NRR-DMPSPEm Resource

From: Sayoc, Emmanuel
Sent: Wednesday, November 29, 2017 12:53 PM
To: wmagui1@entergy.com
Cc: RidsNrrDmlr Resource; RidsNrrDmlrMrpb Resource; RidsNrrPMRiverBend Resource; RidsOgcMailCenter Resource; Wilson, George; Donoghue, Joseph; Sayoc, Emmanuel; Wong, Albert; Billoch, Araceli; Iqbal, Naeem; Casto, Greg; Rogers, Bill; Burton, William; 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'; Min, Seung; Alley, David; Gardner, William; Gavula, James; Holston, William
Subject: FINAL REQUESTS FOR ADDITIONAL INFORMATION FOR THE SAFETY REVIEW OF THE RIVER BEND STATION LICENSE RENEWAL APPLICATION (CAC NO. MF9757)
Attachments: RBS RAI Set 3 Enclosure 11-28-2017.pdf

Importance: High

Docket No. 50-458

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.

On November 21, 2017, the U.S Nuclear Regulatory Commission (NRC) staff sent Entergy Operations, Inc. the draft Requests for Additional Information (RAIs). Entergy Operations, Inc. subsequently informed the NRC staff that a clarification call was needed to discuss the information requested. The clarification call was held on November 28, 2017 between NRC staff and Entergy Operations, Inc. representatives, during which the subject information requests were discussion. The draft RAIs were modified based on these discussions. The final RAIs are enclosed.

David Lach of your staff agreed to provide a response to 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
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	11/28/2017	11/ 29/2017	11/29/2017

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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)
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Received Date: 11/29/2017 12:52:00 PM
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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

Section 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. As described in SRP LR, an applicant may demonstrate compliance with 10 CFR 54.21(a)(3) by referencing the GALL Report and when evaluation of the matter in the GALL Report applies to the plant.

RAI 3.2.2.3.2-1 (Generic Filtration)

Background:

LRA Table 2.0-1, "Component Intended Functions: Abbreviations and Definitions," states that the filtration function is, "[p]rovide removal of unwanted material." LRA Table 2.0-1 states that the mechanical pressure boundary function is, "[p]rovide pressure boundary integrity such that adequate flow and pressure can be delivered…"

LR-ISG-2012-02, "Aging Management of Internal Surfaces, Fire Water Systems, Atmospheric Storage Tanks, and Corrosion Under Insulation," added a new term, "flow blockage," defined as:

> Flow blockage is the reduction of flow or pressure, or both, in a component due to fouling, which can occur from an accumulation of debris such as particulate fouling (e.g., eroded coatings, corrosion products), biofouling, or macro fouling. Flow blockage can result in a reduction of heat transfer or the inability of a system to meet its intended safety function, or both. This definition is consistent with the definition of the term "pressure boundary" as found in SRP-LR Table 2.1-4(b), "Typical 'Passive' Component-Intended Functions."

In addition, the term "fouling" was revised to state in part, "[f]ouling can result in a reduction of heat transfer, flow or pressure, or a loss of material."

SRP-LR, Section A.1.2.1, *Applicable Aging Effects* states, in part, that the effects of aging on the intended functions of components should be considered. In the case of components with an intended function of "filtration," flow blockage due to fouling would appear to be an applicable aging effect to be considered. In addition, Section A.1.2.1 also states:

> An aging effect should be identified as applicable for license renewal even if there is a prevention or mitigation program associated with that aging effect. For example, water chemistry, a coating, or use of cathodic protection could prevent or mitigate corrosion, but corrosion should be identified as applicable for license renewal, and the AMR should

consider the adequacy of the AMP referencing water chemistry, coating, or cathodic protection.

Issue:

Several LRA Table 2s cite components with a filtration intended function, see table below. None of the Table 2 entries cite flow blockage due to fouling as an aging effect requiring management (AERM). The staff recognizes that for some components, flow blockage due to fouling might be effectively managed by routine plant operations, for example, differential pressure is monitored on both sides of the component that has a filtration function. In other instances, flow blockage due to fouling might not be an applicable AERM, for example, a stainless steel strainer in a treated-water environment that has no internal coating or material/environment subjected to loss of material due to general corrosion upstream of the strainer. Based on the staff's review of the LRA, current licensing basis, and the associated components, the staff lacks sufficient information to conclude that the pressure boundary function of downstream components would be met if flow blockage due to fouling is not managed for the following components.

