

NRR-PMDAPEm Resource

From: Regner, Lisa
Sent: Tuesday, June 27, 2017 12:26 PM
To: Free,Robert (DSHS)
Cc: Regner, Lisa; Burkhardt, Janet; Blechman, Paula
Subject: Notice of Impending Amendments for South Texas Project

Good Afternoon, Bob.

The NRC is close to issuing amendments to the operating licenses for the **South Texas Project, Units 1 and 2**, to allow STP Nuclear Operating Company to use a risk-informed and deterministic methodology to comply with the requirements of emergency core cooling systems following a loss of coolant accident specifically considering the impacts of debris in containment. The detrimental impacts of debris in containment (such as piping and component insulation) has been a NRC generic safety issue (GSI) for many years (i.e., GSI-191), and STP is the first site to request and be approved for a risk-informed resolution to this safety concern.

The design basis changes allow a risk-informed analysis to show that the risk associated with the loss of core and containment cooling function during certain LOCA events due to generation and transport of debris is very small and in accordance with the Commission's Safety Goal Policy Statements concerning the use of risk in licensing action decision-making. The NRC staff concluded that the plant meets our regulations with this permanent design change and is safe to continue to operate.

In addition, since the staff historically has interpreted the regulations as requiring a deterministic or bounding analysis to show compliance with ECCS functionality, the licensee has requested exemptions from certain requirements in the ECCS and containment spray system function regulations (10 CFR 50.46, and General Design Criteria 35, 38, and 41). The staff intends to grant these exemptions to allow STPNOC to use a risk-informed method instead of deterministic method for the specific cases where ECCS and CSS function was not assured considering debris. These specific cases are very few, and specifically comprise 1) weld breaks that are outside the plant-specific debris testing threshold and 2) hot-leg breaks greater than 16 inches.

There are no impacts to external accident evaluations, emergency planning, or environmental impacts (the Environmental Assessment was published in the *Federal Register* on May 9, 2017; 82 FR 21568). Additional details are below.

If you have any additional questions, please feel free to contact me at 301-415-1906.

Thanks,
Lisa

Lisa M. Regner

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By letter dated June 19, 2013, as supplemented by letters dated October 3, October 31, November 13, November 21, and December 23, 2013 (two letters); January 9, February 13, February 27, March 17, March 18, May 15 (two letters), May 22, June 25, and July 15, 2014; March 10, March 25, and August 20, 2015; April 13, May 11, June 9, June 16, July 18,

July 21 (two letters), July 28, September 12, October 20, and December 7, 2016; and January 19, 2017, STP Nuclear Operating Company (STPNOC, the licensee) submitted a license amendment application and associated exemption requests for South Texas Project (STP), Units 1 and 2, as the pilot plant for a risk-informed resolution to Generic Safety Issue 191, "Assessment of Debris Accumulation on PWR [pressurized-water reactor] Sump Performance," and to close Generic Letter 2004-02, "Potential Impact of Debris Blockage on Emergency Recirculation During Design Basis Accidents at Pressurized-Water Reactors," dated September 13, 2004.

The U.S. Nuclear Regulatory Commission (NRC, the Commission) plans to issue the enclosed Amendment No. 212 to Facility Operating License No. NPF-76 and Amendment No. 198 to Facility Operating License No. NPF-80 for STP, Units 1 and 2, respectively. The license amendments authorize revision of the design basis accident analysis as described in the Updated Final Safety Analysis Report (UFSAR) and revise the STP Technical Specifications for emergency core cooling and containment spray systems specific to the impacts of debris in containment.

The combined risk-informed and deterministic analysis methodology termed Risk over Deterministic, or RoverD, discussed in Section 1.3 of the staff's safety evaluation (SE), was a unique feature of this pilot proposal and received significant scrutiny. The NRC staff met with STPNOC staff and contractors in over 40 public meetings since 2011. The NRC staff observed plant-specific testing conducted at Texas A&M University and at Alden Laboratories in Holden, Massachusetts, to evaluate the STP's sump strainers response to debris. The NRC staff participated in 13 audits in Washington, DC; College Station, TX; Holden, MA; and Albuquerque, NM, contractor sites. NRC staff audits included entry into the STP containment to assess model accuracy, flow paths, and insulation and coatings condition. STPNOC responded to over 400 questions posed in NRC staff requests for additional information. The NRC staff also adopted recommendations from the Advisory Committee on Reactor Safeguards (ACRS) following meetings in September 2014, March 2015, April 5 and 18, 2017, and May 4, 2017. The ACRS issued a letter on May 17, 2017 (ADAMS Accession No. ML17137A325), to the Commission concluding that STPNOC's proposed changes to its licensing basis and technical specifications are acceptable.

