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10 CFR 50.90

February 10, 2016
Serial: MNS-16-005

U.S. Nuclear Regulatory Commission
Washington, DC 20555-001

ATTENTION: Document Control Desk

Duke Energy Carolinas, LLC (Duke Energy)
McGuire Nuclear Station, Units 1 and 2
Docket Nos. 50-369 and 50-370
Renewed License Nos. NPF-9 and NPF-17

Subject: Response to Request for Additional Information (RAI) during January 12, 2016, NRC teleconference pertaining to "McGuire Nuclear Station, Units 1 AND 2: License Amendment Request for Nuclear Service Water System Allowed Outage Time Extension (TAC NOS. MF2983 AND MF2984)"

References:

1. Duke Energy Letter dated June 30, 2015, "License Amendment Request for Temporary Changes to Technical Specifications for Correction of an 'A' Train Nuclear Service Water System (NSWS) Degraded Condition" (ADAMS Accession No. ML15191A025)
2. Nuclear Regulatory Commission (NRC) Letter dated July 27, 2015, "McGuire Nuclear Station, Units 1 and 2 - Acceptance Review of License Amendment Request RE: Temporary Changes to Technical Specifications for Correction of Nuclear Service Water System Degraded Condition (TAC NOS. MF6409 AND MF6410)" (ADAMS Accession No. ML15202A661)
3. Duke Energy Letter dated August 11, 2015, "Response to Request for Additional Information Regarding License Amendment Request for Temporary Changes to Technical Specifications for Correction of an 'A' Train Nuclear Service Water System (NSWS) Degraded Condition (TAC Nos. MF6409 and MF 6410)" (ADAMS Accession No. ML15247A066)
4. NRC Letter dated August 27, 2015, "McGuire Nuclear Station, Units 1 AND 2: Request for Additional Information Regarding License Amendment Request Nuclear Service Water System Allowed Outage Time Extension (TAC NOS. MF2983 AND MF2984)" (ADAMS Accession No. ML15237A416)

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5. Duke Energy Letter dated September 24, 2015, "Response to Request for Additional Information Regarding License Amendment Request for Temporary Changes to Technical Specifications for Correction of an 'A' Train Nuclear Service Water System (NSWS) Degraded Condition (MF2983 AND MF2984)" (ADAMS Accession No. ML15275A155)
6. NRC Letter dated September 14, 2015, "McGuire Nuclear Station, Units 1 AND 2: Request for Additional Information Regarding License Amendment Request Nuclear Service Water System Allowed Outage Time Extension (TAC NOS. MF2983 AND MF2984)" (ADAMS Accession No. ML15252A276)
7. Duke Energy Letter dated October 08, 2015, "Response to Request for Additional Information Regarding License Amendment Request for Temporary Changes to Technical Specifications for Correction of an 'A' Train Nuclear Service Water System (NSWS) Degraded Condition (MF2983 AND MF2984)" (ADAMS Accession No. ML15313A174)
8. NRC Letter dated October 26, 2015, "McGuire Nuclear Station, Units 1 AND 2: Request for Additional Information Regarding License Amendment Request Nuclear Service Water System Allowed Outage Time Extension (TAC NOS. MF2983 AND MF2984)" (ADAMS Accession No. ML15289A555)
9. Duke Energy Letter dated December 7, 2015, "Response to Request for Additional Information Regarding License Amendment Request for Temporary Changes to Technical Specifications for Correction of an 'A' Train Nuclear Service Water System (NSWS) Degraded Condition (MF2983 AND MF2984)" (ADAMS Accession No. ML15343A012)

By letter dated June 30, 2015 (Reference 1), Duke Energy requested a license amendment for the Renewed Facility Operating Licenses (FOL) and Technical Specifications (TS) for the McGuire Nuclear Station, Units 1 and 2, to allow temporary changes to TS 3.5.2, Emergency Core Cooling System (ECCS) - Operating; TS 3.6.6, Containment Spray System (CSS); TS 3.7.5, Auxiliary Feedwater (AFW) System; TS 3.7.6, Component Cooling Water (CCW) System; TS 3.7.7, Nuclear Service Water System (NSWS); TS 3.7.9, Control Room Area Ventilation System (CRAVS); TS 3.7.11, Auxiliary Building Filtered Ventilation Exhaust System (ABFVES); and TS 3.8.1, AC Sources- Operating.

