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July 31, 2000

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

Subject: River Bend Station - Unit 1
Docket No. 50-458
License No. NPF-47
Response to Request For Additional Information On River Bend Individual Plant Examination Of External Events (IPEEE) Submittal (TAC No. M83667)

References

- 1) Supplemental Response to Generic Letter 88-20, Dated June 30, 1995 (RBG-41646)
- 2) Response to Request For Additional Information On River Bend Individual Plant Examination Of External Events (IPEEE) Submittal, Dated February 26, 1998 (RBG-44407)
- 3) River Bend Station, Unit 1 – Request For Additional Information – Individual Plant Examination Of External Events Submittal, Dated August 11, 1999 (Tac No. M83667)
- 4) Response to Request For Additional Information On River Bend Individual Plant Examination Of External Events (IPEEE) Submittal, Dated October 18, 1999 (RBG-45145)
- 5) Supplemental Response to Request For Additional Information On River Bend Individual Plant Examination Of External Events (IPEEE) Submittal, Dated May 9, 2000 (RBG-45338)

File Nos.: G9.5

RBF1-00-0168
RBG-45444

Ladies and Gentlemen:

By letter dated June 30, 1995, Entergy Operations, Inc., submitted the Individual Plant Examination of External Events (IPEEE) for River Bend Station (RBS). Based on your ongoing review of the submittal, a second request for additional information (RAI) was issued with two questions.

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Question 1 asked that the EOI reevaluate the impact of a cabinet fire based on the new EPRI report entitled, "Guidance for Development of Response to Generic Request for Additional Information on Fire Individual Plant Examination for External Events (IPEEE)," dated May 1999. Question 2 requests that EOI provide an analysis of previously screened areas that would be retained under screening performed in accordance with the NRC approved version of the fire-induced vulnerability evaluation (FIVE) methodology dated September 1993.

During a December 1999, phone conversation between the NRC and EOI personnel, concerning the request for additional information, EOI proposed resolving Question 1 by performing a sensitivity study using the higher cabinet heat release rate of 190 BTU/second to determine the impact of the change from the currently assumed 90 BTU/second. The purpose of this letter is to inform you that the study has been completed. The results are provided in Attachment 1. In summary, the results indicate that no additional equipment would be damaged as a result of a cabinet fire assuming the higher heat release rate.

During the above conversation EOI committed to provide an updated status on Question 2. Attachment 2 provides an update of the status, work scope, and schedule for the response to Question 2. If you have any additional questions or comments, please contact Mr. B. M. Burmeister at (225) 381-4148.

Sincerely,



RJK/BMB

Attachment

cc: Mr. Jeff Harold, NRR Project Manager
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Commitment Identification Form

COMMITMENT	ONE-TIME ACTION*	CONTINUING COMPLIANCE*
Provide the results of the walkdowns and evaluations of the fire areas to the NRC by 1 st Quarter, 2001.	X	

*Check one only

NRC RAI Question 1; Cabinet Heat Release Rates

The response to the previous RAI Question 1 relating to the assumed heat release rates from electrical cabinet fires, reiterated information provided in the submittal and/or traceable to EPRI (Electric Power Research Institute) Fire PRA (probabilistic risk assessment) Implementation Guide, without responding to the original RAI. During the period between review of the submittal and the response to this question, the matter of heat release rates has been under discussion between the NRC and EPRI. Based on such discussions, a new EPRI report entitled 'Guidance for Development of Response to Generic Request for Additional Information on Fire Individual Plant Examination for External Events (IPEEE),' dated May 1999, was recently issued and should be helpful in formulating a new response. Please consider the new guidance and submit a revised response to the original question.

River Bend Station Response

The NRC has requested that EOI update the IPEEE response to the previous RAI, Question 1 based on the EPRI Fire PRA Implementation Guide published May 1999. The generic response to the NRC's question on electrical cabinet heat release rates use a 65 BTU/second (BTU/s) rate if the criteria in EPRI Fire PRA Implementation Guide Section 4.12 can be met. If the criteria are not met, the fire risk evaluation should be re-analyzed using a cabinet heat release rate of 190 BTU/s.

To better expedite resolution of this question, a sensitivity study using a fire modeling code, COMPBRN IIIe, was performed to determine if additional equipment would fail assuming the higher cabinet heat release rate of 190 BTU/s. In developing the study, two key parameters were considered: 1) does the damage area above the cabinet increase, i.e., does the larger fire create a higher and wider plume which could potentially damage more equipment, and 2) can a hot gas layer be created, particularly for small rooms. Three bounding cases were developed based upon these parameters. The fire areas chosen were the Division I, Division II and Division III switchgear rooms. These rooms were chosen because they are smaller, enclosed rooms as compared to other areas with electrical cabinets. Therefore, if a hot gas layer does not develop in these areas, a hot gas layer would not be expected for other fire areas. The height and width of the fire plume should be comparable regardless of the fire area.

