

November 23, 2001

LICENSEE : Duke Energy Corporation

FACILITIES: McGuire, Units 1 and 2, and Catawba, Units 1 and 2

SUBJECT: TELECOMMUNICATION WITH DUKE ENERGY CORPORATION TO DISCUSS  
INFORMATION IN THEIR LICENSE RENEWAL APPLICATION ON AGING  
MANAGEMENT PROGRAMS FOR STRUCTURES

On October 11, 2001, after the staff reviewed information provided in Appendix B of the license renewal application (LRA), a conference call was conducted between the NRC and Duke Energy Corporation to clarify information presented in the application pertaining to aging management programs for structures. Participants in the conference call are provided in an attachment.

The questions asked by the staff, as well as the responses provided by the applicant, are as follows:

### B.3.2 Battery Rack Inspections

1. In Section B.3.2 of the LRA, the applicant stated that the parameters to be inspected in the battery rack inspection program include the visual examination of the battery racks for physical damage or abnormal detection, including the loss of material. This is appropriate for the inspections of the battery rack itself. However, degraded anchor bolts associated with the battery racks may lead to loss of battery rack intended function. Consequently, the staff requests that the applicant provide a description of how to conduct the inspections of battery rack anchor bolts to ensure that loss of material of the anchorages does not prevent the battery racks from performing their intended functions.

The applicant indicated that a station procedure is used to inspect for loss of material of the battery racks and all attendant sub-components (including anchor bolts). The staff may request additional information to determine the acceptability of guidance provided in station procedures for identifying and correcting aging effects associated with the battery rack anchorage bolts.

2. The acceptance criterion for the battery rack inspections program is "no visual indication of loss of material." Describe the criteria for (1) assessing the severity of the observed degradation, and (2) determining whether or not corrective action is necessary.

The applicant indicated that Table 18-1 in the Catawba and McGuire UFSAR Supplements provides cross-references for UFSAR and Improved Technical Specifications (ITS) for each of the aging management programs. The applicant indicated that, for Battery Rack Inspections, ITS Surveillance Requirement 3.8.4.4 and Selected Licensee Commitments 16.7-9.2 and 16.7-9.4 provide the acceptance criteria

for these inspections at Catawba. Similarly, ITS Surveillance Requirement 3.8.4.3 and Selected Licensee Commitments 16.8.3.3, 16.9.7.12 and 16.9.7.17 provide the acceptance criteria for these inspections at Catawba. The staff reviewed these requirements and concluded that an acceptable level of detail was provided to support a staff conclusion about the adequacy of this aging management program. The staff is satisfied with this response from the applicant and has no additional questions on this issue.

### B.3.7 Containment Inservice Inspection Plan - IWE

1. Based on the degradations described in "Operating Experience," and the fact that you plan to inspect and monitor the coated surfaces for evidences of flaking, blistering, etc., provide justification why you would not consider "coating" as part of the preventive action program, under the element "Preventive Action."

The applicant indicated that coatings were not credited for managing the aging of the containment structure. Other aging management programs (IWE, IWL and Appendix J) are relied upon for monitoring the aging of containment. The staff is satisfied with this response from the applicant and has no additional questions on this issue.

2. Under the element, Parameters Monitored or Inspected, you explicitly exclude monitoring or inspection of Category E-B, E-D, E-F, and E-G of Table 2500-1 of Subsection IWE from *Containment Inservice Inspection Plan - IWE*. Please provide a summary of the alternatives that you have instituted to ensure the aging of the pressure-retaining containment components covered by these Categories is or will be effectively managed.

The applicant indicated that Category E-B (Pressure Retaining Welds) and E-F (Pressure Retaining Dissimilar Metal Welds) Examinations are excluded from their Inservice Inspection Plan for McGuire and Catawba. The basis for excluding these examinations is 10CFR50.55a(b)(2)(ix)(C) and SECY-96-080, which states "The NRC concludes that requiring these inspections is not appropriate. There is no evidence of problems associated with welds of this type in operating plants."

