

50-269/270/287

March 30, 1999

MEMORANDUM TO: Bruce S. Mallett, Director  
 Division of Reactor Safety

David B. Matthews, Director  
 Division of Regulatory Improvement Programs  
 Office of Nuclear Reactor Regulation

FROM: Luis A. Reyes, Regional Administrator

Samuel J. Collins, Director  
 Office of Nuclear Reactor Regulation

SUBJECT: OCONEE LICENSE RENEWAL INSPECTION

Attached is the final version of the Oconee Nuclear Station License Renewal Inspection Plan. The plan, which was developed jointly by NRR and Region II, is hereby approved. You are directed to use this plan to prepare and conduct the license renewal inspections at Oconee.

(Original signed by S. J. Collins) Date: 3/30/99  
 Samuel J. Collins, Director  
 Office of Nuclear Reactor Regulation

(Original signed by L. A. Reyes) Date: 3/29/99  
 Luis A. Reyes, Regional Administrator  
 Region II

Attachment: Oconee Nuclear Station  
 License Renewal Inspection Plan

\*FOR PREVIOUS CONCURRENCE SEE ATTACHED COPY

OFFICE	RII:DRS	RII:DRS	RII:DRS	DRP	NRR	NRR	NRR
SIGNATURE							
NAME	CJULIAN*	VMCCREE*	BMALLETT*	LPLISCO*	RPRATO	CGRIMES	DMATTHEWS
DATE	3/ /99	3/ /99	3/ /99	3/ /99	3/30/99	3/30/99	3/30/99
COPY?	YES NO	YES NO	YES NO	YES NO	YES NO	(YES) NO	(YES) NO

OFFICIAL RECORD COPY DOCUMENT NAME: A:\OLRP.WPD

OFFICE	RII:DRA						
SIGNATURE							
NAME	JJOHNSON	S. COLLINS					
DATE	3/21/99	3/30/99	3/ /99	3/ /99	3/ /99	3/ /99	3/ /99
COPY?	YES NO	YES NO	YES NO	YES NO	YES NO	YES NO	YES NO

OFFICIAL RECORD COPY DOCUMENT NAME: A:\OLRP.WPD

9904060290 990330  
 PDR ADOCK 05000269  
 PDR

FILE CENTER COPY

DFol

Oconee Nuclear Station (License Renewal)

cc:

Ms. Lisa F. Vaughn  
Duke Energy Corporation  
422 South Church Street  
Mail Stop PB-05E  
Charlotte, North Carolina 28201-1006

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

Mr. Rick N. Edwards  
Framatome Technologies  
Suite 525  
1700 Rockville Pike  
Rockville, Maryland 20852-1631

Manager, LIS  
NUS Corporation  
2650 McCormick Drive, 3rd Floor  
Clearwater, Florida 34619-1035

Senior Resident Inspector  
U. S. Nuclear Regulatory Commission  
7812B Rochester Highway  
Seneca, South Carolina 29672

Regional Administrator, Region II  
U. S. Nuclear Regulatory Commission  
Atlanta Federal Center  
61 Forsyth Street, SW, Suite 23T85  
Atlanta, Georgia 30303

Virgil R. Autry, Director  
Division of Radioactive Waste Management  
Bureau of Land and Waste Management  
Department of Health and  
Environmental Control  
2600 Bull Street  
Columbia, South Carolina 29201-1708

County Supervisor of Oconee County  
Walhalla, South Carolina 29621

W. R. McCollum, Jr., Vice President  
Oconee Site  
Duke Energy Corporation  
P. O. Box 1439  
Seneca, SC 29679

Mr. J. E. Burchfield  
Compliance Manager  
Duke Energy Corporation  
Oconee Nuclear Site  
P. O. Box 1439  
Seneca, South Carolina 29679

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

L. A. Keller  
Manager - Nuclear Regulatory Licensing  
Duke Energy Corporation  
526 South Church Street  
Charlotte, North Carolina 28201-1006

Mr. Richard M. Fry, Director  
Division of Radiation Protection  
North Carolina Department of  
Environment, Health, and  
Natural Resources  
3825 Barrett Drive  
Raleigh, North Carolina 27609-7721

Gregory D. Robison  
Duke Energy Corporation  
Mail Stop EC-12R  
P. O. Box 1006  
Charlotte, North Carolina 28201-1006

Robert L. Gill, Jr.  
Duke Energy Corporation  
Mail Stop EC-12R  
P. O. Box 1006  
Charlotte, North Carolina 28201-1006  
RLGILL@DUKE-ENERGY.COM

Douglas J. Walters  
Nuclear Energy Institute  
1776 I Street, NW  
Suite 400  
Washington, DC 20006-3708  
DJW@NEI.ORG

Chattooga River Watershed Coalition  
P. O. Box 2006  
Clayton, GA 30525

Distribution:

