirement for completing the upgrade of the PRA, and does not have any implications on the current requirements for license renewal. The upgraded PRA is not an element of any (i.e., past, present, or future) review or approval of a license renewal application." These SOCs support the staff's position that imposing a PRA requirement is not uniquely relevant to operation during the renewal term and therefore should not be included as an option in this paper.

Therefore, this paper does not include the option to require operating reactors originally licensed under 10 CFR Part 50 to meet the same requirement for PRA when applying for subsequent license renewal as reactors licensed under 10 CFR Part 52.

RECOMMENDATION:

The staff recommends the Commission direct the staff to begin the rulemaking process to address all of the proposed topics in Option 4. Addressing these topics through rulemaking would provide additional assurance that aging-management activities would be effectively implemented and provide regulatory clarity, transparency, stability, and efficiency by defining requirements at the outset of the subsequent license renewal process rather than on a case-by-case basis during license renewal reviews.

RESOURCES:

The resource implications associated with each option are addressed Enclosure 3, which is non-public.

COORDINATION:

The Office of the General Counsel has reviewed this paper and has no legal objection. The Office of the Chief Financial Officer has reviewed this paper for resource implications and concurs.

/RA/

Mark A. Satorius
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Enclosures:

1. [Background and Current Activities](#)
2. [Options for Regulatory Framework](#)
3. Resource Implications
4. [Non-Concurrence](#)

License Renewal Background and Current Staff Activities

The Atomic Energy Act (AEA) of 1954, as amended, allows the NRC to issue licenses for commercial power reactors to operate for up to 40 years. The NRC regulations permit these licenses to be renewed beyond the initial 40-year term for an additional period of time, limited to 20-year increments per renewal, based on the outcome of an assessment to determine if the nuclear facility can continue to operate safely during the 20-year period of extended operation. There are no specific limitations in the AEA or the NRC's regulations restricting the number of times a license may be renewed.

In the early 1980s, the NRC staff recognized the need to identify the information required, and the process to be used, for determining whether to grant an extension to an operating license (see *Federal Register* (FR) notice 56 FR 64943; December 13, 1991). In 1990, the NRC issued a proposed power reactor license renewal rule for public comment that addressed the safety and technical requirements for license renewal (55 FR 29043; July 17, 1990). The NRC adopted these regulations (Title 10 of the *Code of Federal Regulations* (10 CFR) Part 54, "Requirements for Renewal of Operating Licenses for Nuclear Power Plants") and published them in the FR on December 13, 1991, (56 FR 64943). In addition, the NRC issued a supporting document that provided the basis for the rule, NUREG-1412, "Foundation for the Adequacy of the Licensing Bases," (ADAMS Accession No. ML080310668), which, as a supplement to the statements of consideration for the 1991 rule, describes how the regulatory process assures that the plant-specific licensing bases provide reasonable assurance that the operation of nuclear power plants would not be inimical to the public health and safety for the duration of the renewal period. After further analysis, the NRC amended the regulations in 1995 to ensure a predictable and stable regulatory process that clearly defined the Commission's expectations for license renewal (60 FR 22461; May 8, 1995).

The NRC is responsible for reviewing license renewal applications for power reactor licenses in accordance with both safety (10 CFR Part 54) and environmental (10 CFR Part 51, "Environmental Protection Regulations for Domestic Licensing and Related Regulatory Functions") requirements. After considering ways to evaluate the environmental consequences of license renewal, the NRC developed NUREG-1437, "Generic Environmental Impact Statement for License Renewal of Nuclear Plants" (hereinafter referred to as "GEIS"), and issued it in May 1996, to cover impacts that were common to most or all nuclear power facilities. The 1996 GEIS allows the applicant and the NRC to focus on those important environmental issues specific to each site pursuing license renewal. In 1996, the NRC published the final rule that revised 10 CFR Part 51, which contains the regulations for the environmental analysis related to license renewal, and incorporates the findings of the GEIS (61 FR 28467; June 5, 1996).

As stated in the 1996 final rule that incorporated the findings of the GEIS in 10 CFR Part 51, the NRC recognized that environmental impact issues might change over time, and that additional issues may need to be considered. NRC staff has revised the GEIS to update and reevaluate the potential environmental impacts arising from the renewal of an operating license for an additional 20 years. In preparing the revised GEIS, the NRC staff considered the need to modify, add to, consolidate, or delete any of the environmental issues evaluated in the

1996 GEIS. The lessons learned and the knowledge gained during previous license renewal environmental reviews, along with public comments received during previous reviews, provided a significant source of new information for revising the GEIS, and the staff believes the revised GEIS is adequate for subsequent license renewal. By SECY-12-0063, "Final Rule: Revisions to Environmental Review for Renewal of Nuclear Power Plant Operating Licenses," dated April 20, 2012 (ADAMS Accession No. ML110760033), the staff provided the revised GEIS and supporting guidance documents to the Commission for review. The final rule and associated documents were subsequently approved and issued in June 2013 (78 FR 37281; June 20, 2013).