The COMPBRN runs were performed for an electrical cabinet fire in these rooms using a 190 BTU/second heat release rate. Three scenarios were run: 1) cabinet ENS-SWG1A in Fire Area C-15, 2) cabinet ENS-SWG1B in Fire Area C-14, and 3) cabinet E22-S004 in Fire Area C-22. The analysis determined that the increased heat release rate of 190 BTU/s resulted in no more damage than the heat release rate used in the original IPEEE, i.e., 90 BTU/s. If additional equipment had failed at the higher cabinet heat release rate, additional COMPBRN runs for each cabinet would need to be performed. In light of the COMPBRN results, this effort will not be necessary.

NRC RAI Question two; Zone with No SSA Equipment

The response to the previous RAI Question 4 relating to the basis for qualitative screening, cites a reference to the fire-induced vulnerability reevaluation (FIVE) methodology, which is incorrect and inconsistent with that approved for IPEEE submittals. The figure cited, Figure 5.1, provides the cited guidance but was taken from the April 1992 draft of the FIVE methodology. The September 1993 version was approved for IPEEE submittals by the NRC and shows, in the same figure as that cited, that fire-initiated events leading to plant trips are to be considered in qualitative screening. With the inclusion of such criteria it is unlikely that typically important areas, such as those in the turbine building, would be qualitatively screened.

Please provide an analysis of those previously screened areas that would be retained under screening performed in accordance with the approved methodology.

River Bend Station Response

The NRC requests that River Bend perform a more detailed evaluation of each of the fire areas that was screened based on no SSA equipment. River Bend qualitatively screened these areas based on Figure 5-1 of the EPRI FIVE (EPRI TR-100370). Note this figure was changed in September 1993 because of discussions with the NRC. Fire zones can only be screened qualitatively if there is no safe shutdown analysis (SSA) equipment in the area and no fire-induced initiating event occurs.

EOI proposes that only the non-SSA zones with offsite power cables routed through the zone be evaluated to satisfy this request. The non-SSA zones without offsite power cables are bounded by one of the other scram initiators (turbine trip, loss of condenser heat sink, loss of feedwater, etc.) evaluated in the PSA.

The fire frequencies for these initiators are generally much lower than the associated initiating event frequencies in the PSA based on a comparison of the fire ignition frequencies in IPEEE Table 4-5 and the generic initiating event frequencies in NUREG/CR-5750. In addition, IPEEE analyses for other plants show that the non-SSA areas with offsite power cables generally have the largest impact to fire risk as compared to non-SSA areas without offsite power cables.

Sixty-one zones were screened per IPEEE Table 4-6 based on no SSA equipment in the area. The following actions have been performed in order to address this request:

- A. The offsite power cables that run through the non-SSA zones have been identified. Approximately 70 cables need evaluation.
- B. The associated fire zones and cable trays for these cables have been determined. The cables penetrate approximately ten fire areas.

- C. Walkdowns of some of the fire areas where these offsite power cables run have been completed to determine the potential damage to these cables due to a fire in the area.

The following actions are expected to be necessary to address this issue:

1. Walkdowns of the remaining fire areas where offsite power cables run to determine the potential damage to these cables due to a fire in the area.
2. COMPBRN IIIe computer code runs or comparable evaluations to determine if the offsite power cables are damaged due to fire in the area. If the cables are not damaged, the fire frequency will be compared to PSA initiating event frequency to screen the fire area.
3. If the offsite power cables are damaged, the fire area will be re-quantified with the appropriate fault trees, databases and recoveries. For fire areas where offsite power cables are damaged and the fire area does not screen based on core damage frequency; credit for non-SSA systems may be evaluated.
4. Provide the results of the walkdowns and evaluations of the fire areas to the NRC by 1st Quarter, 2001.

SCHEDULE UPDATE

Determine location of offsite power cables in non-SSA zones.	COMPLETE
Perform walkdowns associated with non-SSA zones that are high radiation areas during power operation.	PARTIALLY COMPLETE
Fire Re-Analysis: Review COMPBRN IIIe computer package and revise fire analysis runs for non-SSA zones and reduce fire area frequency based on damage to the offsite power cables.	CYCLE 10
Re-quantification: Review the results of the non-SSA zones. Perform additional screenings as necessary. Document the results for non-SSA zones.	
1 st Quarter 2001: Issue RAI response to NRC.	

This effort is currently expected to require about 1000 person-hours of effort.