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Procedure Contains NMM REFLIB Forms: YES NO

Effective Date 2/16/12	Procedure Owner: Title: Site:	Charlene Faison Manager Licensing White Plains Office	Governance Owner: Title: Site:	VP, Nuclear Safety, EP and Licensing White Plains Office
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Exception Date*	Site	Site Procedure Champion	Title
	ANO	David Bice	
	BRP	Jeff Erickson	Senior Licensing Specialist
	GGNS	Rita Jackson	
	IPEC		
	JAF	Eugene Dorman	Senior Lead Engineer
	PLP	Jeff Erickson	Senior Engineer
	PNPS		
	RBS		
	VY		Senior Lead Engineer
	W3		
	HQN	Ron Byrd	Senior Staff Engineer
N/A	NP		

Site and NMM Procedures Canceled or Superseded By This Revision
None.

Process Applicability Exclusion: All Sites:
 Specific Sites: ANO BRP GGNS IPEC JAF PLP PNPS RBS VY W3 NP

Change Statement:

Revision 9 makes an editorial change to a procedure reference. EN-TQ-205 was deleted because the training exemption process was incorporated into procedure EN-TQ-212. Rev. 9 replaces the reference to EN-TQ-205 with a reference to EN-TQ-212.



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1.0 PURPOSE

- [1] This procedure prescribes and establishes:
- (a) Controls and methods for preparing, reviewing, approving and documenting 10 CFR 50.59 Evaluations.
 - (b) Requirements for qualifying personnel who prepare or review 10 CFR 50.59 Evaluations.

2.0 REFERENCES

2.1 REGULATORY REFERENCES


- [1] 10 CFR 50.2, *Definitions*
- [2] 10 CFR 50.59, *Changes, Tests, or Experiments*
- [3] NRC Regulatory Guide 1.187, *Guidance for Implementation of 10 CFR 50.59 Changes, Tests, and Experiments*
- [4] NRC NUREG-0800, *Standard Review Plan*
- [5] NRC Letter from Mr. P. B. Erickson to Mr. S. B. Bram, *Order to Authorize Decommissioning and Amendment No. 45 to License No. DPR-5 for Indian Point Unit No. 1 (TAC No. M59664)*, dated January 31, 1996
- [6] QAPM A.7a [ANSI N18.7 4.3.4(1)]
- [7] QAPM A.7a [ANSI N18.7 4.3.4(2)]
- [8] QAPM-Table 1 C. 6

2.2 INDUSTRY REFERENCES

- [1] NEI 96-07, *Guidelines for 10 CFR 50.59 Implementation*
- [2] NEI 96-07, Appendix E, *User's Guide for NEI 96-07, Revision 1, "Guidelines for 10 CFR 50.59 Implementation"*
- [3] NEI 01-01, *Guideline on Licensing Digital Upgrades*

3.0 DEFINITIONS

- [1] 10 CFR 50.59 (50.59) - Federal regulation that allows a licensee to:
 - Make changes to the facility as described in the Updated Final Safety Analysis Report (UFSAR),

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3.0 [1] Cont.

- Make changes to procedures as described in the UFSAR, and
- Conduct tests or experiments not described in the UFSAR


Without obtaining a license amendment pursuant to 10 CFR 50.90 if:

- A change to the Technical Specifications (TS) incorporated into the Operating License (OL) is not required **and**
- The change, test, or experiment does not meet any of the eight criteria specified in 10 CFR 50.59(c)(2).

[10 CFR 50.59(c)(1) and (c)(2)]

- [2] 50.59 Evaluation - The documented evaluation against the eight criteria in 10 CFR 50.59(c)(2) that determines if a proposed change, test, or experiment requires prior NRC approval via a license amendment under 10 CFR 50.90.
- [3] 50.59 Program Coordinator – The designated individual at each site (including headquarters) who serves as the contact for the 50.59 Evaluation Program, maintains the program, and conducts/provides needed training.
- [4] Accident analyses - The accident analyses are typically performed for a bounding set of accidents. The set is chosen to include all credible accidents, anticipated operating occurrences (AOOs), and a limited number of design basis accidents (DBAs) not expected to occur, but which are used to confirm the adequacy of the plant design.
- [5] Accidents previously evaluated in the UFSAR - The abnormal operations, transients, and DBAs that are analyzed to demonstrate that the plant can operate without undue risk to the health and safety of the public. The accidents considered for the plant involve the possible direct release of radioactive material and are typically found in UFSAR Chapters 6 and/or 15 (standard UFSAR format).
- [6] Change - A modification or addition to, or removal from the facility or procedures that affects:
- (a) A design function, or
 - (b) A method of performing or controlling the design function, or
 - (c) A method of evaluation that demonstrates the intended design functions will be accomplished.

An activity involving a system, structure, or component (SSC) not explicitly described in the UFSAR that affects the function of an SSC that is explicitly described in the UFSAR is also considered a change.


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3.0 Cont.

- [7] Consequences of an accident or malfunction of equipment important to safety - The radiological consequences (dose) that may result from an accident or equipment malfunction. Additionally, onsite dose consequences that restrict access to vital areas or otherwise impede actions to mitigate the consequences of accidents may require a license amendment.
- [8] Departure from a method of evaluation described in the UFSAR used in establishing the design bases or in the safety analyses –
- (a) Changing any element of the method described in the UFSAR unless the results of the analysis are conservative or essentially the same; or
 - (b) Changing from a method described in the UFSAR to another method unless that method has been approved by NRC for the intended application and all conditions specified in the associated NRC Safety Evaluation are met for the site adopting the new method.