As directed by Staff Requirements Memorandum to SECY-99-148, "Credit for Existing Programs for License Renewal," issued August 27, 1999, (ADAMS Accession No. ML003751930), the staff developed the GALL Report to document the staff's evaluation of generic existing aging-management programs. The GALL Report documents the staff's basis for determining the existing programs that are adequate without modification, the existing programs that should be augmented for license renewal, and the areas that might require new programs. The GALL Report is cited in the "Standard Review Plan for Review of License Renewal Applications for Nuclear Power Plants" (SRP-LR) as a basis for determining the adequacy of AMPs. These documents also contain information on aging-management review results and TLAAs, as well as areas in which further evaluation is required on a plant-specific basis. The GALL Report and SRP-LR have been revised twice, and the staff has plans to revise these guidance documents on a periodic basis to address new information, regardless of any changes to the rule. The staff has used the existing review process to renew the licenses for 73 power reactor units to date, with 18 units currently under review. The first license renewal application was submitted in April 1998, and, currently, the last application is tentatively scheduled for a 2018 submittal date. Of those units with a renewed license, 19 units are currently in the period of extended operation.

Technical Considerations for Subsequent License Renewal Safety Reviews

The focus of license renewal, as described in 10 CFR Part 54, is to identify aging that could affect the ability of systems, structures, and components important to safety to perform their functions and to demonstrate that these effects will be adequately managed during the period of extended operation. To address the unique aspects of material aging and degradation that would apply to subsequent renewal, the Office of Nuclear Reactor Regulation (NRR) requested support from the Office of Nuclear Regulatory Research (RES) to develop technical information to evaluate the feasibility of subsequent license renewal. RES has memoranda of understanding with both the U.S. Department of Energy (DOE) and the Electric Power Research Institute to cooperate in nuclear safety research related to long-term operations beyond 60 years.

Under these memoranda, the NRC and the DOE held 2 international conferences, in 2008 and 2011, on reactor operations beyond 60 years. In May 2012, the NRC and the DOE also co-sponsored the Third International Conference on Nuclear Power Plant Life Management for Long-Term Operations, organized by the International Atomic Energy Agency. In February of 2013, the Nuclear Energy Institute (NEI) held a forum on long-term operations and subsequent license renewal. These conferences laid out the technical issues that would need to be addressed to provide assurance for safe operation beyond 60 years. Based on the information gathered over the past several years, the staff currently believes the most significant technical

issues challenging operation beyond 60 years are reactor pressure vessel embrittlement; irradiation-assisted stress corrosion cracking of reactor internals, concrete structures and containment degradation; and electrical cable qualification and condition assessment. Throughout this process, the staff has emphasized that it is the industry's responsibility to resolve these and other issues to provide the technical bases to ensure safe operation beyond 60 years. The staff will review and provide confirmatory research, as needed, on the sufficiency and completeness of industry's technical data.

The NRC, in cooperation with the DOE, is nearing completion of an expanded materials degradation assessment (EMDA). The EMDA uses an expert elicitation process to identify materials and components which could be susceptible to significant degradation during operation beyond 60 years. The EMDA covers the reactor vessel, primary system piping, reactor vessel internals, concrete, and electrical cables and qualification. The staff will use the results of the EMDA to identify any gaps in the current technical knowledge or issues not being addressed by planned industry or DOE research, and to identify AMPs that the staff believes will require enhancements for subsequent license renewal.

In addition to working with external stakeholders on research, the staff has conducted AMP effectiveness audits at three units that are at least 2 years into the period of extended operation. The purpose of these audits was to better understand how licensees are implementing the license renewal AMPs, in terms of both the findings and the effectiveness of the programs, and to develop recommendations for updating license renewal guidance. The staff will use the information gathered from these audits to ensure that subsequent license renewal guidance is fully informed by the licensee's aging-management activities during the first license renewals. A summary of the first two AMP effectiveness audits can be found in the May 2013, report, "Summary of Aging Management Program Effectiveness Audits to Inform Subsequent License Renewal: R.E. Ginna Nuclear Power Plant and Nine Mile Point Nuclear Station, Unit 1" (ADAMS Accession No. ML13122A007).

In addition to the AMP audits, the staff is conducting an international periodic safety review (PSR) pilot study to determine what insights can be gained and possibly considered in the NRC license renewal model. In the pilot study, Argonne National Laboratory compared the safety review information from 14 PSR assessment reports from nine countries to the Reactor Oversight Process and other NRC regulatory assessment tools. The results from this study will be reviewed by NRC staff from NRR and RES to jointly assess the PSR pilot study and to glean relevant insights for possible improvements to the NRC's oversight and regulatory processes. The staff also plans to evaluate the need to modify license renewal guidance documents based on the information from the pilot study.

The staff will review the results from AMP audits, findings from the EMDA, results from the PSR pilot study, and public comments to identify technical issues that need to be considered for assuring the safe operation of NRC-licensed nuclear power plants. In FY 2014, staff expert panels will begin reviewing comments and drafting the NRC guidance for subsequent license renewal to support creating and implementing the updated framework in time for a 2017 application. The staff will also assess the appropriate inspection and audit framework to support subsequent license renewal and will update the associated guidance as necessary.

Detailed Discussion of Options for Updating 10 CFR Part 54 Regulatory Safety Framework

Early in the review of the license renewal regulatory framework, the staff concluded that the underlying principles of license renewal are sound. The principles, as discussed in the 1995 SOC, rely on the existing regulatory process to ensure adequate protection of public health and safety, and focus license renewal on issues that are uniquely relevant to public health and safety during the period of extended operation. Keeping with these principles, the staff is only recommending requirements for subsequent renewal that address issues unique to subsequent license renewal. During the review, the staff evaluated whether adding various new requirements, such as mandating replacement of components, reviewing emergency planning for subsequent license renewal, or requiring probabilistic risk assessments would be necessary to ensure safe plant operation beyond 60 years. For each of these examples, the staff found that the requirements were not uniquely relevant to the subsequent license renewal term and, therefore, should not be added to the license renewal rule. In addition, there are existing regulatory processes in place that allow policy decisions to be made on these requirements without tying them to license renewal. All of the following proposed requirements either modify the existing regulations or add new requirements that align with the existing principles of license renewal and address issues that are uniquely relevant to current and/or subsequent license renewal.