The applicant indicated that Category E-D, Item E5.10 (Seals) and Item E5.20 (Gaskets) examinations are excluded from their Inservice Inspection Plan for McGuire and Catawba. The basis for excluding these examinations is documented in Duke Energy Corporation Request for Relief, Serial No. 98-GO-001, approved by SER submitted by NRC letter dated September 3, 1998. Alternative examinations to be performed are as follows: "The leak-tightness of containment pressure retaining seals and gaskets will be verified by leak rate testing in accordance with 10 CFR 50, Appendix J, as required by Technical Specifications." The applicant also stated that Category E-D, Item E5.30 (Moisture Barriers) is NOT excluded from their Inservice Inspection Plan for McGuire and Catawba.

The applicant indicated that Category E-G, Item E8.20 (Bolt Torque or Tension Tests for Bolted Connections) is excluded from their Inservice Inspection Plan for McGuire and Catawba. The basis for excluding these examinations is documented in Duke Energy Corporation Request for Relief Serial No. 98-GO-002, approved by SER submitted by

NRC letter dated November 24, 1998. Alternative examinations to be performed are as follows: (1) bolted connections shall receive a visual, VT-1 examination in accordance with requirements of Table IWE-2500-1, Examination Category E-G, Pressure Retaining Bolting, Item No. E8.10, and (2) a local leak rate test shall be performed on all containment penetrations, airlocks, and other pressure retaining bolted connections in accordance with 10 CFR 50, Appendix J. The applicant also stated that Category E-G, Item E8.10 (Bolted Connections Visual, VT-1) is NOT excluded from their Inservice Inspection Plan for McGuire and Catawba.

The staff will take this information into consideration, but may request additional information to complete its review of this item.

3. Please summarize the suspect areas that you have identified as requiring augmented inspection (as per IWE-1240) during the current inspection interval of *Containment Inservice Inspection Plan - IWE* (e.g., steel surface areas behind the ice-baskets). Also, summarize the areas subject to Category E-C examination and your plans to continue these examinations during the extended period of operation. Please provide this summary for McGuire (Units 1 and 2) and Catawba (Units 1 and 2).

The applicant indicated that some areas (e.g. shell areas where corrosion had been discovered earlier) had been identified for augmented inspections. The staff will consider the information provided by the applicant but may request additional information to complete its review of this item.

#### B.3.8 Containment Leak Rate Testing Program

1. In the introductory part (i.e. prior to the discussion of the ten elements) of Section B.3.8, you exclude Type C testing from this test program. However, in order to satisfy the Surveillance Requirement (SR) 3.6.1.2 of the plant Technical Specification (and as described under the "Acceptance Criteria" element of this program), you will be conducting Type C testing under this program. Provide justification for excluding Type C testing from this program. For the purpose of computing the cumulative leakages for Type B and Type C testing, if you are conducting different tests for different isolation valve categories, please summarize the methods used and the way you would compute the cumulative leakage during the extended period of operation.

The applicant indicated that Type B and Type C leak rate testing is performed as required by 10 CFR Part 50, Appendix J. Additionally, it is used to compute cumulative leakage. However, since the Type C tests demonstrate the performance of active components (valve disks/seats of containment isolation valves), Duke does not credit these tests for the aging management (or monitoring) of valves. The staff is satisfied with this response from the applicant and has no additional questions on this issue.

2. Under "Preventive Action" element, you state, "No actions are taken as part of this program to prevent aging effects or mitigate aging degradation." For the pressure retaining penetrations with resilient seals, the staff understands that you will be conducting a visual examination of the seals and gaskets to look for wear, tears and degradation before Type B and Type C tests are conducted (or under IWE Program, B.3.7 of this LRA), where applicable. Please state why you would not characterize such

actions as preventive actions for managing the aging of these components during the period of extended operation.

The applicant indicated that the visual examination performed as part of the Containment Leak Rate Testing Program is a condition monitoring program. As such, it is credited for revealing degradation rather than preventing it. Therefore, the "Preventive Action" is not applicable. The staff is satisfied with this response from the applicant and has no additional questions on this issue.

