

POLICY ISSUE (Information)

June 12, 2001

SECY-01-0103

FOR: The Commissioners

FROM: William D. Travers
Executive Director for Operations

SUBJECT: STP NUCLEAR OPERATING COMPANY EXEMPTION REQUESTS:
PROOF-OF-CONCEPT FOR RISK-INFORMING 10 CFR PART 50 OPTION 2

PURPOSE:

To inform the Commission of the staff's findings regarding the exemptions requested by STP Nuclear Operating Company (STPNOC) from the special treatment requirements¹ of Parts 21, 50, and 100 of Title 10 of the *Code of Federal Regulations* (10 CFR Parts 21, 50, and 100) as they apply to South Texas Project, Units 1 and 2 (STP). The staff views the STPNOC exemption requests as a proof-of-concept for Option 2 of SECY-98-300, "Options for Risk-Informed Revisions to 10 CFR Part 50, 'Domestic Licensing of Production and Utilization Facilities'," dated December 23, 1998 (RIP50 Option 2). Further, this paper and the planned July 20, 2001, Commission meeting will provide the staff's consultation with the Commission to satisfy 10 CFR 50.12(a)(2)(vi).

BACKGROUND:

In SECY-98-300, the staff recommended developing risk-informed approaches to applying the special treatment requirements. Option 2 of SECY-98-300 addresses changing the scope of structures, systems, and components (SSCs) needing special treatment, but maintains the expectation that SSCs will be able to perform their safety functions under design-basis conditions. Changes to the requirements pertaining to the design of the plant or the design-basis accidents are not included in RIP50 Option 2. In a staff requirements memorandum (SRM) dated June 8, 1999, the Commission directed the staff to proceed with RIP50 Option 2.

In SECY-99-256, "Rulemaking Plan for Risk-informing Special Treatment Requirements," dated October 29, 1999, the staff discussed an approach for risk-informing the scope of special treatment requirements. This approach included development of a new rule, 10 CFR 50.69, that would specify the appropriate treatment requirements for each category of SSC and a new appendix to 10 CFR Part 50 (to be designated Appendix T), to provide the requirements for categorizing SSCs based on their safety significance. A major element of the rulemaking plan

¹"Special treatment requirements" are requirements currently imposed on structures, systems, and components that go beyond industry-established requirements for equipment classified as commercial grade. The special treatment requirements provide additional confidence that the equipment is capable of meeting its functional requirements under design-basis conditions.

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described in SECY-99-256 was the review of the STPNOC exemption requests. The review of the STPNOC exemption requests is viewed as a proof-of-concept prototype for RIP50 Option 2 rulemaking. In an SRM dated January 31, 2000, the Commission approved the rulemaking plan and asked to be briefed on the STPNOC exemptions before they were granted.

The staff further refined its concept of the RIP50 Option 2 regulatory framework in SECY-00-194, "Risk-Informing Special Treatment Requirements," dated September 7, 2000, that states licensees will be required to maintain the functional capability of SSCs using existing or new programs. Should plant equipment be found to not function or is not maintained, licensees will be required to take corrective actions to restore functionality. RIP50 Option 2 does not provide for change of facility design. Any change in the design of the facility must continue to be performed in accordance with the licensee's design change program and an evaluation of the proposed design change pursuant to the requirements of 10 CFR 50.59, as necessary. This is the same as the current regulatory framework.

In its July 13, 1999, exemption requests, STPNOC sought approval of its processes for categorizing the safety significance of SSCs at STP and treatment of those SSCs consistent with its categorization process as the basis for granting the exemption. The scope of the exemptions requested includes only those safety-related SSCs that have been categorized as low safety significant (LSS) or as nonrisk significant (NRS) using STPNOC's categorization process. The licensee has indicated that the categorization and treatment processes will be implemented over the remaining licensed period of the facility. Thus, the basis for the exemptions granted is the staff's approval of the licensee's categorization process and alternative treatment elements, rather than a comprehensive review of the final categorization and treatment of each SSC. STPNOC submitted a revised exemption request on August 31, 2000.

