



## **Duke License Renewal Project**

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### **McGuire - Catawba License Renewal Application Overview**

**Bob Gill  
Mary Hazeltine  
Rounette Nader  
Greg Robison**

**July 12, 2001**



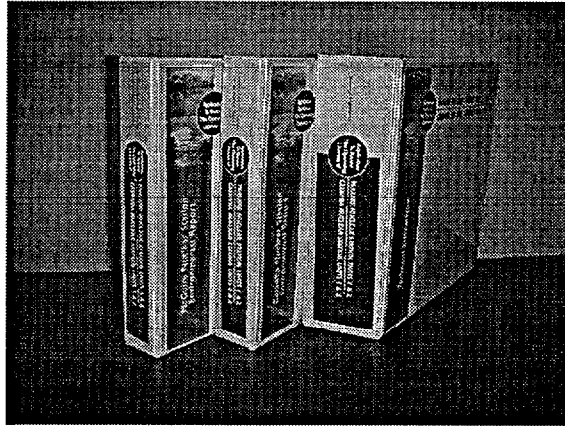
## **Agenda**

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Opening Remarks .....	Chris Grimes Greg Robison
Overview of the Application .....	Duke Energy
Demonstration of the CD-ROM ...	Duke Energy
Discussion.....	NRC and Duke
Closing Remarks .....	Chris Grimes Greg Robison



## McGuire - Catawba License Renewal Application



Submitted June 13, 2001

July 12, 2001

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## Today's Objective

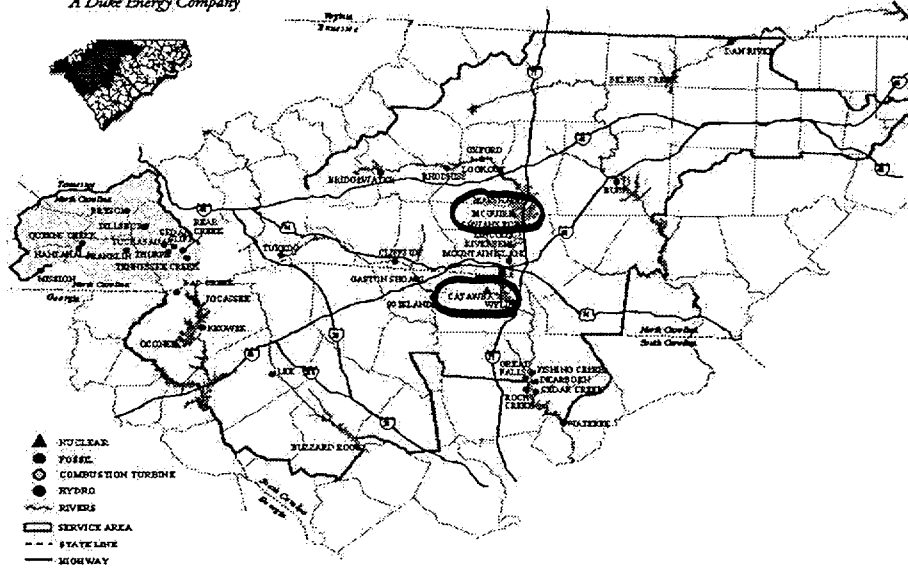
- Better prepare us for processing the application by reviewing key aspects of the application
  - ◆ Orientation to McGuire and Catawba, Duke Team
  - ◆ Cover letter key topics
  - ◆ Integrated Plant Assessment
    - » Scoping / Screening
    - » Aging Management Review
  - ◆ Programs
  - ◆ Time-limited Aging Analyses
  - ◆ UFSAR Supplement

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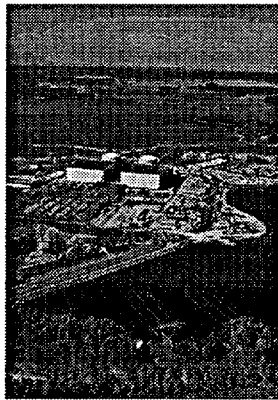
**DUKE POWER GENERATING SYSTEM**



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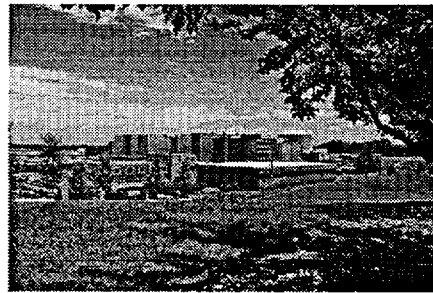
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**McGuire Nuclear Station**  
Huntersville, North Carolina

July 12, 2001



**Catawba Nuclear Station**  
York, South Carolina

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## ***Other Interesting Points***

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- McGuire and Catawba application involves the first SRP (NUREG-0800) plants to pursue renewal
- McGuire and Catawba are the first ice condenser containment plants to pursue renewal
- Steam generators have been replaced on McGuire 1 & 2 and Catawba 1
- Duke is first second renewal applicant