The NRC staff assessed the results of STPNOC's implementation of the RoverD assessment methodology on the STP containment sumps performance considering the effects of debris as described. The NRC staff reviewed the submittal using the five key principles of risk-informed regulation specified in Regulatory Guide (RG) 1.174, Revision 2, "An Approach for Using Probabilistic Risk Assessment in Risk Informed Decisions on Plant Specific Changes to the Licensing Basis" (ADAMS Accession No. ML100910006) and other guidance, to prepare a comprehensive SE. The NRC staff concluded that the Five Key Principles of Risk-Informed Regulation have been met, and, thus, the RoverD methodology and results provide reasonable assurance that the ECCS and CSS structures, systems, and components will remain capable of performing their safety-related functions considering the effects of debris without endangering the health and safety of the public.

Attachment 2 of the SE documents the NRC staff review of STPNOC's use of RELAP5-3D as the platform to evaluate in-core thermal-hydraulic effects of debris on long-term core cooling following a loss of coolant accident. The NRC staff reviewed the RELAP5-3D platform specifically for STPNOC's use as a proposed long-term core cooling application since it is not an NRC-approved code for this application. The NRC staff concluded that the STPNOC long-term core cooling evaluation model is an acceptable evaluation model for debris impacts for hot leg breaks 16 inches in diameter and smaller. Further, the simulations performed with this evaluation model along with those from LOCADM demonstrate that the acceptance criteria have been satisfied. The findings in the NRC staff's SE are limited to STPNOC and are not a generic approval of the RELAP5-3D platform. As specified in SE Attachment 2 and SE Section 7.0, RELAP5-3D is acceptable only for use by STPNOC for specific application at STP and as limited by the SE. Prior NRC review and approval is needed for other licensees to use RELAP5-3D for similar applications.

STPNOC provided comments on the staff's fact check and sensitive information request. SE Enclosure 4 provides the staff's response to STPNOC's comments.

As part of the license amendment application, STPNOC requested exemptions from the requirements of Title 10 to the Code of Federal Regulations (10 CFR), Section 50.46, "Acceptance criteria for emergency core cooling systems for light-

water nuclear power reactors,” and 10 CFR 50, Appendix A, General Design Criterion (GDC) 35, “Emergency core cooling,” GDC 38, “Containment heat removal,” and GDC 41, “Containment atmosphere clean-up.” The exemption requests were necessary since the NRC has interpreted these regulations as requiring a deterministic approach and bounding calculation to show compliance with ECCS and CSS requirements. The NRC staff relied on its SE as part of the basis for granting the exemptions under 10 CFR 50.12. The exemption requests will be discussed in a separate letter (ADAMS Accession No. ML17037C871), and in an FRN Federal Register notice to be published shortly (ADAMS Accession No. ML17037C876).

The Commission supported the option of a risk-informed method to resolved GSI-191 in a December 14, 2012, Staff Requirements Memorandum associated with SECY-12-0093, “Closure Options for Generic Safety Issue 191, Assessment of Debris Accumulation on Pressurized Water Reactor Sump Performance” (ADAMS Accession No. ML12349A378).” The NRC staff has prepared a draft final rule, 10 CFR 50.46c, which, if promulgated, would allow a risk-informed approach to account for debris without the need for exemptions.

The NRC staff published an Environmental Assessment on the exemption requests in the Federal Register on May 9, 2017 (82 FR 21568), finding that the exemptions will not have a significant impact on the environment. A draft Environmental Assessment was published in the Federal Register for comments on May 4, 2016 (81 FR 26838). No public comments were received.

A Notice of Issuance of the Amendments will be included in the Commission's next biweekly Federal Register notice. If you have any questions, please do not hesitate to contact me at 301 415-1906 or Lisa.Regner@nrc.gov.

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