By letter dated August 11, 2015 (Reference 3), Duke Energy responded to NRC letter dated July 27, 2015 (Reference 2), request for additional information (RAI) needed for completion of NRC staff review of the proposed license amendment request (LAR).

By letter dated September 24, 2015 (Reference 5), Duke Energy responded to NRC letter dated August 27, 2015 (Reference 4), RAI needed for completion of NRC staff review of the proposed LAR.

By letter dated October 08, 2015 (Reference 7), Duke Energy responded to NRC letter dated September 14, 2015 (Reference 6), RAI needed for completion of NRC staff review of the proposed LAR.

By letter dated December 07, 2015 (Reference 9), Duke Energy responded to NRC letter dated October 26, 2015 (Reference 8), RAI needed for completion of NRC staff review of the proposed LAR.

During a teleconference between the NRC and Duke Energy on January 12, 2016, the NRC provided Duke Energy an additional RAI needed for completion of the NRC staff review of the LAR. The enclosure provides the NRC RAI questions and Duke Energy's response to the RAI questions.

There are no new regulatory commitments with this submittal. Commitment 32 has been revised to reflect that the breaker for 0RN-7A motor operator will be removed from its cubicle to prevent operation of 0RN-7A as discussed with the NRC during the November 17, 2015 phone conference. The commitments and compensatory actions shown in Attachment 1 represent the final list of commitments as amended during the RAI process. The footnote for each of the affected Technical Specifications will include a reference to this correspondence (MNS-16-005) in order to link the commitments identified in Attachment 1 to the approved license amendment.

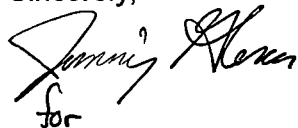
The June 30, 2015, LAR concluded that the proposed change presents No Significant Hazards Considerations and does not require an environmental assessment. This conclusion has not changed as a result of the RAI responses in the enclosure.

Pursuant to 10 CFR 50.91, a copy of this LAR has been forwarded to the appropriate North Carolina state officials.

Please direct any comments or questions regarding this submittal to George Murphy at (980) 875-5715.

I declare under penalty of perjury that the foregoing is true and correct. Executed on February 10, 2016.

Sincerely,

A handwritten signature in black ink, appearing to read "Steven D. Capps", with a small "for" written below it.

Steven D. Capps

Enclosure:

Response to Request for Additional Information

US Nuclear Regulatory Commission
February 10, 2016
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cc w/ Enclosure:

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ENCLOSURE

Response to Request for Additional Information

Response to Request for Additional Information

REQUEST FOR ADDITIONAL INFORMATION
BY THE OFFICE OF NUCLEAR REACTOR REGULATION
RELATED TO A LICENSE AMENDMENT REQUEST SUPPORTING CORRECTION OF A
NUCLEAR SERVICE WATER SYSTEM DEGRADED CONDITION
DUKE ENERGY CAROLINAS, LLC
MCGUIRE NUCLEAR STATION, UNITS 1 AND 2
DOCKET NOS. 50-369 AND 50-370

By letter dated June 30, 2015 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML15191A025), Duke Energy Carolinas, LLC (Duke Energy) submitted a license amendment request (LAR) to temporarily change McGuire Nuclear Station (MNS), Units 1 and 2, Technical Specifications (TSs) for correction of a degraded condition affecting the 'A' Train of the nuclear service water system (NSWS). The requested amendment would temporarily change the following TSs to allow the inoperability of the 'A' Train of the NSWS for a total of up to 14 days: TS 3.5.2, Emergency Core Cooling System (ECCS) - Operating; TS 3.6.6, Containment Spray System (CSS); TS 3.7.5, Auxiliary Feedwater (AFW) System; TS 3.7.6, Component Cooling Water (CCW) System; TS 3.7.7, Nuclear Service Water System (NSWS); TS 3.7.9, Control Room Area Ventilation System (CRAVS); TS 3.7.11, Auxiliary Building Filtered Ventilation Exhaust System (ABFVES), and TS 3.8.1, AC Sources-Operating. The 'A' Train of the shared NSWS would be inoperable while the safety-related supply from the MNS Nuclear Service Water Pond was drained and isolated to correct a degraded condition affecting that line.

