

NRR-DMPSPeM Resource

From: Wong, Albert
Sent: Tuesday, March 06, 2018 9:10 AM
To: wmagui1@entergy.com
Cc: RidsNrrDmlr Resource; RidsNrrDmlrMrpb Resource; RidsNrrPMRiverBend Resource; RidsOgcMailCenter Resource; Wilson, George; Donoghue, Joseph; Sayoc, Emmanuel; Wong, Albert; Min, Seung; Holston, William; Gavula, James; Gardner, William; Allik, Brian; Oesterle, Eric; Alley, David; Martinez Navedo, Tania; Bailey, Stewart; Wittick, Brian; Ruffin, Steve; Bloom, Steven; Regner, Lisa; Turk, Sherwin; Sowa, Jeffrey; Parks, Brian; Pick, Greg; Kozal, Jason; Young, Cale; Young, Matt; Werner, Greg; McIntyre, David; Dricks, Victor; Moreno, Angel; Burnell, Scott; 'Broussard, Thomas Ray'; Lach, David J; SCHENK, TIMOTHY A; 'Coates, Alyson'
Subject: FINAL REQUESTS FOR ADDITIONAL INFORMATION FOR THE SAFETY REVIEW OF THE RIVER BEND STATION LICENSE RENEWAL APPLICATION (CAC NO. MF9757) – SET 12
Attachments: RAI Set 12 Enclosure - CLEAN Final_6 RAIs_030118.pdf

Docket No. 50-458

Dear Mr. Maguire:

By letter dated May 25, 2017 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML17153A282), Entergy Operations, Inc. (the applicant) submitted an application pursuant to Title 10 of the *Code of Federal Regulations* Part 54, "Requirements for Renewal of Operating Licenses for Nuclear Power Plants," to renew the operating license NPF-47 for River Bend Station.

Following staff's review of the applicant's response to RAI 3.2.2.3.2-1 (generic filtration) (ADAMS ML18010A848), dated January 10, 2018, the staff requested a public telephone conference with the applicant to discuss staff concerns regarding this RAI response. On February 22, 2018, the NRC staff sent Entergy, Inc. five RAIs related to the Fatigue Monitoring Aging Management Program (AMP). Entergy Operations, Inc. subsequently informed the NRC staff that a clarification call was needed to discuss the information requested in these Fatigue Monitoring AMP RAIs. The public telephone conference call on generic filtration and the clarification call on fatigue monitoring were held on February 27, 2018. The final RAIs associated with fatigue monitoring are enclosed as well as a follow-up RAI (RAI 3.2.2.3.2-1a) on the response to RAI 3.2.2.3.2-1.

David Lach of your staff agreed to provide a response to all the final RAIs within 30 days of the date of this email. The NRC staff will be placing a copy of this email in the NRC's Agencywide Documents Access and Management System.

Sincerely,

Emmanuel Sayoc, Project Manager *Albert Wong* for
License Renewal Projects Branch (MRPB)
Division of Materials and License Renewal
Office of Nuclear Reactor Regulation

Docket No. 50-458

Enclosure:
As stated

OFFICE	PM:MRPB:DMLR	BC: MRPB:DMLR	PM: MRPB:DMLR
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DATE	02/28/2018	03/01/2018	03/05/2018

OFFICIAL RECORD COPY

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Subject: FINAL REQUESTS FOR ADDITIONAL INFORMATION FOR THE SAFETY
REVIEW OF THE RIVER BEND STATION LICENSE RENEWAL APPLICATION (CAC NO. MF9757) –
SET 12

Sent Date: 3/6/2018 9:09:41 AM

Received Date: 3/6/2018 9:09:00 AM

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MESSAGE	1955	3/6/2018 9:09:00 AM
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Options

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REQUEST FOR ADDITIONAL INFORMATION
LICENSE RENEWAL APPLICATION
RIVER BEND STATION, UNIT 1
DOCKET NO.: 50-458
CAC NO.: MF9757
Office of Nuclear Reactor Regulation
Division of Materials and License Renewal

10 CFR § 54.21(a)(3) of 10 CFR requires an applicant to demonstrate that the effects of aging for structures and components will be adequately managed so that the intended function(s) will be maintained consistent with the current licensing basis for the period of extended operation. One of the findings that the staff must make to issue a renewed license (10 CFR § 54.29(a)) is that actions have been identified and have been or will be taken with respect to the managing the effects of aging during the period of extended operation on the functionality of structures and components that have been identified to require review under § 54.21, such that there is reasonable assurance that the activities authorized by the renewed license will continue to be conducted in accordance with the current licensing basis (CLB). As described in SRP LR, an applicant may demonstrate compliance with 10 CFR 54.21(a)(3) by referencing the GALL Report. In order to complete its review and enable making a finding under 10 CFR § 54.29(a), the staff requires additional information in regard to the matters described below.