On November 15, 2000, the staff issued a draft safety evaluation (SE), based on the revised exemption requests. The draft SE identified 16 open and 2 confirmatory items requiring a licensee response. STPNOC provided responses to the open and confirmatory items in supplemental submittals dated January 15, 18, and 23, March 19, May 8, and May 21, 2001. The staff has completed its review of the STPNOC exemption requests. This was a significant effort by the staff and as of May 26, 2001, the staff had expended more than 13,500 hours reviewing the licensee's proposal. Attachment 1 is the SE documenting the staff's findings on the STPNOC exemption requests. Attachment 2 contains the notices that the staff intends to issue that grant or deny the requested exemptions, as appropriate, based on its findings. Below is a summary of the staff's findings.

DISCUSSION:

Categorization

As discussed in SECY-00-0194, the key to risk-informing the special treatment requirements of 10 CFR Parts 21, 50, and 100 under RIP50 Option 2 is a robust categorization process.

The categorization process determines the safety significance of each SSC and places it in the appropriate risk-informed safety class (RISC). Under SECY-99-256, SSCs are categorized into four RISCs: RISC-1, safety-related and risk significant; RISC-2, nonsafety-related and risk significant; RISC-3, safety-related and low risk significant; and RISC-4, nonsafety-related and low risk significant.

A plant-specific probabilistic risk assessment (PRA)-based methodology in combination with a method of assessing qualitative risk and traditional engineering insights (expert panel-based methodology) are the foundation of a robust categorization process. The PRA-based methodology provides a quantitative measure for identifying SSCs that are important in terms of severe accident risk (core damage frequency [CDF] and large early release frequency [LERF]). A robust categorization process maintains defense-in-depth and sufficient safety margins, and addresses uncertainty consistent with Regulatory Guide (RG) 1.174, "An Approach for Using Probabilistic Risk Assessment in Risk-Informed Decisions on Plant-Specific Changes to the Licensing Basis." The process (1) preserves a reasonable balance among prevention of core damage, prevention of containment failure or bypass, and mitigation of the consequences of an offsite release; (2) preserves system redundancy, independence, and diversity commensurate with the expected frequency of challenges, the consequences of failure of the SSC, and the associated uncertainties in determining these parameters; (3) does not overrely on programmatic activities and operator actions to compensate for weaknesses in the plant design; and (4) takes common-cause failure into account.

Implicit in the RIP50 Option 2 categorization process is the assumption that SSCs will remain capable of performing their design functions consistent with the plant's design bases and the information used in the categorization process. This ties the staff's findings on the categorization process to its findings regarding the use of alternative treatment practices to maintain the functionality of SSCs. In addressing this, the categorization process is used to assess the impact of changes in SSC reliability and availability. This can be accomplished through risk sensitivity studies that vary the failure rates of SSCs identified as candidates for reduction in treatment requirements. The staff considers the use of an assumed increase in SSC failure rate in a sensitivity study to be reasonable provided the licensee's alternative treatment program maintains performance and implements corrective actions to maintain the performance of the SSCs within the assumed increase in failure rate. This should be accomplished through practices that provide reasonable confidence that the SSCs will remain capable of performing their design functions under design-basis conditions. Continued functionality is important given the potential common-cause effects of the reduction in treatment for all safety-related LSS and NRS SSCs and the limitations of sensitivity studies in addressing intersystem common-cause failures.

The staff has completed its review of the STPNOC categorization process. Under STPNOC's categorization process, SSCs are categorized as high safety significant (HSS), medium safety significant (MSS), LSS, or NRS. Safety-related HSS and MSS SSCs are equivalent to RISC-1 SSCs. Nonsafety-related HSS and MSS SSCs are equivalent to RISC-2 SSCs. Safety-related LSS and NRS SSCs are equivalent to RISC-3 SSCs. Nonsafety-related LSS and NRS SSCs are equivalent to RISC-4 SSCs. The details of the staff's review are provided in Section 3.0 of the attached SE (Attachment 1).