Results are “essentially the same” if they are within the margin of error for the type of analysis being performed.

- [9] Described in the UFSAR – SSCs, procedures, tests, descriptions, analyses, drawings, etc. that are described explicitly or implicitly in the UFSAR.
- [10] Design bases - As defined in 10 CFR 50.2, that information which identifies the specific functions to be performed by an SSC and the specific values or range of values chosen for controlling parameters as reference bounds for design. These values may be:
- (a) Restraints derived from generally accepted "state-of-the-art" practices for achieving functional goals; or
 - (b) Requirements derived from analysis (based on calculations and/or experiments) of the effects of a postulated accident for which an SSC must meet its functional goals.
- [11] Design basis limit for a fission product barrier – The controlling numerical value as presented in the UFSAR for any parameter used to determine the integrity of a fission product barrier.
- [12] Design function – UFSAR-described design bases functions and other SSC functions described in the UFSAR that support or impact design bases functions. Design bases functions are functions performed by SSCs that are (1) required by, or otherwise necessary to comply with, regulations, license conditions, orders or technical specifications, or (2) credited in licensee safety analyses to meet NRC requirements.


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3.0 [12] Cont.

Implicitly included within the meaning of design function are the conditions under which intended functions are required to be performed, such as equipment response times, process conditions, equipment qualification, and single failure criteria. This may include:

- (a) Functions performed by safety-related SSCs or non-safety-related SSCs, and
- (b) Functions performed by non-safety-related SSCs that, if not performed, would initiate a plant transient or accident.

- [13] Updated Final Safety Analysis Report (UFSAR) - The Safety Analysis Report submitted in accordance with 10 CFR 50.34, as amended and supplemented, and as updated per the requirements of 10 CFR 50.71(e). [10 CFR 50.59(c)(3)]
- [14] Important to Safety - The term "important to safety" refers to safety-related and non-safety-related SSCs whose failure could impair the ability of equipment necessary for safe shutdown and accident mitigation equipment/structures to perform as designed.
- [15] Input parameters - Those values derived directly from the physical characteristics of SSC or processes in the plant, including flow rates, temperatures, pressures, dimensions or measurements (e.g., volume, weight, size, etc), and system response times.
- [16] Licensing Basis Documents (LBDs) - Documents that contain analyses and evaluations describing the licensing basis aspects of the facility. See NMM Procedure EN-LI-100 for more information.
- [17] Malfunction of an SSC important to safety – The failure of an SSC to perform its intended design function(s) described in the UFSAR (whether or not classified as safety-related in accordance with 10 CFR Part 50, Appendix B).
- [18] Method of evaluation - The calculational or methodical framework that is used for evaluating behavior or response of the facility or an SSC.
- [19] Method of performing or controlling a design function – How a design function is accomplished as credited in the safety analyses, including specific operator actions, procedural steps or sequences, or whether a specific function is to be initiated by manual versus automatic means. For example, substituting a manual actuation for automatic would constitute a change to the method of performing or controlling the function.

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3.0 Cont.

[20] Minimal increase in consequences - An increase in consequences (dose) from a proposed change is defined to be no more than minimal if the increase:

- (a) Is less than or equal to 10% of the difference between the current calculated dose value and the regulatory limit (e.g., 10 CFR Part 100 or GDC 19, as applicable), **and**
- (b) The increased dose does not exceed the NRC's Standard Review Plan (SRP) guideline value for the particular design basis event.

If the current calculated dose consequences already exceed the SRP value, a "minimal increase in consequences" is defined as being ≤ 0.1 Rem.


The current calculated dose values are those documented in the most up-to-date analyses of record. This approach establishes the SRP guidelines as a basis for minimal increases for all facilities not just those that were specifically licensed against those guidelines.

[21] Minimal increase in the frequency of occurrence of an accident – An increase in the frequency of occurrence of an accident is defined to be not more than minimal if:

- (a) The change has a negligible increase in frequency; or
- (b) The change meets applicable NRC requirements as well as the design, material, and construction standards applicable to the SSC being modified; or
- (c) The change in frequency meets one of the following criteria:
 - (1) The increase in the pre-change accident or transient frequency does not exceed 10%, or
 - (2) The resultant frequency of occurrence remains below 1E-6/year or applicable plant-specific threshold.


[22] Minimal increase in the likelihood of occurrence of a malfunction of an SSC – A change in likelihood is not more than minimal if it is so small or the uncertainties in determining whether a change in likelihood has occurred are such that it cannot be reasonably concluded that the likelihood has actually changed (i.e., there is no clear trend towards increasing the likelihood).

[23] On-Site Safety Review Committee (OSRC) - The onsite committee that independently reviews operational activities in order to provide additional assurance that the plant is operated and maintained to ensure nuclear safety. The OSRC is governed by NMM Procedure EN-OM-119.

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3.0 Cont.

