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10 CFR 50.90

RBG-47919

December 17, 2018

Attn: Document Control Desk
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

Subject: Response to Request for Additional Information for License Amendment Request, Risk-Informed Justification for the Relocation of Specific Surveillance Frequency Requirements to a Licensee Controlled Program (TSTF-425).

River Bend Station, Unit 1
NRC Docket No. 50-458
Facility Operating License No. NPF-47

References:
1) Entergy Operations, Inc. (Entergy) letter to U. S. Nuclear Regulatory Commission (NRC), "Application for Technical Specification Change Regarding Risk-Informed Justification for the Relocation of Specific Surveillance Frequency requirements to a Licensee Controlled Program (TSTF-425)," dated February 28, 2018. (ML18067A115)

2) NRC email to Entergy, "Final RAI River Bend TSTF-425 (L-2018-LLA-0056)," dated October 31, 2018. (ML18304A461)

Dear Sir or Madam,

In Reference 1, Entergy Operations, Inc. (Entergy) requested an amendment to Facility Operating License No. NPF-47, Appendix A, Technical Specifications (TS) for River Bend Station, Unit 1 (RBS). The proposed change revises the RBS TS to relocate surveillance frequencies to a licensee controlled program with the implementation of Nuclear Energy Institute 04-10, "Risk-Informed Technical Specification Initiative 5b, Risk-Informed Method for Control of Surveillance Frequencies." (i.e., adoption of Technical Specification Task Force (TSTF) Traveler -425, "Relocate Surveillance Frequencies to Licensee Control - RITSTF Initiative 5b").

In Reference 2, the NRC requested additional information to complete its review of the proposed license amendment. In response, Entergy is providing the requested information in the Enclosure to this letter.

Entergy has reviewed the information supporting a finding of no significant hazards consideration that was previously provided to the NRC in Reference 1. The information provided in this submittal does not affect the basis for concluding that the proposed license amendment does not involve a significant hazards consideration.

In accordance with 10 CFR 50.91, "Notice for public comment; State consultation," paragraph (b), a copy of this application, with attachments, is being provided to the designated State Officials.

There are no regulatory commitments contained within this letter.

Should you have any questions or require additional information, please contact Timothy Schenk at 225-381-4177.

I declare under penalty of perjury, the foregoing is true and correct. Executed on December 17, 2018

Respectfully,

William F. Maguire

WFM/twf

Enclosure: Response to Request for Additional Information, TSTF-425 License Amendment Request

cc: NRC Region IV Regional Administrator, w/o Enclosure
NRC Senior Resident Inspector – River Bend Station, Unit 1
Ji Young Wiley, Department of Environmental Quality, Office of Environmental Compliance, Radiological Emergency Planning and Response Section
Public Utility Commission of Texas, Attn: PUC Filing Clerk
NRC Project Manager

RBG-47919, ENCLOSURE

Response to Request for Additional Information,
TSTF-425 License Amendment Request

Response to Request for Additional Information,
TSTF-425 License Amendment Request

By letter dated February 28, 2018 (ML18067A115), Entergy Operations, Inc. (Entergy) requested an amendment to Facility Operating License No. NPF-47, Appendix A, Technical Specifications (TS) for River Bend Station, Unit 1 (RBS). The proposed change revises the RBS TS to relocate surveillance frequencies to a licensee controlled program with the implementation of Nuclear Energy Institute 04-10, "Risk-Informed Technical Specification Initiative 5b, Risk-Informed Method for Control of Surveillance Frequencies." (i.e., TSTF-425, "Relocate Surveillance Frequencies to Licensee Control - RITSTF Initiative 5b))

In an email dated October 31, 2018 (ML18304A461), the NRC requested additional information to complete its review of the proposed license amendment. Entergy is providing the requested information in this Enclosure.

Each NRC Request for Additional Information (RAI) is provided below, followed by the associated Entergy response.

