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May 9, 2018

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

Subject: Duke Energy Carolinas, LLC (Duke Energy)
McGuire Nuclear Station, Units 1 and 2
Docket Nos. 50-369 and 50-370
Resolution of Commitments related to Review Request for the Aging
Management Program and Inspection Plan for the McGuire Nuclear Station
Units 1 and 2 Reactor Vessel Internals to Implement MRP-227-A

By letter dated December 13, 2017, Duke Energy submitted the Aging Management Program and Inspection Plan for the McGuire Nuclear Station Units 1 and 2 Reactor Vessel Internals to implement MRP-227-A. In that submittal, McGuire committed to provide submittals to address the Reactor Vessel Access Plug Assembly Springs, the Anti-Vibration Sleeves, and the Upflow Conversion Modifications, by May 31, 2018.

Attachment 1 addresses the Access Plug Assembly Springs and Anti-Vibration Sleeves.

Attachment 2 addresses the Upflow Conversion Modifications.

This submittal closes Commitments 2, 3, and 4 from the December 13, 2017 letter. If you have any questions or require additional information, please contact P.T. Vu of Regulatory Affairs at (980) 875-4302.

I declare under penalty of perjury that the foregoing is true and correct. Executed on May 9, 2018.

Thomas D. Ray, P.E.
Site Vice President
McGuire Nuclear Station

Attachments

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xc:

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ATTACHMENT 1

Westinghouse LTR-AMLR-18-1 Rev. 0

MRP-227-A Applicant Licensee Action Items 1 and 2 Resolution for the Access Plug Assembly
Spring and Anti-Vibration Sleeves for McGuire Units 1 and 2

(Westinghouse Non-Proprietary Class 3)



To: Timothy Sokolak
cc:

Date: April 5, 2018

From: Aging Management and License Renewal
Ext: 412-374-2659
Fax: 724-940-8565

Our ref: LTR-AMLR-18-1 Rev. 0

Subject: MRP-227-A Applicant Licensee Action Items 1 and 2 Resolution for the Access Plug Assembly Spring and Anti-Vibration Sleeves for McGuire Units 1 and 2

- References:
1. Westinghouse Calculation Note, CN-RIDA-13-59 Rev. 4, "McGuire Units 1 and 2 Reactor Internals MRP-227-A Licensee Action items 1 and 2," March 28, 2018.
 2. Westinghouse Letter, LTR-AMLR-18-8 Rev. 0, "McGuire Units 1 and 2 Expert Panel Meeting Minutes," February 8, 2018.
 3. Duke Energy License Renewal Application, "Application to Renew the Operating Licenses of McGuire Nuclear Station, Units 1 & 2 and Catawba Nuclear Station, Units 1 & 2," June 2001.
 4. Westinghouse Report, WCAP-18265-NP Rev. 0, "Aging Management Program and Inspection Plan for the McGuire Nuclear Station Units 1 and 2 Reactor Vessel Internals (*Application to Implement MRP-227-A*)," December 2017.

In WCAP-18265-NP Rev. 0 [4] the access plug assembly spring and the anti-vibration sleeves were considered open items for applicant licensee action items (A/LAIs) 1 and 2. A McGuire specific expert panel was convened to address the access plug assembly spring and the anti-vibration sleeves [2] to close these open items.

1.0 Background / Purpose

As is stated in Sections 6.2.1 and 6.2.2 of WCAP-18265-NP [4], the original intent of McGuire was to apply the MRP-191 Rev. 2 expert panel meeting minutes to the access plug assembly springs and anti-vibration sleeves. However, MRP-191 Rev. 2 is not officially published at this time. Therefore, a McGuire specific expert panel was convened to address these components. The McGuire specific expert panel followed the same process used in MRP-191.

