

From: Stone, Zackary
Sent: Friday, June 3, 2022 7:14 AM
To: Treadway, Ryan I
Cc: Edwards, Nicole D
Subject: Catawba Nuclear Station, Units 1 and 2 - Request for Additional Information
RE: Environmentally-Assisted Fatigue License Renewal Commitment
Attachments: June 3, 2022 - Catawba EAF License Renewal Commitment RAIs.docx

Dear Mr. Treadway,

By letter dated April 21, 2022, Duke Energy Carolinas, LLC, submitted information for Catawba Nuclear Station, Units 1 and 2, which proposed Duke Energy's inspection plan for License Renewal Commitment No.10.

The U.S. Nuclear Regulatory Commission staff has determined that additional information is needed as provided in the attached.

Please respond within 30 days of the date of this e-mail.

If you have any questions, please contact me at 301-415-0615 or via e-mail at Zackary.Stone@nrc.gov.

Sincerely,

Zackary Stone, Project Manager
Plant Licensing Branch, II-1
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket Nos: 50-413 and 50-414

cc w/encl: Listserv

Hearing Identifier: NRR_DRMA
Email Number: 1657

Mail Envelope Properties (SA1PR09MB86879871B7CFC49764D10C0EE1A19)

Subject: Catawba Nuclear Station, Units 1 and 2 - Request for Additional Information RE:
Environmentally-Assisted Fatigue License Renewal Commitment
Sent Date: 6/3/2022 7:14:01 AM
Received Date: 6/3/2022 7:13:00 AM
From: Stone, Zackary

Created By: Zackary.Stone@nrc.gov

Recipients:
"Edwards, Nicole D" <Nicole.Edwards@duke-energy.com>
Tracking Status: None
"Treadway, Ryan I" <Ryan.Treadway@duke-energy.com>
Tracking Status: None

Post Office: SA1PR09MB8687.namprd09.prod.outlook.com

Files	Size	Date & Time	
MESSAGE	828	6/3/2022 7:13:00 AM	
June 3, 2022 - Catawba EAF License Renewal Commitment RAIs.docx			52599

Options
Priority: Normal
Return Notification: No
Reply Requested: No
Sensitivity: Normal
Expiration Date:

REQUEST FOR ADDITIONAL INFORMATION
PROPOSED METHOD TO MANAGE AGING DUE TO ENVIRONMENTALLY
ASSISTED FATIGUE FOR THE SAFETY INJECTION NOZZLE
DUKE ENERGY CAROLINAS
CATAWBA NUCLEAR STATION, UNITS 1 AND 2
DOCKET NOS. 50-413 AND 50-414

By letter dated April 21, 2022 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML22111A297), Duke Energy Carolinas, LLC (Duke Energy, the licensee) submitted a document to the U.S. Nuclear Regulatory Commission (NRC) which proposed Duke Energy's inspection plan for License Renewal Commitment (LRC) No.10 (ML030850237). The letter documents Duke Energy's proposed method to manage the aging effects of environmentally assisted fatigue (EAF) through flaw tolerance evaluation and inservice inspections of fatigue-sensitive locations including the safety injection nozzles at Catawba Nuclear Station (Catawba), Units 1 and 2.

The licensee's submittal, RA-22-0115, is in response to LRC No.10 in the license renewal safety evaluation for Catawba, Units 1 and 2, that is described in NUREG-1772, "Safety Evaluation Report Related to the License Renewal of McGuire Nuclear Station, Units 1 and 2, and Catawba Nuclear Station, Units 1 and 2" (ML030850251).

In Section 4.3.2 of NUREG-1772, the NRC staff states that Duke Energy agreed not to use flaw tolerance and inspection procedures specified in Note 1 unless such procedures have been accepted by the NRC staff. Accordingly, the licensee submitted the request for NRC staff's review of the proposed commitment change regarding this analytical method for flaw tolerance evaluation and inservice inspection plan.

Pursuant to Title 10 of the *Code of Federal Regulations* (10 CFR) 54.21, "Content of applications – technical information," each application for license renewal must contain an integrated plant assessment (IPA) and an evaluation of time limited aging analyses (TLAAs). The plant-specific IPA shall identify and list those structures and components subject to an aging management review and demonstrate that the effects of aging will be adequately managed so that their intended functions will be maintained consistent with the current licensing basis for the period of extended operations as required by 10 CFR 54.21(a)(3).

To complete its review, the NRC staff requests additional information as follows.

RAI 1

In Section 4.3.2 of NUREG-1772, NRC staff stated that Duke Energy identified relatively high design basis fatigue usage factors for the reactor pressure vessel outlet nozzle, surge line hot leg nozzle, charging nozzle, and safety injection nozzle for McGuire and Catawba in their July 9, 2002, submittal (ML021960467). As part of their license renewal, Duke Energy committed to performing further evaluations of these components, considering environmental effects, prior to the period of extended operation. In RA-22-0115, the licensee stated that the location of

concern for EAF-adjusted cumulative usage factor (CUF) at Catawba Nuclear Station, Units 1 and 2, are the safety injection nozzles.

Please clarify whether the safety injection nozzle locations analyzed in the flaw tolerance evaluation are the only Class 1 piping and component locations that are projected to have 60-year environmental cumulative usage factor (CUF_{en}) greater than 1.0. If not, please explain why the request does not address the other Class 1 locations that may have 60-year CUF_{en} greater than 1.0.

RAI 2

Table 1 in RA-22-0115 provides the safety injection nozzle crack growth results from the licensee's fatigue flaw tolerance evaluation.

Please provide the following information regarding the flaw tolerance evaluation:

- a) Please describe the initial flaw depth and length for the flaw tolerance evaluation and the basis of the initial flaw size (i.e., how the initial flaw size was determined in the evaluation)
- b) Please describe how the acceptable flaw sizes were determined for the flaw tolerance evaluation.

RAI 3

Table 2 in RA-22-0115 provides the safety injection nozzle weld locations that are to be inspected.

Please clarify:

- a) Whether the safety injection nozzle locations (paths P1 and P2) evaluated in Table 1 are the weld locations that will be inspected in accordance with Table 2. If not, please explain why the flaw tolerance evaluation locations are not consistent with the inspection locations.
- b) Whether the flaw tolerance evaluation locations are the limiting locations in terms of crack growth.

RAI 4

RA-22-0115 states that the inspections of the safety injection nozzles are included in Catawba's risk-informed inservice inspections per ASME Code Section XI, Code Case N-716-1. Please describe the specific item number of the inspections according to Code Case N-716-1, Table 1, "Examination Categories."

RAI 5

In RA-22-0115, the licensee stated that all safety injection nozzle welds were inspected in 2021 for Catawba, Units 1 and 2. Please clarify whether these inspections revealed any indications of cracking. If so, please clarify whether the flaw tolerance evaluation considers the presence of the crack.