Industry Best Practices for Performing 10 CFR 54.37(b) Reviews for "Newly Identified" SSCs in Scope of License Renewal Aging Management

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Executive Summary

Procedures and processes for implementing identification and reporting requirements of 10 CFR 54.37(b) may vary among utilities. This document is intended to provide best practices to ensure potential sources of newly identified systems, structures, and components (SSCs) in scope of license renewal aging management are considered during the 10 CFR 54.37(b) review process. The details of how information is obtained during this review will generally be different from site to site.

A licensee may use the information from this document as an aid and tool to be used for performing periodic 10 CFR 54.37(b) reviews. This document provides guidelines for performing reviews using a consistent approach and process that is thorough and based on industry best practices and operating experience. It is recommended that these guidelines be integrated with existing site and utility 10 CFR 54.37(b) review procedures, but its use is not required or mandatory.

This document is only applicable to plants that have renewed their original operating license.

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1 INTRODUCTION AND BACKGROUND

10 CFR 54.37(b) states the following regarding newly identified SSCs in scope of license renewal aging management:

> *"After the renewed license is issued, the FSAR 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. This FSAR update must describe how the effects of aging will be managed such that the intended function(s) in § 54.4(b) will be effectively maintained during the period of extended operation."*

The NRC later issued RIS 2007-16, Rev. 1 to clarify the intent of 10 CFR 54.37(b) and to identify situations that could lead to newly identified SSCs in scope of license renewal. The following is an excerpt from the Discussion section in RIS 2007-16:

> *"The intent of 10 CFR 54.37(b) is to capture those SSCs that, if they had been identified at the time of the license renewal application, would have been subject to an aging management review or evaluation of TLAAs. In the context of 10 CFR 54.37(b), newly identified SSCs that should be included in the next FSAR update required by 10 CFR 50.71(e) are those SSCs that meet one of the two following conditions:*
>
> *(1) There is a change to the current licensing basis (CLB) that meets the following criteria:*
>
> - *The change impacts SSCs that were not in scope for license renewal when the NRC approved the license renewal application.*
>
> - *The SSCs would have been in the scope of license renewal based on the CLB change if 10 CFR 54.4(a) were applied to the SSCs.*
>
> *(2) SSCs were installed in the plant at the time of the license renewal review that, in accordance with the CLB at the time, should have been included in the scope of license renewal per 10 CFR 54.4(a) but were not identified as in scope until after issuance of the renewed license.*
>
> *SSCs that are plant additions or modifications installed after the renewed license is issued are not subject to the provisions of 10 CFR 54.37(b)."*

RIS 2007-16, Rev. 1 goes on to state:

> *"The language of 10 CFR 54.37(b) does not limit how or who finds newly identified SSCs. A licensee may identify SSCs that should be within the scope of its license renewal program at any time. The NRC staff may also discover newly identified SSCs. One way to identify these SSCs is through the LR-ISG process."*

Outside of reviewing LR-ISG documents, both 10 CFR 54.37(b) and RIS 2007-16, Rev. 1 are silent about how the licensee should search for newly identified SSCs in scope of license renewal. This document attempts to fill this gap by providing best practices for methodically reviewing all potential sources that could produce newly identified SSCs in scope of license renewal.

2 DISCUSSION

The following table is intended to summarize recommended items to review for potential newly identified SSCs in scope of license renewal in accordance with 10 CFR 54.37(b) based on RIS 2007-16 and industry operating experience:

Reviews to Address RIS 2007-16, Item 1: Changes to the Current Licensing Basis (CLB)			
Sources	Items to Review	Review Guidance	Discussion
Updated Final Safety Analysis Report (UFSAR)	UFSAR Changes	Review each UFSAR change incorporated into the latest revision of the UFSAR for the potential of a license renewal newly identified SSC. In particular, review for potential impacts on the License Renewal supplement and other specific UFSAR sections associated with regulated events that bring SSCs into scope of license renewal under 10 CFR 54.4(a)(3) for the potential of a license renewal newly identified SSC. (e.g., Station Blackout (SBO), Anticipated Transients Without SCRAM (ATWS), Pressurized Thermal Shock (PTS))	SSCs that all the following apply to are "newly identified" SSCs: 1. Not in scope for license renewal when the NRC approved the license renewal application 2. The SSCs would have been in the scope of license renewal based on the CLB change if 10 CFR 54.4(a) were applied to the SSCs 3. Subject to aging management review or evaluation of time-limited aging analyses in accordance with § 54.21.
NRC License Renewal Interim Staff Guidance (LR-ISG) Documents	LR-ISGs not previously reviewed	Review Interim Staff Guidance (ISG) or other NRC documentation not previously evaluated that potentially identify SSCs subject to the provisions of 10 CFR 54.37(b). LR-ISGs clearly state whether the ISG could result in newly identified SSCs. In many cases they explicitly do not.	

