Entergy

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ANO

1CAN010606

January 17, 2006

U.S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, DC 20555

SUBJECT: Response to NRC Request
Information Relating to Revision of Instrument Uncertainty Calculation Associated with the Emergency Feedwater Initiation and Control (EFIC) Steam Generator Level – Low Function
Arkansas Nuclear One - Unit 1
Docket No. 50-313
License No. DPR-51

REFERENCE:

1. Entergy Letter dated January 3, 2006, *Request for Emergency Technical Specification Change to Revise the Actuation Allowable Value for Emergency Feedwater Initiation and Control Function (EFIC)* (1CAN010601)
2. Entergy Letter dated January 6, 2006, *Supplement to Amendment Request: Revision of the Allowable Value for Emergency Feedwater Initiation and Control Function (EFIC)* (1CAN010603)
3. Entergy Letter dated January 10, 2006, *Supplement to Amendment Request: Response to Additional Questions Related to the Revision of the Allowable Value for Emergency Feedwater Initiation and Control Function (EFIC)* (1CAN010605)

Dear Sir or Madam:

By letter (Reference 1), Entergy Operations, Inc. (Entergy) proposed a change to the Arkansas Nuclear One, Unit-1 (ANO-1) Technical Specifications (TSs) to the Steam Generator (SG) Level – Low allowable value of Limiting Condition for Operation (LCO) 3.3.11, Emergency Feedwater Initiation and Control (EFIC) System Instrumentation. Supplemental information in support of NRC requests for additional information was subsequently submitted in Entergy letters dated January 6 and 10, 2006 (References 2 and 3). The January 6, 2006 letter included the instrument uncertainty calculation supporting the TS amendment request. The proposed change was granted by the NRC in Amendment 227 to the ANO-1 TSs, dated January 13, 2006.

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While preparing for amendment implementation, a non-conservative error was discovered in the uncertainty calculation. Upon validating the error, Entergy notified the NRC via conference call on January 12, 2006. Entergy's evaluation of the error determined that other conservatisms present within the calculation more than offset the effects of the identified error. The NRC staff agreed that the calculation remained conservative with respect to the revised EFIC SG Level – Low limits captured in ANO-1 TS Amendment 227. Additionally, the NRC requested that Entergy submit information describing the error and offset as a matter of record. Therefore, Entergy is providing the following information in response to the aforementioned request. The uncertainty calculation was transmitted to the NRC in the Entergy letter dated January 6, 2006 (Reference 2).

The specific error involved a Microsoft Excel Spreadsheet cell referencing error on page 196 of the calculation, Section 5.4.4B, where Table 5.4.4.5 (ABN V1o) cell formulas were found to incorrectly reference back to Table 5.4.4.4 (REF V1o) error adjusted voltage values. As a result, smaller (non-conservative) reference (REF) condition uncertainties were incorrectly applied at this point in the calculation and propagated through the remainder of the calculation. Correction of this error resulted in an increase in the Total Loop Uncertainty term ABN SU1ot(+) on calculation page 221 (increase of ~0.59 inches from 3.92 inches to 4.51 inches). This uncertainty term is used to calculate the EFIC SG Level – Low limiting trip setpoint (LTS) of 10.42 inches above the lower tube sheet. The calculated uncertainty increase was easily offset by removal of known calculation conservatisms, an example of such being the Level Transmitter Static Pressure Span bias (SPSb) uncertainty term illustrated on calculation page 185. In this example, the worst case positive (+) and negative (-) extremes are determined for SPSb and propagated throughout the calculation. As seen on calculation page 227, the transmitter calibration table is established based on a SPS correction referenced at 900 psi. Shifts in pressure below 900 psi result in a positive (+) SPSb and shifts in pressure above 900 psi result in a negative (-) SPSb. In actuality, the SPSb uncertainty term is zero (0) at the 900 psi calibration reference point and increases linearly to the worst case extremes relative to the maximum pressure shifts. For purposes of EFIC SG Level – Low LTS for a Loss of Feedwater (LOFW) event, the applicable SG pressures range from normal operating pressure (~900 psi) to higher pressures related to Atmospheric Dump Valve and Main Steam Safety Relief Valve lift pressures. As indicated above, application of the SPSb(+) uncertainty term is not applicable for pressures above 900 psi and the calculation's current application of SPSb(+) above 900 psi is a substantial conservatism. In addition, no credit is presently given to SPSb(-) (for pressures above 900 psi) which, if credited, would act to initiate EFIC earlier than required. Changing SPSb(+) to zero (0) in the calculation results in a decrease in the Total Loop Uncertainty term ABN SU1ot(+) on calculation page 221 (decrease of ~1.44 inches from 3.92 inches to 2.48 inches). The net result is that the ~1.44-inch uncertainty decrease achievable through removal of the SPSb(+) conservatism more than offsets the ~0.59-inch uncertainty increase from the identified cell referencing error such that added margin is established to the proposed EFIC SG Level – Low LTS of 10.42 inches and allowable value of 9.34 inches. Therefore, no revision to the ANO-1 TS Amendment 227 LTS and allowable value is required.

The identified calculation error has been captured in Entergy's corrective action program (Condition Report CR-ANO-1-2006-0071). The calculation has subsequently been revised to correct the identified error and adjust the offsetting conservatisms accordingly. This revision was completed prior to implementing the in-plant setpoint changes associated with ANO-1 TS Amendment 227.

The above information completes the response to the aforementioned NRC request issued on January 12, 2006. If you have any questions or require additional information, please contact David Bice at 479-858-5338.

Sincerely,

Thomas A. Marlow

TAM/dbb

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