- [24] Operating License (OL) – The document issued by the NRC that authorizes operation of a nuclear facility subject to the terms and conditions identified in the document. The OL may include: Appendix A, Technical Specifications (TS); Appendix B, Environmental Protection Plan; Appendix C, Anti-Trust Conditions; NRC Orders, as applicable; and other License Conditions.
- [25] Possible accident of a different type – An accident that involves an initiator or failure not considered in the UFSAR and one that is not bounded by other events that have been analyzed.
- [26] Possible malfunction of an SSC with a different result – A malfunction of an SSC that involves a different result than that considered in the UFSAR.
- [27] Procedures as Described in the UFSAR – Those procedures that contain information described in the UFSAR such as how SSCs are operated and controlled (including assumed operator actions and response times).
- [28] Qualified Individual - A person who is qualified per Section 5.5 to function as a Preparer or Reviewer.
- [29] Safety analyses - Analyses performed pursuant to NRC requirements to demonstrate the integrity of the reactor coolant pressure boundary, the capability to shut down the reactor and maintain it in a safe shutdown condition, or the capability to prevent or mitigate the consequences of accidents that could result in potential offsite exposures comparable to the guidelines in 10 CFR 50.34(a)(1) or 10 CFR 100.11. Safety analyses are required to be presented in the UFSAR per 10 CFR 50.34(b) and 10 CFR 50.71(e).
- [30] Safety Review Committee (SRC) - A review group whose primary purpose is to provide independent review of activities affecting nuclear safety. The SRC is governed by NMM Procedure EN-QV-130.
- [31] Standard Review Plan (SRP) – The SRP is NRC NUREG-0800, which provides acceptance criteria that NRC uses to determine if a nuclear power plant has been designed and built in accordance with regulatory requirements.
- [32] Technical Requirements Manual (TRM) - The document that contains those limitations upon plant operations which are part of the licensing basis for the facility but do not meet the criteria for inclusion in the TS. It also provides information that supplements the TS.
- [33] Technical Specifications (TS) - The portion of the plant OL that contains safety limits, limiting conditions for operation, surveillance requirements, design features, administrative controls, and other requirements imposed on the operation of the plant.


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3.0 Cont.

- [34] Technical Specification Bases (TS Bases) – The document that describes the underlying elements and bases of each TS. The TS Bases may include information on system operation, specific safety functions, related safety analyses, and surveillance testing. The TS Bases are NOT part of the OL.

4.0 RESPONSIBILITIES

- [1] The corporate Nuclear Safety & Licensing (NS&L) Department is responsible for maintaining this procedure.
- [2] Each site licensing department is responsible for:
- (a) Implementing this procedure at the site.
 - (b) Assigning a site 50.59 Program Coordinator.
 - (c) Submitting the periodic 50.59 Evaluation summary report to the NRC in accordance with 10 CFR 50.59(d)(2).
- [3] Each 50.59 Program Coordinator is responsible for:
- (a) Overseeing implementation of the 50.59 Program at his/her site.
 - (b) Ensuring training is provided in support of this procedure.
- [4] Each site Manager, Training and Development is responsible for maintaining training records of Qualified Individuals and providing training support, as appropriate.
- [5] Each site Department Head is responsible for:
- (a) Ensuring adequate numbers of individuals within the department are qualified to perform 50.59 Evaluations to support 50.59-related activities.
 - (b) Determining site-specific competence of Qualified Individuals who perform 50.59 Evaluations.
- [6] The Preparer is responsible for performing 50.59 Evaluations in accordance with this procedure. The preparer must be knowledgeable of the subject being evaluated.
- [7] The Reviewer is responsible for reviewing the 50.59 Evaluation and concurring with its conclusions based on the evidence presented. (This concurrence is NOT an independent review as defined in ANSI N18.7 Section 2.2.) The reviewer must be knowledgeable of the subject being evaluated.

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5.0 DETAILS

5.1 PRECAUTIONS AND LIMITATIONS


- [1] This procedure is normally entered from NMM Procedure EN-LI-100, *Process Applicability Determination*. However, other procedures may require a 50.59 Evaluation in accordance with this procedure. If directed to this procedure by a process or procedure other than EN-LI-100, the Preparer is to ensure that a Process Applicability Determination or an equivalent review has been performed for the proposed activity in accordance with EN-LI-100.
- [2] While Autonomy is a good tool to use for finding documentation related to a proposed change, Autonomy is not controlled at all sites. Therefore, controlled documents must be reviewed when assessing impacts.

5.2 GENERAL OVERVIEW

- [1] If it can be determined that prior NRC review and approval is required for an activity without performing a 50.59 Evaluation, then ensure that a license amendment request is submitted to the NRC.
- [2] Any 50.59 Evaluation performed that has been signed and dated by the Preparer prior to the effective date of this procedure revision may be processed for 60 days following the effective date.

If a revision to a 50.59 Evaluation is required within the 60-day period, the revision should be performed in accordance with the procedure revision used for the original 50.59 Evaluation. If the 60-day period has expired, the revision of the 50.59 Evaluation must be performed in accordance with this procedure. See Section 5.4 for additional information regarding revisions.

- [3] Steps within this procedure may be performed out of sequence.
- [4] Computer generated forms containing the same informational requirements as the procedure forms may be used in lieu of actual procedure forms if confirmed to be consistent with the latest revision of this procedure.
- [5] Signatures for the 50.59 Evaluation Form may be obtained via:
- (a) Electronic processes (e.g., PCRS, EC processes) provided the signature is traceable to a single person
 - (b) Manual methods (e.g., ink signature)
 - (c) E-mails (attach to the 50.59 Evaluation Form)
 - (d) Telecommunications (attach to the 50.59 Evaluation Form)

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5.2 *Cont.*

- [6] Changes to the IPEC Unit 1 Decommissioning Plan are to be evaluated in accordance with the 50.59 process, as allowed by the NRC in a letter to IPEC dated January 31, 1996. [IPEC-1 Letter RA960014]
- [7] The Preparer ensures a copy of the completed 50.59 Evaluation Form accompanies the evaluated document.