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## ***Duke Team***

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- Greg Robison, Project Manager
- Bob Gill, Licensing
- Bill Miller & Chris Hallman, Environmental
- Debbie Keiser, Civil/Structural
- Paul Colaianni, Electrical
- Mary Hazeltine, RCS
- Terry Cox, Rounette Nader & Mike Semmler, Mechanical

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## Cover Letter Key Topics

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- Expiration dates of each renewed license are unit specific
  - ◆ 20 years from expiration of current license or 40 years from date of issuance of the renewed operating license, whichever is earlier
- Safety and environmental reviews cover 60-years

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## Cover Letter Key Topics

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- August 2000 versions of the guidance documents were used
  - ◆ Duke provided comments on draft documents
  - ◆ Duke was involved in industry/NRC meetings
  - ◆ Format of application follows the format presented in the SRP-LR
  - ◆ April 2001 versions of guidance documents were received after the license renewal reviews were complete

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## Cover Letter Key Topics

- Any changes to the CLB during the review of this application will be made in accordance with the AEA and Commission regulations
- One potential change involves the use of MOX fuel at McGuire and Catawba
  - ◆ Regulatory review of license renewal is independent of the regulatory review of any future amendment requests concerning the use of MOX fuel at either McGuire or Catawba
  - ◆ Any potential impacts on the plant from the use of MOX fuel will be addressed in the MOX-related submittals

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## Integrated Plant Assessment Topics

- Integrated Plant Assessment steps
  - ◆ Scoping/Screening methodology and results format
  - ◆ Aging Management Review methodology and results format
- IPA performed along discipline lines
  - ◆ Mechanical
  - ◆ Reactor Coolant (Class 1)
  - ◆ Structural
  - ◆ Electrical

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## 10 CFR 54.4 Scoping

- Scoping and Screening methodology for all disciplines given in Section 2.1 of the Application
- Plant-level scoping results for all disciplines given in Section 2.2 of the Application
- Scoping and screening results descriptions:
  - ◆ Mechanical and Reactor Coolant (including links to drawings and UFSAR) in Section 2.3
  - ◆ Structural in Section 2.4
  - ◆ Electrical in Section 2.5- the bounding approach used for electrical results in the scoping criteria only being applied when beneficial to eliminate scope

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## Application Keys

- System names were obtained from engineering drawings
- These names are sometimes different than UFSAR names
- The system drawings submitted as a complement to the application are highlighted
- Most highlighting is blue with Reactor Coolant System Class 1 highlighted in yellow

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## **10 CFR 54.4(a)(1) Safety Related**

- 10 CFR 54.4(a)(1) scoping was performed using piping and structural safety classifications
- These safety classifications are based on Regulatory Guides and Standard Review Plan (NUREG-0800) safety classifications
- A review of these classifications on flow diagrams and in the UFSAR resulted in systems and structures being included in scope and the mechanical evaluation boundaries used for screening

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## **10 CFR 54.4(a)(2) Non-safety Related**

- 10 CFR 54.4(a)(2) scoping was performed using Duke Safety Classification assigned to those SSCs whose failure may adversely affect essential systems or components
- A review of these classifications on flow diagrams and in the UFSAR resulted in systems and structures being included in scope and the mechanical evaluation boundaries used for screening

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## **10 CFR 54.4(a)(3) Regulated Events**

- Design and licensing documents were reviewed to determine those SSCs required to demonstrate compliance with the regulated events
  - ◆ FP
  - ◆ EQ
  - ◆ PTS
  - ◆ ATWS
  - ◆ SBO

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## **Application Keys**

- System and structure descriptions are generically applicable to both McGuire and Catawba unless otherwise stated
  
- Electrical and Instrumentation and Control descriptions are done on a component basis and are generically applicable to both McGuire and Catawba unless otherwise stated

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## 10 CFR 54.21(a) Screening

- All disciplines consistent with NEI 95-10 Appendix B
  - ◆ Mechanical
  - ◆ Reactor Coolant (Class 1)
  - ◆ Structural
  - ◆ Electrical
- All disciplines' screening results are included with AMR results in Chapter 3 tables of the Application

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## Aging Management Review Methodology

- The AMR process is the same as was used for Oconee:
  - Component
  - +Aging Effect
  - +Program
  - +Demonstration
  - Reasonable Assurance

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## Aging Management Review Results

- Chapter 3 of the Application presents AMR results for all disciplines in the 6-column table format (industry standard)

1	2	3	4	5	6
Component Type	Component Function	Material	Environment	Aging Effect	Aging Management Programs and Activities

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## AMR Results Structural

- Structural AMR results are presented in three tables
  - ◆ Reactor Buildings
  - ◆ Other structures
  - ◆ Component supports
- Component type within a table is presented in alphabetical order
- Tables are combined for McGuire and Catawba

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## ***AMR Results Electrical***

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- Electrical AMR results are presented alphabetically by component
- Table is combined for McGuire and Catawba
- Application Key: Results are presented in a one-page table