Option 2: Minor clarifications to existing 10 CFR Part 54 regulations for current and subsequent renewals

The staff's review of Title 10 of the *Code of Federal Regulations* (10 CFR) Part 54, "Requirements for Renewal of Operating Licenses for Nuclear Power Plants," noted two areas where clarifications to existing requirements could be pursued. This option would consider rulemaking for the following requirements for current and subsequent renewals:

- **Editorial Update to 10 CFR 54.4(a)(3)**

Paragraph 10 CFR 54.4(a)(3) of 10 CFR 54.4, "Scope," states that the components within the scope of specific regulations in 10 CFR Part 50, "Domestic Licensing of Production and Utilization Facilities," must be included within the scope of the Part 54 provisions. One of the regulations referred to in 10 CFR 54.4(a)(3) is 10 CFR 50.61, "Fracture Toughness Requirements for Protection Against Pressurized Thermal Shock (PTS) Events." In 2010, NRC finalized 10 CFR 50.61a, "Alternative Fracture Toughness Requirements for Protection Against Pressurized Thermal Shock Events," (see FR notice 75 FR 13; January 4, 2010). Although Section 50.61a(b) states that the requirements of 10 CFR 50.61a for PTS analysis could be implemented as an alternative to satisfy the requirements of 10 CFR 50.61, this is not apparent from reading the current requirements in 10 CFR 54.4(a)(3). As a result, an amendment to the requirement in 10 CFR 54.4(a)(3) (or the equivalent requirement in a new subsequent license renewal rule) to refer to both 10 CFR 50.61 and 50.61a when referring to the PTS rules would provide further clarification for implementation of 10 CFR Part 54. In the rulemaking process, the staff would make the relevant editorial change to the existing rule.

- Clarification of the Intent of 10 CFR 54.37(b)

The current license renewal rule (Paragraph 54.37(b) of 10 CFR 54.37, “Additional Records and Recordkeeping Requirements,”) states that, “after the renewed license is issued, the final safety analysis report update required by 10 CFR 50.71(e) must include any systems, structures, and components newly identified that would have been subject to an aging-management review or evaluation of time-limited aging analyses in accordance with 54.21.” Implementation of this provision of the rule has led to confusion between the staff and industry because the SOCs are not specific on the intent of this regulation. In particular, the absence of sufficient supporting information in the SOCs has led to confusion on whether the regulation applies to SSCs installed in the plant after issuance of the renewed license. Applicability of the backfit rule (10 CFR 50.109, “Backfitting”) to 10 CFR 54.37(b) has been another area of confusion and was highlighted by the Office of the Inspector General in its 2007 report OIG-07-A-15, “Audit of the NRC’s License Renewal Program.” Consequently, the staff issued Regulatory Issue Summary (RIS) 2007-16, Revision 1, “Implementation of the Requirements of 10 CFR 54.37(b) for Holders of Renewed Licenses,” to clarify the intent of 10 CFR 54.37(b).

The RIS clarifies that 10 CFR 54.37(b) applies to SSCs installed in the plant before issuance of the renewed license that either were: (a) not within the scope of license renewal when the NRC approved the application, but are subject to a licensing basis change after issuance of the renewed license that makes them fall within scope; or (b) within the scope of license renewal when the NRC approved the application, but were not identified as such until after issuance of the renewed license. The RIS also clarifies that development and implementation of aging-management programs for newly identified SSCs under 10 CFR 54.37(b) are not considered backfits. In the rulemaking process, the staff would clarify the language of 10 CFR 54.37(b) consistent with the positions stated in RIS 2007-16, Revision 1, and provide a clear basis for its intended application in the SOCs.

Option 3: Update 10 CFR Part 54 regulations for current and subsequent renewals and pursue Option 2 clarifications

The staff’s review of the 10 CFR Part 54 requirements noted several areas in which updates could be made to improve the existing rule. These changes would apply to both current and subsequent license renewals. This option would include the clarifications discussed in Option 2 and would involve the consideration of rulemaking for the following requirements:

- Define Expectations of Timely Renewal (10 CFR 2.109)

Regulations in 10 CFR 2.109(b) implement the “timely renewal” provision of the Administrative Procedure Act (see the portion of the *United States Code* designated 5 U.S.C 1.558(c)). Section 2.109(b) of 10 CFR states that “if a licensee of a nuclear power plant ... files a sufficient application for renewal of either an operating license or a combined license at least 5 years before the expiration of the existing license, the existing license will not be deemed to have expired until the application has been finally determined.” At the same time aging-management activities necessary for the period of extended operation are required to be implemented only after a power reactor license is

renewed. Therefore, these provisions can result in a situation in which a licensee may enter the period of extended operation without a renewed license and without having implemented aging-management activities as discussed in the license renewal application and as relied on by the staff during review of the application. To address this inconsistency, the staff would consider adding a provision to 10 CFR Part 54 stating that a licensee must implement aging-management activities specified in the license renewal application (as amended during the review) or the staff's documented safety evaluation report for components within the scope of license renewal before the expiration of its current license.

