

NUREG-1800

Standard Review Plan for Review of License Renewal Applications for Nuclear Power Plants

U.S. Nuclear Regulatory Commission

Office of Nuclear Reactor Regulation



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Standard Review Plan for Review of License Renewal Applications for Nuclear Power Plants

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Abstract

The Standard Review Plan for Review of License Renewal Applications for Nuclear Power Plants (SRP-LR) provides guidance to Nuclear Regulatory Commission staff reviewers in the Office of Nuclear Reactor Regulation. These reviewers perform safety reviews of applications to renew nuclear power plant licenses in accordance with Title 10 of the Code of Federal Regulations Part 54. The principal purposes of the SRP-LR are to ensure the quality and uniformity of staff reviewers and to present a well-defined base from which to evaluate applicant programs and activities for the period of extended operation. The SRP-LR is also intended to make information about regulatory matters widely available, to enhance communication with interested members of the public and the nuclear power industry, and to improve their understanding of the staff review process. The safety review is based primarily on the information provided by the applicant in a license renewal application. Each of the individual SRP-LR sections addresses (1) who performs the review, (2) the matters that are reviewed, (3) the basis for review, (4) the way the review is accomplished, and (5) the conclusions that are sought.

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TABLE OF CONTENTS

	Page
ABSTRACT.....	iii
ABBREVIATIONS	ix
INTRODUCTION	1
CHAPTER 1. ADMINISTRATIVE INFORMATION.....	1-i
1.1 DOCKETING OF TIMELY AND SUFFICIENT RENEWAL APPLICATION	1.1-1
CHAPTER 2. SCOPING AND SCREENING METHODOLOGY FOR IDENTIFYING STRUCTURES AND COMPONENTS SUBJECT TO AGING MANAGEMENT REVIEW AND IMPLEMENTATION RESULTS	2-i
2.1 SCOPING AND SCREENING METHODOLOGY	2.1-1
2.2 PLANT-LEVEL SCOPING RESULTS.....	2.2-1
2.3 SCOPING AND SCREENING RESULTS: MECHANICAL SYSTEMS	2.3-1
2.4 SCOPING AND SCREENING RESULTS: STRUCTURES	2.4-1
2.5 SCOPING AND SCREENING RESULTS: ELECTRICAL AND INSTRUMENTATION AND CONTROLS SYSTEMS	2.5-1
CHAPTER 3. AGING MANAGEMENT REVIEW RESULTS	3-i
3.1 AGING MANAGEMENT OF REACTOR VESSEL, INTERNALS, AND REACTOR COOLANT SYSTEM.....	3.1-1
3.2 AGING MANAGEMENT OF ENGINEERED SAFETY FEATURES.....	3.2-1
3.3 AGING MANAGEMENT OF AUXILIARY SYSTEMS	3.3-1
3.4 AGING MANAGEMENT OF STEAM AND POWER CONVERSION SYSTEM.....	3.4-1
3.5 AGING MANAGEMENT OF CONTAINMENTS, STRUCTURES AND COMPONENT SUPPORTS	3.5-1
3.6 AGING MANAGEMENT OF ELECTRICAL AND INSTRUMENTATION AND CONTROLS	3.6-1

TABLE OF CONTENTS (continued)

	Page
CHAPTER 4. TIME-LIMITED AGING ANALYSES	4-i
4.1 IDENTIFICATION OF TIME-LIMITED AGING ANALYSES	4.1-1
4.2 REACTOR VESSEL NEUTRON EMBRITTLEMENT ANALYSIS	4.2-1
4.3 METAL FATIGUE ANALYSIS.....	4.3-1
4.4 ENVIRONMENTAL QUALIFICATION (EQ) OF ELECTRIC EQUIPMENT	4.4-1
4.5 CONCRETE CONTAINMENT TENDON PRESTRESS ANALYSIS.....	4.5-1
4.6 CONTAINMENT LINER PLATE, METAL CONTAINMENTS, AND PENETRATIONS FATIGUE ANALYSIS.....	4.6-1
4.7 OTHER PLANT-SPECIFIC TIME-LIMITED AGING ANALYSES	4.7-1
APPENDIX A: BRANCH TECHNICAL POSITIONS	A-i
A.1 AGING MANAGEMENT REVIEW — GENERIC (BRANCH TECHNICAL POSITION RLSB-1)	A.1-1
A.2 QUALITY ASSURANCE FOR AGING MANAGEMENT PROGRAMS (BRANCH TECHNICAL POSITION IQMB-1)	A.2-1
A.3 GENERIC SAFETY ISSUES RELATED TO AGING (BRANCH TECHNICAL POSITION RLSB-2)	A.3-1