Hard copy

PUBLIC

Docket File

RLSB RF

N. Dudley, ACRS T2E26

E-mail:

R. Zimmerman

W. Kane

D. Matthews

S. Newberry

C. Grimes

F. Akstulewicz

J. Strosnider

R. Wessman

G. Bagchi

H. Brammer

T. Hiltz

G. Holahan

C. Gratton

R. Correia

R. Latta

J. Peralta

J. Moore

R. Weisman

M. Zabler

F. Cherny

E. Hackett

A. Murphy

D. Martin

W. McDowell

S. Droggitis

PDLR Staff

-----

H. Berkow

D. LaBarge

L. Plisco

C. Ogle

R. Trojanowski

M. Scott

C. Julian

B. Zalcmán

J. Wilson

C. Sochor

## OCONEE NUCLEAR STATION LICENSE RENEWAL INSPECTION PLAN

### I. PURPOSE

This inspection plan provides Region II with guidance for implementing Inspection Manual Chapter 2515 and 2516 requirements for the verification of information, programs and activities relating to 10 CFR Part 54 (herein referred to as "the rule") and the Oconee Nuclear Station (ONS) license renewal programs and activities. This plan defines the scope of the inspections planned to verify that the ONS's license renewal program is in compliance with the requirements of the rule, and is consistent with Duke Energy Corporation's (DEC) license renewal application (LRA) and the staff's safety evaluation of DEC's LRA. This plan also provides guidance for inspection scheduling, inspector training, inspection activities, resource requirements, and resource allocation.

The DEC LRA identified the systems, structures, and commodity groups that it determined were within the scope of the rule. Attachment 1 contains a list of those specific systems, structures, and commodity groups, aging effects and aging management programs that may be selected for inspection based on risk significance, uniqueness to ONS, and current issues. However, the scope and depth of inspections in these areas will vary. Attachment 2 is a list of acronyms applicable to the DEC inspection activities for license renewal. Attachment 3 contains a list of reference materials.

### II. OBJECTIVES

The overall objective of this plan is to provide guidance for inspecting the implementation, and effectiveness of the programs and activities associated with DEC's license renewal program to verify that there is reasonable assurance that the effects of aging will be adequately managed such that the intended function(s) of structures and components (SC)<sup>1</sup> requiring an aging management review will be maintained consistent with the current licensing basis (CLB) during the period of extended operation. To accomplish this objective, the inspection team will perform the following inspection activities on a sample of systems, structures and commodity groups within the scope of this inspection plan (refer to Attachment 1), to verify, with reasonable assurance, that the requirements of 10 CFR Part 54 have been fulfilled:

1. Verify that the scoping (10 CFR 54.4) and screening (10 CFR 54.21[a][1]) activities implemented by DEC are consistent with the rule, DEC's methodology submitted for staff review, the staff's safety evaluation of that methodology, the guidance provided in DG-1047, "Standard Format and Content for the Application to Renew Nuclear Power Plant Operating Licenses," dated August 1996, and documented staff positions, as applicable.

---

<sup>1</sup> Reference footnote in SOC on page 60 FR 22462 for clarification between SSC and SC.

2. Verify that the aging management programs were implemented consistent with the rule, the LRA, the staff's safety evaluation report (SER) of the LRA, and NRC approved guidance including the Statements of Consideration (SOC), DG 1047, and documented staff positions.
3. Verify that there is reasonable assurance that the demonstration provided by DEC is consistent with the rule, LRA, staff's SER, and the results from implementing the aging management programs at ONS.
4. Verify that the information and documentation required by, or otherwise necessary to document compliance with the provisions of the rule are maintained in an auditable and retrievable form.

### **III. INSPECTION REQUIREMENTS**

Each inspector will receive basic license renewal inspection program (LRIP) training. In addition, the inspection team will be provided team training on the ONS LRA and the staff's safety evaluation of that application. Training will be given as part of the inspection preparation effort.

The acceptance criteria for the staff verification activities will be derived from the rule, the description of the programs and activities as documented in the LRA, and the documented review performed by the staff in the safety evaluation report. To verify the completeness of the scope selected by DEC, the staff will review five systems and three structures not identified as being within the scope of the rule by the applicant against the scoping criteria under 10 CFR 54.4(a) to identify potential omissions from the scope selected by the applicant. In addition, the staff will perform system walk-downs and review maintenance history to confirm that applicable aging effects have been identified in the LRA.

Consistent with the Commission guidance in the SOC, probabilistic methods may be used as a supplemental tool to assess the relative importance of structures and components that are subject to an aging management review by drawing attention to specific vulnerabilities (e.g., results of an IPE or IPEEE). Probabilistic insights may assist in developing an approach for aging management adequacy. However, probabilistic insights alone will not be an acceptable basis for concluding that, for those structures and components subject to an aging management review, the effects of aging will be adequately managed in the period of extended operation.

