UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

December 20, 2000

LICENSEES: DUKE ENERGY CORPORATION

FACILITIES: MCGUIRE NUCLEAR STATION, UNITS 1 AND 2
CATAWBA NUCLEAR STATION, UNITS 1 AND 2

SUBJECT: SUMMARY OF MEETING TO DISCUSS SUBMITTAL OF FUTURE LICENSE RENEWAL APPLICATIONS

On November 29, 2000, representatives of Duke Energy Corporation (Duke) met with the Nuclear Regulatory Commission (NRC) staff to discuss its planned June 2001 submittal of concurrent license renewal applications for the McGuire and Catawba Nuclear Stations. Duke presented examples of the current format being considered for the applications which continues the dialogue begun with the staff in meetings on January 12 and July 25, 2000. The goal is to identify a format that will achieve efficiencies both for the applicant's preparation and the NRC staff's review of the renewal applications. Attendees at the meeting are listed in Attachment 1. Duke presentation materials are contained in Attachment 2.

Duke plans on submitting a composite application for the safety review that will be applicable to both McGuire and Catawba. Differences between the stations will be identified where applicable. The format of the application will follow that contained in the August 2000 version of the license renewal standard review plan (LR-SRP). Because the revised LR-SRP and the Generic Aging Lessons Learned Report are not scheduled to be issued until summer of 2001, Duke will not be able to fully utilize the documents in preparing its application.

The McGuire and Catawba applications will build on Duke's experience with the Oconee renewal application. The Oconee processes for scoping and screening, aging management review, and identification and evaluation of time-limited aging analyses will be used for McGurie and Catawba. Also, generic McGuire and Catawba aging management programs and activities will build on Oconee activities to the maximum extent possible.

A representative of the Nuclear Control Institute indicated that Duke is considering use of mixed oxide fuel (MOX) and asked how the staff will consider its use in performing the license renewal review. Duke has not applied for approval to used mixed oxide fuel and does not plan on submitting a request in the near future. If the use of MOX is approved prior to an application for license renewal, the effects of MOX use on aging of systems, structures, and components within the scope of the license renewal rule will be reviewed as part of the renewal review. If the request for use of MOX is submitted after a renewed license is issued, the request would be evaluated based on 60 years of plant operation.

Duke will continue to monitor ongoing generic activities regarding form and content of renewal applications. Future meetings will be scheduled if needed to discuss the content of Duke's application.

Stephen T. Hoffman

Stephen T. Hoffman, Senior Project Manager
License Renewal and Standardization Branch
Division of Regulatory Improvement Programs
Office of Nuclear Reactor Regulation

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

Attachments: As stated

cc w/atts: See next page

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/RA/

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

Attachments: As stated

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NOVEMBER 29, 2000

NAME	ORGANIZATION
1. Steve Hoffman	NRC/NRR/DRIP/RLSB
2. Rounette Nader	Duke Energy
3. Robert Gill	Duke Energy
4. Tom Clements	Nuclear Control Institute
5. Anne Cottingham	Winston & Strawn
6. Jerry Phillabaum	Exelon Corp
7. Frank Rinaldi	NRC/NRR/DLPM/LPD2
8. Amar Pal	NRC/NRR/DE/EEIB
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12. Carl Berlinger	NRC/NRR/DE
13. Chris Grimes	NRC/NRR/DRIP/RLSB
14. C. P. Patel	NRC/NRR/DLPM/LPD2

Attachment 1

Overview of the Application to Renew the Operating Licenses of McGuire Nuclear Station and Catawba Nuclear Station

Presentation to the NRC Staff

November 29, 2000

Bob Gill
Duke Energy Corporation

Topics

- Background
- Publishing Considerations
- Guiding Principles for the Format and Content
- Examples –

  Chapter 1 – Administrative Information, Table of Contents

  Chapter 2 – Structures and Components Subject to Aging Management Review, Table of Contents and example pages

  Chapter 3 – Aging Management Review Results, Table of Contents and example pages

  Chapter 4 – Time-Limited Aging Analyses, Table of Contents and example pages
- Appendices – Summary descriptions

Attachment 2

Background

- Exemption to the requirements of §54.17(c) was approved for McGuire Unit 2 and Catawba Units 1 & 2 on October 1, 1999
- Exemption is based on the similarity between McGuire and Catawba and the combined operating experience that is available
- Staff encouraged interaction as Duke developed the form and contents of the application
- The Duke goal is to maximize efficiencies in the review process of the combined McGuire and Catawba license renewal application
- An initial meeting with the NRC staff was held on January 12, 2000
- A second meeting with the staff was held on July 25, 2000

Application to Renew the Operating Licenses of
McGuire Nuclear Station and Catawba Nuclear Station

Publishing Considerations

Application

Word Processing Software – Microsoft Word

Paper Copies – 3-Ring Binders

Electronic Copies – CD-ROM with Adobe Acrobat reader/browser files

Original to DCD/PDR – Signed letter with paper copy attached

Copies for reviewers (and others) – Paper copy and/or CD-ROM copy

Flow Diagrams

Flow Diagram software – Microsoft Microstation

Paper Copies – Printed from diagram files

Electronic Copies – CD-ROM with diagram files and copy of viewing/printing software

Submittal to DCD/PDR – Signed letter plus 5 sets of paper drawings attached (~500 drawings per set)

Copies for staff reviewers – Paper copy and/ or CD-ROM copy

A request for an Exception to the Copy Requirements of §50.4 will be submitted shortly

Guiding Principles for the Format and Content

1. Engineering documents are being developed that provide the bases for the technical and environmental information contained in the application.