RAI 1

LAR Section 3.3 states that the River Bend Station (RBS) does not have a fire Probabilistic Risk Analysis (PRA) model and that a bounding fire risk evaluation, based on information from the Individual Plant Examination of External Events (IPEEE) and "other available insights for fire risk" will be performed for surveillance test interval (STI). Section 3.5 of the LAR states that RBS does not have a PRA model or applications associated with external hazards such as seismic, high wind or external flooding, and that a qualitative or bounding approach will be used to assess external event hazard risk at RBS for STI changes.

i. Describe how the plant's IPEEE and "other available insights" will be used for the STI fire risk evaluation, including discussion of the fire methodology used and the treatment of Structures, Systems, and Components (SSCs) not evaluated in the IPEEE.

ii. Please describe, in more detail, how each of the external initiating events seismic, high winds, and external flooding will be assessed in terms of the NEI 04-10 guidance, (e.g., how the qualitative or bounding (step 10) evaluation described in the NEI 04-10 guidance will be used).

RAI 1 RESPONSE

i. Entergy Procedure EN-DC-354, "Risk Assessment of Surveillance Test Frequency Changes," details the Bounding Assessment used when a component is only implicitly modeled, is only part of a screening analysis, or there is no quantifiable model available. If the delta Core Damage Frequency (CDF) and Large Early Release Frequency (LERF) are very small based on the detailed internal events analysis of the impact of the SSC evaluated or the STI change and it is known that the CDF or LERF impact from external events is not sensitive to the component or system being evaluated (based on qualitative reasoning), then the internal events analysis is used to bound the external event risk inputs. The basis for this determination is then documented.

   The use of the available fire risk information from the IPEEE will be limited, but the NEI 04-10 methodology allows a qualitative screening or bounding analysis to provide justification for acceptability of proposed surveillance frequency changes. The fire risk and other external event risk information from the IPEEE consist primarily of qualitative insights. Therefore, a qualitative screening analysis would not directly use numerical results from the IPEEE fire studies or other external events, but would qualitatively assess available information to determine the impact on proposed surveillance interval changes consistent with Step 10a of the NEI 04-10 methodology (Insights may also be obtained from the fire safe shutdown analysis and risk management actions for managing fire risk). Additionally, for some STI change evaluations, per Step 10b of the NEI 04-10 methodology, qualitative reasoning and very low changes to CDF and LERF results from the internal events analysis may be sufficient to support the STI change evaluation.

ii. The above response is applicable to seismic, as well as other external hazards (high winds, external flooding, etc.). RBS does not have a seismic PRA, and as such, seismic CDF and LERF cannot be directly quantified. Instead, for the bounding TSTF-425 analyses, the frequency of selected seismic events (taken from NUREG 1488) would be considered. As deemed appropriate, the Conditional Core Damage Probability (CCDP) for various events (e.g., loss of offsite power with no credit for power recovery) will be calculated using the internal events model, and a bounding total seismic CDF will be estimated. Note that, due to its low seismic hazard, River Bend was defined as a reduced seismic scope plant for IPEEE per NUREG-1407.

   The RBS IPEEE evaluated the potential risk due to "other" external events, including seismic, high winds and flooding. The "other" external events were all determined to present no vulnerability to RBS, and were excluded from further analysis. As the "other" external event contribution to CDF and LERF at RBS would be small compared to the internal events, fire and seismic risk, delta CDF and delta LERF for these will not be explicitly included in the bounding analyses but would be addressed qualitatively based on the specific STI under evaluation.

RAI 2

Section 3.5 of Attachment 2 to the License Amendment Request (LAR) states that external hazards were evaluated in the IPEEE and that a qualitative or bounding approach will be used to assess external event hazards risk. The LAR does not explain however, how the risk from external hazards evaluated in the RBS IPEEE is updated to reflect new information when used in performing a qualitative or bounding analysis in support of STI extension evaluations in accordance with NEI 04 10, Section 4, Step 10. The LAR states that the IPEEE program was a "one-time review". Hazard characteristics can change over time due to physical changes and changes in the available information.

i. Describe monitoring for, and incorporating as needed, new information for the fire, high winds, including updated tornado and hurricane climatology, external flooding, and seismic events, such as the need to update site-specific ground motion response spectra.