- Expand Scope of Regulation to Include 10 CFR 50.54(hh)(2) Equipment

The current license renewal regulation 10 CFR 54.4(a)(3) includes a category of SSCs that are beyond the traditional definition of safety-related; however, the NRC included them in the scope of the rule "because they provide substantial additional protection to the public health and safety or are an important element in providing adequate protection to the public health and safety" (60 FR 22461 and 22465; May 8, 1995). This category includes SSCs whose functionality are relied on in safety analyses or plant evaluations to perform a function that demonstrates compliance with the NRC's regulations for fire protection (10 CFR 50.48, "Fire Protection"), environmental qualification (10 CFR 50.49, "Environmental Qualification of Electric Equipment Important to Safety for Nuclear Power Plants"), pressurized thermal shock (10 CFR 50.61), anticipated transients without scram (10 CFR 50.62, "Requirements for Reduction of Risk from Anticipated Transients Without Scram (ATWS) Events for Light-Water-Cooled Nuclear Power Plants"), and station blackout (10 CFR 50.63, "Loss of All Alternating Current Power").

Since promulgation of the license renewal rule, the NRC has adopted Paragraph 10 CFR 50.54(hh)(2) of 10 CFR 50.54, "Conditions of Licenses," which requires implementation of "guidance and strategies intended to maintain or restore core cooling, containment, and spent fuel pool cooling capabilities under the circumstances associated with loss of large areas of the plant due to explosions or fire" The staff believes that this requirement provides substantial additional protection to public health and safety as discussed in the SOC. Therefore, rulemaking would consider expanding the scope of the license renewal rule to include SSCs associated with the 10 CFR 50.54(hh)(2) requirements. The rulemaking would also consider including any equipment necessary to show compliance with strategies adopted in response to the accident at the Fukushima Dai-ichi nuclear power plant.

Option 4: Pursue rulemaking for subsequent renewal specific changes and Option 2 and 3, changes

This option would include the rulemaking discussed in Options 2 and 3, and would also consider rulemaking for specific subsequent renewal requirements. These requirements would be considered to address unique aspects of subsequent renewal and would only pertain to licensees applying for a subsequent license renewal. The following are requirements the staff believes could be considered for inclusion in regulations specific to subsequent renewals.

- Maintaining the Effectiveness of Aging-Management Activities

As nuclear power plants continue to operate beyond their initial licensing, the implementation and maintenance of aging-management programs and activities for license renewal continue to play an important role in determining their effectiveness. Therefore, the staff recommends initiating rulemaking to explicitly require maintenance of effectiveness for license renewal activities and reporting aging-related degradation after a license is renewed.

Proposed requirements would include actions for periodically assessing the effectiveness of the aging-management activities and evaluating plant-specific and industry-wide experience related to license renewal. The NRC requires similar self-assessment provisions in other regulations, such as for maintenance (10 CFR 50.65, "Requirements for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants"), fire protection (10 CFR 50.48), and emergency preparedness (Appendix E, "Emergency Planning and Preparedness for Production and Utilization Facilities," to 10 CFR Part 50). To ensure that licensees' self-assessments consider all relevant aging concerns, and that the NRC staff guidance and decisions are appropriately informed, requiring licensees to report age-related degradation would also be considered in potential subsequent license renewal rulemaking. This change would help the staff and industry stay abreast of relevant experience. The staff believes that reporting experience associated with aging-management activities should be a requirement for subsequent license renewals to ensure that the NRC and the industry are getting a complete understanding of the aging mechanisms being experienced throughout the nuclear reactor fleet.

To enhance aging-management for subsequent renewal, the rulemaking effort would also consider imposing a requirement for licensees to report certain changes to subsequent license renewal activities. This requirement would allow the staff to review certain changes to aging-management activities and would ensure the NRC is aware of significant changes being made after a license is subsequently renewed. These mechanisms would require the applicant to emphasize aging-management activities in the submittal of the subsequent license renewal application, and would improve the efficiency and effectiveness of NRC's oversight activities by reducing the staff resources and streamlining the review process. The NRC has similar review requirements for other programs, such as for the quality assurance program (10 CFR 50.54(a)(3)) and the operator requalification program (10 CFR 50.54(i-1)).

Taken together, these requirements would continue to make aging management a focus during subsequent periods of extended operation while reducing the burden of additional oversight and inspection activities by the NRC to verify aging-management effectiveness. During implementation of the first license renewals, the staff noted several cases where licensees encountered administrative challenges (e.g., lack of documentation) in demonstrating their ongoing efforts of maintaining effective aging-management programs and activities for license renewal. The proposed requirements above would create a clear "feedback system" to keep the industry and the NRC informed of developments and new findings in aging mechanisms and effective aging-management techniques. From an NRC perspective, these changes address the regulatory need to stay abreast of aging information during subsequent periods of

extended operation through licensee reporting rather than additional oversight activities initiated by the NRC. For these reasons, the staff believes rulemaking should be initiated to consider including the requirements discussed above for maintaining aging-management activities if a license is subsequently renewed.

- Timing of Subsequent License Renewal Applications

Regulations in 10 CFR 54.17(c) of the license renewal rule allows an applicant to submit an application for a renewed license up to 20 years before the expiration of the license currently in effect; 10 CFR 54.31(b) allows the expiration of the license to be extended by up to 20 years, with the total term not to exceed 40 years. Therefore, for potential subsequent license renewals, an application may be filed at the same time a facility enters its initial period of extended operation.

As discussed in the SOC for the 1991 rule, the Commission imposed a limit on when an application can be filed for a renewed license “to ensure that substantial operating experience was accumulated by a licensee prior to submitting a renewal application” (56 FR 64963; December 13, 1991). The NRC further believed that a minimum 20-year period would provide enough plant-specific experience to identify any unique concerns with regard to age-related degradation.

