



UNITED STATES
NUCLEAR REGULATORY COMMISSION
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July 27, 2015

MEMORANDUM TO: File

FROM: John G. Lamb, Senior Project Manager
Plant Licensing Branch 1-2
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

SUBJECT: SEABROOK STATION, UNIT 1 – NO SIGNIFICANT HAZARDS
CONSIDERATION ANALYSIS AND CATEGORICAL EXCLUSION
RELATED TO PROPOSED EXEMPTION (TAC NO. MF4576)

A handwritten signature in black ink, appearing to read "John G. Lamb".

By letter dated July 24, 2014, as supplemented on March 9, and April 23, 2015, the licensee requested an exemption from Section 60 of Title 10 of the *Code of Federal Regulations* (10 CFR). Specifically, the requested exemption would allow the licensee to use WCAP-17444-P, Revision 0, "Reactor Vessel Closure Head/Vessel Flange Requirements Evaluation for Seabrook Unit 1," in lieu of the methodology required by 10 CFR 50, appendix G, footnote 2 to Table 1. The U.S. Nuclear Regulatory Commission (NRC) staff has completed its review of the requested exemption and is processing it for issuance. Meanwhile, the NRC staff has evaluated the proposed exemption against the standard set forth in 10 CFR 51.22, and has determined that the requested exemption meets the provisions of categorical exclusion 10 CFR 51.22(c)(9); the NRC staff's evaluation is set forth below.

Requirements in 10 CFR 51.22(c)(9)(i)

As described below, the NRC staff has used the NSHC standard provided by 10 CFR 50.92(c) to evaluate the subject exemption request:

- (1) Does the requested exemption involve a significant increase in the probability or consequences of an accident previously evaluated?

No. The proposed exemption does not impact the physical function of plant structures, systems, or components (SSCs) or the manner in which SSCs perform their design function. Operation in accordance with the proposed WCAP-17444 will ensure that all analyzed accidents will continue to be mitigated by the SSCs as previously analyzed. The proposed exemption does not alter or prevent the ability of operable SSCs to perform their intended function to mitigate the consequences of an initiating event within assumed acceptance limits. The proposed exemption neither adversely affects accident initiators or precursors, nor alter design assumptions.

Therefore, this exemption does not involve a significant increase in the probability or consequences of an accident previously evaluated.

- (2) Does the requested exemption create the possibility of a new or different kind of accident from any accident previously evaluated?

No. The proposed exemption does not involve a physical alteration of the plant (i.e., no new or different type of equipment will be installed), does not create new failure modes for existing equipment, or create any new limiting single failures. The exemption will continue to ensure that appropriate fracture toughness margins are maintained to protect against reactor vessel failure, during both normal and low temperature operation. The proposed exemption is consistent with the applicable NRC-approved methodologies (i.e., WCAP-17444-P, Revision 0). Plant operation will not be altered, and all safety functions will continue to perform as previously assumed in accident analyses.

Therefore, this exemption does not create the possibility of a new or different kind of accident from an accident previously evaluated.

- (3) Does the requested exemption involve a significant reduction in a margin of safety?

No. Margin of safety is associated with confidence in the ability of the fission product barriers (i.e., fuel cladding, reactor coolant system pressure boundary, and containment structure) to limit the level of radiation dose to the public. The proposed exemption will not adversely affect the operation of plant equipment or the function of any equipment assumed in the accident analysis. The proposed exemption was developed using NRC-approved methodologies and will continue to ensure an acceptable margin of safety is maintained. The safety analysis acceptance criteria are not affected by this exemption. The proposed exemption will not result in plant operation in a configuration outside the design basis. The proposed exemption does not adversely affect systems that respond to safely shutdown the plant and to maintain the plant in a safe shutdown condition.

Therefore, this exemption does not involve a significant reduction in a margin safety.

As all of the responses to the above questions are in the negative, the NRC staff has determined that the requested exemption involves NSHC.

Accordingly, the requirements of 10 CFR 51.22(c)(9)(i) are met.

Requirements in 10 CFR 51.22(c)(9)(ii)

The proposed exemption would allow the use of WCAP-17444-P, Revision 0, in lieu of the methodology required by 10 CFR 50, Appendix G, Footnote 2 to Table 1. WCAP-17444 demonstrates that the flange region can tolerate assumed flaws of 0.1 T (thickness) during the heatup, cooldown, and boltup conditions. Additionally, it can be concluded that flaws are unlikely to initiate in the flange region, since there is no known degradation mechanism for the flange region and the fatigue usage in the flange region is less than 0.1. Furthermore, based on WCAP-17444, the alternative flange temperature requirement of 46 degrees Fahrenheit (°F) is less than the minimum boltup temperature of 60 °F for the Seabrook Station, Unit No. 1. Therefore, the proposed exemption will not significantly change the types of effluents that may

be released offsite or significantly increase the amount of effluents that may be released offsite. Therefore, the requirements of 10 CFR 51.22(c)(9)(ii) are met.

Requirements in 10 CFR 51.22(c)(9)(iii)

The proposed exemption would allow the use of WCAP-17444-P, Revision 0, in lieu of the methodology required by 10 CFR 50, Appendix G, Footnote 2 to Table 1. Therefore, the proposed exemption will not significantly increase individual occupational radiation exposure or significantly increase cumulative occupational radiation exposure. Therefore, the requirements of 10 CFR 51.22(c)(9)(iii) are met.

Categorical Exclusion

Based on the above, the NRC staff concludes that the proposed exemption meets the eligibility criteria for the categorical exclusion set forth in 10 CFR 51.22(c)(9). Therefore, in accordance with 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the NRC's issuance of this exemption.

Docket No. 50-443

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