#### B.3.10 Crane Inspection Program

1. The acceptance criterion for the crane inspection program is "no unacceptable visual indication of loss of material." Describe the criteria for (1) assessing the severity of the observed degradation, and (2) determining whether or not corrective action is necessary.

The applicant indicated that engineering judgement is applied to assess the severity of the observed degradations and determine if corrective action is necessary. The applicant and the staff agreed that additional information will be needed for the staff to complete its review of this item.

#### B.3.12 Fire Protection Program, B.3.12.1 Fire Barrier Inspections

1. Describe the inspection procedures that permit the timely detection of cracking/delamination and separation of the fire barrier penetration seals. The application states in the acceptance criteria that "separation from wall and through-holes shall not exceed limits as specified in the procedure." Indicate what these limits are and the basis for their selection.

The applicant indicated that this inspection is governed by Selected Licensee Commitment (SLC) 16.9-5. The staff reviewed the SLC and determined that insufficient detail was provided to enable them to complete its review of this issue. The applicant and the staff agreed that additional information pertaining to the inspection of fire barrier penetration seals and associated acceptance criteria is needed for the staff to complete its review of this item.

#### B.3.13 Flood Barrier Inspection

1. The acceptance criterion for the flood barrier inspection program is "no unacceptable visual indication of cracking and change in material properties of elastomeric flood seals that would result in loss of intended function." Describe the criteria for (1) assessing the severity of the observed degradation, and (2) determining whether or not corrective action is necessary.

The applicant indicated that engineering judgement is applied to assess the severity of the observed degradations and determine if corrective action is necessary. The applicant and the staff agreed that additional information will be needed for the staff to complete its review of this item.

### B.3.18 Ice Condenser Inspections

1. The acceptance criterion for the ice condenser inspections program is “no unacceptable visual indication of loss of material of the ice baskets that would prevent the ice condenser from performing its intended function.” Describe the criteria for (1) assessing the severity of the observed degradation, and (2) determining whether or not corrective action is necessary.

The applicant indicated that Table 18-1 of the McGuire FSAR Supplement references FSAR Supplement Section 18.2.14 and Improved Technical Specification (ITS) SR 3.6.12 for this aging management program (AMP). Similarly, Table 18-1 of the Catawba FSAR Supplement references FSAR Supplement Section 18.2.14 and Technical Specification Surveillance Requirement 3.6.12 for this AMP. The staff reviewed the information provided in these references and concluded that the details and criteria provided therein constituted adequate acceptance criteria. The staff is satisfied with this response from the applicant and has no additional questions on this issue.

### B.3.21 Inspection Program for Civil Engineering Structures and Components

1. Under the section entitled "Monitoring & Trending", the application states that inspectors are qualified by appropriate training and experience. Also under the section entitled "Acceptance Criteria", the application states that the severity of the observed degradation is evaluated by an accountable engineer. State the qualifications as well as the required training and experience for the inspectors and accountable engineer.

The applicant indicated that an inspector performing this AMP would be a registered Professional Engineer with experience. The staff will consider the information provided, but may request additional information to complete its review of this AMP.

2. The acceptance criteria for the inspection program for civil engineering structures and components are “no unacceptable visual indication of loss of material, cracking or change of material properties of concrete, and loss of material for steel, as identified by the accountable engineer.” Describe the criteria for (1) assessing the severity of the observed degradation, and (2) determining whether or not corrective action is necessary.

The applicant indicated that a registered Professional Engineer would apply engineering judgement to assess the severity of the observed degradations and determine if corrective action is necessary. The applicant and the staff agreed that additional information will be needed for the staff to complete its review of this item.

### B.3.30 Standby Nuclear Service Water Pond (SNSWP) Dam Inspection

1. Section B.3.30 of the LRA has referenced an independent consultant’s inspection of the SNSWP Dam at McGuire; however, no reference has been made to such inspection at Catawba. Provide the results of any independent consultant’s inspection at Catawba.