The NRC staff has determined the following additional information is necessary to support completion of its technical review:

SBPB-RAI-004

The LAR includes the potential activity to install a piping penetration in the drained section of the NSWS within the auxiliary building if required for personnel access to remove suspected blockage. In SBPB-RAI-003, the NRC staff requested additional information on how using the single valve 0RN-7A for isolation was consistent with defense-in-depth. Duke's response to SBPB-RAI-003 discussed administrative controls that would be used to maintain the valve in the closed position, commitments supporting isolation of the 'A' Train NSWS supply piping from Lake Norman (Commitments 13 and 32), and commitments regarding protection of the Standby Shutdown Facility and associated systems (Commitment 21). Commitment 5 was unchanged, but identified that FLEX strategies would be available for implementation as additional defense-in-depth on both units.

Commitments 13 and 32 discuss provisions for dedicated personnel to identify excessive leakage, attempt to close the manway, and notify the control room of the need to isolate the 'A' Train NSWS if the manway cannot be closed. However, the reliability of these actions does not appear commensurate with the risk associated with excessive leakage. Commitments 5 and 21 suggest the availability of the SSF and FLEX capabilities to provide defense in depth. Address the accessibility of equipment necessary to implement safe shutdown via the SSF and FLEX assuming the equipment in the vicinity of the auxiliary building manway is unavailable due to flooding.

Response to Request for Additional Information

Duke Energy Response to SBPB-RAI-004:

The question includes two separate issues and the response will address each of them separately:

1. Commitments 13 and 32 discuss provisions for dedicated personnel to identify excessive leakage, attempt to close the manway, and notify the control room of the need to isolate the 'A' Train NSWs if the manway cannot be closed. However, the reliability of these actions does not appear commensurate with the risk associated with excessive leakage.

Response:

In addition to the use of dedicated personnel to identify excessive leakage and notify the control room, existing plant equipment would trigger an alarm in the control room in response to a level rise in the 'A' and 'B' Ground Water System (WZ) sumps. Each sump includes an 'A' and 'B' WZ sump pump. The 'B' WZ sump is physically located in the same auxiliary building room as the potential open manway.

Existing Alarm Response procedures for each unit provide actions for responding to the WZ Sump level alarms. The alarm response includes actions up to and including the swapping of Nuclear Service Water (NSW) Trains and entering the plant flooding procedure for mitigation of flooding.

A rise in WZ sump level would trigger the following response:

- a. WZ sump high level would actuate an Operator Aid Computer (OAC) alarm in the control room
- b. 'A' WZ sump pump starts on Hi level
- c. If level continues to rise the 'B' WZ pump will start at Hi Hi level
- d. Control room alarm window D2 will light up and the annunciator response actions will be performed.
- e. In addition to the above response there are status lights in the control room that light up whenever a WZ sump pump is running.

The WZ sump level control and alarm system is inspected and functionally checked on a three year frequency. The preventive maintenance (PM) activity includes calibration of the level switch, functional testing of the sump pumps and verification that the control room annunciator alarms in response to a rising level in the WZ sump.

2. Commitments 5 and 21 suggest the availability of the SSF and FLEX capabilities to provide defense in depth. Address the accessibility of equipment necessary to implement safe shutdown via the SSF and FLEX assuming the equipment in the vicinity of the auxiliary building manway is unavailable due to flooding.

Response:

The intent of Commitments 5 and 21 with respect to the SSF and FLEX capabilities were for defense in depth support for a loss of NSW. These commitments are not intended to support a response to flooding in the auxiliary building.

Response to Request for Additional Information

SBPB-RAI-005

The LAR includes changes to Technical Specifications that include a note referencing commitments described in MNS LAR submittal correspondence letter MNS-15-026. These are no longer the most recent commitments. Clearly indicate that the TS note will be updated to reference the final regulatory commitments.

Duke Energy Response to SBPB-RAI-005:

Duke Energy will update the TS note to represent the final regulatory commitments. A copy of the final commitment table is included in this RAI response. Pending no further changes the TS note will reference this correspondence (MNS-16-005).

ATTACHMENT 1

Regulatory Commitments

REGULATORY COMMITMENTS - Final

The following table identifies those actions committed to by Duke Energy in this document. Any other statements made in this licensing submittal are provided for informational purposes only and are not considered to be regulatory commitments. Please direct any questions you may have in this matter to George Murphy at 980-875-5715.