### **IV. INSPECTION ACTIVITIES**

The LRIP will be implemented at ONS, prior to the approval of its LRA to verify that DEC meets the requirements of the rule and has implemented license renewal programs and activities consistent with the rule, their application, and the staff's safety evaluation

report (SER) of the LRA, Commission and staff approved guidance, and documented staff positions, as applicable.

Inspection Procedure (IP) 71002, "License Renewal Inspections," will be the primary procedure used to inspect DEC's implementation of the requirements of the rule. Various other IPs will be used to verify the implementation of the individual aging management programs. This inspection plan will be used to define the inspection activities and the implementation of these activities.

This inspection plan will be reviewed and approved by NRR and the Region II Regional Administrator prior to implementation. Substantive changes to the approved inspection plan will be approved by the Director, Division of Reactor Safety, Region II and the Director, License Renewal Project Directorate, NRR (PDLR) or his designee. After inspection activities begin, changes to the inspection plan will be approved and documented as an attachment to the original plan.

The basic scope of the ONS inspection will be performed on the systems, structures, and commodity groups identified in Attachment 1 attached to this plan. The selection of these systems, structures, and commodity groups is based on risk significance, uniqueness to ONS, and current issues.

1. The inspection team will verify that DEC implemented the scoping methodology consistent with the rule, and DEC's methodology as detailed in their License Renewal Application submitted July 6, 1998. The inspection team will also inspect five systems and three structures not included within the scope of the rule by DEC's process to verify that there is reasonable assurance that all systems and structures that meet the criteria under 10 CFR 54.4 were identified. The inspection team will use *IP-71002, § 02.02.a and § 03.02.a* for this inspection.
2. The implementation of screening activities required under 10 CFR 54.21(a)(1) will be inspected by reviewing the evaluation boundaries, intended functions, and active/passive or short/long-lived characteristics of the structures and components (SC) included within the scope of DEC's aging management review for the systems, structures and commodity groups listed in Attachment 1. These inspection activities will be implemented to verify that DEC's process was implemented consistent with the rule, DEC's methodology submitted for staff review, and the staff's safety evaluation of that methodology. The inspection team will also walkdown the systems and structures, as available, to identify any observable inconsistencies with the scoping and screening activities. The inspection team will use *IP-71002, § 02.02.b.1 and § 03.02.b.1* for this inspection.

For more information on the screening activities refer to the following reference:

- system/structural-level intended function(s) refer to 10 CFR 54.4(a), 54.4(b), 54.21(a)(1)(i), 60FR22467, and NEI 95-10,§3.2;

- evaluation boundaries refer to 60FR22467, and NEI 95-10, §4.1.1;
  - component/structural component-level intended function(s) refer to 60FR22467, and NEI 95-10, §4.1.2;
  - active/passive determination as defined under 10 CFR 54.21(a)(1)(i) refer to 60FR22477, and NEI 95-10, §4.1.2 and Attachment B, and
  - short/long-lived determination as defined under 10 CFR 54.21(a)(1)(ii) refer to 60FR22478, and NEI 95-10, §4.1.2.
3. The inspection team will verify that there is reasonable assurance that evident aging effects (refer to 60FR22468, and NEI 95-10, § 4.2.1.1) for the systems, structures and components requiring an aging management review have been identified by DEC. Although the aging effects identified by DEC will be reviewed during the NRR technical review, the inspection team will identify any aging effects observed during walkdowns and physical inspections of the different systems, structures and commodity groups that are not included in the LRA. In addition, the inspection team will perform a sample inspection of related maintenance records of the systems, structures and commodity groups from Attachment 1 to identify ongoing aging not identified by DEC. The inspection team will use *IP-71002, § 02.02.b.2 and § 03.02.b.2* for this inspection.
  4. The inspection team will inspect the aging management programs (Refer to 60FR22474 and NEI 95-10, § 4.2.1.2) for approximately half of the aging effects in each of the systems, structures, and commodity groups identified in Attachment 1. The inspections will be used to verify that DEC implemented the aging management programs as identified in its LRA and the staff's safety evaluation. The inspection team will also perform a sample inspection of related maintenance records for the systems, structures and commodity groups in Attachment 1 to identify ongoing aging that is not being managed consistent with the aging management programs in place. The inspection team will also walkdown systems and structures, and inspect structures and components, as plant conditions allow, to identify ongoing aging that is not being managed. Based on their observations from these inspection activities, the inspection team will document their findings relative to the effectiveness of an aging management program to maintain an intended function(s) consistent with the CLB for the period of extended operation. The inspection team will use *IP-71002, § 02.02.b.3, and § 03.02.b.3* to inspect the implementation activities. The inspection of the aging management programs and resulting effectiveness from implementing these programs will be performed by using a variety of existing inspection procedures from the IMC 2515 inspection program as applicable.
  5. An inspection of DEC's supporting information and objective evidence relating to the demonstration (Refer to 10 CFR 54.21(a)(3), and NEI 95-10, §4.2.1.3, § 4.2.2.2, and § 4.2.3.2) of the aging management programs inspected in item 4 above, including a review of program documentation and a review of the applicable maintenance records will be used to verify that there is reasonable assurance that the demonstrations provided by DEC are consistent and complete with the results from implementing the applicable aging management programs at ONS. The inspection team will use

*IP-71002, § 02.02.b.4, § 03.02.b.4*, and existing IMC 2515 inspection procedures for this inspection activity.