RAI 2 RESPONSE

i. As described in the response to RAI-1 item i, the NEI 04-10 methodology allows a qualitative screening or bounding analysis to provide justification for acceptability of proposed surveillance frequency changes. By following Steps 10a and 10b of the NEI 04-10 guidance, the evaluation of fire risk and other external events risk supporting this application will reflect and consider the current plant configuration and operating experience. The IPEEE is not a living document and has not been updated to the present plant configuration and operating experience. However, for applicable STI change evaluations, qualitative evaluation of fire and external events risk in support of Step 10b would also include consideration of applicability to the current plant configuration and operating experience. This information will be documented for each STI change provided to the Integrated Decision Panel.

   Entergy procedure EN-DC-151, Probabilistic Safety Assessment (PSA) Maintenance and Update, details the process for maintaining and updating all Entergy PRA models, including those for RBS. As described in Section 5.2 of that procedure, any new information identified by a PSA engineer should be evaluated for model impact and a model change request (MCR) created and entered into the MCR database. In addition, per EN-DC-151, if/when PRA models are developed for seismic, fire, or other external hazards, updates to those PRA models would also be considered during each periodic internal events PRA update to meet any plant-specific commitments or applications. The subsequently updated external events analyses would then be used for the Surveillance Frequency Control Program (SFCP) evaluations.

RAI 3

The dispositions for the following five unresolved internal flooding and LERF PRA Facts & Observations (F&Os) state that the unresolved findings have minimal impact and that the impact of the findings is expected to be assessed in case-by-case STI evaluations. However, the licensee does not describe how the impact of the unresolved F&Os will be evaluated, or does not provide a justification for concluding that the F&Os have a minimal impact on the application.

i. F&O RB-6096 related to SR IFSO-A4 identified that no evaluation was performed to identify human induced flooding mechanisms as stated by the supporting requirement.
ii. F&O RB-6101 related to SR LE-F3 identifies that a review of key assumptions in the LERF analysis has not been performed.
iii. F&O RB-6106 related to SR IFQU-A5 identified that a consistency check of the Human Error Probabilities (HEPs) was not performed.
iv. F&O RB-6108 related to SR IFQU-A7 states that the Human Failure Events (HFE) values in the dependency analysis were not seeded with sufficiently high values to ensure that cutsets with multiple HFEs were not truncated.
v. F&O RB-6110 related to SR IFQU-B3 identified that a review of sources of modeling uncertainty in the internal flooding PRA and their impact on the results was not performed.

For each for the five F&Os listed above address the following:

- Provide detailed justification why the F&O has no impact on the application, or
- Describe and justify the evaluation, if any, that will be performed on a case-by-case STI evaluation to address the impact of each unresolved F&O, or
- Propose a mechanism that ensures the F&O will be resolved in the PRA model and associated documentation prior to implementation of the SFCP. This mechanism should provide an explicit description of actions that will be taken and any changes that will be made to the PRA model or documentation to resolve this F&O.

RAI 3 RESPONSE

i. This F&O (tracked via EN-DC-151 Model Change Request RB-6096) related to SR IFSO-A4 identified that no evaluation was performed to identify human induced flooding mechanisms as stated by the supporting requirement. This F&O has no impact on the application. In response to the F&O, the RBS test and maintenance procedures listed in the RBS PRA system notebooks were reviewed. This review determined that, for the procedures identified in the system notebooks as affecting system availability, only vent and fill operations create an opening in a system. Fill openings are typically quite small, the flow rate associated with fill source is usually small (sometimes even a hose), and the vent valve is manned by operations personnel during the procedure. Therefore, the likelihood of a maintenance-induced flooding event of any significance is considered insignificant. This check of the RBS test and maintenance procedures for human-induced flooding mechanisms is included in the documentation for the next update to the RBS Model of Record (MOR).

