



Kevin P. Riley
Support Services Manager
Harris Nuclear Plant
5413 Shearon Harris Rd
New Hill, NC 27562-9300

Generic Letter 83-11, Supplement 1

August 26, 2019
Serial: RA-19-0023

ATTN: Document Control Desk
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

Shearon Harris Nuclear Power Plant, Unit 1
Docket No. 50-400/Renewed License No. NPF-63

Subject: Use of GOTHIC Computer Code for Containment Analysis at Shearon Harris Nuclear Power Plant, Unit 1

Ladies and Gentlemen:

In accordance with guidance provided in Nuclear Regulatory Commission (NRC) Generic Letter (GL) 83-11, Supplement 1: Licensee Qualification for Performing Safety Analyses, Shearon Harris Nuclear Power Plant, Unit 1 (HNP), has implemented a change from the Westinghouse CONTEMPT computer code to the GOTHIC computer code to perform containment pressure and temperature analyses. This change has been reviewed under the requirements of 10 CFR 50.59 and it was determined that this change does not require prior NRC approval. This notification fulfills the requirements of GL 83-11 to inform the NRC of the change. Documentation related to this change is available for NRC audit.

GL 83-11 details the regulatory expectations for eligible methods or codes, application procedures, training/personnel qualifications, benchmarking, quality assurance, and change control processes. Aside from providing direct guidance to the licensee on the requirements when establishing an in-house program, one significant note is that the GL 83-11 supplement also removes the requirement of licensee topical submission to the NRC. Below is a discussion of how the criteria in the generic letter supplement were met.

Eligibility: NRC has reviewed the submittals of several utilities and vendors and determined that the GOTHIC computer code is applicable to licensing basis containment response. These include submittals by Dominion, Omaha Public Power District, AREVA, and Duke Energy.

Application: Use of the GOTHIC computer code for containment analysis is consistent with the code qualifications and the NRC-approved application of the code. The code application for HNP is consistent with the appropriate technical guidance. An independent review of the analysis was performed as part of the Quality Assurance process.

Training and Qualification of Licensee Personnel: The GOTHIC computer code analysis for HNP was performed by Duke Energy Safety Analysis Applications personnel. Duke Energy Safety Analysis Applications personnel have been using GOTHIC methods approved by the NRC for Catawba Nuclear Station, Units 1 and 2; McGuire Nuclear Station, Units 1 and 2; and Oconee Nuclear Station, Units 1, 2 and 3, safety analyses for many years. Individuals performing and verifying safety analysis have been mentored by senior group members and have completed training in the use of the GOTHIC code provided by Zachry Nuclear Engineering. Duke Energy

has also been a participant in the Electric Power Research Institute GOTHIC Advisory Group since the late 1980s to ensure a solid understanding of the code capabilities and limitations, to monitor industry applications, and to guide the code qualification effort. Internal procedures are in place for software quality assurance, verification, and validation of the code and the input data, as well as input file organization.

Comparison Calculation: The GOTHIC computer code containment model for HNP has been benchmarked against the HNP design bases analysis using the CONTEMPT code. The comparison of these calculations shows no significant differences.

Quality Assurance and Change Control: All GOTHIC computer code calculations for HNP have been prepared and reviewed in accordance with the Duke Energy Quality Assurance Program. Numerical Applications, Inc., is responsible for creating and maintaining the GOTHIC computer code.

This document contains no new Regulatory Commitments.

Please refer any questions regarding this submittal to Sarah McDaniel – Regulatory Affairs, at (919) 362-2002.

Sincerely,

A handwritten signature in black ink, appearing to read "K.P. Riley". The signature is fluid and cursive, with the first letters of each name being capitalized and prominent.

Kevin P. Riley

cc: J. Zeiler, NRC Sr. Resident Inspector, HNP
M. Barillas, NRC Project Manager, HNP
NRC Regional Administrator, Region II

has also been a participant in the Electric Power Research Institute GOTHIC Advisory Group since the late 1980s to ensure a solid understanding of the code capabilities and limitations, to monitor industry applications, and to guide the code qualification effort. Internal procedures are in place for software quality assurance, verification, and validation of the code and the input data, as well as input file organization.

Comparison Calculation: The GOTHIC computer code containment model for HNP has been benchmarked against the HNP design bases analysis using the CONTEMPT code. The comparison of these calculations shows no significant differences.

Quality Assurance and Change Control: All GOTHIC computer code calculations for HNP have been prepared and reviewed in accordance with the Duke Energy Quality Assurance Program. Numerical Applications, Inc., is responsible for creating and maintaining the GOTHIC computer code.

This document contains no new Regulatory Commitments.

Please refer any questions regarding this submittal to Sarah McDaniel – Regulatory Affairs, at (919) 362-2002.

Sincerely,

Kevin P. Riley

cc: J. Zeiler, NRC Sr. Resident Inspector, HNP
M. Barillas, NRC Project Manager, HNP
NRC Regional Administrator, Region II