The applicant indicated that the independent consultant inspection at McGuire is required by the state. No independent consultant inspection is required at Catawba, although NRC inspections of the Catawba SNSWP dam have been documented in NRC inspection reports that are available to the staff to review. The applicant also indicated that Table 18-1 of the Catawba and McGuire FSAR Supplements references ITS SR 3.7.8.3 for this aging management program, although the applicant indicated that Table 18-1 for Catawba is in error. The correct ITS SR reference for Catawba is ITS SR 3.7.9.3. The staff is satisfied with this response and has no additional questions on this item.

2. Provide the qualifications of the “accountable engineer” who will (1) evaluate the performance of the SNSWP Dam (as reflected by the results of settlement monitoring and foundation pore pressure monitoring, etc.), and (2) recommend the needed repairs for the continued service of the Dam.

The applicant indicated that a registered Professional Engineer will apply engineering judgement to evaluate the performance of the SNSWP Dam and recommend needed repairs for the continued service of the Dam. The applicant and the staff agreed that additional information will be needed for the staff to complete its review of this item.

3. The acceptance criteria for the standby nuclear service water pond dam inspection program are “no visual indications of abnormal degradation, vegetation growth, erosion, or excessive seepage that would affect the Standby Nuclear Service Water Pond Dam operability.” Describe the criteria for (1) assessing the severity of the observed degradation, and (2) determining whether or not corrective action is necessary.

The applicant reiterated that Table 18-1 of the Catawba and McGuire FSAR Supplements references ITS SR 3.7.8.3. The staff reviewed the test requirements associated with ITS SR 3.7.8.3 and determined that the surveillance requirements were not sufficiently detailed to enable the staff to determine the adequacy of the acceptance criteria. The staff will request additional information to complete its review of this item.

#### B.3.33 Technical Specification SR 3.6.16.3 Visual Inspection

1. The only detection of age-related degradation under technical specification SR 3.6.16.3 is by visual inspection. Areas of inspection include the walls and dome of the concrete Reactor Building. Explain how the inspections are conducted to be effective in areas that are many feet above the floor (monitoring & trending). Are there cranes or catwalks that allow close visual access to key areas to be inspected? Are visual enhancements such as binoculars used to increase the effectiveness of the inspections?

The applicant indicated that visual inspections of the interior surface of the concrete reactor building are performed in the annulus space between the exterior of the steel containment vessel and the concrete reactor building structure. Containment vessel stiffening rings are located at 10-foot intervals along the exterior of the steel containment vessel and act as a platform for the inspectors to stand on while examining the concrete surface of the reactor building. The applicant also indicated that ladders are used to access the exterior containment dome, and binoculars are used to visually

inspect the exterior reactor building walls. The staff will consider this information but may request additional information to complete its review.

2. In areas where leaching is observed on the Reactor Building dome or walls, a potential related consequence is that corrosion of rebar may be occurring. Is degradation of the rebar considered a credible concern with respect to parameters monitored or inspected, detection of aging effects? If so, what actions are taken to assess the status of the rebar (with respect to “monitoring and trending” and “acceptance criteria”)?

The applicant indicated that operating experience at Catawba and McGuire indicates that this is not a credible concern. The staff will consider this information, but may request additional information to complete its review of LRA Section 3.5, Aging Management of Containments, Structures, and Component Supports.

3. The scope of Technical Specification SR 3.6.16.3 involves inspections of “accessible surfaces” (monitoring & trending). Are there areas of the reactor building considered inaccessible that may be subject to age-related degradation? Where are these areas? What practical methods might be applied to inspect some or all of the inaccessible areas, perhaps on a less frequent schedule than is required under SR 3.6.16.3?

