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UNITED STATES
NUCLEAR REGULATORY COMMISSION
OFFICE OF NUCLEAR REACTOR REGULATION
OFFICE OF NEW REACTORS
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April 13, 2016

NRC REGULATORY ISSUE SUMMARY 2016-03
10 CFR 50.59 ISSUES IDENTIFIED IN NRC'S SAN ONOFRE STEAM GENERATOR TUBE DEGRADATION LESSONS LEARNED REPORT

ADDRESSEES

All holders of an operating license under the provisions of Title 10 of the *Code of Federal Regulations* (10 CFR) Part 50, "Domestic Licensing of Production and Utilization Facilities," including those who have permanently ceased operations and have certified that fuel has been permanently removed from the reactor vessel.

All holders of and applicants for a power reactor combined license, standard design approval, or manufacturing license under 10 CFR Part 52, "Licenses, Certifications, and Approvals for Nuclear Power Plants." All applicants for a standard design certification, including such applicants after initial issuance of a design certification rule.

INTENT

The U.S. Nuclear Regulatory Commission (NRC) is issuing this regulatory issue summary (RIS) to highlight issues involving 10 CFR 50.59, "Changes, tests, and experiments," and 10 CFR Part 50, Appendix B, Criterion III, "Design Control," related to the process of identifying which changes, tests, or experiments are subject to an evaluation against the 10 CFR 50.59 criteria. These issues were identified with respect to the replacement steam generators at San Onofre Nuclear Generating Station (SONGS). This RIS requires no action or written response on the part of an addressee.

BACKGROUND INFORMATION

The requirements in 10 CFR 50.59 permit licensees to make changes in the facility or procedures as described in its updated final safety analysis report (UFSAR), or conduct tests or experiments not described in its UFSAR, without first obtaining a license amendment pursuant to 10 CFR 50.90, "Application for amendment of license, construction permit, or early site permit." The licensee can make these changes or conduct these tests or experiments without a license amendment only if a change to the facility's technical specifications is not required, and if the change, test, or experiment does not meet any of the eight criteria listed in 10 CFR 50.59(c)(2).

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Prior NRC approval is required by 10 CFR 50.59(c)(2)(viii) if the change, test, or experiment would, "Result in a departure from a method of evaluation described in the FSAR (as updated) used in establishing the design bases or in the safety analyses."

The definition in 10 CFR 50.59(a)(2) states the following:

> Departure from a method of evaluation described in the FSAR (as updated) used in establishing the design bases or in the safety analyses means:
>
> (i) Changing any of the elements of the method described in the FSAR (as updated) unless the results of the analysis are conservative or essentially the same; or
>
> (ii) Changing from a method described in the FSAR to another method unless that method has been approved by NRC for the intended application.

Section VIII of each design certification appendix to 10 CFR 52 contains a process similar to 10 CFR 50.59 for changes to Tier 2 of the design certification. A similar evaluation of processes associated with these evaluations is recommended for those affected addressees.

In November 2000, the NRC issued corresponding Regulatory Guide (RG) 1.187, "Guidance for Implementation of 10 CFR 50.59, Changes, Tests, and Experiments," (Agencywide Documents Access and Management System (ADAMS) Accession No. ML003759710). RG 1.187 endorsed an industry document, Nuclear Energy Institute (NEI) 96-07, Revision 1, "Guidelines for 10 CFR 50.59 Implementation," also issued in November 2000, (ADAMS Accession No. ML003771157).

SUMMARY OF ISSUE

On March 6, 2015, the NRC staff issued a report, "Review of Lessons Learned from the San Onofre Steam Generator Tube Degradation Event" (ADAMS Accession No. ML15062A125), along with an accompanying White Paper, "10 CFR 50.59; the Process, Application to Substantial Modifications to Licensee Facilities, and NRC Staff Assessment of Licensee Implementation," dated February 25, 2015 (ADAMS Accession No. ML13066A249). The SONGS lessons learned report highlights important aspects of the guidance in NEI 96-07, Revision 1, related to issues with the San Onofre 10 CFR 50.59 screening and evaluation for the replacement steam generators. These issues are discussed below.

