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Subject: Transmittal of Errata Page for WCAP-14483-A, "Generic Methodology for Expanded Core Operating Limits Report"

Enclosed is Errata page 9 for WCAP-14483-A, "Generic Methodology for Expanded Core Operating Limits Report."

Page 9 of WCAP-14483-A shows the typical equation for calculating the Overpower ΔT (OPΔT) reactor trip setpoint. This equation contains typographical errors in the terms containing the variables τ_3 and τ_6. Each of these terms is missing an "S" variable from the Laplace transforms used to derive the equation. The Errata page in Enclosure 1 provides the corrected OPΔT equation. This equation is correctly shown in other WCAP-14483-A locations, including the markup to the Standard Technical Specification, NUREG-1431, in WCAP-14483-A Appendix A. The corrected equation is shown below:

$$\Delta T \frac{(1+\tau_1 S)}{(1+\tau_2 S)} \frac{1}{(1+\tau_3 S)} \leq \Delta T_0 \{K_4 - K_5 \left(\frac{\tau_7 S}{(1+\tau_7 S)}\right) \frac{1}{(1+\tau_6 S)} T - K_6 [T \frac{1}{(1+\tau_6 S)} - T''] - f_2(\Delta I)\}$$

These typographical errors do not impact the content of the topical report or the NRC's Safety Evaluation for the topical report.

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Enclosures:
(1) Errata Page for WCAP-14483-A

Enclosure 1

Errata Page for WCAP-14483-A

June 2023

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3.0 Relocation of the OTDT and OPDT Setpoint Parameter Values to the COLR

3.1 Basis for the OTDT/OPDT Setpoints

The basis for the OTDT and OPDT reactor trip functions is to ensure that during any Condition I or II transient, there is at least a 95% probability at a 95% confidence level that the peak kW/ft fuel rods will not exceed the UO_2 melting temperature. To achieve this, a fuel centerline temperature limit has been established (Reference 6) based on the melting temperature for UO_2 of 5080 °F, decreasing by 58 °F per 10,000 MWD/MTU of burnup (Reference 7). For design purposes, this fuel centerline temperature limit is significantly below the melting temperature to allow for fuel temperature calculation and other uncertainties. In addition, the departure from nucleate boiling (DNB) design basis is defined as the probability that DNB will not occur on the limiting fuel rod(s) is at least 95% at a 95% confidence level. If DNB is precluded, adequate heat transfer is assured between the fuel cladding and the reactor coolant, and damage due to inadequate cooling is prevented.

The OPDT reactor trip function, in conjunction with the OTDT reactor trip function, ensures operation within the fuel temperature design basis. With Westinghouse PWRs, this is accomplished through the OPDT trip function by correlating the core thermal power with the temperature difference across the vessel (ΔT). Since the thermal power is not precisely proportional to ΔT, because of the effects of changes in coolant density and heat capacity, a compensation term, which is a function of the vessel average temperature, is factored into the calculated overpower trip setpoint. A typical OPDT equation is presented below.

$$\Delta T \frac{(1+\tau_1 S)}{(1+\tau_2 S)} \frac{1}{(1+\tau_3 S)} \leq \Delta T_o \{K_4 - K_5 \left(\frac{\tau_7 S}{(1+\tau_7 S)}\right) \frac{1}{(1+\tau_6 S)} T - K_6 \left[T \frac{1}{(1+\tau_6 S)} - T''\right] - f_2(\Delta I)\}$$

where:

ΔT	=	measured RCS vessel ΔT
ΔT_o	=	vessel ΔT preset to the indicated ΔT at rated thermal power at the reference T'' (°F)
K_4	=	a preset manually adjustable bias (fraction of full-power ΔT)
K_5	=	a constant that compensates for piping and thermal time delays (fraction of full-power ΔT/°F). This term is zero for a constant T-avg because it is preceded by a rate lag compensation term.
K_6	=	a constant that compensates for the effects of coolant density and heat capacity on the relationship between ΔT and thermal power (fraction of full-power ΔT/°F)