LIST OF TABLES

	Page
Table 1.1-1. Acceptance Review Checklist for Docketing of Timely and Sufficient Renewal Application	1.1-5
Table 2.1-1. Sample Listing of Potential Information Sources	2.1-12
Table 2.1-2. Specific Staff Guidance on Scoping.....	2.1-13
Table 2.1-3. Specific Staff Guidance on Screening	2.1-15
Table 2.1-4. Typical “Passive” Structure and Component Intended Functions.....	2.1-16

LIST OF TABLES (continued)

	Page
Table 2.1-5. Typical Structures, Components, and Commodity Groups, and 10 CFR 54.21(a)(1)(i) Determinations for Integrated Plant Assessment	2.1-17
Table 2.2-1. Examples of System and Structure Scoping and Basis for Disposition	2.2-5
Table 2.3-1. Examples of Mechanical Components Scoping and Basis for Disposition	2.3-6
Table 2.3-2. Examples of Mechanical Components Screening and Basis for Disposition	2.3-6
Table 2.3-3. Examples of Mechanical Component Intended Functions.....	2.3-7
Table 2.4-1. Examples of Structural Components Scoping/Screening and Basis for Disposition	2.4-6
Table 2.5-1. Examples of “Plant Spaces” Approach for Electrical and I&C Scoping and Corresponding Review Procedures.....	2.5-7
Table 3.1-1. Summary of Aging Management Programs for Reactor Vessel, Internals, and Reactor Coolant System Evaluated in Chapter IV of the GALL Report.....	3.1-17
Table 3.1-2. FSAR Supplement for Aging Management of Reactor Vessel, Internals, and Reactor Coolant System.....	3.1-23
Table 3.2-1. Summary of Aging Management Programs for Engineered Safety Features Evaluated in Chapter V of the GALL Report.....	3.2-10
Table 3.2-2. FSAR Supplement for Aging Management of Engineered Safety Features	3.2-13
Table 3.3-1. Summary of Aging Management Programs for Auxiliary Systems Evaluated in Chapter VII of the GALL Report.....	3.3-13
Table 3.3-2. FSAR Supplement for Aging Management of Auxiliary Systems.....	3.3-17
Table 3.4-1. Summary of Aging Management Programs for Steam and Power Conversion System Evaluated in Chapter VIII of the GALL Report	3.4-9
Table 3.4-2. FSAR Supplement for Aging Management of Steam and Power Conversion System.....	3.4-11

LIST OF TABLES (continued)

	Page
Table 3.5-1. Summary of Aging Management Programs for Structures and Component Supports Evaluated in Chapters II and III of the GALL Report.....	3.5-12
Table 3.5-2. FSAR Supplement for Aging Management of Structures and Component Supports.....	3.5-17
Table 3.6-1. Summary of Aging Management Programs for the Electrical Components Evaluated in Chapter VI of the GALL Report.....	3.6-6
Table 3.6-2. FSAR Supplement for Aging Management of Electrical and Instrumentation and Control System.....	3.6-8
Table 4.1-1. Identification of Potential Time-Limited Aging Analyses and Basis for Disposition	4.1-7
Table 4.1-2. Potential Time-Limited Aging Analyses.....	4.1-7
Table 4.1-3. Additional Examples of Plant-Specific TLAA as Identified by the Initial License Renewal Applicants.....	4.1-8
Table 4.2-1. Examples of FSAR Supplement for Reactor Vessel Neutron Embrittlement TLAA Evaluation	4.2-9
Table 4.3-1. Stress Range Reduction Factors	4.3-10
Table 4.3-2. Example of FSAR Supplement for Metal Fatigue TLAA Evaluation.....	4.3-10
Table 4.4-1. Environmental Qualification Reanalysis Attributes	4.4-8
Table 4.4-2. Examples of FSAR Supplement for Environmental Qualification of Electric Equipment TLAA Evaluation.....	4.4-9
Table 4.5-1. Examples of FSAR Supplement for Concrete Containment Tendon Prestress TLAA Evaluation	4.5-5
Table 4.6-1. Examples of FSAR Supplement for Containment Liner Plates, Metal Containments, and Penetrations Fatigue TLAA Evaluation	4.6-6
Table A.1-1. Elements of an Aging Management Program for License Renewal.....	A.1-8
Table A.3-1. Examples of Generic Safety Issues that Should/Should Not Be Specifically Addressed for License Renewal and Basis for Disposition	A.3-3

