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NLS2010079
August 20, 2010

U.S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, D.C. 20555-0001

Subject: Response to Cooper Nuclear Station License Renewal Request for Additional Information
Cooper Nuclear Station, Docket No. 50-298, DPR-46

- References:**
1. Letter from Bo Pham, U.S. Nuclear Regulatory Commission, to Brian O'Grady, Nebraska Public Power District, dated August 16, 2010, "Completion of Cooper Nuclear Station License Renewal Review."
 2. Letter from Stewart B. Minahan, Nebraska Public Power District, to U.S. Nuclear Regulatory Commission, dated September 24, 2008, "License Renewal Application" (NLS2008071).

Dear Sir or Madam:

The purpose of this letter is for the Nebraska Public Power District to respond to a Nuclear Regulatory Commission Request for Additional Information (Reference 1) related to the Cooper Nuclear Station License Renewal Application (LRA) (Reference 2). This response is provided in Attachment 1. Certain conforming changes to the LRA are provided in Attachment 2.

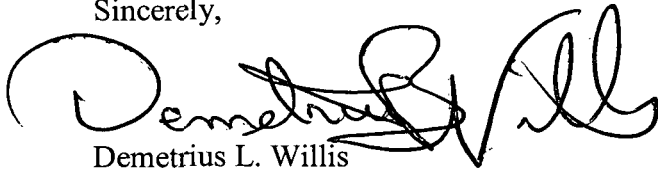
The General Manager of Plant Operations is authorized to sign under oath or affirmation in the absence of the Chief Nuclear Officer in accordance with Regulatory Issue Summary 01-018. Should you have any questions regarding this submittal, please contact David Bremer, License Renewal Project Manager, at (402) 825-5673.

A136
NRR

I declare under penalty of perjury that the foregoing is true and correct.

Executed on 8/20/2010
(Date)

Sincerely,



Demetrius L. Willis
General Manager of Plant Operations

/wv

Attachments

cc: Regional Administrator w/ attachments
USNRC - Region IV

Cooper Project Manager w/ attachments
USNRC - NRR Project Directorate IV-1

Senior Resident Inspector w/ attachments
USNRC - CNS

Nebraska Health and Human Services w/ attachments
Department of Regulation and Licensure

NPG Distribution w/ attachments

CNS Records w/ attachments

Attachment 1

Response to Cooper Nuclear Station License Renewal
Request for Additional Information
Cooper Nuclear Station, Docket No. 50-298, DPR-46

The Nuclear Regulatory Commission (NRC) Request for Additional Information (RAI) regarding the License Renewal Application (LRA) is shown in italics. The Nebraska Public Power District's (NPPD) response to the RAI is shown in block font.

NRC Request: RAI B.1.25-2

Background

NUREG-1801, Rev. 1, "Generic Aging Lessons Learned," (the GALL Report) addresses inaccessible medium voltage cables in aging management program (AMP) XI.E3, "Inaccessible Medium Voltage Cables Not Subject to 10 CFR 50.49 Environmental Qualification Requirements." The purpose of this program is to provide reasonable assurance that the intended functions of inaccessible medium voltage cables (2 kV to 35 kV), that are not subject to environmental qualification requirements of 10 CFR 50.49 and are exposed to adverse localized environments caused by moisture while energized, will be maintained consistent with the current licensing basis. The scope of the program applies to inaccessible (in conduits, cable trenches, cable troughs, duct banks, underground vaults or direct buried installations) medium-voltage cables within the scope of license renewal that are subject to significant moisture simultaneously with significant voltage.

The application of AMP XI.E3 to medium voltage cables was based on the operating experience (OE) available at the time Revision 1 of the GALL Report was developed. However, recently identified industry OE indicates that the presence of water or moisture can be a contributing factor in inaccessible power cables failures at lower service voltages (480 V to 2 kV). Applicable OE was identified in licensee responses to Generic Letter 2007-01, "Inaccessible or Underground Power Cable Failures that Disable Accident Mitigation Systems or Cause Plant Transients," which included failures of power cable operating at service voltages of less than 2 kV where water was considered a contributing factor. The staff has proposed changes to be included in the next revision of the GALL Report AMP XI.E3 to address recently identified OE concerning the failure of inaccessible low voltage power cables, which includes general water intrusion as a failure mechanism and increases the scope of program to include power cables greater than or equal to 480 V.