5.3 50.59 EVALUATION PROCESS


- [1] A 50.59 Evaluation is documented on the 50.59 Evaluation Form (Attachment 9.1).
- [2] Use the 50.59 Evaluation Form Instructions provided in Attachment 9.2 for completing the 50.59 Evaluation Form.
- [3] The OSRC sends a copy of any approved 50.59 Evaluation to the licensing department.
- [4] The 50.59 Evaluation should accompany or be linked to the associated change package [e.g., Engineering Change (EC) modification package, procedure change, or UFSAR change package], which is transmitted to station document control. [10 CFR 50.59(d)(1) and (d)(3)]

5.4 REVISIONS TO 50.59 EVALUATIONS

Any revision to a 50.59 Evaluation that affects the basis to any of the Evaluation questions requires the same level of review as the original. The Preparer adds a revision number to the existing 50.59 Evaluation number. The Preparer should also denote revised information in some conspicuous manner (e.g., hi-lighted text, clouded text, revision bars, etc.).

5.5 QUALIFICATION OF PERSONNEL

- [1] Preparers and reviewers are qualified and requalified in accordance with this procedure.
- [2] Preparers and reviewers previously qualified in accordance with ENN-LI-101 or ENS-LI-101 meet the training requirements for performing 50.59 Evaluations.
- [3] To become qualified, an individual successfully completes the training activities listed on the 10 CFR 50.59 Review Program Initial Training qualification card, FQC-ADM-5059 (fleet curricula F-ADM-5059 Evaluator). The qualification card should be completed within 90 days of completing the initial training. If not, the individual should repeat initial training.

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5.5 Cont.


- [4] Qualified 50.59 Evaluation preparers and reviewers must complete requalification training every three years in order to maintain their 50.59 Evaluation qualifications. Failure to meet this requalification requirement will result in lapsed qualification for a qualified individual.
- [5] An individual may be exempted from the qualification or requalification requirements by using the exemption process controlled by NMM Procedure EN-TQ-212, *Conduct of Training and Qualification*. Any person seeking 50.59 training exemption must receive approval from the site 50.59 Program Coordinator.
- [6] Once the individual successfully completes training, the site 50.59 Program Coordinator contacts training personnel, as appropriate, and submits appropriate entries to training records.
- [7] Refresher training is scheduled as deemed necessary by the site/corporate 50.59 Evaluation Program Coordinator or site management.
- [8] Lapsed Qualification
 - (a) Failure to attend or participate in any requalification training, or any refresher training that the 50.59 Task Force (from a fleet prospective), site 50.59 Program Coordinator or site management deems to be necessary, will result in lapsed qualification for a qualified individual.
 - (b) An individual whose qualification has lapsed may have his qualification reinstated by:
 - (1) Completing all required requalification or refresher training given since the date the qualification lapsed; or
 - (2) Being exempted in accordance with Section 5.5[4].

5.6 50.59 EVALUATION REPORT [10 CFR 50.59(d)(2)]

As required by 50.59(d)(2), the site licensing department submits a report of 50.59 Evaluations to the NRC. This report is to be submitted on a frequency not to exceed 24 months.

6.0 INTERFACES

- [1] NMM Procedure EN-LI-100, *Process Applicability Determination*
- [2] NMM Procedure EN-TQ-212, *Conduct of Training and Qualification*

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7.0 RECORDS

[1] Quality Records [10 CFR 50.59(d)(1) and (d)(3)]

50.59 Evaluations

[2] Record Retention Requirements [10 CFR 50.59(d)(3)]

50.59 Evaluations shall be maintained as follows:

- (a) 50.59 Evaluations of changes to the facility shall be maintained until the date of termination of the license.
- (b) 50.59 Evaluations of changes to procedures and 50.59 Evaluations of tests and experiments shall be maintained for a period of at least five (5) years.


8.0 SITE SPECIFIC COMMITMENTS

Step	Site	Document	Commitment Number or Reference
3.0 [1]	GGNS	10 CFR 50.59(c)(1)	P-17929
3.0 [1]	W3	10 CFR 50.59(c)(1)	P-1293
3.0 [1]	GGNS	10 CFR 50.59(c)(2)	P-17930
3.0 [13]	GGNS	10 CFR 50.59(c)(3)	P-34707
5.3[4] and 7.0[1]	GGNS	10 CFR 50.59(d)(1)	P-34704 & P-34705
5.6	GGNS	10 CFR 50.59(d)(2)	P-34709
5.3[4] and 7.0	GGNS	10 CFR 50.59(d)(3)	P-17928
3.0 [23][30]	GGNS	QAPM A.2.h	P-33633
All	GGNS	QAPM A.7.a, [ANSI N18.7 4.3.4(1)]	P-34230

All	W3	QAPM A.7.a, [ANSI N18.7 4.3.4(1)]	P-151
All	GGNS	QAPM A.7.a [ANSI N18.7 4.3.4(2)]	P-34420
All	W3	QAPM A.7.a [ANSI N18.7 4.3.4(2)]	P-151
All	GGNS	QAPM A.1.d	P-33616
All	IPEC-1	Letter RA960014, <i>Order to Authorize Decommissioning and Amendment No. 45 to License No. DPR-5 for Indian Point Unit No. 1 (TAC NO. M59664)</i>	None

9.0 **ATTACHMENTS**

- 9.1 50.59 Evaluation Form
- 9.2 50.59 Evaluation Form Instructions

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ATTACHMENT 9.1

50.59 EVALUATION FORM

Sheet 1 of 3

I. OVERVIEW / SIGNATURES¹

Facility: _____ Evaluation # / Rev. #: _____

Proposed Change / Document: _____

Description of Change:

Summary of Evaluation:

Is the validity of this Evaluation dependent on any other change? Yes No

If "Yes," list the required changes/submittals. The changes covered by this 50.59 Evaluation cannot be implemented without approval of the other identified changes (e.g., license amendment request). Establish an appropriate notification mechanism to ensure this action is completed.