2. The methodologies and results described in the composite application are considered to be generically applicable to both McGuire Nuclear Station and Catawba Nuclear Station unless otherwise stated.

3. Site specific information includes:

   - Some system descriptions
   - References to specific UFSAR Sections
   - References to marked flow diagrams
   - UFSAR Supplement
   - Technical Specification changes
   - Environmental Report
   - Update required by §54.37(b)

4. The scoping and screening methodologies, the aging management review process, including identification of aging effects requiring management, and the TLAA identification and evaluation processes utilized during the course of the Oconee license renewal effort are being used for the McGuire and Catawba review processes.

5. Current plans are to use the standard format as contained in SRP (August 2000). Content of the application will be consistent with the guidance contained in Table 6.2-2 of NEI 95-10, Revision 2, as modified by recent applications.

6. Aging management programs and activities that are generic to McGuire and Catawba will build on the Oconee success to the maximum extent possible.

7. Operating experience will include Oconee, McGuire and Catawba as well as industry-wide experience, as applicable.

8. Duke plans to review the March 2001 versions of the GALL and SRP upon issuance and to support the staff in its review of the application later in 2001.

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Table 2.2-1 McGuire Systems and Structures within the Scope of License Renewal

McGuire Mechanical Systems within the Scope Of License Renewal

Annulus Ventilation	Heating Water
Auxiliary Building Ventilation	Hydrogen Bulk Storage
Auxiliary Feedwater	Ice Condenser Refrigeration
Auxiliary Steam	Instrument Air
Boron Recycle	Liquid Waste Monitor And Disposal
Chemical & Volume Control	Liquid Waste Recycle
Component Cooling	Lower Containment Ventilation
Condenser Circulating Water	Main Steam
Containment Air Return Exchange & Hydrogen Skimmer	Main Steam Supply To Auxiliary Equipment
Containment Spray	Main Steam Vent To Atmosphere
Control Area Chilled Water	Main Turbine Hydraulic Oil
Control Area Ventilation	Miscellaneous Service Building HVAC
Conventional Chemical Addition	Nitrogen
Conventional Waste Water Treatment	Nuclear Sampling
Diesel Building Ventilation	Nuclear Service Water
Diesel Generator Air Intake And Exhaust	Nuclear Solid Waste Disposal
Diesel Generator Cooling Water	Reactor Coolant
Diesel Generator Crankcase Vacuum	Recirculated Cooling Water
Diesel Generator Fuel Oil	Refueling Water
Diesel Generator Lube Oil	Residual Heat Removal
Diesel Generator Room Sump Pump	Safety Injection
Diesel Generator Starting Air	Spent Fuel Cooling
Feedwater	Standby Shutdown Diesel
Feedwater Pump Turbine Hydraulic Oil	Turbine Building Ventilation
Fire Protection	Turbine Exhaust
Fuel Handling Building Ventilation	Upper Containment Ventilation
Groundwater Drainage	Waste Gas

Table 2.2-1 McGuire Systems and Structures within the Scope of License Renewal (continued)

The following McGuire mechanical systems are within the scope of license renewal only because a portion of each system provides valves and piping for containment isolation purposes. For convenience, these systems are described collectively in Section 2.3.2.2, Containment Isolation System:

Breathing Air	Ice Condenser Refrigeration
Containment Air Release & Addition System	Instrument Air
Containment Purge Ventilation	Station Air
Containment Ventilation Cooling Water	Steam Generator Blowdown Recycle
Demineralized Water	Steam Generator Wet Lay-Up Recirculation

Table 2.2-1 McGuire Systems and Structures within the Scope of License Renewal (continued)

McGuire Structures Within the Scope of License Renewal

Auxiliary Building	Reactor Makeup Water Storage Tank (RMWST) Foundation
Control Building (within Auxiliary Building Structure)	Refueling Water Storage Tank (RWST) Foundation
Diesel Generator Building Unit 1 (within Auxiliary Building Structure)	Refueling Water Storage Tank (RWST) Missile Wall
Diesel Generator Building Unit 2 (within Auxiliary Building Structure)	Service Building / South Personnel Access Portal [North Wall ONLY – credited for FP]
Main Steam Doghouses Unit 1 (within Auxiliary Building Structure)	Standby Nuclear Service Water Pond Dam
Main Steam Doghouses Unit 2 (within Auxiliary Building Structure)	Standby Nuclear Service Water Pond Discharge Structure (Nuclear Service Water Discharge Structure)
New Fuel Storage Building Unit 1 (within Auxiliary Building Structure)	Standby Nuclear Service Water Pond Intake Structure (Nuclear Service Water Intake Structure)
New Fuel Storage Building Unit 2 (within Auxiliary Building Structure)	Spent Fuel Building Unit 1 (within Auxiliary Building Structure)
New Fuel Storage Vault Unit 1 (within Auxiliary Building Structure)	Spent Fuel Building Unit 2 (within Auxiliary Building Structure)
New Fuel Storage Vault Unit 2 (within Auxiliary Building Structure)	Standby Shutdown Facility
Pipe Trenches	Station Vent
Reactor Building Unit 1	Turbine Building Unit 1
Reactor Building Unit 2	Turbine Building Unit 2

Table 2.2-1 McGuire Systems and Structures within the Scope of License Renewal (continued)

McGuire Electrical Systems Within the Scope of License Renewal

The scoping of electrical systems and components is a bounding approach that assumes that all plant electrical and instrumentation and control components are within the scope of license renewal except for those that have been specifically excluded.