As noted in the SE, the staff found that STPNOC's categorization process used both a probabilistic and an expert panel based methodology that appropriately addressed the issues of defense-in-depth, maintenance of sufficient safety margins, intrasystem common cause failure (intersystem common cause failure is addressed through effective implementation of the licensee's alternative treatment program), and aggregate risk impacts. The STP PRA has also been the subject of previous reviews by the staff. These included a broad review by Sandia National Laboratories in 1991, and an application-specific review for graded quality assurance. On the basis of the staff's reviews of the STP PRA, the staff has concluded that the STP PRA is adequate for these exemptions. Sensitivity studies STPNOC conducted as part of its categorization process have shown that for an assumed factor of 10 increase in the failure rates (a measure of reliability) of LSS SSCs modeled in the PRA, there were small changes in CDF and LERF. These changes were within the guidelines of RG 1.174.

The staff concluded that the proposed categorization process was sufficiently robust to be acceptable for categorizing the risk significance of functions and SSCs and defining groups of SSCs to which varying levels of treatment can be applied according to risk significance. For LSS and NRS safety-related SSCs, the staff determined that exempting these SSCs from the special treatment requirements would not result in undue risk to public health and safety provided STPNOC effectively implements its alternative treatment processes to maintain the functionality of these SSCs under design-basis conditions.

Treatment

The categorization process provides a method for identifying groups of SSCs for which varying levels of treatment can be applied consistent with safety significance. For RISC-1 SSCs the current special treatment requirements continue to apply. SSCs categorized as RISC-2 remain within the scope of any applicable special treatment requirements and would require controls sufficient to maintain the reliability, availability, and capability of the SSCs consistent with the assumptions in the categorization process. For RISC-3 SSCs, the licensee would implement alternative treatment practices to provide reasonable confidence that the SSCs will be capable of performing their safety-related functions under design-basis conditions. Alternative treatment practices are expected to address programmatic elements such as design control; procurement; installation; maintenance; inspection, test, and surveillance; corrective action; oversight; and configuration control. RISC-4 SSCs are neither risk significant nor safety-related. Some RISC-4 SSCs are within the scope of current special treatment requirements. However, RISC-4 SSCs will be removed from the scope of these requirements and will not be within scope of any future treatment requirements developed for the RIP50 Option 2 rulemaking.

The staff position is that under RIP50 Option 2 safety-related low risk SSCs would remain in the plant and be expected to perform their design functions (SECY-98-300). Further, RISC-3 SSCs need to receive sufficient regulatory treatment to support the expectation that these SSCs will meet their functional requirements (SECY-99-256). The staff intends to accomplish this by establishing minimum requirements, reflecting the low safety significance of these SSCs, to maintain the functional capability of RISC-3 SSCs (SECY-00-194).

In reviewing the alternative treatment processes for STPNOC's safety-related LSS and NRS SSCs (RISC-3), the staff focused on the expected outcomes of these processes (i.e., maintaining functionality of the subject SSCs, and addressing high level programmatic elements for achieving that outcome). This is in contrast to the staff's initial and traditional

approach of reviewing the details of how the treatment processes would be implemented for LSS and NRS SSCs. The staff considers such a detailed review unnecessary because SSCs identified as LSS or NRS by STPNOC's categorization process should not contribute significantly to plant risk. The approach taken by the staff emphasizes that it is the licensee's responsibility to define the details of the treatment program so that the expected outcome of maintaining the functionality of low safety significant SSCs is achieved. Based on the above, the staff concluded that the acceptability of the alternative treatment processes is based on whether these processes, to be effectively implemented by STPNOC, can result in safety-related LSS and NRS SSCs remaining capable of performing their safety functions under design-basis conditions.