The McGuire components were compared to MRP-191 within [1] in order to satisfy LAI 1 and LAI 2. The McGuire aging management review (AMR) identified a component, "Irradiation specimen holder (spring)" [3] that has no corresponding MRP-191 component. The irradiation specimen holder (spring) is a subcomponent of the access plug assembly, which is a subcomponent of the irradiation specimen holder assembly. This component will be referred to as the access plug assembly spring. The access plug assembly spring was the only additional component identified for McGuire when comparing the McGuire AMR to MRP-191.

In addition to the access plug assembly spring, several other components were identified outside of the AMR that do not have corresponding MRP-191 components: the anti-vibration sleeves, core barrel plugs, lower former plate plugs, and modified upper former plate. The core barrel plugs, lower former plate plugs, and modified upper former plate are a result of an upflow conversion and will be evaluated for compliance with MRP-227-A by the vendor that performed the upflow conversion and provided to the

Nuclear Regulatory Commission (NRC) in a separate submittal. The anti-vibration sleeves are protective sleeves for the flux thimbles. They were installed within McGuire Unit 1 and Unit 2 to reduce the clearance within the lower internals bottom mounted instrumentation (BMI) columns and limit the amount of vibratory motion of the flux thimbles. The access plug assembly spring and anti-vibration sleeves have been assessed within [2].

2.0 McGuire Units 1 and 2 Expert Panel Results [2]

Access plug assembly spring

The McGuire Units 1 and 2 access plug assembly spring is part of the lower internals assembly. It is a piece-part of the irradiation specimen plug. The screening and categorization for the access plug assembly spring is shown below in Table 1. According to the plant specific drawings the access plug assembly spring installed at McGuire Units 1 and 2 is made of Inconel X-750. It should be noted that the access plug assembly spring had no active degradation mechanisms and was therefore not evaluated by the panel for likelihood of failure and likelihood of damage. The access plug assembly spring was assigned a FMECA ranking of 0 and a component classification of A. Since the access plug assembly was ranked as a classification of A, it is a "No Additional Measures" component.

Table 1
McGuire Units 1 and 2 Screening and Categorization for the Access Plug Assembly Spring [2]

Assembly	Subassembly	Component	Material	Screened-in Degradation Mechanisms	Likelihood of Failure	Likelihood of Damage	FMECA Group	Category
Lower internals assembly	Irradiation specimen guides	Access plug assembly spring ¹	Alloy X-750	NONE			0	A

Note:

1. The spring is a piece-part of the irradiation specimen plug in MRP-191 Revision 1.

Flux thimble anti-vibration sleeve

The McGuire Units 1 and 2 flux thimble anti-vibration sleeves are part of the lower internals assembly. They are part of the flux thimbles (tubes) sub assembly. The screening and categorization for the flux thimble anti-vibration sleeves is shown below in Table 2. According to the plant specific drawings the anti-vibration sleeves installed at McGuire Units 1 and 2 are made of 304 SS. Despite having multiple screened-in degradation mechanisms, the panel considered the likelihood of failure and damage to be low. It was assigned a FMECA ranking of 1 and a component classification of A. Since the flux thimble anti-vibration sleeves were ranked as a classification of A, they are a "No Additional Measures" component.

Table 2
McGuire Units 1 and 2 Screening and Categorization for the Flux Thimble Anti-Vibration Sleeves
[2]

Assembly	Subassembly	Component	Material	Screened-in Degradation Mechanisms	Likelihood of Failure	Likelihood of Damage	FMECA Group	Category
Lower internals assembly	Flux thimbles (tubes)	Flux thimble anti-vibration sleeves	SA-213 SA-479	IASCC, Wear, Fatigue, IE, VS, ISR/IC	L	L	1	A

Conclusion

Both the access plug assembly spring and the flux thimble anti-vibration sleeves screen into Category A. Therefore, no additional inspections are required per MRP-227-A. This closes the associated Westinghouse open items regarding the access plug assembly spring and the flux thimble anti-vibration sleeves identified in Sections 6.2.1, 6.2.2, and 8 of WCAP-18265-NP Rev. 0 [4].

Any questions, please contact the undersigned.

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