Table 2.2-3 McGuire Systems and Structures Not within the Scope of License Renewal

McGuire Mechanical Systems Not within the Scope of License Renewal

Administration Building HVAC
Auxiliary Boiler Feedwater
Boron Thermal Regeneration
Condensate
Condensate Storage
Condenser Circulating Water Intake Screen Backwash
Condenser Cleaning
Condenser Steam Air Ejector
Condenser Vacuum Priming
Control Rod Drive Ventilation
Conventional Low Pressure Service Water
Conventional Sampling
Drinking Water
Equipment Staging Building Air Condition
Equipment Staging Building Chilled Water
Feedwater Pump Seal Injection
Feedwater Pump Turbine Lube Oil
Feedwater Pump Turbine Steam Seal
Filtered Water
Generator Hydrogen System
Generator Seal Oil
Generator Stator Cooling
Heater Bleed Steam A, B, C, D, E, F, G
Heater Drains
Heater Relief Valves
Heater Vents
Hydrogen Blanket
Incore Instrumentation Area Ventilation
Main Steam Bypass to Condenser
Main Steam to Feedwater Pump Turbine
Main Turbine Leakoff & Steam Seal
Main Turbine Lube Oil and Purification
Main Vacuum
Miscellaneous Outside Structures HVAC
Miscellaneous Structures Ventilation
Moisture Separator-Reheater Bleed Steam
Moisture Separator-Reheater Drains
Roof Drains
Sanitation and Waste Treatment
Technical Support Center Ventilation
Turbine Building Sump
Turbine Crossover
Turbine Exhaust Hood Spray
Unwatering Pump System
Waste Oil
Yard Drains

Table 2.2-3 McGuire Systems and Structures Not within the Scope of License Renewal

(continued)

McGuire Structures Not within the Scope of License Renewal

230 kV Switch Station Steel and Foundation	Guardhouse
525 kV Switch Station	Earthen Dam and Dike Extension of Cowans Ford Dam North of MNS
Administration Building	Equipment Staging Building
Advanced Training Facility	Final Holdup Pond
Bahnson Building	Hazardous Waste Storage Facility / Bottle Gas Storage
Ballistics Vault	Hydrogen Storage Facility
BBQ Shed	Initial Holding Pond
Blower House	Landfill Area
Canteen, Office & Warehouse	McGuire Garage
Condenser Circulating Water Low Level Intake Structure	McGuire Office Complex
Condenser Circulating Water Low Level Pump Structure	Meteorological Instrument House
Chemical Mixing	Mulsifyer Houses (7)
CO_2 Cylinder Storage House	Nitrogen Storage Facility
Communications Back-up Diesel Building	North Personnel Access Portal
Communications Buildings (3)	Office Building (2)
Compacted Waste Storage Building	Office Shop Building
Condenser Cooling Water Intake Structure	Oil Storage House
Condenser Discharge Structure	Oil Water Separator Building
Contract Services Building	Operations Office Addition
Corporate Medical Facility	Oxygen Storage Facility
Cowans Ford Auxiliary Intake Structure	Paint Shed
Cowans Ford Dam	Picnic Shelter
Diesel Building (#7434)	Pumphouse
Demineralized Water Processing Building & Equipment	Pumphouse Fish Tank

Table 2.2-3 McGuire Systems and Structures Not within the Scope of License Renewal

(continued)

McGuire Structures Not within the Scope of License Renewal

(continued)

Radiographics Shooting Vault	Training Stand & Storage
Radwaste Facility	Transmitter Shelters (4)
Recirculation Pump House	Upper McGuire Hydro Office
Relay House	Warehouses (2)
Restroom	Waste Solidification Building
Retired Steam Generator Storage Facility	Waste Treatment Pumphouse / Chemical Mixing Station
Settling Pond A,B	Waste Water Collection Basin Dam (Non-Nuclear Waste)
Shed	Water Treatment Supply
Storage Buildings (5)	Wellhouse
Target Storage	Yard Equipment Storage Building

Areas of Review – Special Circumstances

SSC	NUREG-0800	GALL/SRP-LR	Application
Refueling Water System	AUX	ESF	ESF
Control Area Ventilation and Chilled Water	ESF	AUX	ESF
Residual Heat Removal	ESF	ESF/AUX	ESF
Condenser Circulating Water	SPCS	AUX	SPCS
Condensate Storage System	AUX	SPCS	SPCS
Spent Fuel Racks	AUX	AUX	Structural
Spent Fuel Pool	AUX	AUX	Structural
Cranes	AUX	AUX	Structural
Fire Barriers	AUX	AUX	Structural

2.3.2 Engineered Safety Features

The methodology to identify the mechanical systems within the scope of license renewal is described in Section 2.1 of this Application. Section 2.1.2.1 contains a description of the methodology to identify the mechanical components that are subject to aging management review. The following mechanical systems are described in Section 2.3.2, Engineered Safety Features in the section indicated:

- Annulus Ventilation System (Section 2.3.2.1)
- Containment Isolation System (Section 2.3.2.2)
- Containment Air Return Exchange & Hydrogen Skimmer System (Section 2.3.2.3)
- Containment Spray System (Section 2.3.2.4)
- Containment Valve Injection Water System (Section 2.3.2.5)
- Control Area Ventilation and Chilled Water Systems (Section 2.3.2.6)
- Refueling Water System (Section 2.3.2.7)
- Residual Heat Removal System (Section 2.3.2.8)
- Safety Injection System (Section 2.3.2.9)

2.3.3 AUXILIARY SYSTEMS

The methodology to identify the mechanical systems within the scope of license renewal is described in Section 2.1 of this Application. Section 2.1.2.1 contains a description of the methodology to identify the mechanical components that are subject to aging management review. The following mechanical systems are described in Section 2.3.3, Auxiliary Systems, in the sections as indicated:

- Auxiliary Building Ventilation System (Section 2.3.3.1)
- Boron Recycle System (Section 2.3.3.2)
- Building Heating Water System (Section 2.3.3.3)
- Chemical & Volume Control System (Section 2.3.3.4)
- Component Cooling System (Section 2.3.3.5)
- Conventional Chemical Addition System (Section 2.3.3.6)
- Conventional Wastewater Treatment (Section 2.3.3.7)
- Diesel Building Ventilation System (Section 2.3.3.8)
- Diesel Generator Air Intake and Exhaust System (Section 2.3.3.9
- Diesel Generator Cooling Water System (Section 2.3.3.10)
- Diesel Generator Crankcase Vacuum System (Section 2.3.3.11)
- Diesel Generator Fuel Oil System (Section 2.3.3.12)
- Diesel Generator Lube Oil System (Section 2.3.3.13)
- Diesel Generator Room Sump Pump (Section 2.3.3.14)
- Diesel Generator Starting Air System (Section 2.3.3.15)
- Drinking Water (Section 2.3.3.16)
- Equipment Decontamination System (Section 2.3.3.16)
- Fire Protection (Section 2.3.3.18)
- Fuel Handling Building Ventilation System (Section 2.3.3.19)
- Groundwater Drainage System (Section 2.3.3.20)
- Heating Water System (Section 2.3.3.21)
- Hydrogen Bulk Storage System (Section 2.3.3.22)
- Instrument Air System (Section 2.3.3.23)
- Liquid Waste Monitor and Disposal System (Section 2.3.3.24)
- Liquid Waste Recycle System (Section 2.3.3.25)
- Lower Containment Ventilation System (Section 2.3.3.26)
- Nuclear Sampling System (Section 2.3.3.27)
- Nuclear Service Water System (Section 2.3.3.28)
- Nuclear Service Water Pump Structure Ventilation (Section 2.3.3.29)
- Nuclear Solid Waste Disposal (Section 2.3.3.30)
- Recirculated Cooling Water System (Section 2.3.3.31)
- Solid Radwaste (Section 2.3.3.32)
- Spent Fuel Cooling System (Section 2.3.3.33)
- Standby Shutdown Diesel (Section 2.3.3.34)

- Turbine Building Sump Pump System (Section 2.3.3.35)
- Turbine Building Ventilation System (Section 2.3.3.36)
- Upper Containment Ventilation System (Section 2.3.3.37)
- Waste Gas System (Section 2.3.3.38)

2.3.4 STEAM AND POWER CONVERSION SYSTEMS

The methodology to identify the mechanical systems within the scope of license renewal is described in Section 2.1 of this Application. Section 2.1.2.1 contains a description of the methodology to identify the mechanical components that are subject to aging management review. The following mechanical systems are described in Section 2.3.4, Steam and Power Conversion Systems in the sections as indicated:

- Auxiliary Feedwater System (Section 2.3.4.1)
- Auxiliary Steam System (Section 2.3.4.2)
- Condensate System (Section 2.3.4.3)
- Condensate Storage System (Section 2.3.4.4)
- Condenser Circulating Water System (Section 2.3.4.5)
- Feedwater System (Section 2.3.4.6)
- Feedwater Pump Turbine Exhaust System (Section 2.3.4.7)
- Feedwater Pump Turbine Hydraulic Oil System (Section 2.3.4.8)
- Main Steam System (Section 2.3.4.9)
- Main Steam Supply to Auxiliary Equipment (Section 2.3.4.10)
- Main Steam Vent to Atmosphere System (Section 2.3.4.11)
- Main Turbine Hydraulic Oil System (Section 2.3.4.12)
- Nitrogen Supply to Feedwater Isolation Valves (Section 2.3.4.13)
- Turbine Exhaust System (Section 2.3.4.14)

2.3.4.1 Auxiliary Feedwater System

McGuire Nuclear Station – The Auxiliary Feedwater System is a nuclear safety related system which serves as a backup to the Feedwater System to ensure the safety of the plant and protection of equipment. The Auxiliary Feedwater System is essential to prevent an unacceptable decrease in the steam generator water levels, to reverse the rise in reactor coolant temperature, to prevent the pressurizer from filling to a water solid condition, and to establish stable hot standby conditions. The Auxiliary Feedwater System can be used during an emergency as well as during normal startup and shutdown operations. The McGuire UFSAR, Section 10.4.10, Auxiliary Feedwater System, provides additional information concerning the McGuire Auxiliary Feedwater System. The mechanical components subject to aging management review, their intended functions, and materials of construction for the McGuire Auxiliary Feedwater System are listed in Table 3.4-1.

