



UNITED STATES
NUCLEAR REGULATORY COMMISSION
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April 25, 2018

MEMORANDUM TO: Jennifer Whitman, Chief
Reactor Systems Branch
Division of Safety Systems
Office of Nuclear Reactor Regulation

FROM: Chris Hoxie, Chief */RAI/*
Code Development and Reactor Analysis Branch
Division of Systems Analysis
Office of Nuclear Regulatory Research

SUBJECT: DELIVERY OF PARTIAL DELIVERABLE ASSOCIATED WITH
MAXIMUM EXTENDED LOAD LINE LIMIT ANALYSIS PLUS
(MELLLA+) ANTICIPATED TRANSIENT WITHOUT SCRAM
WITH INSTABILITY (ATWS-I) CONFIRMATORY ANALYSIS FOR
BRUNSWICK STEAM ELECTRIC PLANT (BSEP) UNDER USER
NEED NRR-2016-009

By memorandum dated May 19, 2016 the Office of Nuclear Reactor Regulation (NRR) requested that the Office of Nuclear Regulatory Research (RES) perform confirmatory analyses to support the licensing of Brunswick Steam Electric Plant (BSEP) license amendment request (LAR) to operate with the Maximum Extended Load Line Limit Analysis Plus (MELLLA+) expanded operating domain. In this request, NRR asked that RES perform calculations using the TRACE/PARCS code system of select Anticipated Transient without SCRAM (ATWS) scenarios leading to core instability (ATWS-I). RES responded to the request via memorandum dated June 22, 2016 and tracks this user need under the identifier: NRR-2016-009.

The enclosed report is Part 1 of a series of reports that describe the confirmatory analyses performed by the RES staff. The Part 1 report provides the RES staff confirmatory analysis of the three highest priority cases identified in the confirmatory analysis case matrix for this user need. The base case (Case 1) was run to establish a base line which is compared to two sensitivity cases. The sensitivity cases (Case 2-1 and 2-2) study the effect of feedwater temperature response and manual operator action timing.

The TRACE/PARCS calculations indicate that there is no fuel damage in Case 1 with a peak cladding temperature (PCT) of 2109 °F. Case 2-1 and 2-2 are comparable to reference results provided by the licensee. Because the reference results are proprietary, the enclosure is also proprietary. Overall, the confirmatory analysis results do not indicate fuel damage, and therefore, demonstrate acceptable performance. The RES staff has not identified any technical areas where it would be necessary to follow-up with the licensee through the request for additional information (RAI) process.

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This transmittal alone does not fulfill the RES obligation under the existing user need, so further correspondence will be transmitted with Part 2 of the confirmatory analysis report. This future, Part 2 report, in combination with Part 1, will provide the confirmatory analysis for all cases under the case matrix for BSEP.

We look forward to our continued collaboration with your staff on this project.

Enclosure:

1. Yarsky, P., "TRACE/PARCS Analysis of BSEP MELLLA+ ATWS-I – Part 1," April 25, 2018.

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DELIVERY OF PARTIAL DELIVERABLE ASSOCIATED WITH MAXIMUM EXTENDED LOAD LINE LIMIT ANALYSIS PLUS (MELLLA+) ANTICIPATED TRANSIENT WITHOUT SCRAM WITH INSTABILITY (ATWS-I) CONFIRMATORY ANALYSIS FOR BRUNSWICK STEAM ELECTRIC PLANT (BSEP) UNDER USER NEED NRR-2016-009 DATED April 25, 2018.

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