6. An inspection of the documentation for the programs and activities relating to the scoping, screening, aging management, and demonstrations will be used to verify that the information and documentation (Refer to 10 CFR 54.21 and 54.37, 60FR22482, and NEI 95-10, § 3.3, § 4.4, § 5.3, and § 6.0) required by, or otherwise necessary to document compliance with the provisions of the rule are maintained in an auditable and retrievable form. The inspection team will use *IP-71002* for this inspection activity.

## V. PLANNED INSPECTIONS

The ONS license renewal inspection activities will be implemented through three site-inspections.

1. First Inspection - The first inspection will primarily consist of an inspection of the scoping and screening process described above (IV.1 and IV.2) to verify that these processes have been implemented consistent with the rule, DEC's methodology, and the staff's safety evaluation of DEC's methodology. This inspection must be performed after the staff's safety evaluation of the scoping and screening methodology is complete. In addition, this inspection will be used to verify that there is reasonable assurance that the implementation of DEC's scoping and screening processes have identified the systems, structures, and components, requiring an aging management review consistent with the requirements of the rule.

The first inspection includes the following:

- a. Prior to the inspection preparation week, the Team Leader will review this inspection plan, DEC's methodology, the staff's safety evaluations of the methodology, and the LRA to assign various inspection activities to individual team members for detailed review during inspection preparation. The goal for assigning these inspection activities is to allow each team member to become familiar with the scope of the inspection, and for each team member to prepare for their role in the inspection process.
- b. During preparation week, the Team will review the necessary documentation. For the systems, structures, and commodity groups assigned to each inspection, the inspector will prepare to verify that DEC implemented its methodology consistent with the rule, the methodology in its LRA, the staff's safety evaluation of that methodology, NRC approved guidance, and documented staff positions. The inspector will review the system/structural-level intended functions identified by DEC to verify that they fulfill the requirements and criteria of the rule and the applicable guidance documents. The inspectors will familiarize themselves with the systems and structures assigned and their evaluation boundaries to identify any components or structural components not included within the evaluation boundary that may fulfill the intended functions relating to the scoping criteria



under 10 CFR 54.4. The inspectors will prepare to inspect the active/passive and the long/short-lived determination to verify that they were made consistent with the rule, staff approved guidance, and staff positions.

- c. During the on-site inspection, the team will implement the inspection activities defined in Sections IV.1, IV.2, and IV.6 of this inspection plan.
- d. During the week following the on-site inspection, the team members will submit their documented findings within the time specified by the team leader. The team leader will develop the final inspection report consistent with NRC guidance in inspection Manual Chapters.

2. Second Inspection - The second inspection is expected to be performed in the following sequence: one-week preparation; one week of inspection; one week return to region for review, interim report writing, and adjustment to inspection plan; another week of inspection; and one week to write the inspection report. This inspection will be the heart of the aging management review and demonstration inspection. The second inspection should not begin until the "SER with open items" (currently scheduled for June 1999) is complete.

For the aging management review inspections, the inspector will verify that DEC's aging management programs and activities have been implemented completely, correctly, and consistent with the requirements of the rule, DEC's LRAs, the staff's review of the application as documented in the SER, and site-approved program and procedures.

- a. Prior to the inspection preparation week, the team leader will review this inspection plan, the inspection report from the first inspection, and the LRA to assign various inspection activities to individual team members for detailed review during inspection preparation. The goal for assigning these inspection activities is to allow each inspection team member to become familiar with the scope of the inspection, and for each team member to prepare for their role in the inspection process.
- b. During preparation week, the team will review the necessary documentation. For the systems, structures, and commodity groups assigned to each inspector, the inspector will verify that DEC's aging management review and demonstration was implemented consistent with the rule, DEC's LRA, the staff's safety evaluation of the LRA, the Commission and staff approved guidance, and documented staff positions, as applicable.
- c. During the on-site inspection, the team will implement the inspection activities defined in Section IV.3, IV.4, IV.5 and IV.6 of this inspection plan.
- d. During the week following the second week of on-site inspection, the team members will submit their documented findings within the time specified by the team leader. The team leader will develop the final inspection report consistent with NRC guidance in inspection Manual Chapters.