Based on the results of this 50.59 Evaluation, does the proposed change require prior NRC approval? Yes No

Preparer: _____
Name (print) / Signature / Company / Department / Date

Reviewer: _____
Name (print) / Signature / Company / Department / Date

OSRC: _____
Chairman's Name (print) / Signature / Date [GGNS P-33633, P-34230, & P-34420; W3 P-151]

¹ Signatures may be obtained via electronic processes (e.g., PCRS, ER processes), manual methods (e.g., ink signature), e-mail, or telecommunication. If using an e-mail or telecommunication, attach it to this form. When using other manual methods, type/print Name, electronic method of signature, Company, and Department (and Date, if desired), where applicable.

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OSRC Meeting # _____

ATTACHMENT 9.1

50.59 EVALUATION FORM

Sheet 2 of 3

II. 50.59 EVALUATION [10 CFR 50.59(c)(2)]

Does the proposed Change being evaluated represent a change to a method of evaluation **ONLY?** If "Yes," Questions 1 – 7 are not applicable; answer only Question 8. If "No," answer all questions below. Yes
 No

Does the proposed Change:

1. Result in more than a minimal increase in the frequency of occurrence of an accident previously evaluated in the UFSAR? Yes
 No

BASIS: _____

2. Result in more than a minimal increase in the likelihood of occurrence of a malfunction of a structure, system, or component important to safety previously evaluated in the UFSAR? Yes
 No


BASIS: _____

3. Result in more than a minimal increase in the consequences of an accident previously evaluated in the UFSAR? Yes
 No

BASIS: _____

4. Result in more than a minimal increase in the consequences of a malfunction of a structure, system, or component important to safety previously evaluated in the UFSAR? Yes
 No

BASIS: _____

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5. Create a possibility for an accident of a different type than any previously evaluated in the UFSAR? Yes
 No

BASIS: _____

6. Create a possibility for a malfunction of a structure, system, or component important to safety with a different result than any previously evaluated in the UFSAR? Yes
 No

BASIS: _____


7. Result in a design basis limit for a fission product barrier as described in the UFSAR being exceeded or altered? Yes
 No

BASIS: _____

8. Result in a departure from a method of evaluation described in the UFSAR used in establishing the design bases or in the safety analyses? Yes
 No

BASIS: _____

If any of the above questions is checked "Yes," obtain NRC approval prior to implementing the change by initiating a change to the Operating License in accordance with NMM Procedure EN-LI-103.

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ATTACHMENT 9.2

50.59 EVALUATION FORM INSTRUCTIONS

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I. OVERVIEW / SIGNATURES²

Facility: _____ **Evaluation # / Rev. #:** _____

Insert the facility and unit number and the Evaluation # and revision #, as applicable.

Proposed Activity / Document: _____

Provide the document title and number of the being reviewed (e.g., ER number and title, procedure number and title).

Description of Change: *This section can be any length, but should clearly provide a description of the change including the adverse effect that led to the need to perform a 50.59 Evaluation. It should describe the context of what is being changed in order that a third party reviewer can understand the adverse effect. The following should be included in the description:*

- *Clear description of the specifics of the proposed change presented in a summarization of the activity (i.e., not a list of every change but an overall description)*
- *Overall scope of the 50.59 Evaluation*
- *Acronyms or component numbers, if used (provide their noun names at least once)*

If this 50.59 Evaluation supports a Process Applicability Determination (PAD) per EN-LI-100, the Preparer may either copy the above information from the PAD and paste it into this form or provide a synopsis of the change and reference the PAD.

Personnel performing additional reviews of this Evaluation may be identified in this section.

Summary of Evaluation: *A summary of the Evaluation should be provided in this section.*

Is the validity of this Evaluation dependent on any other change? Yes No

If "Yes," list the required changes/submittals. The changes covered by this 50.59 Evaluation cannot be implemented without approval of the other identified changes (e.g., license amendment request). Establish an appropriate notification mechanism to ensure this action is completed.


While processing a license amendment, this section is to be used to continue the design change or procedure change while NRC review is progressing. The discussion should cover what is being reviewed by the NRC and what is being covered by the remainder of the 50.59 Evaluation that is not under NRC review.

Discuss the appropriate control and closure mechanism with your site's 50.59 Program Coordinator.

Based on the results of this 50.59 Evaluation, does the proposed change require prior NRC approval? Yes No

Document the conclusion of the 50.59 Evaluation by checking the appropriate box.

² Signatures may be obtained via electronic processes (e.g., PCRS, ER processes), manual methods (e.g., ink signature), e-mail, or telecommunication. If using an e-mail or telecommunication, attach it to this form. When using other manual methods, type/print Name, electronic method of signature, Company, and Department (and Date, if desired), where applicable.

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ATTACHMENT 9.2

50.59 EVALUATION FORM INSTRUCTIONS

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Preparer: _____
Name (print) / Signature / Company / Department / Date

Reviewer: _____
Name (print) / Signature / Company / Department / Date

When signing as Reviewer, your signature represents that you have read the conclusions and the discussions are complete in all respects for the Evaluation criteria. In addition, the Reviewer concurs that the activity has been properly evaluated in accordance with 50.59. As a minimum, the Reviewer should ensure the 50.59 Evaluation provides adequate justification for the stated conclusions.