ABBREVIATIONS

AFW	auxiliary feedwater
AMP	aging management program
AMR	aging management review
ANL	Argonne National Laboratory
ANSI	American National Standards Institute
ASME	American Society of Mechanical Engineers
ASTM	American Society for Testing and Materials
ATWS	anticipated transients without scram
B&W	Babcock & Wilcox
BWR	boiling water reactor
BWRVIP	Boiling Water Reactor Vessel and Internals Project
CASS	cast austenitic stainless steel
CDF	core damage frequency
CE	Combustion Engineering
CFR	Code of Federal Regulations
CLB	current licensing basis
CRD	control rod drive
CUF	cumulative usage factor
DBA	design basis accident
DBE	design basis event
DG	Draft Regulatory Guide
DOR	Division of Operating Reactors
ECCS	emergency core cooling system
EDG	emergency diesel generator
EFPY	effective full power year
EPRI	Electric Power Research Institute
FAC	flow-accelerated corrosion
FR	Federal Register
FSAR	Final Safety Analysis Report
GALL	Generic Aging Lessons Learned
GE	General Electric
GL	generic letter
GSI	generic safety issue
HAZ	heat-affected zone
HELB	high-energy line break
HPCI	high-pressure coolant injection
HVAC	heating, ventilation, and air conditioning
I&C	instrumentation and control
IASCC	irradiation assisted stress corrosion cracking
IEEE	Institute of Electrical and Electronics Engineers
IGA	intergranular attack

ABBREVIATIONS (continued)

IGSCC	intergranular stress corrosion cracking
IN	information notice
INPO	Institute of Nuclear Power Operations
IPA	integrated plant assessment
IPE	individual plant examination
IPEEE	individual plant examination of external events
IR	insulation resistance
ISI	inservice inspection
ITG	Issues Task Group
LCD	liquid crystal display
LED	light-emitting diode
LER	licensee event report
LOCA	loss of coolant accident
LTOP	low-temperature overpressure protection
MIC	microbiologically influenced corrosion
MRV	minimum required value
NDE	nondestructive examination
NDT	nil-ductility temperature
NEI	Nuclear Energy Institute
NFPA	National Fire Protection Association
NPS	nominal pipe size
NRC	Nuclear Regulatory Commission
NRR	NRC Office of Nuclear Reactor Regulation
NSAC	Nuclear Safety Analysis Center
NSSS	nuclear steam supply system
ODSCC	outside diameter stress corrosion cracking
OM	operation and maintenance
P&ID	pipng and instrument diagrams
PLL	predicted lower limit
PRA	probabilistic risk analysis
PT	penetrant testing
P-T	pressure-temperature
PTS	pressurized thermal shock
PWR	pressurized water reactor
PWSCC	primary water stress corrosion cracking
QA	quality assurance
RCIC	reactor core isolation cooling
RCPB	reactor coolant pressure boundary
RCS	reactor coolant system
RG	Regulatory Guide
RPV	reactor pressure vessel
RT	reference temperature

ABBREVIATIONS (continued)

