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U. S. Nuclear Regulatory Commission  
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Subject: Arkansas Nuclear One - Unit 2  
Docket No. 50-368  
License No. NPF-6  
Response to Follow-up Request for Additional Information on Probabilistic  
Safety Assessment Regarding the ANO-2 Power Uprate License Application

Gentlemen:

In a letter dated December 19, 2000 (2CAN120001), Entergy Operations, Inc. submitted a license application for Arkansas Nuclear One, Unit 2 (ANO-2) to increase the authorized power level from 2815 megawatts thermal to 3026 megawatts thermal. Supplemental information regarding the probabilistic safety assessment (PSA) portion of the application was provided in letters dated June 28, 2001 (2CAN060110), and July 24, 2001 (2CAN070105). On October 12, 2001, Entergy responded to a Nuclear Regulatory Commission (NRC) staff request for additional information regarding PSA (2CAN100108).

A follow-up request for additional information containing two questions was received from the NRC staff on October 29, 2001. Entergy's responses to the two questions are contained in the attachment. Verbal responses were discussed with the staff during a teleconference on November 13, 2001. This submittal contains no regulatory commitments.

I declare under penalty of perjury that the foregoing is true and correct. Executed on November 16, 2001.

Very truly yours,

A handwritten signature in cursive script that reads "Glenn R. Ashley".

Glenn R. Ashley  
Manager, Licensing

GRA/dwb  
Attachment

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## **Response to Follow-up Questions on Probabilistic Risk Assessment**

### **NRC Question 1**

The core damage frequency (CDF) values for a number of fire zones in the licensee's individual plant examination for external events (IPEEE) are more than a factor of two less than that presented in the submittal as the pre-power uprate CDF contribution. This results in an overall pre-power uprate CDF value near  $1E-4$ /year, while the IPEEE CDF value was less than  $5E-5$ /year. The largest changes are for the turbine building, cable spreading room, and intake structure. This occurs even though the internal events model, which derives the conditional core damage probability (CCDP) input for the fire analysis, actually decreases from the individual plant examination (IPE) model value of  $3.4E-5$ /year to the current probabilistic safety assessment (PSA) model value of  $1.7E-5$ /year. Please explain what changes have occurred from the IPEEE to the current fire analysis to explain the increased fire CDF values.

### **ANO Response**

The initial ANO-2 Fire IPEEE CDF results were reported in a letter to the NRC dated May 31, 1996 (OCAN059609), "Individual Plant Examination of External Events (IPEEE) and Unresolved Safety Issue (USI) A-46 Summary Reports." This analysis resulted in a total of six (6) unscreened fire zones.

On February 7, 2000, the NRC submitted a request for additional information (OCNA020004) to ANO requesting a re-evaluation of certain fire scenarios. In conjunction with responding to the request for additional information, the ignition source frequencies (i.e., F1 values) were recalculated to correct a misapplication of ignition source count. As a result, several of the fire zones were assigned CDFs that increased by a factor of two from the original submittal. The results of the reanalysis indicated that fifteen (15) fire zones were above the screening criteria (twelve zones in the E-5 to E-6 range and three zones in the E-4 to E-5 range). These differences were primarily due to revised ignition source frequency tabulations. The CDF number for the six (6) previously identified, unscreened fire zones increased and nine (9) new zones moved from screened to unscreened. However, consistent with the guidance of NEI 91-04, Revision 1, "Severe Accident Issue Closure Guidelines," the changes were not significant enough to require procedure changes or plant modifications. Therefore, the changes to the unscreened fire zones were not submitted in Entergy's June 14, 2000, response (OCAN060003) to the request for additional information. For values between  $1E-4$  and  $1E-6$ , the guidance states, in part, for licensees to ensure either Severe Accident Management Guidelines are in place or find a cost-effective treatment in emergency operating procedures or other plant procedures. For the fifteen unscreened fire zones, emergency and abnormal operating procedures are in place to address the loss of any systems due to a fire.

## **NRC Question 2**

The IPEEE safety evaluation report (SER)/technical evaluation report (TER) indicates that a number of seismic outliers were identified, including some listed in Table 3.5-1 and Table 7-1 of the licensee's IPEEE submittal. Have all these outliers been resolved and were the resolutions in accordance with the proposed resolutions provided in Table 7-1? If not, what were the specific resolutions? Based on the current plant condition, what is the plant's high confidence of a low probability of failure (HCLPF) value and/or does it meet the IPEEE 0.3g review level earthquake (RLE)?

## **ANO Response**

All of the outliers for ANO-2 have been resolved in accordance with the proposed resolutions provided in Table 7-1. This information was provided to the staff in a letter dated March 30, 1999 (0CAN039901). Specifically, the second paragraph on page 21 of the attachment to the letter states, "For ANO-2, the outliers listed in Table 7-1 have been resolved." In addition, a completion letter dated November 18, 1999 (0CAN119901) was provided to the NRC advising the staff that corrective actions identified in the Arkansas Nuclear One Summary Reports, or agreed to with the staff as a result of other related correspondence, had been completed.

In response to part 2 of the staff's question regarding ANO-2's HCLPF value and/or whether it meets the IPEEE 0.3 g RLE, ANO-2 does not have a composite HCLPF value. However, all of our equipment meets a minimum RLE of 0.3 g. The results of the screening, not final resolution, can be found in Section 3, "Seismic Analysis" of the Summary Report of Individual Plant Examination of External Events (IPEEE) for Severe Accident Vulnerabilities for Arkansas Nuclear One, Unit 2" (Letter 0CAN059609 dated May 31, 1996).