OSRC: _____
Chairman's Name (print) / Signature / Date

Once approved, the document is sent to the Licensing Department.

II. 50.59 EVALUATION

General Guidance:


The 50.59 Evaluation criteria must be answered uniquely based on the question being asked. Repeating responses without consideration of the question generally indicates that the Preparer is not performing a complete Evaluation; therefore, it may be returned for revision.

The importance of the documentation is emphasized by the fact that experience and engineering knowledge (other than analytical models and experimental data) are often relied upon when performing the 50.59 Evaluation. Since an important goal of the 50.59 Evaluation is completeness, the items considered by the Preparer must be clearly stated. The 50.59 Evaluation should, as a minimum, consider the following:

- a) *What systems and components are affected by the change and what are the functions of those systems affected?*
- b) *What parameters of the accident analysis are affected by the change?*
- c) *What design basis accidents were reviewed for any effect?*

Questions such as the following may be helpful in focusing the 50.59 Evaluation and its review.

- a) *What is the intent of the Change?*
- b) *What is (are) the safety function(s) added, altered, deleted or preserved by the proposed Change?*
- c) *What interactions may occur between the Change and other systems/components?*
- d) *Are there seemingly positive aspects of the Change which could, in unusual circumstances, adversely affect safety?*

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- e) *What are the applicable accidents and malfunctions of equipment?*
- f) *What fission product barrier is affected and is the design basis limit for the barrier clearly defined?*
- g) *What safety concerns have to be addressed in the course of preparing the design Change, which would not routinely have been resolved by employing applicable codes and standards?*
- h) *What questions would a technically knowledgeable objective reviewer raise?*
- i) *What is the method of evaluation and how is it affected by the Change?*

Detailed guidance on performing 50.59 Evaluations is provided in Section 4.3 of NEI 96-07, Guidelines for 10 CFR 50.59 Implementation.

Detailed guidance on performing 50.59 Evaluations for digital upgrades is provided in NEI 01-01, Guideline on Licensing Digital Upgrades.

Does the proposed Change being evaluated represent a change to a method of evaluation ONLY? If “Yes,” Questions 1 – 7 are not applicable; answer only Question 8. If “No,” answer all questions below. Yes No

See guidance under Question 8 for what constitutes a change to a method of evaluation.


Does the proposed Change:

- 1. Result in more than a minimal increase in the frequency of occurrence of an accident previously evaluated in the UFSAR? Yes No

BASIS:

*To answer this question, the Preparer should consider which accidents evaluated in the UFSAR may be involved with the proposed activity. After identifying the accidents previously evaluated in the UFSAR that may be caused by the proposed activity (if any), a determination is made to whether the frequency of the accident occurring would be more than a minimal increase. To affect the frequency of occurrence of an accident, the change has to affect an “**accident initiator**”. Various questions may be asked to assist in this determination. For instance, does the change:*

- *Affect overall system performance or reliability in a manner that could change the likelihood of accident occurring?*
- *Use instrumentation with accuracies or response characteristics that are different from existing instrumentation such that an accident is more likely to occur (e.g., a pressure sensor that would allow a system to exceed its design pressure, thereby increasing the potential for a pipe break)?*
- *Cause systems to be operated outside of their design or test limits such as by imposing additional loads on electrical systems, operating piping systems at a higher pressure, operating a motor outside its rated voltage and amperage, vibration, water hammer, fatigue, etc.?*
- *Affect any system interface in a way that could lead to an accident?*
- *Result in changes to safety system operation that could affect accident frequency?*
- *Increase the possibility of operator error due to added complexity or other human factors conditions?*

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Also consider the environment at the installation site (e.g., temperature, humidity, seismic conditions, electromagnetic fields, and airborne particulates) to assess system performance relative to the system being replaced.

If the proposed change meets the applicable standards and does not affect overall system performance in a manner that could lead to an accident, the proposed change would not increase the frequency of an accident previously evaluated in the UFSAR. However, if the proposed change does affect overall system performance in a manner which could lead to an accident, then either a justification for concluding that there is less than a minimal increase in the likelihood of the accident occurring will need to be developed or it is concluded that the likelihood of the accident occurring is increased. More than a minimal increase in the frequency of occurrence would require a "Yes" response and a license amendment.

See Section 4.3.1 of NEI 96-07 for more information.

2. Result in more than a minimal increase in the likelihood of occurrence of a malfunction of a structure, system, or component important to safety previously evaluated in the UFSAR? Yes No

BASIS:


The first step is to determine what important-to-safety SSCs could be affected by the proposed activity. (Alternatively, for many changes it may be possible to justify that there is no effect on any important-to-safety equipment.) Important-to-safety equipment is defined with respect to a particular analyzed event. After identifying the important-to-safety equipment that could be affected (if any), an evaluation of the effects of the activity on the important-to-safety equipment is made. This evaluation should consider both direct and indirect effects.

After identifying the effect of the activity on the important-to-safety SSCs, a determination is made as to whether an increase in the likelihood of a malfunction has occurred. The following are examples of questions that can be used in making the determination: "Does the proposed activity meet the original design specifications for material and construction practices?" For example:

- Are the seismic specifications met, such as use of proper supports and proper anchoring?*
- Are separation criteria met, such as minimum distance between circuits in separate divisions, channels in the same division?*
- Are the environmental qualification criteria met, such as use of materials qualified for the environment (e.g., radiation, thermal, etc.) in which they will be used?*
- Are single failure criteria met?*

In evaluating the responses to this question, the only functions of the important-to-safety SSC that need to be considered are those that pertain to preventing and mitigating malfunctions and accidents described in the UFSAR.