The following is a list of the flow diagrams that have been marked to indicate the license renewal evaluation boundary for the McGuire Auxiliary Feedwater System:

MCFD-1574-02.00	MCFD-1592-01.01	MCFD-2591-01.01
MCFD-1574-03.00	MCFD-1617-01.00	MCFD-2592-01.00
MCFD-1584-01.00	MCFD-2574-02.00	MCFD-2592-01.01
MCFD-1591-01.01	MCFD-2574-03.00	MCFD-2617-01.00
MCFD-1592-01.00	MCFD-2584-01.00	

These flow diagrams are contained in Reference YY.

Catawba Nuclear Station – The Auxiliary Feedwater System is a nuclear safety related system which serves as a backup to the Feedwater System to ensure the safety of the plant and protection of equipment. The Auxiliary Feedwater System is essential to prevent an unacceptable decrease in the steam generator water levels, to reverse the rise in reactor coolant temperature, to prevent the pressurizer from filling to a water solid condition, and to establish stable hot standby conditions. The Auxiliary Feedwater System can be used during an emergency as well as during normal startup and shutdown operations. The Catawba UFSAR, Section 10.4.9, Auxiliary Feedwater System, provides additional information concerning the Catawba Auxiliary Feedwater System. The mechanical components subject to aging management review, their intended functions, and materials of construction for the Catawba Auxiliary Feedwater System are listed in Table 3.4-1.

The following is a list of the flow diagrams that have been marked to indicate the license renewal evaluation boundary for the Catawba Auxiliary Feedwater System:

CN-1592-1.0	CN-1584-1.0	CN-2573-2.3
CN-1592-1.1	CN-1591-1.1	CN-2574-2.1
CN-1565-2.2	CN-2592-1.0	CN-2574-2.5
CN-1573-2.2	CN-2592-1.1	CN-2584-1.0
CN-1573-2.3	CN-2565-2.2	CN-2591-1.1
CN-1574-2.1	CN-2573-2.2	CN-1593-1.2
CN-1574-2.5		

These flow diagrams are contained in Reference YY.

2.3.4.3 Condensate System

McGuire Nuclear Station – No portion of the McGuire Condensate System is within the scope of license renewal.

Catawba Nuclear Station – The Condensate System provides water to various plant equipment as required during all modes of plant operation, including condensate cleanup, startup, normal operation, and shutdown. Only the portion of this system that is Class F is within the scope of license renewal. The mechanical components subject to aging management review, their intended functions, and materials of construction for the Catawba Condensate System are listed in Table 3.4-3.

The following is a list of the flow diagrams that have been marked to indicate the license renewal evaluation boundary for the Catawba Condensate System (Class F Portion):

CN-1590-1.8	CN-2590-1.8

These flow diagrams are contained in Reference YY.

2.3.4.7 Feedwater Pump Turbine Exhaust System

McGuire Nuclear Station – The corresponding McGuire system is the Turbine Exhaust System which is described in Section 2.3.4.14.

Catawba Nuclear Station – The Feedwater Pump Turbine Exhaust System provides a flowpath for the exhaust steam from the Turbine-driven Auxiliary Feedwater pump turbine. The steam to the Turbine-driven Auxiliary Feedwater pump turbine is provided by the Main Steam System. The Feedwater Pump Turbine Exhaust System is addressed as a part of the Catawba Main Steam System. The Catawba UFSAR, Sections 10.3 and 10.4.9, Main Steam System and Auxiliary Feedwater System, respectively, provide additional information concerning the design and operation of these systems. The mechanical components subject to aging management review, their intended functions, and materials of construction for the Catawba Feedwater Pump Turbine Exhaust System are listed in Table 3.4-7.

The following is a list of the flow diagrams that have been marked to indicate the license renewal evaluation boundary for the Feedwater Pump Turbine Exhaust System:

CN-1593-1.2	CN-2593-1.2

These flow diagrams are contained in Reference YY.

2.3.4.14 Turbine Exhaust System

McGuire Nuclear Station – The Turbine Exhaust System exhausts steam from the Turbine Driven Auxiliary Feedwater Pump turbine and the Feedwater Pump turbines. The mechanical components subject to aging management review, their intended functions, and materials of construction for the McGuire Turbine Exhaust System are listed in Table 3.4-14.

The following is a list of the flow diagrams that have been marked to indicate the license renewal evaluation boundary for the McGuire Turbine Exhaust System:

MCFD-1593-01.02	MCFD-1612-04.00	MCFD-2593-02.00
MCFD-1593-02.00	MCFD-2593-01.02	MCFD-2612-04.00

These flow diagrams are contained in Reference YY.

Catawba Nuclear Station – The corresponding Catawba system is the Feedwater Pump Turbine Exhaust System which is described in Section 2.3.4.7.