The applicant indicated that inaccessible areas of the reactor building are located below grade and in areas where an obstruction such as equipment may make the location inaccessible for inspection. In areas where there is an obstruction, the inaccessible surfaces are exposed to the same environment, Reactor Building environment, as the accessible surfaces. Therefore, the accessible surfaces provide a leading indicator for the inaccessible surface. For the below grade portions of the concrete, the structure is exposed to back fill and groundwater. The groundwater at McGuire and Catawba is not aggressive since the pH, chloride, and sulfate concentrations are below the limits where degradation would occur. The pH, chloride, and sulfate levels are identified on page 3.5-2 of the LRA. The applicant also referenced page II A1-7 of the Generic Aging Lessons Learned report to demonstrate that inspection of inaccessible areas was not warranted. A similar question was generated from the staff (3.5.1 Question 1), as documented in a summary of an October 25, 2001, conference call on Section 3.5 of the LRA. A request for additional information will be generated from Section 3.5 of the LRA to confirm that below-grade chemistry is, and will continue to be, periodically monitored to demonstrate that the below-grade environment is not aggressive.

4. The acceptance criteria for the Technical Specification SR 3.6.16.3 visual inspection program are “based on visual indication of structural damage or degradation. For concrete, the acceptance criterion is no unacceptable indication of change in material property due to leaching.” Describe the criteria for (1) assessing the severity of the observed degradation, and (2) determining whether or not corrective action is necessary.

The applicant and the staff agreed that additional information will be needed for the staff to complete its review of this item.

#### B.3.35 Underwater Inspection of Nuclear Service Water Structures (EMEB/Pichumani)

1. Provide the qualifications of the “accountable engineer” who will be responsible for determining the need for repairs of the NSW structures and components at both Catawba and McGuire.

The applicant and staff agreed that additional information is needed for the staff to complete its review of this item.

2. The acceptance criteria for the underwater inspection of nuclear service water structures are “no visual indications of (1) loss of material for steel components and (2) loss of material and cracking for concrete components, as determined by the accountable engineer.” Describe the criteria for (1) assessing the severity of the observed degradation, and (2) determining whether or not corrective action is necessary.

The applicant indicated that additional information can be provided to the staff for review.

A draft of this telecommunication summary was provided to the applicant to allow them the opportunity to comment prior to the summary being issued.

**/RA/**

Rani L. Franovich, Project Manager  
License Renewal Project Directorate  
Division of Regulatory Improvement Programs  
Office of Nuclear Reactor Regulation

Docket Nos. 50-369, 50-370, 50-413, and 50-414

Attachment: As stated

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property due to leaching.” Describe the criteria for (1) assessing the severity of the observed degradation, and (2) determining whether or not corrective action is necessary.

The applicant and the staff agreed that additional information will be needed for the staff to complete its review of this item.

B.3.35 Underwater Inspection of Nuclear Service Water Structures (EMEB/Pichumani)

1. Provide the qualifications of the “accountable engineer” who will be responsible for determining the need for repairs of the NSW structures and components at both Catawba and McGuire.

The applicant and staff agreed that additional information is needed for the staff to complete its review of this item.

2. The acceptance criteria for the underwater inspection of nuclear service water structures are “no visual indications of (1) loss of material for steel components and (2) loss of material and cracking for concrete components, as determined by the accountable engineer.” Describe the criteria for (1) assessing the severity of the observed degradation, and (2) determining whether or not corrective action is necessary.

The applicant indicated that additional information can be provided to the staff for review.

A draft of this telecommunication summary was provided to the applicant to allow them the opportunity to comment prior to the summary being issued.

*/RA/*

Rani L. Franovich, Project Manager  
License Renewal Project Directorate  
Division of Regulatory Improvement Programs  
Office of Nuclear Reactor Regulation

Docket Nos. 50-369, 50-370, 50-413, and 50-414

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NAME	E Hylton	R Franovich	C Grimes
DATE	11/23/01	11/23/01	11/23/01

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E. Hylton

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C. Grimes

B. Zalcman

J. Strosnider (RidsNrrDe)

F. Eltawila

G. Bagchi

K. Manoly

W. Bateman

J. Calvo

C. Holden

P. Shemanski

S. Rosenberg

G. Holahan

B. Boger

D. Thatcher

G. Galletti

B. Thomas

J. Moore

R. Weisman

M. Mayfield

A. Murphy

W. McDowell

S. Droggitis

N. Dudley

RLSB Staff

-----

R. Martin

C. Patel

C. Julian (RII)

R. Haag (RII)

A. Fernandez (OGC)

J. Wilson

M. Khanna

R. Elliott

C. Munson

P. Y. Chen

H. Ashar

J. Ma

McGuire & Catawba Nuclear Stations, Units 1 and 2

Mr. Gary Gilbert  
Regulatory Compliance Manager

Duke Energy Corporation  
4800 Concord Road

York, South Carolina 29745

Ms. Lisa F. Vaughn  
Duke Energy Corporation  
422 South Church Street  
Charlotte, North Carolina 28201-1006