Evaluations of a proposed activity for its effect on likelihood of a malfunction would be performed at the level of detail that is described in the UFSAR. Determining whether the likelihood of malfunction is more than minimally increased is made at a level consistent with the existing UFSAR-described failure modes and effects analyses. While the 50.59 Evaluation should take into account the level that was

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previously evaluated in terms of malfunctions and resulting event initiators or mitigation effects, it also needs to consider the nature of the proposed activity. Thus, for instance, if failures were previously postulated on a train level because the trains were independent, a proposed activity that introduces a cross-tie or credible common mode failure (e.g., as a result of an analog-to-digital upgrade) should be evaluated further to see whether the likelihood of malfunction has been increased. As a general rule of thumb, any change in likelihood of a malfunction by more than a factor of 2 is more than a minimal change and requires NRC approval. This factor of 2 should be applied at the component level.

Changes in design requirements for earthquakes, tornadoes, and other natural phenomena are considered malfunctions and should be treated as potentially affecting the likelihood of malfunction of equipment.


Although this criterion allows minimal increases, licensees must still meet applicable regulatory requirements and other acceptance criteria to which they are committed (such as contained in regulatory guides and nationally recognized industry consensus standards, e.g., the ASME B&PV Code and IEEE standards). Further, departures from the design, fabrication, construction, testing and performance standards as outlined in the GDC (Appendix A to Part 50) are not compatible with a “no more than minimal increase” standard. See Section 4.3.2 of NEI 96-07 for more information.

3. Result in more than a minimal increase in the consequences of an accident previously evaluated in the UFSAR? Yes
 No

BASIS:

*When answering this question, the first step is to determine which accidents evaluated in the UFSAR may have their consequences (radiological dose) altered or affected as a result of the proposed activity. (Alternatively, for many changes, it may be possible to simply demonstrate that there can be no radiological effect.) The next step (if necessary) is to determine if the activity does, in fact, alter the consequences of any of the accidents evaluated in the UFSAR. To affect the consequences of an accident, the change has to affect an **“accident mitigator”**. Equipment is important to safety with respect to a particular analyzed event and the safety function the equipment performs in preventing or mitigating the event. Thus, equipment may be “important to safety” for a given event yet serve no function in another. For example:*

- Could the activity change, prevent or degrade the effectiveness of actions described or assumed in an accident discussed in the UFSAR?*
- Does the activity alter assumptions previously made in evaluating the consequences of an accident described in the UFSAR?*
- Does the activity play direct a role in mitigating the consequences of an accident described in the UFSAR?*
- Could the activity affect any barrier that mitigates dose to the public (e.g., containment integrity, fuel safety limits, etc.)?*
- Does the activity affect the function of equipment designed to control the release of radioactive material?*
- Does the activity result in a new pathway for release of radioactive material?*
- Does the activity affect onsite dose in a way that restricts access to vital areas or impedes mitigating actions?*

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To be an “increase in consequences”, an increase in radiation dose as a result of accident analysis is required. If it is determined that the activity has no effect on the consequences of any accident described in the UFSAR, then the activity does not increase the consequences of an accident previously evaluated in the UFSAR. See the discussion on acceptance limit under Question 4.0, below.

If it is determined that the activity does have an effect on the consequences of the accident described in the UFSAR, then either:

- a) Demonstrate that the consequences of the accident described in the UFSAR are bounding for the activity (e.g., by showing that the dose consequences and assumptions used in the UFSAR analysis bound those that would be associated with the proposed activity); or*
- b) Revise and document the analysis taking into account the proposed activity and appropriate data inputs and determine if more than a minimal increase in consequences has occurred.*

If Item a) is satisfied, the activity does not result in more than a minimal increase in the consequences of an accident previously evaluated in the UFSAR. The comparison in Item b) will determine whether or not the activity does result in more than a minimal increase in the consequences for an accident previously evaluated in the UFSAR.

See Section 4.3.3 of NEI 96-07 for more information.

4. Result in more than a minimal increase in the consequences of a malfunction of a structure, system, or component important to safety previously evaluated in the UFSAR? Yes No

BASIS:


This question asks if the proposed change would result in more than a minimal increase in consequences (radiological releases) assuming a malfunction of an SSC important to safety was to occur.

An example of this is if a change is made so that an important-to-safety power supply failure now fails a valve in the open position where previously it failed in the closed position. If failing the valve in the open position results in more than a minimal increase in consequences of an accident as discussed in Question 3, then this change increases the consequences of a malfunction of an SSC important to safety.

If greater reliance is placed on a specific SSC to perform a safety function as a result of the change, then the consequences of a malfunction of that SSC may be increased. For example, if a change resulted in two safety functions being powered from the same emergency diesel generator where previously they had been powered from separate diesels, failure of the diesel to start could prevent both safety functions and, therefore, increase the offsite dose consequences associated with the diesel generator malfunction.

Similar to Question 3, other indirect effects from such events as missiles, flooding, line breaks, etc. need to be evaluated under this question.

See Section 4.3.4 of NEI 96-07 for more information.

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5. Create a possibility for an accident of a different type than any previously evaluated in the UFSAR? Yes No

BASIS:

An accident that involves an initiator or failure not considered in the UFSAR and that is not bounded by existing analyses is an accident of a different type.

The possible accidents of a different type are limited to those that are as likely to happen as those considered in the UFSAR. For example, a seismic-induced failure of a component that has been designed to the appropriate seismic criteria will not cause a malfunction of a different type. However, a change that increases the probability of an accident previously thought to be incredible (and thus not analyzed in the UFSAR) to the point where it becomes as likely as the accidents in the UFSAR creates a possible accident of a different type.