The staff has completed its review of the treatment processes proposed by STPNOC for the various categories of SSCs. The details of the staff's review are provided in Section 4.0 of the attached SE. As noted in the SE, the staff found that for HSS and MSS SSCs the elements of the proposed process for determining the treatment to be applied to both safety-related and nonsafety-related HSS and MSS SSCs are acceptable. The current special treatment requirements will continue to apply to safety-related HSS and MSS SSCs. In addition to any special treatment requirements that may be applicable, the licensee will target treatment to the aspects of nonsafety-related SSCs that are the basis for categorizing these SSCs as HSS or MSS. Based on the staff's review, the staff determined that the alternative treatment processes proposed by STPNOC contain elements that can result in safety-related LSS and NRS SSCs remaining capable of performing their safety-related functions under design-basis conditions. STPNOC's design control and corrective action process will continue to adhere to the requirements of 10 CFR Part 50, Appendix B, for all categories of safety-related SSCs. The staff's conclusion to grant the exemptions is based on the combination of its finding that the licensee's categorization process will effectively determine the risk significance of SSCs and that the alternative treatment program will provide treatment such that the functionality of the SSCs will be maintained consistent with the plant's design bases and information used in the categorization process.

Overview of STPNOC Exemption Findings

Based on its findings on categorization and treatment, the staff concluded that the licensee's request for exemptions from the following regulations can be granted for LSS and NRS SSCs as described in the attached SE:

<u>Regulation</u>	<u>SE Section</u>
10 CFR 21.3 - Definition of Basic Component	6.0
10 CFR 50.34(b)(10) and (11) - Related to 10 CFR Part 100, Appendix A	18.0
10 CFR 50.49(b) - Environmental Qualification of Electrical Equipment	8.0
10 CFR 50.55a(f) - Inservice Testing	9.0
10 CFR 50.55a(g) - Repair/Replacement and Inservice Inspection	10.0
10 CFR 50.55a(h) - IEEE 279 Quality and Qualification Requirements	11.0
10 CFR 50.59(c)(1), (c)(2), and (d)(1) - Prior review & approval of changes	12.0
10 CFR 50.65(b) - Maintenance Rule Scope	13.0
10 CFR Part 50, Appendix B - Quality Assurance Criteria	7.0
10 CFR Part 50, Appendix J - Type C Containment Leak Testing	14.0

10 CFR Part 100, Appendix A, VI(a)(1) & (2) - Seismic Design

18.0

In determining that exemptions from the above regulations can be granted, the staff used the provisions of 10 CFR 21.7 and 10 CFR 50.12. It is important to note that 10 CFR Part 100 does not have specific exemption provisions. The staff concluded that for the exemptions requested from Appendix A of 10 CFR Part 100, the exemption provisions of 10 CFR 50.12 could be applied consistent with previous Commission policy. Section 20.1 of the attached SE provides the staff's basis for this conclusion. Further, under 10 CFR 50.12, special circumstances must be present to grant exemptions from the regulations of 10 CFR Part 50. Based on the licensee's submittal, the staff determined that the categorization process is a material circumstance that was not considered when the above regulations were adopted and that it is in the public interest to grant such exemptions. The staff found that this meets the special circumstances of 10 CFR 50.12(a)(2)(vi). Section 20.2 of the attached SE provides the staff's basis for this conclusion. As required by 10 CFR 50.12(a)(2)(vi), if this provision is relied on exclusively for satisfying the special circumstances of 10 CFR 50.12(a)(2), the exemption may not be granted until the Executive Director for Operations has consulted with the Commission.

The licensee requested exemptions from two related regulations on maintaining the description of its operating quality assurance program (OQAP). The staff determined that the licensee must update its OQAP to reflect the changes in treatment for safety-related, low risk SSCs. STPNOC has submitted an update to its OQAP, which the staff has reviewed and found acceptable. The staff will issue notices denying the requested exemptions because the licensee must continue to meet the requirements of the following regulations:

<u>Regulation</u>	<u>SE Section</u>
10 CFR 50.34(b)(6)(ii) - 10 CFR 50, Appendix B Information in FSAR	7.0
10 CFR 50.54(a)(3) - Changes to QA Program	7.0