3. Third Inspection - The third inspection will primarily be used to follow-up on previous inspection activities and to inspect DEC actions relating to SER open items. This inspection should be performed about 30 days prior to final licensing action.
- a. Prior to the inspection preparation week, the team leader will review this inspection plan, the inspection reports from the first two inspections, and input from the program office to assign various inspection activities to individual team members for detailed review during inspection preparation. The goal of this review will be to allow each inspection team member to become familiar with the scope of the inspection, and for each team member to prepare for their role in the inspection process.
  - b. During preparation week, the team will review the necessary documentation to prepare for the scope of this inspection as agreed upon by Region II and the program office.
  - c. Team members will perform the inspection activities as followup to address open items from previous inspection activities under Section IV, as assigned by the team leader. Other inspection activities, such as verifying the completion of SER open items or inspection follow-up items will be performed using standard inspection practices and/or existing inspection procedures, as applicable. Special instructions will be documented, as necessary.
  - d. The staff's technical review of the LRA and resulting SER may result in specific inspection activities. PDLR will keep track of all required and recommended inspection activities resulting from the technical review. PDLR will provide the team with a list of these inspection activities and coordinate any clarification or discussions necessary to implement these activities. These inspection activities may be performed anytime throughout the inspection process. However, the third inspection will be used to verify that all required inspection activities are completed.
  - e. Any followup items resulting from the first two inspections and any additional system, structural, component, or commodity group visual inspections, as arranged with DEC, will be performed during this inspection. In addition, any recommended visual inspection identified in one of the LRIP inspections can be performed by the resident or regional personnel at a later date if the component is not accessible during any of these inspections. The third inspection report should document the need for any specific future inspections and identify the steps that have been taken to coordinate any future inspections with DEC.
  - f. Any inspection activities associated with enforcement items will be performed using standard inspection practices and/or existing inspection procedures, as applicable. Special instructions will be documented, as necessary.

As part of the above specified inspection activities for each of the three inspections, the inspection team will verify that the information and documentation required by, or otherwise necessary to document compliance with, the provisions of the rule are being maintained in an auditable and retrievable form wherever applicable throughout the inspection process.

### **INSPECTION RESOURCES:**

The inspection resources will consist of the following positions and skills for the DEC inspections:

1. Inspectors - positions
  - 1 Team leader
  - 3 Regional based inspectors
  - 1 Inspector with site-specific knowledge
  - 1 or more support staff from program office
2. Inspectors - skills - the inspection team needs a cross-section of skills including mechanical, material, civil and electrical engineering skills

The scope of the third inspection (and correspondingly, the resources) will be determined by the open issues, if any, from the previous inspection activities. Therefore the third inspection team will be made up of 3 to 6 inspectors with the skills determined necessary after the third inspection.

3. Resource Recommendations:
  - 4 weeks of inspection
  - 5-7 inspectors per inspection
  - 1 week preparation per inspection
  - 1 week on-site inspection
  - 3 days report writing for each inspector
  - 1 week for team leader to finalize the inspection report
  - 1 week processing inspection report
  - At least one inspection performed during an outage to allow the inspectors to inspect the material condition of the SCs within the scope of the rule

4. Resource Estimates:

Inspection Resources -

6 inspectors x 4 inspection weeks x 2.6 weeks per inspection (1 week prep +1 week inspecting +3 days report writing) = 62.4 weeks

Training Resources - In addition to inspection activities, members of the inspection team will be trained on the rule and inspection procedures prior to beginning inspection activities.

2 PDLR staff members + 6 inspectors x 2 days/sessions = 16 person-days

## Systems, Structures & Commodity Groups

Systems, Structures & Commodity Groups	Aging Effects	Aging Management Programs
Reactor Building (Containment) Structural Components Section 3.3 & Table 3.3-1)	Loss of Material	Containment Inservice Inspection Plan (Examination Categories E-A, E-B, E-C, E-D, E-F, E-G, E-P and L-B)
		Coating Program
		Containment Leak Rate Testing Program
	Cracking	Containment Inservice Inspection Plan (Examination Category L-A for Concrete)
	Change in Material Properties	Containment Inservice Inspection Plan (Examination Category L-A for Concrete)
Reactor Coolant System Components & Class 1 Supports (Section 3.4 & Table 3.4-1)	Loss of Material	Boric Acid Wastage Surveillance Program
		Chemistry Control Program
		Rx Coolant System Operational Leakage Monitoring
		Steam Generator Tube Surveillance Program
		Alloy 600 Aging Management Program
		Inservice Inspection Plan (Examination Categories B-G-1, B-H, B-N-1, B-N-2, B-N-3, B-Q, B-P, C-H, and F-A)
		Inspection Program for Civil Engineering Structures and Components
	Cracking	Inservice Inspection Plan (Examination Categories B-G-1, B-A, B-B, B-D, B-E, B-F, B-H, B-J, B-L-1, B-L-2, B-N-1, B-N-2, B-N-3, B-O, B-P, B-Q, C-A, C-B, C-C, and C-H)
		Rx Coolant System Operational Leakage Monitoring
		Chemistry Control Program
		Alloy 600 Aging Management Program
		Small Bore Piping Inspections
		CRDM Nozzle and Other Vessel Closure Penetrations Inspection Program
		TLAA
		Program to Inspect the HPI Connections to the RCS
		Pressurizer Examinations
		Steam Generator Tube Surveillance Program
	Rx Vessel Internals Aging Management Program	
	Loss of Preload / Closure Integrity	Inservice Inspection Plan (Examination Categories B-G-1, B-G-2, B-N-3, B-O, B-P, and C-H)
		Rx Coolant System Operational Leakage Monitoring
		Rx Vessel Internals Aging Management Program
	Reduction of Fracture Toughness (CASS)	Chemistry Control Program