Reviews to Address RIS 2007-16, Item 2: SSCs installed in the plant at the time of the license renewal review that, in accordance with the CLB at the time, should have been included in the scope of license renewal per 10 CFR 54.4(a) but were not identified as in scope until after issuance of the renewed license.
The following review items pertain to Engineering Change (EC) Packages. The questions align with Responsible Engineer guidance from the standard design change process screening questions in IP-ENG-001-F-10 Rev. 1. Any YES answers require further review by a LR SME (e.g., Aging Management Coordinator).

Sources	Items to Review	Review Guidance	Discussion
IP-ENG-001-F-10 screening questions #1.	Does the change add a safety-related (SR) System, Structure, or Component (SSC) to a room where no safety-related SSCs currently exist?	Review NSR SSCs in area where new SR SSCs will be installed for their potential to be in scope of license renewal aging management for Non-Safety Affecting Safety (NSAS) if their failure could cause a safety function failure. Confirm the plant location of the safety-related SSC by review of station drawings.	Existing NSR SSCs not previously in scope of license renewal aging management evaluated to be non-safety affecting safety are "newly identified" SSCs.
IP-ENG-001-F-10 screening question #2.	Does the change affect the safety classification of a structure / component? (Affect is defined as add, change, or remove)	Review Engineering Change package for existing SSCs upgraded from NSR to SR. If any NSR are upgraded to SR, review other NSR SSCs in area for the potential of their failure to cause a safety function failure (NSAS). Confirm that the EC documents the change in safety classification and identifies the structure or component.	SSCs not previously in scope of license renewal aging management upgraded to SR or non-safety affecting safety are "newly identified."
IP-ENG-001-F-10 screening question #3.	Does the change result in an existing non-safety-related SSCs providing structural support to safety-related SSCs where before it did not?	Review Engineering Change package for whether failure of the NSR SSCs that provide structural support for SR SSCs could cause a safety function failure (NSAS). Confirm that the Engineering Change package documents the structural support function in a calculation.	SSCs not previously in scope of License Renewal Aging Management evaluated to be non-safety affecting safety are "newly identified."

Sources	Items to Review	Review Guidance	Discussion
IP-ENG-001-F-10 screening question #4.	Does the change affect a failure mode such that failure of existing non-safety-related SSCs could prevent the satisfactory accomplishment of a safety function? (Affect is defined as add, change, or remove)	Review Engineering Change package for changes in failure modes of existing NSR SSCs such that they could prevent the satisfactory accomplishment of a safety function (NSAS). Confirm that the new failure mode is described in the Engineering Change package.	SSCs not previously in scope of License Renewal Aging Management evaluated to be non-safety affecting safety are "newly identified."
IP-ENG-001-F-10 screening question #5.	Does the change affect a seismic boundary anchor such that existing non safety-related components are now included in the seismic analysis of safety-related components when previously they were not? (Affect is defined as add, change, or remove)	Review Engineering Change package for NSR existing NSR SSCs now included in the seismic analysis of SR related SSCs when previously they were not (NSAS). Confirm that a calculation includes crediting NSR components.	SSCs not previously in scope of License Renewal Aging Management evaluated to be non-safety affecting safety are "newly identified."
IP-ENG-001-F-10 screening question #6.	Does the change involve existing SSCs being newly identified as required to demonstrate compliance with any of the following NRC regulations?	See below specific program/area guidance.	