2.4 Scoping and Screening Results: Structures and Structural Components

The methodology to identify structures within the scope of license renewal is described in Section 2.1.1 of this Application. Section 2.1.2.2 contains a description of the methodology to identify the structural components that are subject to aging management review. The following structures and structural components are described in Section 2.4, Structures and Structural Components in the section as indicated:

- Auxiliary Building (Section 2.4.2.1)
- Component Supports (Section 2.4.3)
- Containment Recirculation Sump Screen Assembly (Section 2.4.2.2)
- Control Building (Section 2.4.2.1)
- Control Complex (Section 2.4.2.1)
- Diesel Generator Building (Section 2.4.2.1)
- Doghouse (Section 2.4.2.1)
- Fuel Building (Section 2.4.2.1)
- Groundwater Drainage System (Section 2.4.2.3)
- Main Steam Doghouse (Section 2.4.2.1)
- New Fuel Storage Building (Section 2.4.2.1)
- New Fuel Storage Vault (Section 2.4.2.1)
- Nuclear Service Water and Standby Nuclear Service Water Pump Structure (Section 2.4.2.4)
- Nuclear Service Water Conduit Manholes (Section 2.4.2.4)
- Nuclear Service Water Intake Structure (Section 2.4.2.4)
- Pipe Trenches (Section 2.4.2.5)
- Reactor Building (Section 2.4.1)
- Reactor Makeup Water Storage Tank Foundation (Section 2.4.2.6)
- Refueling Water Storage Tank Foundation (Section 2.4.2.7)
- Refueling Water Storage Tank Missile Wall (Section 2.4.2.7)
- Refueling Water Storage Tank Pipe Trench (Section 2.4.2.5)
- Service Building / South Personnel Access Portal (Section 2.4.2.8)
- Spent Fuel Building (Section 2.4.2.1)
- Standby Nuclear Service Water Pond Dam (Section 2.4.2.9)
- Standby Nuclear Service Water Pond Discharge Structure (Section 2.4.2.9)
- Standby Nuclear Service Water Pond Intake Structure (Section 2.4.2.9)
- Standby Nuclear Service Water Pond Outlet (Section 2.4.2.9)
- Standby Shutdown Facility (Section 2.4.2.10)
- Station Vent (Section 2.4.2.11)
- Turbine Building (Section 2.4.2.12)
- Upper Head Injection Tank Building (Section2.4.2.13)

2.4.1 Reactor Buildings

2.4.2 Other Structures

2.4.2.1 AUXILIARY BUILDINGS

2.4.2.2 CONTAINMENT INTERNAL STRUCTURES

2.4.2.3 GROUNDWATER DRAINAGE SYSTEM

2.4.2.4 NUCLEAR SERVICE WATER AND STANDBY NUCLEAR SERVICE WATER PUMP STRUCTURE, CONDUIT MANHOLES, INTAKE STRUCTURE

2.4.2.5 PIPE TRENCHES

2.4.2.6 REACTOR MAKEUP WATER STORAGE TANK FOUNDATION

2.4.2.7 REFUELING WATER STORAGE TANK FOUNDATION, MISSILE WALL

2.4.2.8 SERVICE BUILDING / SOUTH PERSONNEL ACCESS PORTAL

2.4.2.9 STANDBY NUCLEAR SERVICE WATER POND DAM, DISCHARGE STRUCTURE, INTAKE STRUCTURE

2.4.2.10 STANDBY SHUTDOWN FACILITY

2.4.2.11 STATION VENT

2.4.2.12 TURBINE BUILDINGS

2.4.2.13 UPPER HEAD INJECTION TANKS BUILDING

Structures Prototype Ch 2-4 Draft B.doc

2.4.3 Component Supports

3. AGING MANAGEMENT REVIEW RESULTS 3.1-1
3.1 REACTOR COOLANT SYSTEM 3.1-1
3.2 ENGINEERED SAFETY FEATURES 3.2-1
3.3 AUXILIARY SYSTEMS 3.3-1
3.4 STEAM AND POWER CONVERSION SYSTEMS 3.4-1
3.5 STRUCTURES AND STRUCTURAL COMPONENTS 3.5-1
3.6 ELECTRICAL AND INSTRUMENTATION AND CONTROLS 3.6-1

3.4 AGING MANAGEMENT REVIEW RESULTS: STEAM AND POWER CONVERSION SYSTEMS

Note: The aging management reviews for all steam and power conversion systems are considered to be generically applicable to both McGuire Nuclear Station and Catawba Nuclear Station unless otherwise stated.

The following mechanical systems are evaluated in the indicated tables in Section 3.4, Steam and Power Conversion Systems:

- Auxiliary Feedwater System (Table 3.4-1)
- Auxiliary Steam System (Table 3.4-2)
- Condensate System (Table 3.4-3)
- Condensate Storage System (Table 3.4-4)
- Condenser Circulating Water System (Table 3.4-5)
- Feedwater System (Table 3.4-6)
- Feedwater Pump Turbine Exhaust System (Table 3.4-7)
- Feedwater Pump Turbine Hydraulic Oil System (Table 3.4-8)
- Main Steam System (Table 3.4-9)
- Main Steam Supply to Auxiliary Equipment (Table 3.4-10)
- Main Steam Vent to Atmosphere System (Table 3.4-11)
- Main Turbine Hydraulic Oil System (Table 3.4-12)
- Nitrogen Supply to Feedwater Isolation Valves (Table 3.4-13)
- Turbine Exhaust System (Table 3.4-14)

3.4.1 Aging Management Review Results Tables

The results of the aging management review for each system of this section is provided a table, as indicated above. Information contained in each table was obtained in the following manner:

Column 1 – The components listed in Column 1 were identified through the screening methodology described in Section 2.1.2 of this application and are on the marked plant drawings identified in Section 2.3.4 of this application.

Column 2 – The component functions listed in Column 2 were obtained from plant specific engineering documents using the screening methodology described in Section 2.1.2.