In answering this question, the first step is to determine the types of accidents that have been evaluated in the UFSAR. The second step is to identify the types of accidents that the proposed activity could create. Comparing the results of these two steps will determine the answer to the question.

See Section 4.3.5 of NEI 96-07 for more information.

6. Create a possibility for a malfunction of a structure, system, or component important to safety with a different result than any previously evaluated in the UFSAR? Yes No

BASIS:

This question asks if the proposed activity could lead to a failure mode with a "different result". In evaluating a proposed activity against this criterion, the types and results of failure modes of SSCs that have previously been evaluated in the UFSAR and that are affected by the proposed activity should be identified. This evaluation should be performed consistent with any failure modes and effects analysis (FMEA) described in the UFSAR, recognizing that certain proposed activities may require a new FMEA to be performed. Attention must be given to whether the malfunction was evaluated in the accident analyses at the component level or the overall system level. While the evaluation should take into account the level that was previously evaluated in terms of malfunctions and resulting event initiators or mitigation effects, it also needs to consider the nature of the proposed activity. Thus, for instance, if failures were previously postulated on a train level because the trains were independent, a proposed activity that introduces a cross-tie or credible common mode failure (e.g., as a result of an analog to digital upgrade) should be evaluated further to see whether new outcomes have been introduced.

Once the malfunctions previously evaluated in the UFSAR and the results of these malfunctions have been determined, then the types and results of failure modes that the proposed activity could create are identified. Comparing the two lists can provide the answer to the criterion question. An example that might create a malfunction with a different result could be the addition of a normally open vent line in the discharge of an emergency core cooling system pump. The different result of a malfunction could be potential voiding in the system causing it not to operate properly.

Equipment malfunctions should be considered as a malfunction with a different result based on the effects of the malfunction. A new failure mechanism is not a malfunction with a different result if the result or effect is the same as that previously evaluated in the UFSAR. For example, if a pump is replaced with a new design, there may be a new failure mechanism introduced that would cause a failure of the pump to run. But if this effect (failure of the pump to run) was previously evaluated and bounded, then a malfunction with a different result has not been created. See Section 4.3.6 of NEI 96-07 for more information.

7. Result in a design basis limit for a fission product barrier as described in the UFSAR being exceeded or altered? Yes No

BASIS:

Guidance for applying this criterion is structured around a two-step approach:

- Identify affected design basis limits for a fission product barrier.
- Determine if these limits are exceeded or altered.


Identifying Affected Design Basis Limits for a Fission Product Barrier

<u>Barrier</u>	<u>Parameter</u>
Fuel Cladding	DNBR/MCPR, fuel temperature, fuel enthalpy, clad strain, clad temperature, clad oxidation
RCS Boundary	Pressure and stresses
Containment Pressure	Containment design pressure

These limits have three key attributes:

The parameter is crucial to the barrier's integrity. **Design basis limits for fission product barriers establish the boundaries, or limits of the design bases as defined in 10 CFR 50.2. They are the limiting value for parameters that directly determine the performance of a fission product barrier. If those limits were to be exceeded, that information alone would be sufficient for the barrier's integrity to be questioned.**

The design basis limit may be thought of as the point at which confidence in the barrier begins to decrease.

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The limit is expressed numerically. Design basis limits are numerical values used in the overall design process, not descriptions of functional requirements. Design basis limits are typically the numerical event acceptance criteria utilized in the accident analysis methodology. The facility's design and operation associated with these parameters as documented in the UFSAR will be at or below (more conservative than) the design basis limit.

The limit is found in the UFSAR. As required by 10 CFR 50.34(b), design basis limits were presented in the original UFSAR and continue to reside in the UFSAR. They may be located in a vendor topical report that is included in the UFSAR by reference.

Any design basis limit for a fission product barrier that is controlled by another, more specific regulation or TS would not require evaluation under this question. The effect of the proposed change on those parameters would be evaluated in accordance with the more specific regulation. Evaluations under this question supporting proposed changes that might directly or indirectly affect a design basis limit covered by another regulation or TS need not be extended to consider those parameters. See Section 4.3.7 of NEI 96-07 for more information.

8. Result in a departure from a method of evaluation described in the UFSAR used in establishing the design bases or in the safety analyses? Yes
 No

BASIS:

Methods of evaluation described in the UFSAR subject to criterion 50.59(c)(2)(viii) are:

- Methods of evaluation used in analyses that demonstrate that design basis limits of fission product barriers are met [i.e., for the parameters subject to criterion c(vii)].*
- Methods of evaluation used in UFSAR safety analyses to demonstrate that consequences of accidents do not exceed 10 CFR 100 or 10 CFR 50 Appendix A limits.*
- Methods of evaluation for other analyses that demonstrate intended design functions will be accomplished, such as analyses that show that SSCs will function under design basis natural phenomena, environmental conditions, dynamic effects, etc., that the plant is required to withstand.*

Two-step process for applying Question 8:

- 1. Identify the method of evaluation affected (already determined to be in the UFSAR from Screening)*
- 2. Determine if the change constitutes a departure from the method previously approved.*

Applying a different method approved by NRC is acceptable when:

- Approved for specific plant/application*
- Approved for another plant provided:*
 - It is applicable for the type of analysis being conducted, and*
 - Applicable terms, conditions and limitations for use are satisfied*

If any of the above questions is checked "YES", obtain NRC approval prior to implementing the change by initiating a change to the Operating License in accordance with NMM Procedure EN-LI-103.