RAI 3.2.2.3.2-1a (Generic Filtration Follow-up)

Background

The response to RAI 3.2.2.3.2-1, dated January 10, 2018, states that, unlike piping, strainers and filters (with the intended function of filtration) are designed to collect debris, whether from aging effects or other causes. Consequently, provisions have been incorporated into the system design or operation to manage the debris collection, so the active function of providing system flow can continue to be accomplished. An overall summary of the response indicates that flow blockage would be detectable by: a) alarmed differential pressure, b) local indication of differential pressure, or c) abnormal operation indicated through performance monitoring of temperatures, pressures, or flows. In addition, the response indicates that some of these components are also periodically inspected and cleaned.

In its discussion regarding the IPA required by 10 CFR 54.21, the industry guidance endorsed by Regulatory Guide 1.188, "Standard Format and Content for Applications to Renew Nuclear Power Plant Operating Licenses," states that the information to be documented by the applicant should include an identification of the **AERM and an identification of the specific program or activities** [emphasis added by staff] that will manage the effects of aging for each component.

For the strainer in the main steam positive leakage control system, LRA Table 3.3.2-6 indicates that only the strainer is exposed to a treated water environment, which is consistent with the response's discussion regarding the compressor seal water cooler outlet strainer. However, PID-27-20C also shows a strainer (STR10BA), which takes a suction from the auxiliary building atmosphere through a 0.125-inch perforated screen, indicating an environment of indoor air.

Issue

- 1) Although considerations for debris collection may be incorporated into the system design or operation, the industry guidance endorsed in Regulatory Guide 1.188 states that the IPA should include an identification of the specific program or activities that are used to manage aging effects. For components with an intended function of filtration, it is not clear to the staff that in all cases the proposed operational controls (e.g., for abnormal operation), or maintenance tasks (e.g., periodic inspections or cleaning of strainers) are linked to a specific program.

For the suppression pool suction strainers, it is also not clear how fouling is trended to ensure that accumulation of debris will not prevent an intended function from being met prior to the next inspection.

In addition, given the normal movement of control rods, it is not clear to the staff that normal operation will be adequate to detect potential flow blockage in the hydraulic control unit (HCU) filters.

- 2) For the strainer STR10BA in the main steam positive leakage control, it is not clear to the staff whether this component is within the scope of license renewal and whether LRA Table 3.3.2-6 includes a corresponding AMR item.

Request

- 1) For each component in the table below provide additional information as follows:

Table No.	System	Component Type	Discussion from RAI Response
3.2.2-2	High Pressure Core Spray	Suction Strainer	Inspect and Clean
3.2.2-3	Residual Heat Removal	Suction Strainer	Inspect and Clean
3.2.2-4	Low Pressure Core Spray	Suction Strainer	Inspect and Clean
3.2.2-5	Reactor Core Isolation Cooling	Suction Strainer	Inspect and Clean
3.3.2-1	Control Rod Drive	Filter	Normal Operation will detect flow blockage. Inspect and replace during rebuilds

- a. For strainers where periodic inspections are performed, state: (a) the specific AMP to be used; (b) whether the maintenance tasks will be linked to the AMP; (c) how monitoring and trending will be conducted; and (d) the frequency of the inspections being credited.
 - b. For the HCU's, state the basis for why monitoring during normal operation will be adequate to detect potential flow blockage of the filters. If monitoring might not be adequate, state the basis for why the periodicity of rebuilds provides reasonable assurance that the intended function of the control rods will be met.
- 2) For strainer STR10BA in the main steam positive leakage control system (PID-27-20C), provide additional information to clarify whether this component is within the scope of license renewal and, if so, state which aging management review item in LRA Table 3.3.2-6 is applicable.

RAI B.1.18-1: Fatigue Monitoring of Emergency and Faulted Transients

Background

The “parameters monitored or inspected” program element of GALL Report AMP X.M1, “Fatigue Monitoring,” recommends that the program monitor and track all plant design transients that cause cyclic strains, which are significant contributors to the fatigue usage factor. The GALL Report AMP also states that the program ensures the fatigue usage remains within the allowable limit, thus minimizing fatigue cracking of metal components caused by cyclic strains in the material. LRA Section B.1.18 describes the applicant’s Fatigue Monitoring Program.

During the audit, the staff noted that the following applicant procedure addresses the transients that are counted for fatigue management at the River Bend Station (RBS): EDP-MP-05, “Fatigue Management,” Revision 2A. Specifically, Section 7.2, “Applicable Transient,” of this procedure indicates that some adverse emergency or faulted transients may be counted as normal transients in the event the transients occur.

Issue

It is not clear to the staff whether the applicant’s monitoring of “some” emergency and faulted transients is consistent with the guidance in the GALL Report AMP that the program monitors all plant design transients that cause cyclic strains which are significant contributors to the fatigue usage factor.

Request

Please clarify the use of the term “some” with respect to consistency between the LRA program and the guidance provided in the GALL report.

RAI B.1.18-2: Fatigue Management and Monitoring for Containment Components

Background

The “parameters monitored or inspected” program element of GALL Report AMP X.M1, “Fatigue Monitoring,” recommends that that the program monitor and track all plant design transients that cause cyclic strains, which are significant contributors to the fatigue usage factor. The GALL Report AMP also states that the program ensures the fatigue usage remaining within the allowable limit, thus minimizing fatigue cracking of metal components caused by anticipated cyclic strains in the material. LRA Section B.1.18 describes the applicant’s Fatigue Monitoring Program.