In an augmented inspection report dated November 9, 2012 (ADAMS Accession No. ML12318A342), NRC inspectors identified a minor violation of 10 CFR 50.59(d)(1) which requires that the licensee maintain records of changes in the facility for changes that do not require license amendment. Specifically, the minor violation identified an inadequate 10 CFR 50.59 written evaluation for the San Onofre replacement steam generators related to whether the change from one computer code to another (ANSYS to ABAQUS) constituted a departure from the method of evaluation. The licensee revised the SONGS UFSAR to reflect that the stress analyses for the original SONGS Units 2 and 3 steam generators utilized the ANSYS computer program to evaluate reactor coolant system structural integrity. The analyses employed for the replacement steam generators used the ABAQUS computer program. The NRC inspection report stated that the licensee inappropriately evaluated this change against 10 CFR 50.59(a)(2)(i) (i.e., as a change to an element of a method) rather than against 10 CFR 50.59(a)(2)(ii) (as a change from one method to another method). As such, the

licensee's 10 CFR 50.59 evaluation did not address 10 CFR 50.59(a)(2)(ii) for changing to another method by describing whether "that method [ABAQUS] has been approved by NRC for the intended application" [emphasis added]. The NRC determined that the 10 CFR 50.59 written evaluation for this change did not provide an appropriate basis for the determination, and that the change in the method of evaluation did not require a license amendment prior to implementing the change, which constituted a minor violation of 10 CFR 50.59(d). The NRC inspection report describes that the licensee subsequently cited examples where ABAQUS had been approved by the NRC for the intended application. However, the listed examples included three NUREG contractor reports of research done for the NRC Office of Nuclear Regulatory Research, and do not constitute NRC approval. Specifically, NEI 96-07, Rev. 1, Section 4.3.8.2, "Guidance for Changing from One Method of Evaluation to Another," identifies two paths for NRC approval. The first path consists of a vendor's submittal of a topical report, and NRC issuing a safety evaluation report documenting generic NRC approval for the use of a specific analysis methodology by a given class of power plants. The second path consists of NRC approval of a specific analysis for a given plant via a license amendment.

A second issue involved the guidance in NEI 96-07, Revision 1, that defines "method of evaluation" as the calculational framework used for evaluating behavior or response of the facility. Per this definition, a method of evaluation could consist of a calculational framework of numerous calculations (e.g., a computer program), but it also might consist of a single calculation that is very simple (e.g., adding two numbers together). As such, the licensee's 10 CFR 50.59 is required to evaluate a change in a method of evaluation (e.g., from a computer program to a simple manual calculation) to determine whether the change requires prior NRC approval per 10 CFR 50.59(c)(2)(viii) as a "departure from the method of evaluation" as defined in 10 CFR 50.59(a)(2).

The third issue involves the failure of the licensee to properly identify at least 14 methods of evaluation listed in Section 3.9, "Mechanical Systems and Components," of the SONGS UFSAR that were changed as a result of the steam generator replacement efforts, and therefore, needed to be evaluated under 10 CFR 50.59. However, the licensee failed to identify these 14 changes as requiring an evaluation against the criteria in 10 CFR 50.59. As a result, the SONGS 10 CFR 50.59 evaluation did not appropriately discuss whether these changes in the method of evaluation met the definition in 10 CFR 50.59(a)(2) of a departure from a method of evaluation that would require a license amendment. This issue was not inspected, and dispositioned from an enforcement perspective in an NRC inspection report because the issue was raised after the licensee's decision to permanently cease power operations. The issue pertains to 10 CFR 50.59(d)(1), which requires the licensee to prepare a written evaluation providing the bases for the determination that the change, test or experiment does not require a license amendment pursuant to paragraph 10 CFR 50.59(c)(2) (e.g. criterion viii methods of evaluation).

BACKFITTING AND ISSUE FINALITY DISCUSSION

The RIS reiterates the NRC staff's position and practice with respect to the 10 CFR 50.59(a)(2) criterion with respect to departures from a method of evaluation in an FSAR, and does not represent a new or changed position or interpretation of the regulatory requirement. Therefore, issuance of the RIS does not represent backfitting or a violation of any issue finality provision in Part 52.

FEDERAL REGISTER NOTIFICATION

The NRC did not publish a notice of opportunity for public comment on this RIS in the *Federal Register* because it is informational and pertains to an NRC staff position that does not represent a new or changed regulatory requirement, interpretation or practice.

CONGRESSIONAL REVIEW ACT

This RIS is not a rule as defined in the Congressional Review Act (5 U.S.C. §§ 801-808).

PAPERWORK REDUCTION ACT STATEMENT

This RIS does not contain new or amended information collections requirements that are subject to the Paperwork Reduction Act of 1995 (44 U.S.C. 3501 et seq.). Existing requirements were approved by the Office of Management and Budget (OMB), control number 3150-0011.

Public Protection Notification

The NRC may not conduct or sponsor, and a person is not required to respond to, a request for information or an information collection requirement unless the requesting document displays a currently valid OMB control number.

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