For the initial period of extended operation, new AMPs, and enhancements to existing AMPs, were identified to manage the effects of aging on some components within the scope of license renewal. Adequate experience with these AMPs would be required before an application for a subsequent renewal period could be filed. Because the rule allows for a subsequent renewal application to be filed at the point that a plant enters the first period of extended operation, which is when new AMPs and enhancements are required to be implemented, in the rulemaking process the staff would consider limiting the time during which a subsequent license renewal application can be filed. The new limit would ensure adequate accumulation of experience with new AMPs, while still allowing utilities an appropriate span of time in which to submit their application prior to the 5-year limit associated with the timely renewal provision. The staff recognizes that limiting the time an application can be submitted can have business-planning implications for the industry, but believes that, with an explicit clarification in the rule for subsequent license renewal, such planning can still be accomplished and that accumulating experience with new and enhanced license renewal AMPs is necessary before a subsequent renewal application can be filed. This proposed requirement supports the effectiveness proposal discussed above in that it requires applicants to accumulate experience to demonstrate that the new and enhanced AMPs are managing the effects of aging as intended.

- Verifying the Continuing Validity of Certain Original Design Input Parameters

In considering issues for subsequent license renewal, the staff identified that certain parameters that support the CLB may change over time. These parameters are those described in Chapter 2, “Site Characteristics,” of a plant’s Updated Final Safety Analysis Report (UFSAR). The Chapter 2 parameters include those related to natural phenomena, severe weather, and other changes to the surrounding plant environment. These parameters and any changes to them are more relevant to subsequent license

renewal than the first renewal period. Applications for a subsequent license renewal would be reflective of these parameters 40-50 years after their collection, representing a greater chance that the parameters had changed with possible impact to the CLB. Therefore, for operation beyond 60 years, the staff seeks assurance that changes to these parameters would be adequately understood and addressed, both in terms of aging concerns and the broader agency perspective of ensuring continued safe plant operations. Identifying parameters that change over time and evaluating the impact of those parameter changes is similar to the approach that the staff takes in evaluating environmental impacts—a well-accepted and implemented process.

These parameters described in the Chapter 2 of the UFSAR support the plant's basis for meeting Appendix A to 10 CFR Part 50 General Design Criteria (GDC) 2, "Design Basis for Protection Against Natural Phenomena," and GDC 4, "Environmental and Dynamic Effects Design Basis." GDC 2 requires the plant's design to withstand the effects of the most severe of the natural phenomena that have been historically reported for the site and surrounding area, with margin to account for the limited accuracy, quantity, and period of time in which the historical data have been accumulated. GDC 4 requires that plants be designed to protect structures, systems, and components from, among other things, the effects and conditions outside the nuclear power unit.

As a result of the Fukushima Dai-ichi nuclear power plant accident, efforts are already underway by the staff to reevaluate the design bases of nuclear power plants against seismic and flooding hazards using present-day NRC requirements and guidance. The staff's efforts will expand to assess other external hazards, consistent with the mandate of the 2011 Consolidated Appropriations Act that requires the re-evaluation of seismic, flooding, and other external hazards at licensed sites against current applicable Commission requirements and guidance.

In addition to these ongoing evaluations, the Commission approved the staff's development of a rulemaking plan to evaluate an additional requirement to periodically reassess external hazards in the future. The ultimate decision by the Commission on whether or not to approve an additional 10 CFR Part 50 requirement will inform the agency's decision on a subsequent license renewal application. If that rulemaking effort results in a new requirement and is complete prior to or during the first subsequent license renewal application review, applicants for subsequent license renewal would be required to adhere to that requirement. If the rulemaking is still in process when the first subsequent renewal decision is expected, the staff will consider the confirmation of that portion of the CLB associated with the UFSAR Chapter 2 parameters through conditions or other changes to the renewed license, consistent with the requirements in 10 CFR 54.33, "Continuation of CLB and conditions of renewed license," and adjust accordingly following a Commission decision on the rulemaking.

Non-Concurrence Process Record for NCP-2013-012

The U.S. Nuclear Regulatory Commission (NRC) strives to establish and maintain an environment that encourages all employees to promptly raise concerns and differing views without fear of reprisal and to promote methods for raising concerns that will enhance a strong safety culture and support the agency's mission.

Individuals are expected to discuss their views and concerns with their immediate supervisors on a regular, ongoing basis. If informal discussions do not resolve concerns, individuals have various mechanisms for expressing and having their concerns and differing views heard and considered by management.

Management Directive MD 10.158, "NRC Non-Concurrence Process," describes the Non-Concurrence Process (NCP).

<http://pbadupws.nrc.gov/docs/ML0706/ML070660506.pdf>

The NCP allows employees to document their differing views and concerns early in the decision-making process, have them responded to, and attach them to proposed documents moving through the management approval chain.

NRC Form 757, NCP is used to document the process.

Section A of the form includes the personal opinions, views, and concerns of an NRC employee.

Section B of the form includes the personal opinions and views of the NRC employee's immediate supervisor.

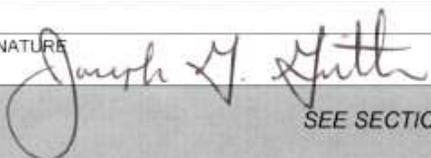
Section C of the form includes the agency's evaluation of the concerns and the agency's final position and outcome.