Table No.	System	Component Type
3.2.2-2	High Pressure Core Spray	Strainer
3.2.2-3	Residual Heat Removal	Cyclone separator, Orifice[1], Strainer
3.2.2-4	Low Pressure Core Spray	Strainer
3.2.2-5	Reactor Core Isolation Cooling	Strainer[2]
3.2.2-6	Standby Gas Treatment	Moisture separator
3.3.2-1	Control Rod Drive	Filter
3.3.2-3	Service Water	Strainer
3.3.2-4	Compressed Air	Strainer
3.3.2-6	Main Steam Positive Leakage Control	Strainer
3.3.2-10	Standby Diesel Generator	Strainer
3.3.2-11	HPCS Diesel Generator	Strainer
3.3.2-12	Control Building HVAC	Demister
3.3.2-13	Miscellaneous HVAC	Screen
3.3.2-14	Chilled Water	Strainer, Air dryer
3.3.2-17	Fuel Oil	Strainer
3.4.2-1	Condensate Makeup, Storage and Transfer	Screen

Notes:

1) For the residual heat removal system, as noted on P&IDs 27-07A, and 27-07B, the restricting orifice plates for RHS-RO208A and RO208B were replaced with an "Inline Drag Resistor." This multistage flow restricting device was designed to eliminate cavitation, and consists of a set of 149 "punched disks," in addition to a multi-port baffle plate, which allow particles 0.125 inch diameter or less to pass. Although not intended to function as strainers, based on a review of the drawing for the inline drag resistor, it is not clear how large the openings are in order to determine if these components will act as strainers.

2) For the reactor core isolation cooling system, as noted on P&ID 27-06A, there is a pump inlet strainer, STRT1, shown for E51-PC003 “Sub System Fill Pump.” Although Note 9 says the strainer element for STRT2 for E51-PC001, “Reactor Core Isolation Cooling Pump” was removed, there is no comparable note associated with STRT1 for the Sub System Fill Pump. It is not clear to the staff whether the E51-PC003 strainer was removed.

Request:

1. State the basis for why the core spray inline drag resistor does not act as a strainer, or if it could, respond to Request No. 3.
2. State whether the E51-PC003 strainer was removed. If it has not been removed, respond to Request No. 3.
3. For each of the above components that cite filtration as an intended function, state the basis for why flow blockage due to fouling is not considered as an applicable AERM. Alternatively, revise the Table 2s, cite the AMP(s) that will be used to manage this AERM, and revise the AMP(s) to address this AERM.

RBS Stress Corrosion Cracking AMR (TRP-101)

RAI 3.4.1.11-1 (Potential Aging Effects of Control Rod Drive (CRD) Hydraulic Control Unit (HCU) Accumulators)

Background:

LRA Table 3.3.2-1 addresses aging management review results for the control rod drive hydraulic system. The LRA table indicates that stainless steel accumulators, exposed to treated water (greater than 140 °C), are subject to cracking due to stress corrosion cracking (SCC) and that the aging effect of SCC is managed by using the Water Chemistry Control – BWR Program and the One-Time Inspection Program.

During the audit, the staff noted that CR-RBS-2015-00855 (dated February 11, 2015) addresses an adverse trend of equipment reliability for the hydraulic control unit (HCU) accumulators in the control rod drive hydraulic system. The CR indicates a plan for accumulator replacements. In addition, the CR indicates that these accumulators are made with carbon steel or stainless steel and that preventive maintenance activities will be emphasized to prevent accumulator faults.

Issue:

The staff needs additional information to clarify whether aging effects are associated with the reliability concern of the accumulators discussed above.

Request:

1. Provide additional information on the following: (1) whether aging effects are associated with the reliability concern of HCU accumulators (e.g., the reliability issue resulted from aging effects); and (2) if aging effects are associated with the reliability concern, what aging effects are involved and what aging management programs and activities are used to manage the aging effects.

2. Revise aging management review results for these accumulators (e.g., LRA Table 3.3.2-1), as needed.

RAI 3.3.2.1-1 (Aging Management for Control Rod Drive (CRD) Hydraulic Control Unit (HCU) Directional Control Valve (DCV) Cap Screws)

Background:

LRA Table 3.3.2-1 addresses aging management review results for the control rod drive hydraulic system. During the audit, the staff noted that CR-RBS-2016-02942 addresses signs of corrosion in ASTM A574 cap screws of control rod drive (CRD) hydraulic control unit (HCU) directional control valves (DCVs). This CR indicates that the cap screws are used to maintain the pressure boundary integrity of DCVs. The CR further indicates that, as addressed in GE SIL 678, these alloy steel cap screws are susceptible to stress corrosion cracking.

Issue:

LRA does not clearly address aging management programs or activities that are used to manage loss of material due to corrosion and cracking due to stress corrosion cracking for these HCU DCV cap screws.

Request:

Describe aging management programs and activities that the applicant uses to manage loss of material and cracking for these cap screws. In addition, revise the LRA to describe the aging management programs and activities, as needed.