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## ***AMR Results Mechanical***

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- Mechanical AMR results tables are presented by system
- Component type within a system is presented in alphabetical order
- McGuire and Catawba system tables are combined unless entries vary significantly

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## *Application Keys*

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Division of mechanical system results:

- Engineered Safety Features
  - ◆ 8 Common Systems
- Auxiliary Systems
  - ◆ 41 Total Systems- Many common, some plant specific systems
- Steam and Power Conversion Systems
  - ◆ 10 Common Systems

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## *AMR Results Reactor Coolant*

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- Reactor Coolant System AMR results tables are presented by component
  
- Compared with other mechanical system results and similar to previous Applications, Reactor Coolant System component evaluations are presented at a greater level of detail

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## ***AMR Results Reactor Coolant***

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- Identified specific components and their material - environment combinations using engineering records
- Determined applicable aging effects using a Duke engineering specification
- Identified programs to manage aging using Oconee or common department program descriptions as applicable

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## ***Application Keys***

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- Many Reactor Coolant System programs are equivalent to Oconee programs previously reviewed in NUREG-1723
- Examples
  - ◆ Chemistry Control Program
  - ◆ Reactor Vessel Internals Inspection
  - ◆ CRDM and Other Vessel Closure Penetration Inspection Program
  - ◆ Alloy 600 Aging Management Review

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## *Application Keys*

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- In contrast with some previous Applications, the McGuire and Catawba Application does not reference Owner's Group topical reports
- Generic Topical Reports are high level rather than specific
- Use of existing Duke information precluded need for referencing these reports

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## *Programs / Activities*

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- Appendix B of the application includes
  - ◆ Identification of Program Types,
  - ◆ Definitions of Program Attributes, and
  - ◆ Descriptions of each Aging Management Program and Activity
- Level of detail in each program / activity description is consistent with the level of detail provided during the Oconee review

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## Programs / Activities

- 54 total programs credited in safety work
  - ◆ 51 aging management programs
    - » 34 are existing programs
    - » 9 are new programs for renewal
    - » 8 are one-time inspections
  - ◆ 3 time-limited aging analysis programs
- 48 of these are common to both sites (91%)
- 31 are equivalent to Oconee renewal programs accepted by NRC (60%)

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## Unique McGuire Programs

- 6 are unique to McGuire
  - ◆ Boraflex Monitoring Program
    - » due to high density spent fuel racks
  - ◆ Augmented ISI - Reactor Coolant CASS cold leg elbow
    - » due to material characteristics
  - ◆ Flood Barrier Inspection
    - » Catawba equivalent covered by another program also credited for renewal

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## Unique McGuire Programs

- 6 are unique to McGuire (continued)
  - ◆ Refueling Water Storage Tank Coating Inspection
    - » Catawba equivalent is made of stainless steel and does not require coating
  - ◆ Pump Motor Air Handling Units Preventive Maintenance Activity
    - » Raw water cooling at McGuire vs. Component cooling at Catawba
  - ◆ Pump Oil Coolers Preventive Maintenance Activity
    - » Raw water cooling at McGuire vs. Component cooling at Catawba

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## Unique Catawba Programs

- 2 are unique to Catawba
  - ◆ Standby Nuclear Service Water Pond Monitoring Program
    - » Pond settlement does have a time-limited calculational limit at Catawba, but not at McGuire
  - ◆ Diesel Generator Engine Starting Air Heat Exchanger Preventive Maintenance Activity
    - » Diesel design differences exist between the plants

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## Time-limited Aging Analyses

The TLAA chapter of the application follows format of Chapter 4 of the SRP-LR:

- Reactor Vessel Embrittlement
  - ◆ PTS, USE and P-T limits are analyzed for 60-years
- Metal Fatigue
  - ◆ *Thermal Fatigue Management Program* is credited
  - ◆ Fatigue Environmental Effects addressed consistent with EPRI guidance submitted by NEI 12/13/2000
- EQ of Electric Equipment
  - ◆ *Environmental Qualification Program* is credited

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## Time-limited Aging Analyses

- Containment Related Topics
  - ◆ Concrete Containment Prestressed Tendons are not installed at McGuire or Catawba
  - ◆ Containment liner plate, metal containment and penetration fatigue analyses are not TLAA (local leak testing is credited for cracking of bellows)
- Plant Specific TLAA
  - ◆ RCP Flywheel fatigue for 60-years
  - ◆ Leak-before-break analyzed for 60-years
  - ◆ Catawba specific TLAA - SNSW pond volume monitoring credits *SNSW Pond Volume Program*

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## Updated Final Safety Analysis Report Supplement

- Contents of the plant specific UFSAR Supplements are based on the contents of Appendix B (program descriptions) and Chapter 4 (TLAA)
- Format and level of detail are consistent with that previously deployed during the Oconee license renewal review
- Level of detail in the plant specific UFSAR Supplements are similar to or greater than that provided in the examples contained in the SRP-LR

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## Demonstration of the CD-ROM

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*Discussion*



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