Sources	Items to Review	Review Guidance	Discussion
	Fire Protection (FP, 10 CFR 50.48)	Review Engineering Change package for existing SSCs newly credited by the Fire Protection Program for complying with 10 CFR 50.48. Confirm the "newly identified" SSC with the Fire Protection program owner.	SSCs not previously in scope of License Renewal Aging Management evaluated to be necessary to demonstrate compliance with 10 CFR 50.48 are "newly identified." Based on industry experience, CLB changes to adopt NFPA-805 for Fire Protection have resulted in newly identified SSCs.
	Pressurized Thermal Shock (PTS, 10 CFR 50.61)	Review Engineering Change package for existing SSCs newly credited for complying with 10 CFR 50.61, Pressurized Thermal Shock. Confirm the "newly identified" SSC with the PTS subject matter expert.	SSCs not previously in scope of License Renewal Aging Management evaluated to be necessary to demonstrate compliance with 10 CFR 50.61 are "newly identified."
	Environmental Qualification (EQ, 10 CFR 50.49)	Review Engineering Change package for existing SSCs newly credited for complying with 10 CFR 50.49, Environmental Qualification. Confirm the "newly identified" SSC with the EQ program owner.	SSCs not previously in scope of License Renewal Aging Management evaluated to be necessary to demonstrate compliance with 10 CFR 50.49 are "newly identified."
	Anticipated Transient without scram (10 CFR 50.62)	Review Engineering Change package for existing SSCs newly credited for complying with 10 CFR 50.62, Anticipated Transient Without Scram (ATWS). Confirm the "newly identified" SSC with the ATWS subject matter expert.	SSCs not previously in scope of License Renewal Aging Management evaluated to be necessary to demonstrate compliance with 10 CFR 50.62 are "newly identified."

Sources	Items to Review	Review Guidance	Discussion
	Station Blackout (10 CFR 50.63)	Review Engineering Change package for existing SSCs newly credited for complying with 10 CFR 50.63, Station Blackout (SBO). Confirm the "newly identified" SSC with the SBO subject matter expert.	SSCs not previously in scope of License Renewal Aging Management evaluated to be necessary to demonstrate compliance with 10 CFR 50.63 are "newly identified."
IP-ENG-001-F-10 screening question #7.	Does the change affect existing SSCs being newly identified as required to protect safety-related SSCs from natural phenomena or internal/external events such as High-Energy Line Break (HELB), tornados, flooding, and seismic events? (Affect is defined as add, change, or remove)	Review Engineering Change package for identifying new SSCs required to protect SR SSCs from natural phenomena or internal/external events such as HELB, tornados, flooding, and seismic events. Confirm that structural calculation includes crediting existing SSCs that were not credited before the design change.	SSCs not previously in scope of License Renewal Aging Management evaluated to be necessary to protect SR SSCs during natural phenomena or internal/external events are "newly identified."
IP-ENG-001-F-10 screening question #8.	Does the change reclassify an existing SSC to from a non-seismic category to a seismic category (including 2 over 1)?	Review Engineering Change package for changes to non-seismic SSCs to a seismic category (including 2 over 1). Confirm that the Engineering Change package documents what SSC is now seismic and has seismic qualification (test report or calculation).	SSCs not previously in scope of License Renewal Aging Management and upgraded to a seismic category are "newly identified."

Sources	Items to Review	Review Guidance	Discussion
IP-ENG-001-F-10 screening question #9.	Does the change affect an existing calculation or analysis that meets ALL the following? a) Considers the effects of aging; b) Involves time-limited assumptions defined by the original or prior approved operating license duration, for example 40 years or number of cycles? (Affect is defined as add, change, or remove)	Review Engineering Change package for calculations that consider aging and involve both time-limited assumptions defined by the original and prior approved operating license duration (e.g., number of cycles or years). Confirm that the calculation is associated with a "newly identified" component or was missed during the original License Renewal review.	SSCs not previously in scope of License Renewal Aging Management that are now impacted by time-limited aging assumptions that affect a License Renewal intended function are "newly identified."

2.1 Additional Guidance:

1. Newly added equipment IDs (e.g., functional locations, equipment numbers) to the site's equipment database may have the potential to be categorized as newly identified SSCs in scope of License Renewal. Review of Doc-only EC packages (or similar) for newly- added equipment IDs may be warranted, for equipment installed prior to receipt of renewed operating licenses. "Newly identified" SSCs would be those not included in the License Renewal Application tables.

2. Review of EC packages that include only administrative changes without any equipment changes (drawing revisions, vendor tech manual changes, etc.), temporary modifications, and procurement evaluations/equivalencies is optional, based on generally having no potential to include newly identified SSCs in scope of license renewal.