Systems, Structures & Commodity Groups	Aging Effects	Aging Management Programs
	Reduction of Fracture Toughness (CASS)	Chemistry Control Program
		Inservice Inspection Plan (Examination Categories B-L-1, B-L-2, B-M-2, B-N-3, and B-P)
		Rx Vessel Integrity Program
	Change in Material Properties of Lubrite Pads	OTSG Upper Lateral Support Inspections
	Mechanical Distortion	Inservice Inspection Plan (Examination Categories B-Q and B-P)
		Rx Coolant System Operational Leakage Monitoring
Steam Generator Tube Surveillance Program		
Reactor Building Spray System (Section 3.5.3.2 & Table 3.5-1)	Loss of Material	Chemistry Control Program
		Reactor Building Spray System Inspection
	Cracking	Chemistry Control Program
		Reactor Building Spray System Inspection
Containment Isolation Systems - Component Cooling System (Section 3.5.4.2 & Table 3.5-2)	Loss of Material	Chemistry Control Program
	Cracking	Treated Water Systems Stainless Steel Inspection (one time inspection/verification)
Emergency Core Cooling System (ECCS) - Core Flood System (Section 3.5.5.1 & Table 3.5-3)	Loss of Material	Chemistry Control Program
	Cracking	Chemistry Control Program
Emergency Core Cooling System (ECCS) - High Pressure Injection System (Section 3.5.5.2 & Table 3.5-3)	Loss of Material	Chemistry Control Program
	Cracking	Chemistry Control Program
		Rx Coolant System Operational Leakage Monitoring
Auxiliary Systems - Low Pressure Service Water System (Section 3.5.6.5 & Table 3.5-4)	Loss of Material	Service Water Piping Corrosion Program
		System Performance Testing Activities
		Preventive Maintenance Activities
		Galvanic Susceptibility Inspection
		Chemistry Control Program
	Fouling	Service Water Piping Corrosion Program
		System Performance Testing Activities
Steam & Power Conversion Systems - Emergency Feedwater System (Section 3.5.9.3 & Table 3.5-7)	Loss of Material	Chemistry Control Program
	Cracking	Chemistry Control Program
Steam & Power Conversion Systems - Feedwater System (Section 3.5.9.4 & Table 3.5-7)	Loss of Material	Chemistry Control Program
		Piping Erosion/Corrosion Program

Table 3.5-7)

Systems, Structures & Commodity Groups	Aging Effects	Aging Management Programs
	Cracking	Chemistry Control Program
Steam & Power Conversion Systems - Keowee Hydroelectric Station (Section 3.5.13 & Table 3.5-11)	Loss of Material	Keowee Air and Gas System Inspection
		Keowee Oil Sampling Program
		Service Water Piping Inspection Program
		Fire Protection Program
		Galvanic Susceptibility Inspection
		Cast Iron Selective Leaching Inspection
		Preventive Maintenance Activities
		Service Water Piping Corrosion Program
	Fouling	Service Water Piping Inspection Program
		Fire Protection Program
Fire Protection Program - Piping		
System Performance Testing Activities		
Preventive Maintenance Activities		
Standby Shutdown Facility - Reactor Coolant Makeup System (Section 3.5.14.5 & Table 3.5-12)	Loss of Material Cracking	Chemistry Control Program
Electrical Components - Bus (Section 3.6.2 & Table 3.6-1)	None Identified <sup>2</sup>	None Required
Electrical Components - Insulated Cables & Connections (Section 3.6.3 & Table 3.6-1)	None Identified <sup>2</sup>	None Required
Structural Components - Auxiliary Building (Section 3.7.3 & Table 3.7-1)	Cracking	Inspection Program for Civil Engineering Structures and Components
		Chemistry Control Program
		Fire Protection Program
	Loss of Material	Inspection Program for Civil Engineering Structures and Components
		Battery Rack Inspections
		Crane Inspection Program
		Inservice Inspection Plan (Category F-A)
		Chemistry Control Program