   In addition, the screening value of ~1E-05/yr estimated in the internal flooding PRA initiating events analysis was based upon very conservative criteria. First, the

calculation used the highest component maintenance unavailability value from the PRA model data, i.e., unavailability of the control room chiller at 4.5E-02. That value is approximately an order of magnitude higher than a typical maintenance unavailability value.

Second, the screening estimate cited assumed that all maintenance activities that result in component unavailability involve activities that breach the pressure boundary. When calculating unavailability values, the period of maintenance unavailability begins when the hanging of clearance tags begins and ends after the tags are cleared and the system aligned for operation. However, the pressure boundary should not be breached until clearance tags are checked. The pressure boundary should be restored before clearing of tags is authorized. Furthermore, not all maintenance activities would be expected to breach the pressure boundary. For example, pump unavailability to change bearing oil or valve unavailability for motor operated valve (MOV) testing would not be expected to breach a fluid pressure boundary. Additionally, some systems contain limited liquid volume and thus present only a limited flooding threat. Therefore, it is expected that less than about ten percent of maintenance unavailability actually breaches the pressure boundary. This factor was not included in the screening estimate calculated.

Consideration of typical maintenance unavailability, with the fraction of total maintenance unavailability that could result in a breach of the fluid pressure boundary, along with the probability that isolation failure occurs and is not detected and corrected, would result in a maintenance-induced flood frequency that is two orders of magnitude less than the screening estimate of ~1E-05/yr. The screening value of 1E-5 would be reduced by a factor of 0.1 as a conservative probability for failure to isolate the flood since the diagnosis of maintenance-induces floods is more straightforward than for pipe breaks. The screening value would be further reduced by a factor of 0.1 for failure to detect/correct flood isolation failure of the maintenance-induced flood by maintenance personnel located in the vicinity of the maintenance activity.

Although no data exists for the distribution of flow from maintenance-induced flood events, a reasonable assumption is that the flow rate that results from a maintenance induced flood would follow the same trend as for random flood events. That is, events with high flow rates, (e.g., greater than 2,000 gpm), have a frequency that is about two orders of magnitude less than events with low flow rates, (e.g., less than 100 gpm). As previously noted, the review of RBS test and maintenance procedures shows only vent/fill operations create a system opening, and those openings are quite small. A maintenance activity that creates a large opening in a system that could result in a high flow rate is much less likely than an activity that creates a small opening, just as a pipe break that creates a high flow rate is much less likely than a break that creates a low flow rate.

Consideration of the factors discussed above could result in a frequency for maintenance-induced floods that is approximately two to four orders of magnitude lower than the ~1E-05/yr screening estimate or 1E-7/yr for events with smaller flow rates to 1E-09/yr for events with larger flow rates. These values are lower than the initiating event frequency values calculated considering only random pipe breaks in a similar flow range.

Furthermore, maintenance-induced floods would not be expected to cause any unique effects on the accident progression that were not considered for events caused by random pipe breaks. Initiating event frequency calculations have a very large uncertainty for flooding events, particularly for events with a high flow rate. Given the uncertainty in the inputs for maintenance-induced flood events, that there are no unique effects on accident progression from maintenance induced floods, and that there is a large uncertainty in the frequency of flooding events that occur due to random pipe breaks, use of the initiating event frequency calculated from random pipe breaks only is considered representative of maintenance-induced floods and no additional consideration of maintenance-induced flood frequency is needed for internal flooding events.