NOTE: Content in Sections A and B reflects personal opinions and views and does not represent official factual representation of the issues, nor official rationale for the agency decision. Section C includes the agency's official position on the facts, issues, and rationale for the final decision.

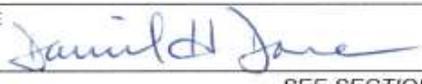
The agency's official position (i.e., the document that was the subject of the non-concurrence) is included in ADAMS Accession Number ML13210A206.

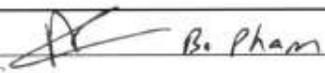
This record is profiled in ADAMS as publicly available and will be declared an official agency record when the SECY paper is declared after the Commission has voted and the SRM is issued.

ENCLOSURE 4

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| NRC FORM 757 NRC MD 10 158 (7-2011) | | U.S. NUCLEAR REGULATORY COMMISSION | |
| NON-CONCURRENCE PROCESS | | NCP TRACKING NUMBER NCP-2013-012 | |
| SECTION A - TO BE COMPLETED BY NON-CONCURRING INDIVIDUAL | | | |
| TITLE OF SUBJECT DOCUMENT Ongoing Staff Activities to Assess Regulatory And Technical Considerations for Reactor SLR SECY | | ADAMS ACCESSION NO. ML13210A206 | |
| DOCUMENT SIGNER Eric J. Leeds | | SIGNER PHONE NO. (301)415-1270 | |
| TITLE Director | ORGANIZATION NRR | | |
| NAME OF NON-CONCURRING INDIVIDUAL(S) Joseph Giitter | | PHONE NO. (301) 415-2884 | |
| TITLE Director, Division of Risk Assessment | ORGANIZATION NRR | | |
| <input type="checkbox"/> DOCUMENT AUTHOR <input type="checkbox"/> DOCUMENT CONTRIBUTOR <input type="checkbox"/> DOCUMENT REVIEWER <input checked="" type="checkbox"/> ON CONCURRENCE | | | |
| REASONS FOR NON-CONCURRENCE AND PROPOSED ALTERNATIVES | | | |
| <p>I am nonconcurring on this SECY paper because I believe the SECY should provide to the Commission an option to require an upgraded Probabilistic Risk Assessment (PRA) when submitting an application for subsequent license renewal. I believe this option provides:</p> <ul style="list-style-type: none">-Consistency with the Commission Policy Statement on the use of PRA-Opportunity to establish consistent PRA requirements for the current operating fleet and any future combined operating license holders seeking renewed licenses-Opportunity to better focus resources on risk insights, smart inspections, aging susceptibility, and integrated plant consequences <p>The Commission Policy Statement on the use of PRA (60FR42622) states that the use of PRA "should be increased in all regulatory matters to the extent supported by the state of the art..." The fact that the SECY does not include an option to consider the use of upgraded PRAs in the subsequent license renewal process is inconsistent with the intent of the Policy Statement. Since the current regulations for license renewal were promulgated (1995), the Commission issued the PRA Policy Statement (1996) and there have been meaningful improvements in the state of the art of PRA, particularly in the area of fire and external hazards. Many of the improvements in PRA scope and quality were necessitated by voluntary risk-informed licensing actions, such as NFPA-805, Risk-informed Tech Spec Initiative 4.b and risk-informed in-service inspection (RI-ISI). Although it is anticipated that PRA scope and quality will continue to improve, consistent with Commission direction on the phased approach to PRA quality, there is no "hard stop" requirement for PRAs--let alone upgraded PRAs--for the current fleet of operating reactors. To the contrary, reactors licensed under Part 52 are required to develop a Level 1 and Level 2 PRA that covers the initiating event and modes for which NRC-endorsed consensus standards exist. In addition, 10 CFR 50.71(h)(3) requires Combined Operating License (COL) holders to submit an upgraded PRA (one that covers all modes and initiating events) as part of their license renewal application. This inconsistency in license renewal regulations could result in an incongruous regulatory situation in the future, where plants licensed under Part 52 (that arguably have a lower baseline risk profile) are required to have an upgraded PRA, but plants operating for over 60 years under a Part 54 license renewal process would have no requirement for PRA whatsoever. The SECY should include an upgraded PRA requirement option similar to the requirement needed for a combined license holder to obtain a renewed license.</p> <p>Continued in Section D</p> | | | |
| SIGNATURE  | | <input checked="" type="checkbox"/> CONTINUED IN SECTION D DATE 8/10/13 | |
| SEE SECTION E FOR IMPLEMENTATION GUIDANCE | | | |