Issue

The staff has concluded, based on recently identified industry OE concerning the failure of inaccessible low voltage power cables (480 V to 2 kV) in the presence of significant moisture, that these cables should be included in an AMP. The staff notes that your AMP does not address these low voltage cables.

Request

1. *Provide a summary of the evaluation of recently identified industry OE and any plant-specific OE concerning inaccessible low voltage power cable failures within the scope of license renewal (not subject to 10 CFR 50.49 environmental qualification requirements), and how this OE applies to the need for additional aging management activities by the applicant for such cables.*
2. *Provide a discussion of how Cooper Nuclear Station will manage the effects of aging on inaccessible low voltage power cables within the scope of license renewal and subject to aging management review; with consideration of recently identified industry OE and relevant plant-specific OE. The discussion should include assessment of your AMP description, program elements (i.e., Scope of Program, Parameters Monitored/Inspected, Detection of Aging Effects, and Corrective Actions), and Final Safety Analysis Report summary description to demonstrate reasonable assurance that the intended functions of inaccessible low voltage power cables subject to adverse localized environments will be maintained consistent with the current licensing basis through the period of extended operation.*

NPPD Response:

1. NPPD responded to Generic Letter (GL) 2007-01, "Inaccessible or Underground Power Cable Failures That Disable Accident Mitigation Systems or Cause Plant Transients," in a letter dated May 7, 2007 (NLS 2007029, ADAMS Accession Number ML071300389). In this letter, NPPD stated in response to Question 1 that Cooper Nuclear Station (CNS) had experienced zero failures of those cables within the scope of GL 2007-01 (i.e., within the scope of 10 CFR 50.65 (Maintenance Rule)). The inaccessible low-voltage cables (480 V to 2 kV) that are in scope for license renewal are also in scope for the Maintenance Rule. Therefore, the GL 2007-01 results are applicable to this RAI response.

CNS operating experience from May 7, 2007, to August 16, 2010, was researched in the Corrective Action Program database. CNS has experienced no age-related failures of inaccessible low-voltage power cables that are within the scope of license renewal and subject to aging management review since the response to GL 2007-01. One event was noted during the CNS operating experience search. In May 2008, an inaccessible electrical power cable to a safety-related sump pump motor was found damaged during a routine surveillance. The damage was subsequently determined to have occurred prior to installation. This condition was not associated with aging and the damaged cable was replaced.

Regarding recently identified industry operating experience, NPPD has reviewed the information provided in the industry responses to GL 2007-01, recent NRC and Electric Power Research Institute guidance documents, and recent industry/NRC meetings on this topic. It was determined no program changes are required from this review of recent

industry operating experience. Nevertheless, NPPD has determined that it is appropriate to expand the scope of the LRA B.1.25 (Non-EQ Inaccessible Medium-Voltage Cable) aging management program to include the in-scope inaccessible low-voltage power cables, as described in the response to Question 2.

2. In response to Question 2 of GL 2007-01, NPPD stated:

CNS inspection, testing and monitoring practices for inaccessible or underground power cables presently include periodic meggering of 4160 and 480VAC motors and feeder cables. The duct banks for the safety related service water pumps are sloped downward toward manholes with sump pumps and control room alarms for high water level. Plant condition reporting is used to determine root cause and extent of condition where deemed necessary and would be the mechanism for determining the need for, and extent of, any increased cable monitoring.