Anne Cottingham, Esquire  
Winston and Strawn  
1400 L Street, NW  
Washington, DC 20005

North Carolina Municipal Power  
Agency Number 1  
1427 Meadowwood Boulevard  
P. O. Box 29513  
Raleigh, North Carolina 27626

County Manager of York County  
York County Courthouse  
York, South Carolina 29745

Piedmont Municipal Power Agency  
121 Village Drive  
Greer, South Carolina 29651

Ms. Karen E. Long  
Assistant Attorney General  
North Carolina Department of Justice  
P. O. Box 629  
Raleigh, North Carolina 27602

Ms. Elaine Wathen, Lead REP Planner  
Division of Emergency Management  
116 West Jones Street  
Raleigh, North Carolina 27603-1335

Mr. Robert L. Gill, Jr.  
Duke Energy Corporation  
Mail Stop EC-12R  
P. O. Box 1006  
Charlotte, North Carolina 28201-1006

Mr. Alan Nelson  
Nuclear Energy Institute  
1776 I Street, N.W., Suite 400  
Washington, DC 20006-3708

North Carolina Electric Membership  
Corporation  
P. O. Box 27306  
Raleigh, North Carolina 27611

Senior Resident Inspector  
U.S. Nuclear Regulatory Commission  
4830 Concord Road  
York, South Carolina 29745

Mr. Virgil R. Autry, Director  
Dept of Health and Envir Control  
2600 Bull Street  
Columbia, South Carolina 29201-1708

Mr. C. Jeffrey Thomas  
Manager - Nuclear Regulatory Licensing  
Duke Energy Corporation  
526 South Church Street  
Charlotte, North Carolina 28201-1006

Mr. L. A. Keller  
Duke Energy Corporation  
526 South Church Street  
Charlotte, North Carolina 28201-1006

Saluda River Electric  
P. O. Box 929  
Laurens, South Carolina 29360

Mr. Peter R. Harden, IV  
VP-Customer Relations and Sales  
Westinghouse Electric Company  
5929 Carnegie Blvd.  
Suite 500  
Charlotte, North Carolina 28209

Mr. T. Richard Puryear  
Owners Group (NCEMC)  
Duke Energy Corporation  
4800 Concord Road  
York, South Carolina 29745

Mr. Richard M. Fry, Director  
North Carolina Dept of Env, Health, and  
Natural Resources  
3825 Barrett Drive  
Raleigh, North Carolina 27609-7721

County Manager of  
Mecklenburg County  
720 East Fourth Street  
Charlotte, North Carolina 28202

Michael T. Cash  
Regulatory Compliance Manager  
Duke Energy Corporation  
McGuire Nuclear Site

12700 Hagers Ferry Road  
Huntersville, North Carolina 28078

Senior Resident Inspector  
U.S. Nuclear Regulatory Commission  
12700 Hagers Ferry Road  
Huntersville, North Carolina 28078

Dr. John M. Barry  
Mecklenburg County  
Department of Environmental Protection  
700 N. Tryon Street  
Charlotte, North Carolina 28202

Mr. Gregory D. Robison  
Duke Energy Corporation  
Mail Stop EC-12R  
526 S. Church Street  
Charlotte, NC 28201-1006

**TELECOMMUNICATION PARTICIPANTS  
OCTOBER 11, 2001**

**Staff Participants**

Rani Franovich

Clifford Munson

Pei-Ying Cheng

Hansraj Ashar

John Ma

**Duke Energy Corporation Participants**

Greg Robison

Bob Gill

Debra Keiser

Sing Chu

Mark Ferlisi