SBO	station blackout
SCC	stress corrosion cracking
SER	safety evaluation report
SG	steam generator
S/G	standards and guides
SOC	statement of considerations
SOER	significant operating experience report
SRM	staff requirements memorandum
SRP	standard review plan
SRP-LR	standard review plan for license renewal
SS	stainless steel
SSC	systems, structures, and components
SSE	safe shutdown earthquake
TLAA	time-limited aging analysis
UFSAR	updated final safety analysis report
USI	unresolved safety issue
UT	ultrasonic testing
UV	ultraviolet

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INTRODUCTION

The Standard Review Plan for Review of License Renewal Applications for Nuclear Power Plants (SRP-LR) provides guidance to Nuclear Regulatory Commission (NRC) staff reviewers in the Office of Nuclear Reactor Regulation (NRR). These reviewers perform safety reviews of applications to renew nuclear power plant licenses in accordance with Title 10 of the *Code of Federal Regulations* (CFR) Part 54. The principal purposes of the SRP-LR are to ensure the quality and uniformity of staff reviews and to present a well-defined base from which to evaluate applicant programs and activities for the period of extended operation. The SRP-LR is also intended to make information about regulatory matters widely available, to enhance communication with interested members of the public and the nuclear power industry, and to improve their understanding of the staff review process.

The safety review is based primarily on the information provided by the applicant in a license renewal application. The NRC regulation, in 10 CFR 54.21, requires that each license renewal application shall include an integrated plant assessment (IPA), current licensing basis (CLB) changes during review of the application by NRC, an evaluation of time-limited aging analyses (TLAAs), and a final safety analysis report (FSAR) supplement.

In addition to the technical information required by 10 CFR 54.21, a license renewal application must contain general information (10 CFR 54.19), necessary technical specification changes (10 CFR 54.22), and environmental information (10 CFR 54.23). The application must be sufficiently detailed to permit the reviewers to determine (1) whether there is reasonable assurance that the activities authorized by the renewed license will continue to be conducted in accordance with the CLB and (2) whether any changes made to the plant's CLB to comply with 10 CFR Part 54 are in accord with the Atomic Energy Act of 1954 and NRC regulations.

Before submitting a license renewal application, an applicant should have analyzed the plant to ensure that actions have been or will be taken to (1) manage the effects of aging during the period of extended operation (this determination should be based on the functionality of structures and components that are within the scope of license renewal and that require an aging management review), and (2) evaluate TLAAs. The license renewal application is the principal document in which the applicant provides the information needed to understand the basis upon which this assurance can be made.

10 CFR 54.21 specifies, in general terms, the technical information to be supplied in the license renewal application. Regulatory Guide 1.188, "Standard Format and Content for Applications to Renew Nuclear Power Plant Operating Licenses," proposes to endorse the Nuclear Energy Institute (NEI) guidance in NEI 95-10, Rev. 3, "Industry Guideline for Implementing the Requirements of 10 CFR Part 54 — The License Renewal Rule." NEI 95-10 provides guidance on the format and content of a license renewal application. The SRP-LR sections are keyed to the RG-1.188 Standard Format document; the sections are numbered according to the section numbers in that document.

During the review of the initial license renewal applications, NRC staff and the applicants have found that most of the programs to manage aging that are credited for license renewal are existing programs. In a staff paper (SECY 99-148), "Credit for Existing Programs for License Renewal," dated June 3, 1999, the staff described options and provided a recommendation for crediting existing programs to improve the efficiency of the license renewal process. In a staff requirements memorandum (SRM) dated August 27, 1999, the NRC approved the staff recommendation and directed the staff to focus the review guidance in the SRP-LR on areas

where existing programs should be augmented for license renewal. Under the terms of the SRM, the SRP-LR would reference a "Generic Aging Lessons Learned" (GALL) report, which evaluates existing programs generically, to document (1) the conditions under which existing programs are considered adequate to manage identified aging effects without change and (2) the conditions under which existing programs should be augmented for this purpose.

The GALL report (NUREG-1801) should be treated as an approved topical report. The NRC reviewers should not repeat their review of a matter described in the GALL report, but should find an application acceptable with respect to such a matter when the application references the GALL report and the evaluation of the matter in the GALL report applies to the plant. However, reviewers should ensure that the material presented in the GALL report is applicable to the specific plant involved and that the applicants have identified specific programs as described and evaluated in the GALL report if they rely on the report for license renewal.