As a result of its review, the staff determined that exemptions from the General Design Criteria (GDC) of Appendix A to 10 CFR Part 50 were not necessary. As noted above, STPNOC has submitted a revision to its OQAP that the staff found acceptable. This meets the requirements of GDC 1. For the other GDC from which STPNOC requested exemptions, the staff determined that the regulations specify design requirements and STPNOC will continue to maintain the design of safety-related LSS and NRS SSCs consistent with these design requirements. On this basis, the staff concluded that it is not necessary to grant exemptions from these regulations in order for the licensee to implement the processes proposed in its submittal. To provide the licensee with the regulatory basis for this conclusion, the staff will issue notices denying the requested exemptions from the following regulations:

<u>Regulation</u>	<u>SE Section</u>
GDC 1 - Quality Standards and Records	7.0
GDC 2 - Protection Against Natural Phenomena	15.0
GDC 4 - Environmental and Dynamic Effects	16.0
GDC 18 - Inspect/Test Electrical Power Systems	17.0

COORDINATION:

The Advisory Committee on Reactor Safeguards (ACRS) was briefed on the STPNOC exemption requests in meetings on December 7, 2000, and February 21, April 6, and June 6, 2001. The staff will discuss the ACRS comments and its responses to them during the Commission meeting planned for July 20, 2001. The Office of the General Counsel has reviewed this paper and has no legal objection.

CONCLUSIONS:

The staff concluded that STPNOC's categorization process demonstrated an acceptable method for identifying safety-related SSCs so that the special treatment requirements in 10 CFR Parts 21, 50, and 100 can be relaxed. In the case of STPNOC, the quality of the PRA, unique design of the facilities, and programs committed to in the FSAR support the basis for granting these exemptions. This conclusion does not imply that this is the only categorization method that the staff would find acceptable.

Based on its review of the treatment process proposed by STPNOC, the staff concluded that it contains elements that, if effectively implemented by the licensee, can result in LSS and NRS SSCs remaining capable of performing their safety functions under design-basis conditions. The staff concluded that it was not necessary to review the licensee's implementation of the alternative treatment practices for this class of SSCs, because the SSCs were determined to be of low safety significance by a sufficiently robust categorization process.

The staff intends to issue the final SE and Notices of Exemptions two weeks following the meeting with the Commission. This period will allow the staff to address any final comments from internal or external stakeholders, including any provided by STPNOC based on its review of the SE provided in a letter dated June 5, 2001, in which the staff requested STPNOC to identify omissions or factual errors.

/RA/

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Attachments: 1. Safety Evaluation

2. STPNOC Exemptions

The staff intends to issue the final SE and Notices of Exemptions two weeks following the meeting with the Commission. This period will allow the staff to address any final comments from internal or external stakeholders, including any provided by STPNOC based on its review of the SE provided in a letter dated June 5, 2001, in which the staff requested STPNOC to identify omissions or factual errors.

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Attachments: 1. Safety Evaluation
2. STPNOC Exemptions

Package: ML 011560341
Prelim SE: ML 011510272
Page-vi-of SE ML 011560051

Draft Notices: ML 01110280

ACCESSION NUMBER: ML011560317

*see previous concurrence **SECY only, see previous concurrence *** No Legal Objection

OFFICE	PDIV-1/PM	PDIV-D/LA	PDIV-1/SC	PDIV/D	Tech Ed.	DIPM/D
NAME	JNakoski	MMcAllister*	RGramm*	SRichards*	PKleene**	BBoger*
DATE	05/30/01	5/24/01	5/23/01	5/24/01	5/29/01	5/30/01
OFFICE	DSSA/D	DRIP/D	DE/D	DLPM/D	OGC/NLO***	ADPT/D
NAME	GHolahan*	DMatthews*	JStrosnider*	JZwolinski*	JMoore for LChandler	BSheron
DATE	5/30/01	5/30/01	5/30/01	5/30/01	06/05/01	05/30/01
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ATTACHMENT 1

SAFETY EVALUATION

ATTACHMENT 2

STPNOC EXEMPTIONS