Column 3 – The materials listed in Column 3 were obtained from the drawings identified in Section 2.3.4 of this application and other plant specific engineering documents.

Column 4 – The internal and external environments listed in Column 4 were obtained from plant specific engineering documents. External environments are also noted on the drawings identified in Section 2.3.4 of this application. These environments are as follows:

- **Treated water** – Treated water is demineralized water that may be deareated, treated with a biocide or corrosion inhibitors, or a combination of these treatments. Treated water does not include borated water, which is separately evaluated.

- **Sheltered environment** – The ambient conditions within the sheltered environment may or may not be controlled. The sheltered environment atmosphere is a moist air environment. Components in systems with external surface temperatures the same or higher than ambient conditions due to normal system operation are expected to be dry.

- **Reactor Building** – The Reactor Building environment atmosphere is a moist air environment. Components in systems with external surface temperatures the same or higher than ambient conditions due to normal system operation are expected to be dry.

- **Lubricating oil** – Lubricating oil is an organic fluid used to reduce friction between moving parts.

Column 5 – The aging effects listed in Column 5 were obtained using the following aging effects identification process. The aging effects that require management during the period of extended operation have been determined by reviewing the plant-specific materials of construction (Column 3) and operating environments (Column 4) for each structure and component (Column 1) that is subject to an aging management review.

To provide reasonable assurance that the aging effects that require management for a specific material-environment combination are the only aging effects of concern for McGuire and Catawba, Duke also has performed a review of industry experience and NRC generic communications relative to these structures and components. Finally, relevant McGuire and Catawba operating experience have been reviewed to provide further confidence that the set of aging effects for the specific material-environment combinations have been identified. Taken together, the steps of this methodology provide reasonable assurance that the aging effects that require management during the period of extended operation for McGuire and Catawba structures and components have been identified.

This aging effects identification process is consistent with that process that had been used in Section 3.5 of the Oconee Nuclear Station license renewal application. Furthermore, in NUREG-1723, the staff concluded that based on its review of the information provided in Sections 3.5.1 and 3.5.2 of the Oconee application, "the applicant has identified the aging effects that are associated with mechanical systems components reviewed in [Section 3.5]." This aging effects identification process provides reasonable assurance that the aging effects that require management during the period of extended operation have been identified.

Column 6 – The aging management programs and activities listed in Column 6 are credited to manage the effects of aging for the period of extended operation.

3.4.2 Aging Management Programs

The following aging management programs and activities are credited to manage the effects of aging for the steam and power conversion systems listed in Section 3.5:

List Plant Specific Programs (Examples from ONS review)(Link to Appendix B)

- *Cast Iron Selective Leaching Inspection (New)*
- *Chemistry Program*
- *Flow Accelerated Corrosion Program*
- *Fluid Leak Management Program*
- *Galvanic Susceptibility Inspection (New)*
- *Inspection Program for Civil Engineering Structures and Components*
- *Preventive Maintenance Activities*
- *Service Water Piping Corrosion Program*

Based on the evaluations provided in Appendix B for the aging management programs and activities listed above, the aging effects will be adequately managed such that the intended functions of the components listed in Tables 3.5-1 through 3.5-14 will be maintained consistent with the current licensing basis for the period of extended operation.

Table 3.4-1 Aging Management Review Results – Auxiliary Feedwater System

(Notes are located at the end of this Table)

1	2	3	4	5	6
Component Type	Component Function (Note 1)	Material (Note 2)	Environment Internal (External)	Aging Effects	Aging Management Programs or Activities
Eductors (CNS Only)	PB	SS	Treated Water	Loss of Material	Chemistry Program
				Cracking	Chemistry Program
			(Sheltered)	None Identified	None Required
Motor-Driven CA Pump Casings	PB	CS	Treated Water	Loss of Material	Chemistry Program
			(Sheltered)	Loss of Material	Fluid Leak Management Program Inspection Program for Civil Engineering Structures and Components
Orifices	PB, TH	SS	Treated Water	Loss of Material	Chemistry Program
				Cracking	Chemistry Program
			(Sheltered)	None Identified	None Required
Orifices	PB	SS	Treated Water	Loss of Material	Chemistry Program
				Cracking	Chemistry Program
			(Sheltered)	None Identified	None Required
Pipe	PB	CS	Treated Water	Loss of Material	Chemistry Program
			(Reactor Building)	Loss of Material	Fluid Leak Management Program Inspection Program for Civil Engineering Structures and Components
Pipe	PB	CS	Treated Water	Loss of Material	Chemistry Program
			(Sheltered)	Loss of Material	Fluid Leak Management Program Inspection Program for Civil Engineering Structures and Components
Pipe	PB	SS	Treated Water	Loss of Material	Chemistry Program
				Cracking	Chemistry Program
			(Sheltered)	None Identified	None Required

Table 3.4-1 Aging Management Review Results – Auxiliary Feedwater System

(continued)