#	REGULATORY COMMITMENTS
1	The 'A' Train NSWS pumps will remain aligned to Lake Norman during the extended CT until the system is ready for post maintenance testing.
2	Any maintenance that is performed on the remaining portions of 'A' Train NSWS during the period in which the 'A' NSWS piping from the SNSWP is not available will be evaluated for impact on the ability of the system to operate while taking suction from the Lake Norman Low Level Intake (LLI) and will be limited to a 72 hour completion time.
3	The 'B' Train NSWS will be placed in its ESFAS alignment to the SNSWP water source with the 'B' Train pumps in standby prior to starting the LAR activity and remain in this alignment until the 'A' Train NSWS SNSWP water source is restored and ready for post maintenance testing.
4	Procedures will be established to provide an additional defense in depth contingency that could be used in the event of an extremely low probability of a loss of the Lake Norman water source due to a seismic event. The procedures will ensure that system operation is maintained within design limits (less than or equal to 2 NSWS pumps running on a header), control of maximum system flow, and that system configuration prevents interaction of the degraded equipment with the functional equipment.
5	Fukushima Response FLEX modifications will be installed and the FLEX strategies will be available for implementation as additional defense-in-depth on both units.
6	<p>During the period in which the 'A' NSWS suction path from the SNSWP is non-functional, no discretionary maintenance or discretionary testing will be planned on the following:</p> <ul style="list-style-type: none"> • 1A EDG • 2A EDG • The 'A' Train of NSWS excluding the activities described in the LAR for the 'A' Train NSWS piping to the SNSWP. • The 'B' Train of NSWS, ECCS, CSS, AFW, CCW, CRAVS, ABFVES or the EDGs • The switchyard and other offsite power sources • The SSF

7	A condition in which repairs could impact the ability of an SSC to perform its Safety Function would result in termination of activities. The inspection may identify a condition that cannot be resolved within the 14 day completion time. Should such a condition be identified then the system will be restored to its current OBDN condition. If the ROV survey presents any opportunities for a less intrusive or less time consuming solution for addressing the OBDN condition, then these opportunities will be pursued, as appropriate.
8	In an activity planned to be performed separate from the 14 day completion time repair activity, 0RN-7A will be tested for leakage and adjusted if necessary to minimize leakage.
9	In an activity planned to be performed separate from the 14 day completion time repair activity the SNSWP isolation flange will be test fitted to the 'A' SNSWP pipe.
10	Procedure guidance will establish controls to limit evacuation air pressure to less than a predetermined value in order to prevent air intrusion into the operating NSWS.
11	<p>Dedicated personnel with procedure guidance will be provided to close the NSWS access manway in the auxiliary building in the event of any of the following:</p> <ul style="list-style-type: none"> • An Engineered Safety Feature (ESF) actuation • Entry into RP/0/A/5700/006 Natural Disasters • Entry into RP/0/A/5700/007 Earthquake
12	This activity will be controlled under the Infrequently Performed Test or Evolution (IPTE) process defined in Fleet Directive AD-OP-ALL-106, "Conduct of Infrequently Performed Tests or Evolutions", and Duke Energy's Work Management and Execution procedures.
13	<p>During periods when the auxiliary building NSWS piping manway is open, dedicated personnel having communication to the main control room with procedures to continuously monitor and respond to 0RN-7A leakage will be in place. If leakage increases and reaches the pre-determined leak rate limit, the repair activity will be stopped, and the manway will be closed. If conditions prevent the prompt closure of the manway, then operations will place the 'B' NSWS train in operation, secure 'A' NSWS operations and isolate the 'A' NSWS train to stop the leakage as follows:</p> <p>If the manway cannot be immediately closed then perform the following actions to isolate the flowpath from Lake Norman within 15 minutes:</p> <ul style="list-style-type: none"> • Stop the A NSWS pumps from the control room • Close 0RN-12AC and 0RN-13A from the control room to isolate the flowpath from Lake Norman • Start B Train NSWS pumps

14	If the NSWS piping manway in the auxiliary building is opened then prior to the breach of the NSWS piping an evaluation of 0RN-7A leakage will be performed to validate proper isolation and that leakage is within acceptable limits.
15	McGuire will communicate with the Transmission Control Center (TCC) to ensure that the McGuire Control Room is notified in the event of potential grid disturbances in order that an appropriate plant response can be formulated.
16	The Work Control Center or OCC will monitor weather forecasts and radar during the activities that require the NSWS piping personnel access points to be open to assess the potential for severe weather conditions (tornado, thunderstorms).
17	Training will be provided in accordance with the Systematic Approach to Training (SAT) process to Operations personnel on this TS change and the associated evolution to inspect and correct the degraded condition in the 'A' NSWS supply piping from the SNSWP.
18	Operations will review applicable abnormal operating procedures related to the response to an earthquake, the loss of the Lake Norman and the loss of NSWS prior to making 'A' NSWS suction path from the SNSWP inoperable and each shift until 'A' Train NSWS operability is restored.
19	The repair work on the NSWS 'A' Train suction from the SNSWP will be scheduled during a period in which hurricanes and tornadoes have a lower likelihood of occurrence.
20	The Outage Command Center (OCC) will be manned while performing the activities authorized by this amendment.

