



ARKANSAS POWER & LIGHT COMPANY

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ATTN: Mr. Jose A. Calvo, Director
Project Director, Region IV
Division of Reactor Projects
III, IV, V and Special Projects

SUBJECT: Arkansas Nuclear One - Unit 2
Docket No. 50-368
License No. NPF-6
Clarification of CEA Drop Time
Technical Specification Change Request

Dear Mr. Calvo:

Our letter dated May 9, 1988 (2CAN058802) transmitted a request for an emergency license amendment regarding TS 3.1.3.4, Control Element Assembly (CEA) drop time. Included as part of the amendment request were the results of a review of the ANO-2 SAR Design Basis Accident Analyses to determine the impact of an increased CEA drop time. These accident analysis review results were later independently reviewed and verified by AP&L to ensure correctness and clarity in the amendment request; we are now forwarding the findings of this independent review. These findings consist of editorial corrections and clarifications and do not alter the technical statements and conclusions of the amendment request.

The statement on page 8 of 2CAN058802 in the Seized Rotor paragraph (b.) which reads "the revised scram reactivity data . . . at the time of approach to a SAFDL is more conservative than the design data"; should read "is less conservative." This is evident by noting that the time of approach to a Specified Acceptable Fuel Design Limit (SAFDL) of 1.08 seconds is actually just prior to the 1.16 second time when the revised scram reactivity data becomes more conservative (see Table 6 of 2CAN058802). The correction of this statement does not effect the conclusion made in the paragraph. The seized rotor analysis described by the paragraph was done at asymptotic flow conditions and is, therefore, insensitive to a small delay in the CEA drop time. The additional (but necessary to determine the impact of an increased CEA drop time) statement is then made incorrectly that the revised reactivity data is more conservative than the design data. The fact that this latter statement is simply additional information which does not effect the conclusion can be seen by examining what is meant by the seized rotor analysis being done at asymptotic flow conditions.

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A qualitative comparison of the "actual DNBR", the calculated design DNBR, and the revised DNBR for an increased CEA drop time for the seized rotor analysis may be derived from Figures 7.2.5-1, core flow vs. time, and 7.2.5-3, core heat flux vs. time, from the ANO-2 Cycle 2 Reload Analysis Report (RAR). The shape of the DNBR curve results from the combination of the two dominant DNBR components, core flow and core average heat flux, vs. time. An initially fiat profile for the design and revised DNBR curves results due to the conservative assumption that core flow is initially at the three pump flow level while an "actual DNBR" profile reflects the flow coastdown that actually occurs. The conservative assumption that core flow is initially at the three pump flow condition (asymptotic flow conditions) determines the minimum DNBR value while the core average heat flux vs. time (driven by the CEA drop time) determines the time at which the minimum DNBR occurs. Therefore, an increased CEA drop time results in the minimum DNBR occurring later in the transient, but does not effect the minimum DNBR value, which is the criterion of interest.

Other corrections/clarifications from the independent review of 2CAN058802 are identified below (page numbers are from the Description of Amendment Request and Determination of Significant Hazards attachment):

Page 8, Seized Rotor paragraph (b.) - The reference to Table 7.2.5-2 would more appropriately be Table 7.2.5-1 since this table contains the analysis assumptions.

Page 24, Table 9 - The column heading "Time to Closest Approach to a SAFDL" would more appropriately read "Time to Closest Approach to a safety Limit."

Other corrections/clarifications to Page 24, Table 9:

Uncontrolled CEA Withdrawal - 1% Power reference (Figures 1 & 2) should be just (Figure 1) and 100% Power should have (Figure 2) as a reference.

Loss of Condensor Vacuum - Reference time should be 2.6 seconds, not 2.3 seconds, to be consistent with comments on page 10.

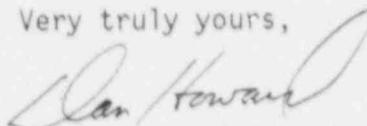
Asymmetric Steam Generator Transient reference time should be 2.3 seconds, not 2.1 seconds, to be consistent with comments on page 13.

Note 3, Page 25 - Second sentence should have ~ 1.08 seconds as time to reach minimum DNBR, not ~ .95 seconds.

Note 4, Page 25 - First sentence should read "The closest approach to the peak RCS pressure safety limit...", not SAFDL.

These corrections/clarifications were necessary due to the complex nature of the required analysis review, coupled with the limited time available to edit the text for consistency. As stated previously, they do not effect the technical statements or conclusions of the amendment request, but are being forwarded to document and assure the accuracy of our TS change submittal.

Very truly yours,



Dan R. Howard
Manager, Licensing