1	2	3	4	5	6
Component Type	Component Function (Note 1)	Material (Note 2)	Environment Internal (External)	Aging Effects	Aging Management Programs and Activities
Tubing	PB	SS	Treated Water	Loss of Material	Chemistry Program
				Cracking	Chemistry Program
			(Sheltered)	None Identified	None Required
Tubing	PB	SS	Lubricating Oil	None Identified	None Required
			(Sheltered)	None Identified	None Required
Turbine-Driven CA Pump Casings	PB	CS	Treated Water	Loss of Material	Chemistry Program
			(Sheltered)	Loss of Material	Fluid Leak Management Program Inspection Program for Civil Engineering Structures and Components
TDCAP Bearing Oil Cooler (Tubes)	PB, HT	SS	Treated Water	Loss of Material	Chemistry Program
				Cracking	Chemistry Program
				Fouling	Chemistry Program
			(Lubricating Oil)	Non Identified	None Required
TDCAP Bearing Oil Cooler (Tube Sheet)	PB	SS	Treated Water	Loss of Material	Chemistry Program
				Cracking	Chemistry Program
				Fouling	Chemistry Program
			(Lubricating Oil)	Non Identified	None Required
TDCAP Bearing Oil Cooler (End Caps)	PB	SS	Treated Water	Loss of Material	Chemistry Program
				Cracking	Chemistry Program
				Fouling	Chemistry Program
			(Sheltered)	Non Identified	None Required
TDCAP Bearing Oil Cooler (Shell-Side)	PB	SS	Lubricating Oil	Non Identified	None Required
			(Sheltered)	Non Identified	None Required

Table 3.4-1 Aging Management Review Results – Auxiliary Feedwater System (continued)

1	2	3	4	5	6
Component Type	Component Function (Note 1)	Material (Note 2)	Environment Internal (External)	Aging Effects	Aging Management Programs and Activities
Valve Bodies	PB	CS	Treated Water	Loss of Material	Chemistry Program
			(Sheltered)	Loss of Material	Fluid Leak Management Program Inspection Program for Civil Engineering Structures and Components
Valve Bodies	PB	SS	Treated Water	Loss of Material	Chemistry Program
				Cracking	Chemistry Program
			(Sheltered)	Non Identified	None Required

Notes:

(1) Component Function

HT Provide heat transfer so that system and/or component operating temperatures are maintained.

PB Maintain mechanical pressure boundary integrity so that sufficient flow and/or sufficient pressure are delivered.

TH Provide throttling so that sufficient flow and/or sufficient pressure is delivered, to provide backpressure, to provide pressure reduction, or to provide differential pressure.

(2) Material

CS Carbon Steel

SS Stainless Steel

4. TIME-LIMITED AGING ANALYSES 4-1
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4.1.1 Background *4-1*
4.1.2 Process to Identify Potential McGuire Time-Limited Aging Analyses *4-2*
4.1.3 Identification of Exemptions *4-3*
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4.8 REFERENCES 4-11

Appendix A: UFSAR Supplements

Duke is reviewing several examples of UFSAR Supplements from other applications as well as the SRP (August 2000) and will decide on the preferred format and content after the first of the year.

Two UFSAR Supplements will be provided in the application, one for each plant – McGuire and Catawba.

Appendix B: Aging Management Programs and Activities

One set of aging management program and activity descriptions that cover both McGuire and Catawba will be provided. Programs and activities will be described using the ten attributes. Attribute descriptions contained in SRP Appendix A.1, as revised by NEI comments are being used.

Appendix C: Commodity Groups (Optional)

This Appendix will not be used.

Appendix D: Technical Specification changes

No changes to ITS are expected to be required for either McGuire or Catawba.

Appendix E: Environmental Information

The required environmental information will be contained in this appendix consistent with that provided with the Oconee Application, modified as necessary by current regulatory guidance.

Two Environmental Reports will be provided in the application, one for each plant – McGuire and Catawba.

B.2 Program and Activity Attributes

(descriptions of attributes from Appendix C of DPS-1274.00-00-0001 or simply refer to NEI 95-10 and/or the SRP)

Insert discussion of the governing documents from which these attribute descriptions have been derived. Consider adding a statement comparing these attributes to those described in SRP-LR Appendix A-1.

B.2.1.1 Program Orientation (Duke specific)

B.2.1.2 Scope

B.2.1.3 Preventive Actions

B.2.1.4 Parameters Monitored or Inspected

B.2.1.5 Detection of Aging Effects

B.2.1.6 Monitoring & Trending

B.2.1.7 Acceptance Criteria

B.2.1.8 Corrective Action & Confirmation Process

B.2.1.9 Administrative Controls

B.2.1.10 Operating Experience and Demonstration

B.3 Aging Management Programs

B.3.1 Program A

(Duke Specific Demonstration)

Program Orientation (Duke specific)

Scope

Preventive Actions

Parameters Monitored or Inspected

Detection of Aging Effects

Monitoring & Trending

Acceptance Criteria

Corrective Action & Confirmation Process

Administrative Controls

Operating Experience and Demonstration

Preliminary List of Aging Management Programs that will be credited for McGuire and Catawba

1. Chemistry Control Program
2. Crane Inspection Program
3. Fire Protection Program
4. Flow Accelerated Corrosion Program
5. Fluid Leak Management Program
6. Heat Exchanger Performance Testing Activities
7. Inservice Inspection Plan
8. Inspection Program for Civil Engineering Structures and Components
9. Insulated Cables and Connections Aging Management Program
10. Preventive Maintenance Activities
11. Reactor Building Divider Barrier Seal Inspection
12. Reactor Coolant System Operational Leakage Monitoring
13. Reactor Vessel Integrity
14. Reactor Vessel Internals Inspection
15. Service Water Piping Corrosion Program
16. Standby Nuclear Service Water Pond Dam Inspection
17. Steam Generator Tube Surveillance Program
18. System Performance Activities