LRA Section 4.6 addresses fatigue analyses for containment liner plate, metal containments and penetrations. LRA Section 4.6 also indicates the following: (1) fatigue analyses for the floor liner plate complies with the requirements of ASME Boiler and Pressure Vessel (B&PV) Code, Section III, Division 2; (2) fatigue analyses for the steel containment cylinder and dome complies with the requirements of ASME B&PV Code Section III, Division 1, Subsection NE; (3) detailed fatigue calculations were generated for the containment penetrations at River bend Station (RBS); and (4) containment structural components (e.g., polar crane, equipment hatch and drywell combination door/hatch assembly) are evaluated for fatigue.

In addition, LRA Section 4.6 indicates that the applicant will manage the aging effects due to fatigue for the containment components using the Fatigue Monitoring Program in accordance with 10 CFR 54.21(c)(1)(iii).

Issue

During the audit, the staff noted that the applicant's procedure, EDP-MP-05 (Revision 2A) addresses counted fatigue transients and fatigue management activities. However, this procedure does not clearly describe fatigue monitoring and management activities for the containment liner plate, metal containments, containment penetrations, and other containment structural components (such as polar cranes).

During the audit, the staff also noted that the following Engineering Report provides recent updates to fatigue analysis and usage results for various pressure boundary piping components at RBS: RBS-EP-17-00006, Revision 0, "Fatigue Update for River Bend Nuclear Station Using FatiguePro Software." This report does not address fatigue analysis updates for the containment liner plate, cylinder, dome, penetrations and other structural components (such as polar cranes).

Request

Provide a description of the fatigue monitoring program for the containment liner plate, cylinder and dome, penetrations, and other structural components (such as polar cranes) or, alternatively, provide the documents that describe the fatigue monitoring program for these structural components.

RAI B.1.18-3: Corrective Action Program Element

Background

The "corrective action" program element of GALL Report AMP X.M1, "Fatigue Monitoring," states that the program provides for corrective actions to prevent the usage factor from exceeding the design code limit during the period of extended operation. The program element in the GALL Report also states that acceptable corrective actions include repair of the component, replacement of the component, and a more rigorous analysis of the component to demonstrate that the design code limit will not be exceeded during the period of extended operation.

The following reference describes the program elements and basis of the applicant's Fatigue Monitoring Program in comparison with those of GALL Report AMP X.M1: Section 4.7., "Fatigue Monitoring" of RBS-EP-15-00006, Revision 0, "RBS License Renewal Project: Aging Management Program Evaluation Report Class 1 Mechanical."

Issue

During the audit, the staff noted that the "corrective action" program element of the Fatigue Monitoring Program in the program basis document (RBS-EP-15-00006, Revision 0) does not address specific corrective actions such as repair of the component, replacement of the component, and a more rigorous analysis of the component. The program basis document only

refers to the corrective action program. The lack of these corrective actions from the “corrective action” program element appears inconsistent with the guidance in GALL Report AMP X.M1.

Request

Provide justification for why the program basis document does not address corrective actions such as component repair/replacement activities and more rigorous analyses. Alternatively, confirm whether the program includes relevant corrective actions in the “corrective action” program element.

RAI B.1.18-4: Operating Experience

Background

River Bend Station (RBS) Condition Report, CR-RBS-2016-00656 (1/22/2016) indicates the following information related to fatigue cycle monitoring: The FatiguePro software uses the COLLECT program to retrieve cycle and fatigue related data from the ERIS computer. During the retrieval of the cycle 18 data, it was noticed that the COLLECT program unexpectedly stopped automatically recording data from November 2012 to September 2013. The Collect computer has been restored to service. Data on the Collect computer was not recoverable.

Issue

Data collection for fatigue cycles and related information is an important attribute for fatigue monitoring and management. The LRA does not provide information regarding this operating experience and resolution of the data collection issue.

Request

Describe how the applicant resolved the fatigue data collection issue that is addressed in CR-RBS-2016-00656 and discuss how loss of this data was addressed as part of the Fatigue Monitoring Program.

RAI B.1.18-5

Background

The applicant’s enhancement to the “preventive actions” program element of the Fatigue Monitoring Program states that an environmentally assisted fatigue analysis using NUREG CR-6909 will not use average temperature for complex transients. NUREG CR-6909 Report provides equations that can be used to calculate environmental fatigue correction factors.

Issue

Given the applicant’s statements concerning temperatures used in its fatigue analysis, it is not clear to the staff whether the applicant’s analyses follow the guidance contained in NUREG CR-6909.

Request

Please clarify whether the approach proposed is in accordance with NUREG CR-6909 and, if not, provide a description of how the approach used differs from the approved guidance and a basis for those differences. As part of the response, clarify what temperature is used to determine the environmental fatigue correction factor for complex thermal transients with multiple increasing and decreasing temperature excursions.