<sup>2</sup> Inspection Team should during the Scoping Inspection pay extra attention to Electrical SCs. They were omitted during Scoping and Screening process

Systems, Structures & Commodity Groups	Aging Effects	Aging Management Programs
		Fire Protection Program
	Separation	Fire Protection Program
Structural Components - Intake Structure (Section 3.7.5 & Table 3.7-3)	Loss of Material	Inspection Program for Civil Engineering Structures and Components
		Inservice Inspection Plan (Category F-A)
Structural Components - Keowee Structures (Section 3.7.6 & Table 3.7-4)	Cracking	Inspection Program for Civil Engineering Structures & Components
	Loss of Material	Penstock Inspection
		FERC Five Year Inspection
		Duke Power Five-Year Underwater Inspection of Hydroelectric Dams and Appurtenances
		Inspection Program for Civil Engineering Structures & Components
		Crane Inspection
		Battery Rack Inspection
		Inservice Inspection Plan (Category F-A)
	Change in Material Properties	Duke Power Five-Year Underwater Inspection of Hydroelectric Dams and Appurtenances
		Penstock Inspection
Inspection Program for Civil Engineering Structures & Components		
FERC Five Year Inspection		
Structural Components - Standby Shutdown Facility (SSF) (Section 3.7.8 & Table 3.7-6)	Loss of Material	Inspection Program for Civil Engineering Structures & Components
		Battery Rack Inspections
		Crane Inspection Program
		Inservice Inspection Plan (Examination Category F-A)
	Cracking	Inspection Program for Civil Engineering Structures & Components



## Aging Effects

Aging Effects	Systems, Structures, Commodity Groups	Aging Management Programs
Loss of Material	Reactor Building (Containment) Structural Components  Reactor Coolant System Components & Class 1 Supports  Containment Isolation Systems - Component Cooling System  Emergency Core Cooling System (ECCS) - Core Flood System  Emergency Core Cooling System (ECCS) - High Pressure Injection System  Auxiliary Systems - Low Pressure Service Water System  Steam & Power Conversion Systems - Emergency Feedwater System  Steam & Power Conversion Systems - Feedwater System  Steam & Power Conversion Systems - Keowee Hydroelectric Station  Standby Shutdown Facility - Reactor Coolant Makeup System  Structural Components - Auxiliary Building  Structural Components - Intake Structure  Structural Components - Keowee Structures  Structural Components - Standby Shutdown Facility (SSF)  Reactor Building Spray	Alloy 600 Aging Management Program  Battery Rack Inspections  Boric Acid Wastage Surveillance Program  Cast Iron Selective Leaching Inspection  Chemistry Control Program  Coating Program  Containment Inservice Inspection Plan (Examination Categories E-A, E-B, E-C, E-D, E-F, E-G, E-P and L-B)  Containment Leak Rate Testing Program  Crane Inspection Program  Duke Power Five-Year Underwater Inspection of Hydroelectric Dams and Appurtenances  FERC Five Year Inspection  Fire Protection Program  Galvanic Susceptibility Inspection  Chemistry Control Program  Inservice Inspection Plan (Examination Categories B-G-1, B-H, B-N-1, B-N-2, B-N-3, B-Q, B-P, C-H, and F-A)  Inservice Inspection Plan (Category F-A)  Inspection Program for Civil Engineering Structures and Components  Keowee Air and Gas System Inspection  Keowee Oil Sampling Program  Penstock Inspection  Piping Erosion/Corrosion Program  Preventive Maintenance Activities  Reactor Building Spray System Inspection  Rx Coolant System Operational Leakage Monitoring  Service Water Piping Corrosion Program  Service Water Piping Inspection Program  Steam Generator Tube Surveillance Program  System Performance Testing Activities