The SRP-LR is divided into four major chapters: (1) Administrative Information; (2) Scoping and Screening Methodology for Identifying Structures and Components Subject to Aging Management Review, and Implementation Results; (3) Aging Management Review Results; and (4) Time-Limited Aging Analyses. The appendixes to the SRP-LR list branch technical positions. The SRP-LR addresses various site conditions and plant designs and provides complete procedures for all of the areas of review pertinent to each of the SRP-LR sections. For any specific application, NRC reviewers may select and emphasize particular aspects of each SRP-LR section, as appropriate for the application. In some cases, the major portion of the review of a plant program or activity may be done on a generic basis (with the owners' group of that plant type) rather than in the context of reviews of particular applications from utilities. In other cases, a plant program or activity may be sufficiently similar to that of a previous plant that a complete review of the program or activity is not needed. For these and similar reasons, reviewers need not carry out in detail all of the review steps listed in each SRP-LR section in the review of every application.

The individual SRP-LR sections address (1) who performs the review, (2) the matters that are reviewed, (3) the basis for review, (4) the way the review is accomplished, and (5) the conclusions that are sought. One of the objectives of the SRP-LR is to assign review responsibilities to the appropriate NRR branches. Each SRP-LR section identifies the branch that has the primary review responsibility for that section. In some review areas, the primary branch may require support; the branches that are assigned these secondary review responsibilities are also identified for each SRP-LR section.

Each SRP-LR section is organized into the following six subsections, generally consistent with NUREG-0800 "Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants," (July 1981).

1. Areas of Review

This subsection describes the scope of review, that is, what is being reviewed by the branch that has primary review responsibility. It contains a description of the systems, structures, components, analyses, data, or other information that are reviewed as part of the license renewal application. It also contains a discussion of the information needed or the review expected from other branches to permit the primary review branch to complete its review.

2. Acceptance Criteria

This subsection contains a statement of the purpose of the review, an identification of applicable NRC requirements, and the technical basis for determining the acceptability of programs and activities within the area of review of the SRP-LR section. The technical bases consist of specific criteria, such as NRC regulatory guides, codes and standards, and branch technical positions.

Consistent with the approach described in NUREG-0800, the technical bases for some sections of the SRP-LR can be provided in branch technical positions or appendixes as they are developed and can be included in the SRP-LR.

3. Review Procedures

This subsection discusses the way the review is accomplished. It is generally a step-by-step procedure that the reviewer follows to provide reasonable verification that the applicable acceptance criteria have been met.

4. Evaluation Findings

This subsection presents the type of conclusion that is sought for the particular review area. For each section, a conclusion of this type is included in the safety evaluation report (SER), in which the reviewers publish the results of their review. The SER also contains a description of the review, including which aspects of the review were selected or emphasized; which matters were modified by the applicant, required additional information, will be resolved in the future, or remain unresolved; where the applicant's program deviates from the criteria provided in the SRP-LR; and the bases for any deviations from the SRP-LR or exemptions from the regulations.

5. Implementation

This subsection discusses the NRC staff's plans for using the SRP-LR section.

6. References

This subsection lists the references used in the review process.

The SRP-LR incorporates the staff experience in the review of the initial license renewal applications. It may be considered a part of a continuing regulatory framework development activity that documents current methods of review and provides a basis for orderly modifications of the review process in the future. The SRP-LR will be revised and updated periodically, as needed, to incorporate experience gained during future reviews, to clarify the content or correct errors, to reflect changes in relevant regulations, and to incorporate modifications approved by the NRR Director. A revision number and publication date are printed in a lower corner of each page of each SRP-LR section. Because individual sections will be revised as needed, the revision numbers and dates will not be the same for all sections. The table of contents indicates the revision numbers of the most current sections. Comments and suggestions for improvement should be sent to the Director, Office of Nuclear Reactor Regulation, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001. Notices of errors or omissions should be sent to the same address.

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