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| NRC FORM 757 NRC MD 10-158 (7-2011) | U.S. NUCLEAR REGULATORY COMMISSION |
| NON-CONCURRENCE PROCESS | NCP TRACKING NUMBER NCP-2013-012 |
| TITLE OF SUBJECT DOCUMENT Ongoing Staff Activities to Assess Regulatory Considerations for Power Reactor SLR SECY | ADAMS ACCESSION NO. ML13210A206 |
| SECTION D: CONTINUATION PAGE | |
| CONTINUATION OF SECTION | <input checked="" type="checkbox"/> A <input type="checkbox"/> B <input type="checkbox"/> C |
| <p>Continued from Section A</p> <p>While I view the inclusion of a PRA requirement as an option in the SECY paper as a policy decision, I also believe that there are safety benefits for such a requirement. This in fact was recognized in the Statements of Consideration (SOC) for the 1995 License Renewal Rule which acknowledged that, "PRA methods and techniques would focus regulations and programs on those items most important to safety by eliminating unnecessary conservatism or by supporting additional regulatory requirements. PRA insights would be used to more clearly define a proper safety focus, which may be narrower or may be broader." The SOC went on to state that PRA should not be used to "justify poor performance in aging management or to reduce regulatory or programmatic requirements in aging management or to reduce regulatory or programmatic requirements to the extent that the implementation of the regulation or program is no longer adequate to credit for monitoring or identifying the effects of aging." An option for using an upgraded PRA in the subsequent license renewal process has safety benefits. For example,</p> <ul style="list-style-type: none">- An appropriately upgraded PRA may be used to proactively identify the most susceptible aging locations with the highest consequences (similar to RI-ISI).- As plants age, the integrated effect of design bases may be difficult to determine and an important design feature may be altered or disabled during a modification. An upgraded PRA can provide an integrated analysis of these changes.- An upgraded PRA can help to assess the relative importance of structures and components that are subject to an aging management review by drawing attention to specific vulnerabilities. The upgraded PRA is an essential tool to help identify the most important plant risk contributors that can be focused on to improve overall plant safety.- An upgraded PRA provides the NRC with the latest core damage frequency and Large Early Release Frequency for assurance that adequate margins to safety goals are being met with updated design and reliability information. <p>Experience gained over the last twenty years from plant operation, the understanding of inspection methods, the use of PRAs and their insights, as well as an enhanced understanding of reliability, maintainability and those mechanisms (including their causes) that adversely impact aging has put the industry/regulatory bodies in a position today to develop balanced, integrated and effective changes to aging management program (AMP) requirements which focus on plant safety. In general, aging management programs have historically been performed based on mandated requirements, Generic Aging Lessons Learned (GALL) Report recommendations, or company policy. Most previous inspection requirements were based on past experience and engineering judgment and had only an implicit consideration of risk-informed information, such as failure probability (given the specific material, operation and loading conditions) and consequences.</p> <p>In summary, an option that would include an upgraded PRA requirement for subsequent license renewal could result in consistent regulations and provide a greater focus on risk insights, smart inspections, aging susceptibility, and integrated plant consequences to further insure that plants continue to operate safely beyond 60 years. Therefore, I believe an option for requiring an upgraded PRA is appropriate for subsequent license renewal.</p> | |
| SEE SECTION E FOR IMPLEMENTATION GUIDANCE | |

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| NRC FORM 757 NRC MD 10-158 (7-2011) | | U.S. NUCLEAR REGULATORY COMMISSION | |
| NON-CONCURRENCE PROCESS | | NCP TRACKING NUMBER NCP-2013-012 | |
| TITLE OF SUBJECT DOCUMENT Ongoing Staff Activities to Assess Regulatory and Technical Considerations for Reactor SLR SECY | | ADAMS ACCESSION NO. ML13210A206 | |
| SECTION B - TO BE COMPLETED BY NON-CONCURRING INDIVIDUAL'S SUPERVISOR | | | |
| NAME Daniel H. Dorman | | | |
| TITLE Deputy Director for Engineering and Corporate Support | | PHONE NO. 301-415-1274 | |
| ORGANIZATION Office of Nuclear Reactor Regulation | | | |
| COMMENTS FOR THE NCP REVIEWER TO CONSIDER | | | |
| <p>First, I commend Mr. Giitter and his staff for their thoughtful contributions to the development of this paper and to leadership's consideration of their concerns. They have demonstrated the NRC values and commitment to the Open, Collaborative Work Environment throughout.</p> <p>Mr. Giitter has provided a thoughtful discussion of the potential safety benefits of applying risk insights to aging management in the context of a subsequent license renewal. It is less clear to me why subsequent license renewal is the proper vehicle through which to introduce a requirement for Part 50 licensees to have an upgraded PRA. If it is inconsistent to have a PRA requirement for Part 52 licenses in renewal, but not for Part 50 licensees under Part 54 subsequent renewal, it is also inconsistent at first renewal and during initial operation. If there were no other on-going staff activities looking at broader framework issues where this might be addressed, I would be more inclined to provide the Commission an option in the context of subsequent license renewal. However, there are several staff activities that I believe provide a better venue for raising the option of requiring current licensees to have an upgraded PRA. For example, the staff continues to develop its response to Recommendation 1 of the Near Term Task Force and the Risk Management Regulatory Framework (RMRF) with Commission options papers due in December 2013 and late summer of 2014, respectively. An upgraded PRA requirement could provide safety benefits in many areas of the reactor licensing, oversight, and operations, therefore I recommend that consideration of such an option be presented to the Commission in a broad context such as Recommendation 1 or RMRF rather than in the narrower context of requirements for subsequent license renewal.</p> <p>Wherever the issue is presented to the Commission, it should include a robust discussion of the current and anticipated resource burdens on the available risk analysis resources of both the staff and industry (e.g., NFPA-805, seismic PRA response to Fukushima, risk-informed resolution of GSI-191, risk-informed technical specifications initiatives, Level 3 PRA) as well as a well-developed assessment of the timing and resources necessary to implement such a requirement.</p> | | | |
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| SIGNATURE  | | DATE 8/23/13 | |
| SEE SECTION E FOR IMPLEMENTATION GUIDANCE | | | |

