

November 26, 1997

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

Subject: Clarification of Response to Request for Additional Information
Associated with Revised Steam Generator Tube Rupture Analysis

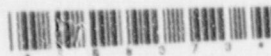
Byron Nuclear Power Station, Units 1 and 2
Facility Operating Licenses NPF-37 and NPF-66
NPC Docket Numbers: 50-454 and 50-455

Braidwood Nuclear Power Station, Units 1 and 2
Facility Operating Licenses NPF-72 and NPF-77
NRC Docket Numbers: 50-456 and 50-457

- References:
1. Telecon with M. Lesniak (ComEd) and G. Dick (NRR), dated November 20, 1997.
 2. Response to Request for Additional Information for the Steam Generator Tube Rupture Analysis, letter from J. Hosmer to NRC, dated March 20, 1997.
 3. J. Hosmer letter to NRC transmitting the Revised Steam Generator Tube Rupture Topical Report for Byron and Braidwood Stations, dated November 13, 1996.
 4. "Acceptance for Referencing of Licensing Topical Report WCAP-11397, Revised Thermal Design Procedure," letter from Ashok C. Thadani (NRC) to W. J. Johnson (Westinghouse), dated January 17, 1989.
 5. "Westinghouse Reload Safety Evaluation Methodology," WCAP-9272-P-A, dated July 1985.
 6. "Increased SGTP/Reduced TDF/PMTIC Analysis Program, Engineering/Licensing Report, "WCAP-13964, dated January 1994. ADU
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The following response is provided to clarify the information discussed in Reference 1 and submitted in response to question A.1 from Reference 2 concerning T_{avg} values used at Byron and Braidwood. The nominal design T_{avg} window for Byron and Braidwood is 569.1 °F to 588.4 °F

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The calculated temperature uncertainty (including rod controller deadband) for Byron/Braidwood is ± 7.6 °F. A $+1.14$ °F bias is added as a penalty for steam generator (SG) tube fouling. This is consistent with the previously reported uncertainty of 8.74 °F (Reference 6). The manner in which uncertainties and penalties are applied in the safety analyses is discussed below. In all cases, the values assumed in the safety analyses bound the calculated uncertainties.

For DNB-limited safety analyses, a T_{avg} of 589.9 °F (upper nominal T_{avg} limit + SG tube fouling penalty) is used as the initial temperature. An uncertainty equivalent to 7.6 °F is included in the DNB limit. Therefore, the DNB events are effectively analyzed for a T_{avg} of 597.5 °F (see Table 1). This is consistent with the NRC approved methodology of Reference 4.

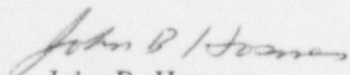
For the safety analyses which are not DNB limited, a T_{avg} of 597.9 °F (see Table 1) is used as the initial temperature for events which are more limiting at high initial temperatures. A T_{avg} of 561.1 °F (see Table 1) is used for the events which are analyzed at low T_{avg} . This is consistent with the NRC approved methodology of Reference 5.

As discussed in References 2 and 3, the revised steam generator tube rupture analysis assumes a T_{avg} of 567 °F (see Table 1). The corresponding low T_{avg} design limit of 575 °F is controlled via the reload design process. This is consistent with the NRC approved methodology of Reference 5.

The Byron and Braidwood Technical Specification temperature limit for DNB is an indicated T_{avg} less than or equal to 591.2 °F. The indicated value is determined as the upper nominal T_{avg} limit + control system operating allowance + SG tube fouling - instrument uncertainty (588.4 °F + 4.0 °F + 0.8 °F - 2.0 °F = 591.2 °F). As shown in Table 1, the high temperature inputs to the various safety analyses bound this indicated Technical Specification value.

Please address any questions or comments to this office.

Sincerely,



John B. Hosmer
Engineering Vice President

Attachment

cc: Regional Administrator - RIII
Byron/Braidwood Project Manager - NRR
Senior Resident Inspector - Braidwood
Senior Resident Inspector - Byron
Office of Nuclear Safety - IDNS

Table 1

	Calculated Uncertainty	DNB-Limited Analyses	Analyses NOT DNB-Limited - high temperature limiting	Analyses NOT DNB-Limited - low temperature limiting	Revised SGTR Analysis
Nominal T_{avg}	N/A	588.4°F	588.4°F	569.1°F	575°F
Uncertainty*	+/- 7.5°F	+ 7.6°F**	+ 8.0°F	- 8.0°F	- 8.0°F
SG Fouling Penalty/Bias	+ 1.14°F	+ 1.5°F	+ 1.5°F	N/A	N/A
Analysis T_{avg} Value	N/A	597.5°F**	597.9°F	561.1°F	567°F

* "Uncertainty" may include rod controller deadband tolerance, measurement uncertainty, or other random uncertainties.

** The uncertainty for DNB-limited analyses is not applied directly to the nominal T_{avg} . The value given in the table is the equivalent temperature corresponding to the statistical uncertainty specific to the DNB analysis that is applied to the DNB limit. Therefore, the Analysis T_{avg} value is an effective temperature versus an actual input temperature.