Aging Effects	Systems, Structures, Commodity Groups	Aging Management Programs
Cracking	Reactor Building (Containment) Structural Components Reactor Coolant System Components & Class 1 Supports Containment Isolation Systems - Component Cooling System Emergency Core Cooling System (ECCS) - Core Flood System Emergency Core Cooling System (ECCS) - High Pressure Injection System Steam & Power Conversion Systems - Emergency Feedwater System Steam & Power Conversion Systems - Feedwater System Standby Shutdown Facility - Reactor Coolant Makeup System Structural Components - Auxiliary Building Structural Components - Keowee Structures Structural Components - Standby Shutdown Facility (SSF) Reactor Building Spray	Alloy 600 Aging Management Program Chemistry Control Program Containment Inservice Inspection Plan (Examination Category L-A for Concrete) CRDM Nozzle and Other Vessel Closure Penetrations Fire Protection Program Inservice Inspection Plan (Examination Categories B-G-1, B-A, B-B, B-D, B-E, B-F, B-H, B-J, B-L-1, B-L-2, B-N-1, B-N-2, B-N-3, B-O, B-P, B-Q, C-A, C-B, C-C, and C-H) Inspection Program Inspection Program for Civil Engineering Structures and Components Pressurizer Examinations Chemistry Control Program Program to Inspect the HPI Connections to the RCS Reactor Building Spray System Inspection Rx Coolant System Operational Leakage Monitoring Rx Vessel Internals Aging Management Program Small Bore Piping Inspections Steam Generator Tube Surveillance Program TLAA Treated Water Systems Stainless Steel Inspection (one time inspection/verification)
Loss of Preload / Closure Integrity	Reactor Coolant System Components & Class 1 Supports	Inservice Inspection Plan (Examination Categories B-G-1, B-G-2, B-N-3, B-O, B-P, and C-H) Rx Coolant System Operational Leakage Monitoring Rx Vessel Internals Aging Management Program
Reduction of Fracture Toughness (CASS)	Reactor Coolant System Components & Class 1 Supports	Chemistry Control Program Inservice Inspection Plan (Examination Categories B-L-1, B-L-2, B-M-2, B-N-3, and B-P) Rx Vessel Integrity Program

Aging Effects	Systems, Structures, Commodity Groups	Aging Management Programs
Change in Material Properties	Reactor Building (Containment) Structural Components  Structural Components - Keowee Structures	Containment Inservice Inspection Plan (Examination Category L-A for Concrete)  Duke Power Five-Year Underwater Inspection of Hydroelectric Dams and Appurtenances  FERC Five Year Inspection  Inspection Program for Civil Engineering Structures and Components  Penstock Inspection
Mechanical Distortion	Reactor Coolant System Components & Class 1 Supports	Inservice Inspection Plan (Examination Categories B-Q and B-P)  Rx Coolant System Operational Leakage Monitoring  Steam Generator Tube Surveillance Program
Change in Material Properties of Lubrite Pads	Reactor Coolant System Components & Class 1 Supports	OTSG Upper Lateral Support Inspections
Fouling	Auxiliary Systems - Low Pressure Service Water System  Steam & Power Conversion Systems - Keowee Hydroelectric Station	Fire Protection Program  Fire Protection Program - Piping  Preventive Maintenance Activities  Service Water Piping Corrosion Program  Service Water Piping Inspection Program  System Performance Testing Activities
Separation	Structural Components - Auxiliary Building	Fire Protection Program
None Identified	Electrical Components - Bus  Electrical Components - Insulated Cables & Connections	None Required

## List of Acronyms

---

AMR	Aging Management Review
ARDM	Age-Related Degradation Mechanism
ATWS	Anticipated Transient Without Scram
CCW	Component Cooling Water
CLB	Current Licensing Basis
CRDM	Control Rod Drive Mechanism
DBE	Design Basis Event
DEC	Duke Energy Corporation
ECCS	Emergency Core Cooling System
EQ	Environmental Qualification
FERC	Federal Energy Regulatory Commission
FP	Fire Protection
FSAR	Final Safety Analysis Report
HP	High Pressure Injection
HVAC	Heating, Ventilation and Air Conditioning
IPA	Integrated Plant Assessment
IP	Inspection Procedure
IR	Issue Report
LR	License Renewal
LRA	License Renewal Application
LRIP	License Renewal Inspection Program
NSR	Non-Safety-Related
ONS	Oconee Nuclear Station
OTSG	Once Through Steam Generator
PAM	Post-Accident Monitoring
PB	Pressure Boundary
RCS	Reactor Coolant System
Rx	Reactor
SBO	Station Blackout
SC	Structures and Components
SER	Safety Evaluation Report
SOC	Statements of Consideration
SR	Safety-Related
SS	System and Structure
SSF	Standby Shutdown Facility
SSC	Systems, Structures and Components
SSCG	Systems, Structures and Commodity Groups
TAA	Time-Limited Aging Analysis
UFSAR	Updated Final Safety Analysis Report

## Reference Material

---

- The License Renewal Rule promulgated in Title 10, Part 54, of the *Code of Federal Regulations* revised May 8, 1995.
- The statement of consideration that accompanied the License Renewal Rule as published in the *Federal Register*, May 8, 1995.
- Draft Regulatory Guide DG-1047, entitled "Standard Format and Content for Applications to Renew Nuclear Power Plant Operating Licenses," issued August 1996.
- The "Industry Guidelines for Implementing the Requirements of 10 CFR Part 54 - The License Renewal Rule," issued March 1996.
- The Inspection Manual Chapter 2516
- Inspection Procedures 71002
- ONS License Renewal Application, submitted July 6, 1998.
- The staff's Safety Evaluation relating to the ONS LRA.