3. Review of docketed correspondence between the station and the NRC is optional but may be useful to confirm licensing basis changes. However, in most cases licensing basis changes are addressed in engineering change packages or UFSAR changes.

4. Discussing potential newly identified SSCs with associated program owners, design authorities, or subject matter experts is a beneficial practice in supporting or refuting the finding. Fire Protection NFPA 805 and Station Blackout licensing basis changes are examples where this practice has helped build consensus for potential newly identified SSCs.

3 REPORTING

When newly identified SSCs in scope of license renewal are identified, § 54.37(b) states the following:

> *"…the FSAR 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. This FSAR update must describe how the effects of aging will be managed such that the intended function(s) in § 54.4(b) will be effectively maintained during the period of extended operation."*

RIS 2007-16 attempts to clarify where newly identified SSCs are to be identified in the FSAR Update section as follows:

> *"The FSAR update required by 10 CFR 54.37(b) must include newly identified SSCs that would have been subject to an aging management review or evaluation as a TLAA in accordance with 10 CFR 54.21. The FSAR update needs to describe how the licensee will manage the effects of aging in order to effectively maintain the intended function(s) in 10 CFR 54.4(b) during the period of extended operation.*
>
> *When the NRC issued the amended license renewal rule in 1995, the Commission stressed the importance of describing the aging management reviews or TLAAs for newly identified SSCs in the FSAR (Volume 60 of the Federal Register (FR), pages 22483–22484 (60 FR 22483-22484)). The FR notice noted that such a level of detail appeared to be at odds with the requirement in 10 CFR 54.21(d) that the FSAR supplement need only contain a summary description of the aging management programs or TLAAs. However, the Commission explained that for those SSCs that were subject to an aging management review as part of the license renewal process, the application itself and the FSAR supplement together provided the requisite regulatory control to ensure the efficacy of the aging management program. Newly identified SSCs have not been subjected to the same level of review. Thus, the level of detail required to describe the aging management reviews or TLAAs in the FSAR update for newly identified SSCs is appropriate, even though it is greater than the level of detail required for the original license renewal FSAR supplement."*

This last section of RIS 2007-16 makes it clear that the NRC expects licensees to make additions to the license renewal FSAR supplement regarding newly identified SSCs even though it would be a greater level of detail than the FSAR supplement originally contained. RIS 2007-16 states that the FSAR update needs to describe how the licensee will manage the effects of aging in order to effectively maintain the intended function(s) in 10 CFR 54.4(b) during the period of extended operation. The level of detail recommended for these FSAR supplement additions is the same level of detail found in license renewal application (LRA) aging management tables (commonly known as 3.X.2 tables for the standard numbering of these tables in the LRA). There is a multitude of acceptable ways to provide the newly identified SSC information to the FSAR supplement. One potential option is to identify all the new plant systems, component types, materials, environments, aging effects, and aging mechanisms managed to the summary descriptions of each AMP or TLAA affected in the FSAR supplement. This would provide the key information normally contained in 3.X.2 tables and would also meet the requirements of 10 CFR 54.37(b) that the "…FSAR update must describe how the effects of aging will be managed such that the intended function(s) in § 54.4(b) will be effectively maintained during the period of extended operation." A new paragraph could be added to the AMP/TLAA descriptions for each 54.37(b) review

that identifies new SSCs managed by the AMP. As stated previously, this is only one acceptable way to provide this information to the licensee's FSAR supplement. Each licensee may adopt a different format that provides the same level of required information.

Lastly, the letter to the NRC in accordance with 10 CFR 50.71(e) (FSAR update letter) should include a summary of the newly identified SSCs in scope of license renewal and how their aging effects requiring aging management will be managed as specified in 10 CFR 54.37(b). This can be presented in any format or style the licensee deems appropriate provided the information is complete and accurate.

4 REFERENCES

1. NRC 10 CFR Part 54, Requirements for Renewal of Operating Licenses for Nuclear Power Plants.

2. NRC Regulatory Issue Summary 2007-16, Rev. 1, Implementation of the Requirements of 10 CFR 54.37(b) for Holders of Renewed Licenses.

3. NEI IP-ENG-001, Rev. 1, Standard Design Change.

4. NEI IP-ENG-001-F-10, Rev. 1, Design Attribute Review.

5. NEI Position on Implementation of 10 CFR 54.37(b) (ML061860752).,