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| NRC FORM 757 NRC MD 10-158 (7-2011) | | U.S. NUCLEAR REGULATORY COMMISSION | |
| NON-CONCURRENCE PROCESS | | NCP TRACKING NUMBER NCP-2013-012 | |
| TITLE OF SUBJECT DOCUMENT Ongoing Staff Activities to Assess Regulatory and Technical Considerations for Reactor SLR SECY | | ADAMS ACCESSION NO. ML13210A206 | |
| SECTION C - TO BE COMPLETED BY DOCUMENT SPONSOR | | | |
| NAME Bo M. Pham | | | |
| TITLE Branch Chief | | PHONE NO. (301) 415-8450 | |
| ORGANIZATION NRR/DLR/RSRG | | | |
| SUMMARY OF ISSUES <p>The NRC staff is preparing a notation-vote paper for The Commission which provides options for potential subsequent license renewal rulemaking. The paper does not include an option that would require operating reactors (originally licensed under 10 CFR 50) to meet the same requirement for PRA as reactors licensed under Part 52. Mr. Giitter believes the paper should include an option for The Commission to consider that would require applicants for subsequent license renewal to meet the same standard as "new" reactors license under Part 52.</p> | | | |
| ACTIONS TAKEN TO ADDRESS NON-CONCURRENCE <p>During the concurrence process the Division of Risk Assessment (DRA) expressed its concern discussed in Section A of this form. Division of License Renewal staff and management met several times with their DRA counterparts in an attempt to reach a consensus on how to address PRA in the paper. DRA and DLR staff tentatively agreed on draft language to include in the paper. The draft language proposed incentives for applicant's to update its PRA without an explicit requirement to do so. DLR and DRA staff presented the topic to NRR executive team (ET) members on 2 separate occasions. Subsequent to the meetings with the NRR ET members, DLR and DRA staff diverged on the appropriate recommendation for including PRA in the paper. As a result, DLR did not make significant changes to the paper and Mr. Giitter non-concurred.</p> <p>The paper does not include the option to require operating reactors (originally licensed under 10 CFR part 50) to meet the same requirement for PRA as reactors licensed under Part 52 because the potential rulemaking options presented in the paper are consistent with the underlying principles of license renewal. The underlying principles, as discussed in the 1995 SOC, rely on the existing regulatory process to ensure adequate protection of public health and safety, but also explain that license renewal should focus on issues that are uniquely relevant to public health and safety during the period of extended operation. Therefore, staff only recommends additional requirements for subsequent renewal that address issues unique to operation during the renewal term. (Continued in Section D)</p> | | | |
| SIGNATURE--DOCUMENT SPONSOR  | | TITLE Branch Chief | |
| ORGANIZATION NRR/DLR/RSRG | | DATE 9/24/13 | |
| SIGNATURE--NCP REVIEWER  | | TITLE Director | |
| ORGANIZATION NRR | | DATE 9/25/2013 | |
| NCP OUTCOME Non-Concurring Individual: CONCURS <input checked="" type="checkbox"/> NON-CONCURS <input type="checkbox"/> WITHDRAWS NON-CONCURRENCE (i.e., discontinues process) | | | |
| AVAILABILITY OF NCP FORM Non-Concurring Individual: <input checked="" type="checkbox"/> WANTS NCP FORM PUBLIC <input type="checkbox"/> WANTS NCP FORM NON-PUBLIC | | | |
| <input checked="" type="checkbox"/> CONTINUED IN SECTION D | | | |
| SEE SECTION E FOR IMPLEMENTATION GUIDANCE | | | |

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| NRC FORM 757 NRC MD 10 15B (7-2011) | | U.S. NUCLEAR REGULATORY COMMISSION | |
| NON-CONCURRENCE PROCESS | | NCP TRACKING NUMBER NCP-2013-012 | |
| TITLE OF SUBJECT DOCUMENT Ongoing Staff Activities to Assess Regulatory and Technical Considerations for Reactor SLR SECY | | ADAMS ACCESSION NO. ML13210A206 | |
| SECTION D: CONTINUATION PAGE | | | |
| CONTINUATION OF SECTION <input type="checkbox"/> A <input type="checkbox"/> B <input checked="" type="checkbox"/> C | | | |
| <p>Issues that do not fit in this category can and should be adequately addressed by existing regulatory processes rather than through renewal requirements.</p> <p>For example, during the development of its recommendations for subsequent renewal, the staff considered requiring PRA updates, along with other requirements such as mandating replacement of components, and reviewing emergency planning for subsequent renewal. However, in keeping with the underlying principles discussed above, the staff did not recommend such changes in the SECY because they are not uniquely relevant to the period of extended operation and the existing regulatory processes already address them on an ongoing basis and will continue to do so during a subsequent renewal term (e.g., there is no compelling evidence to show that these requirements are needed for subsequent renewal but not for current operation).</p> <p>In addition, the current license renewal rule as discussed in the 1995 statements of consideration already allows license renewal applicants to risk inform its aging management activities. Therefore, no rule change would be necessary to allow subsequent license renewal applicants to use PRA insights to inform its aging management activities.</p> <p>Also, the statements of consideration published when enacting 10 CFR 50.71(h)(3), which requires Part 52 licensees to develop a PRA covering all modes and initiating effects, states that "The requirement to develop and maintain [an all mode] PRA by the time of license renewal application is intended only to establish a timing requirement for completing the upgrade of the PRA, and does not have any implications on the current requirements for license renewal. The upgraded PRA is not an element of any (i.e., past, present, or future) review or approval of a license renewal application." This supports the staff's assertion that imposing a PRA requirement is not uniquely relevant to operation during the renewal term and therefore should not be included as an option in the notation-vote SECY paper.</p> | | | |
| SEE SECTION E FOR IMPLEMENTATION GUIDANCE | | | |