21	<p>The following list of equipment will be protected:</p> <ul style="list-style-type: none"> • 'B' Train NSWS • 1B EDG • 2B EDG • 1B ECCS • 2B ECCS • 1B CSS • 2B CSS • 1B AFW • 2B AFW • 1B CCW • 2B CCW • B CRAVS • B ABFVES • Auxiliary Building WZ Sump and equipment supporting function of sump • SSF including Standby Makeup pumps for Unit 1 and Unit 2 • Unit 1 TDCAP • Unit 2 TDCAP • Unit 1 Containment Ventilation Cooling Water System (RV) • Unit 2 Containment Ventilation Cooling Water System (RV)
22	<p>If required to be installed the new personnel access opening to be located on the 'A' Train NSWS piping in the auxiliary building will be designed and installed in accordance with the Engineering Change Process.</p>
23	<p>Foreign Material Exclusion (FME) will be controlled during the proposed activities in accordance with AD-MN-ALL-0002, Foreign Material Exclusion (FME). Any debris resulting from the obstruction removal activity will be mechanically cleaned out before the system is closed for return to service per FME plan developed in accordance with the above procedure. The system will be video inspected and reversed flushed from the LLI to the SNSWP with isolation to downstream components to force any sediment back to the SNSWP.</p>
24	<p>Following 'A' Train NSWS restoration, testing will be performed to verify that the as left NSWS performance meets or exceeds pre-activity performance including 'A' Train NSW pump NPSH conditions.</p>
25	<p>Prior to entering the 14 day CT perform an evaluation to ensure that there will be no anticipated impact to 'A' NSWS water supply from the LLI from Alewife fish the during 14 day CT.</p>

26	The new personnel access piping opening (in the auxiliary building) will be controlled by using procedures developed or revised for this purpose to maintain positive control of the opening and to prevent an unmonitored release.
27	The ERAT program includes the option to use a SSA (Safety Significant Activity) code which will cause the risk condition color to be "YELLOW". MNS will use this code during the activities described in this LAR.
28	Designated operators will be available to execute the manual actions associated with aligning the affected unit's 'A' Train NSWS pump to the 'B' NSWS SNSWP via the Main Supply Crossover piping.
29	If the contingency personnel access opening is installed, then Security personnel will establish the proper controls and compensatory measures prescribed by security procedures and the security plan.
30	<p>In support of the contingency the following conditions will be established before the start of activities in the LAR:</p> <ul style="list-style-type: none"> • The 'A' valve (0RN-14A) will be opened prior to the evolution and power will be removed from the valve operator. • The 'B' valve (0RN-15B) will be maintained closed with the ESFAS signal from each unit blocked prior to the evolution. Maintaining 0RN-15B closed with power removed satisfies operability requirements for the 'B' Train NSWS. The 'B' valve (0RN-15B) can be opened from the control room after power is restored if conditions warrant the use of this contingency.
31	Operations will utilize the concurrent dual verification process when operating 0RN-7A.
32	<p>In order to prevent inadvertent operation of 0RN-7A, MNS will perform the following actions to ensure that the position of this valve is physically restrained with several barriers in place to prevent operation or movement of the valve while the NSWS piping access manway in the auxiliary building is open:</p> <ul style="list-style-type: none"> • The operating hand wheel for 0RN-7A will be in the closed position and restrained with a lock and tag. • A mechanical stem locking device will be installed on 0RN-7A to prevent <u>ANY</u> movement of the valve disk. • Electrical isolation of the 0RN-7A motor operator will be established by removing its electrical supply breaker from its MCC cubical, and the cubicle door tagged to prevent installation of the breaker while the auxiliary building manway is open. • A dedicated person with no other duties will be stationed in the room where 0RN-7A and the access manway are located to monitor for 0RN-7A leakage and to prevent anyone from operating 0RN-7A while the NSWS piping manway is open.