In consideration of industry operating experience associated with GL 2007-01, and plant specific operating experience, NPPD will expand the scope of the LRA B.1.25 (Non-EQ Inaccessible Medium-Voltage Cable) to include in-scope inaccessible low-voltage power cables. The parameters monitored or inspected, as required by the program, are changed to include in-scope inaccessible low-voltage power cables. The in-scope inaccessible low-voltage power cables will be tested for degradation of the cable insulation at least once every 10 years. The inspections for water in manholes containing in-scope inaccessible low-voltage power cables will be performed at least once every two years. A proven, commercially available test will be used for detecting deterioration due to wetting of the insulation system for all in-scope inaccessible low-voltage power cables (480 V to 2 kV).

In addition, LRA Sections A.1.1.25 (Non-EQ Inaccessible Medium-Voltage Cable Program) and B.1.25 (Non-EQ Inaccessible Medium-Voltage Cable) are revised to delete the criterion of "exposure to significant voltage" (system voltage for more than 25% of the time) associated with in-scope inaccessible medium-voltage cable.

Corresponding changes to the LRA are shown in Attachment 2 (Changes 1 and 2).

Attachment 2

Changes to the License Renewal Application
Cooper Nuclear Station, Docket No. 50-298, DPR-46

This attachment provides changes to the License Renewal Application (LRA) that conform to the Request for Additional Information (RAI) response in Attachment 1. The changes are presented in underline/strikeout format.

1. LRA Section A.1.1.25, "Non-EQ Inaccessible Medium-Voltage Cable Program," is revised to read:

"Non-EQ Inaccessible Medium-Voltage Cable Program

The Non-EQ Inaccessible Medium-Voltage Cable Program is a new program that inspects ~~the following underground~~ in-scope inaccessible low-voltage and medium-voltage power cables.

- ~~inaccessible medium-voltage cables between the station service water pumps (SWP-1A, 1B, 1C, and 1D) and the 4.16 kV safety switchgear~~
- ~~inaccessible medium-voltage cables between 12.5 kV overhead loop and the fire pump motor (FP-MOT-E)~~
- ~~inaccessible medium-voltage cables between the standby diesel (DG1 and DG2) to the 4.16 kV safety busses (1F and 1G)~~
- ~~inaccessible medium-voltage cables between the 4.16 kV non-safety buses (1A and 1B) and the 161 kV control house power transformers (located in the 345 kV switchyard)~~

The Non-EQ Inaccessible Medium-Voltage Cable Program entails periodic inspections for water collection in cable manholes and periodic testing of cables. In-scope medium-voltage cables (cables with operating voltage from 2 kV to 35 kV) exposed to significant moisture ~~and voltage~~ will be tested at least once every ten years to provide an indication of the condition of the conductor insulation. Significant moisture is defined as periodic exposures to moisture that last more than a few days (e.g., cable in standing water). Periodic exposures to moisture that lasts less than a few days (i.e., normal rain and drain) are not significant. ~~Significant voltage exposure is defined as being subjected to system voltage for more than twenty-five percent of the time.~~

~~The program includes~~ Inspections for water accumulation in manholes containing in-scope inaccessible low-voltage and medium-voltage power cables will be performed at least once every two years.

In-scope inaccessible low-voltage power cables (cables with operating voltage from 480 V to 2 kV) that are subject to aging management review are included in this program. The in-scope inaccessible low-voltage power cables will be tested for degradation of the

cable insulation prior to the period of extended operation and at least once every 10 years thereafter. A proven, commercially available test will be used for detecting deterioration due to wetting of the insulation system for all in-scope inaccessible low-voltage power cables (480 V to 2 kV).

This program will be implemented prior to the period of extended operation. This new program will be implemented consistent with the corresponding program described in NUREG-1801 Section XI.E3, Inaccessible Medium-Voltage Cables Not Subject to 10 CFR 50.49 Environmental Qualification Requirements, ~~prior to the period of extended operation.~~”

2. LRA Section B.1.25, “Non-EQ Inaccessible Medium Voltage Cables,” is revised to read¹:

“B.1.25 Non-EQ Inaccessible Medium-Voltage Cable

Program Description

The Non-EQ Inaccessible Medium-Voltage Cable Program is a new program that inspects ~~the following underground~~ in-scope inaccessible low-voltage and medium-voltage power cables.