ii. This F&O (MCR RB-6101) related to SR LE-F3 identifies that a review of key assumptions in the LERF analysis has not been performed. This F&O should not have been included in the documentation of open findings for RBS, as subsequent communication from the peer review team resulted in the deletion of this finding and it is not included in the final peer review report. The RBS LERF analysis in the MOR does review the specific model assumptions made for the RBS LERF analysis in order to identify candidate sensitivity analyses to assess those uncertainties that may impact the MOR results. In addition, the RBS LERF analysis was reviewed for applicability against the generic sources of model uncertainty identified in EPRI 1016737, "Treatment of Model and Parameter Uncertainty for Probabilistic Risk Assessments," consistent with the guidance in NUREG-1855 Rev. 1. The sources of uncertainty determined to be most important, or most interest, to the RBS LERF analysis based on these reviews were characterized and further evaluated with a set of sensitivity cases. To ensure the selected sensitivity cases adequately addressed the uncertainty from key assumptions, those sources of uncertainty with the potential to challenge the acceptance criteria for a candidate STI change will be evaluated with further sensitivity studies during the TSTF-425 implementation in accordance with NEI 04-10.

iii. This F&O (MCR RB-6106) related to SR IFQU-A5 identified that a consistency check of the Human Error Probabilities (HEPs) was not performed. This impact of this F&O will be evaluated during the TSTF-425 implementation process; That is, candidate STI changes will be reviewed against the operator actions considered in the internal flooding analysis. Those actions and associated HEPs determined to have the potential to challenge the acceptance criteria for the STI change will be identified, and sensitivity studies performed in accordance with NEI 04-10. In response to the F&O, a consistency check has been performed for the operator HEPs used in the internal flooding analysis which were not included in the internal events HEP consistency check. This consistency check for the internal flood HEPs is included in the documentation for the next update to the RBS MOR. The consistency check for the internal flood HEPs confirmed the HEPs were reasonable and consistent with similar operator actions in the analysis, given the context of the scenarios and plant operational practices, procedures, and experience.

iv. This F&O (MCR RB-6108) related to SR IFQU-A7 states that the Human Failure Events (HFE) values in the dependency analysis were not seeded with sufficiently high values to ensure that cutsets with multiple HFEs were not truncated. This F&O has no impact on the application. In response to the F&O, it was confirmed for the internal flooding (i.e., as explicitly stated in the quantification report) that the HEPs for all operator actions

(i.e., both those developed for the internal events analysis and those specific to the internal flooding analysis) were set (seeded) to a high value (0.5) to generate cutsets for the HEP dependency analysis. The Human Reliability Analysis (HRA) Calculator tools were then used to create the appropriate recovery rules for the combinations of dependent HEPs, including setting seed values of 1.0. Therefore, it is concluded that the use of higher seed values to generate cutsets for the HEP dependency analysis will have no impact on the overall results.

v. This F&O (MCR RB-6110) related to SR IFQU-B3 identified that a review of sources of modeling uncertainty in the internal flooding PRA and their impact on the results was not performed. The impact of this F&O will be evaluated during the TSTF-425 implementation process; candidate STI changes will be reviewed against the relevant sources of uncertainty identified for the RBS internal flooding analysis. Those sources of uncertainty determined to have the potential to challenge the acceptance criteria for the STI change will be identified as key, and sensitivity studies performed in accordance with NEI 04-10. As discussed in Section 7.3 of NUREG-1855 Rev. 1, only relevant sources of uncertainties and related assumptions with the potential to challenge the acceptance guidelines for an application are considered key. Therefore, in the context of the RBS PRA MOR, key assumptions and sources of uncertainty are not defined and cannot be determined.

   In response to the F&O, a review of specific model assumptions made for the RBS internal flooding analysis, as well as the generic sources of model uncertainty identified in EPRI 1016737, "Treatment of Model and Parameter Uncertainty for Probabilistic Risk Assessments," was performed consistent with the guidance in NUREG-1855 Rev. 1. The sources of uncertainty will be used to identify candidate sensitivity analyses to assess those uncertainties that may impact the internal flooding analysis results. This review of sources of modeling uncertainty in the internal flooding analysis and their impact on the results will be included in the documentation for the next update to the RBS MOR.