- ~~• inaccessible medium voltage cables between the station service water pumps (SWP-1A, 1B, 1C, and 1D) and the 4.16 kV safety switchgear~~
- ~~• inaccessible medium voltage cables between 12.5 kV overhead loop and the fire pump motor (FP-MOT-E)~~
- ~~• inaccessible medium voltage cables between the standby diesel (DG1 and DG2) to the 4.16 kV safety busses (1F and 1G)~~

The Non-EQ Inaccessible Medium-Voltage Cable Program entails periodic inspections for water collection in cable manholes and periodic testing of in-scope inaccessible power cables.

In-scope medium-voltage cables (cables with operating voltage from 2 kV to 35 kV) exposed to significant moisture ~~and voltage~~ will be tested at least once every ten years to provide an indication of the condition of the conductor insulation. Significant moisture is defined as periodic exposures to moisture that last more than a few days (e.g., cable in standing water). Periodic exposures to moisture that lasts less than a few days (i.e., normal rain and drain) are not significant. ~~Significant voltage exposure is defined as being subjected to system voltage for more than twenty-five percent of the time.~~

¹ This LRA Section was previously revised in NLS2009040 (ADAMS Accession Number ML091690050).

The program includes Inspections for water accumulation in manholes containing in-scope inaccessible low-voltage and medium-voltage power cables will be performed at least once every two years.

In-scope inaccessible low-voltage power cables (cables with operating voltage from 480 V to 2 kV) that are subject to aging management review are included in this program. The in-scope inaccessible low-voltage power cables will be tested for degradation of the cable insulation prior to the period of extended operation and at least once every 10 years thereafter. A proven, commercially available test will be used for detecting deterioration due to wetting of the insulation system for all in-scope inaccessible low-voltage power cables (480 V to 2 kV).

This program will be implemented prior to the period of extended operation. This new program will be implemented consistent with the corresponding program described in NUREG-1801 Section XI.E3, Inaccessible Medium-Voltage Cables Not Subject to 10 CFR 50.49 Environmental Qualification Requirements.

NUREG-1801 Consistency

The program elements for managing the effects of aging on in-scope inaccessible medium-voltage power cables will be consistent with NUREG-1801, Section XI.E3, Inaccessible Medium-Voltage Cables Not Subject to 10 CFR 50.49 Environmental Qualification Requirements.

Exceptions to NUREG-1801

None.

Enhancements

None This program includes in-scope inaccessible low-voltage power cables (480 V to 2 kV) that are subject to aging management review.”

Reference: Response to RAI B.1.25-2.

Correspondence Number: NLS2010079

The following table identifies those actions committed to by Nebraska Public Power District (NPPD) in this document. Any other actions discussed in the submittal represent intended or planned actions by NPPD. They are described for information only and are not regulatory commitments. Please notify the Licensing Manager at Cooper Nuclear Station of any questions regarding this document or any associated regulatory commitments.

COMMITMENT	COMMITMENT NUMBER	COMMITTED DATE OR OUTAGE
<p>Implement the Non-EQ Inaccessible Medium-Voltage Cable Program. [LRA Section B.1.25]</p> <p>Inspections for water accumulation in manholes containing in-scope inaccessible low-voltage and medium-voltage power cables will be performed at least once every two years.</p> <p>In-scope inaccessible low-voltage power cables (cables with operating voltage from 480 V to 2 kV) that are subject to aging management review are included in this program. The in-scope inaccessible low-voltage power cables will be tested for degradation of the cable insulation prior to the period of extended operation and at least once every 10 years thereafter. A proven, commercially available test will be used for detecting deterioration due to wetting of the insulation system for all in-scope inaccessible low-voltage power cables (480 V to 2 kV).</p>	<p>NLS2008071-16 Revision 1</p>	<p>January 18, 2014</p>