February 4, 1999

LICENSEE: Duke Energy Corporation

FACILITIES: McGuire Nuclear Station, Units 1 and 2

SUBJECT: MEETING SUMMARY - MEETING OF JANUARY 27, 1999, REGARDING SOLUBLE BORON AND BORAFLEX

On January 27, 1999, the staff met with Duke Energy Corporation (DEC) personnel to discuss information related to a proposed license amendment to take credit for soluble boron and partial credit for boraflex in the spent fuel pools at the McGuire Nuclear Station. The meeting was scheduled at the request of DEC to present its general analytical approach and provide an opportunity for staff's questions.

DEC plans to use two computer codes in its assessments. The BADGER Code would be used to measure boron and the RACKLIFE Code to predict boraflex degradation. Also, DEC plans to test for available boraflex using neutron blackness testing every 3 years. The staff indicated that the review and approval of credit for boraflex is a first-of-a-kind that will require additional time than just the approval for soluble boron.

Enclosure 1 lists the meeting participants. Enclosure 2 is the handout provided by DEC.

original signed by:
Frank Rinaldi, Project Manager
Project Directorate II-2
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

Docket Nos. 50-369 and 50-70

Distribution:
See next page

Enclosures:
1. Meeting Attendees
2. DEC Handout

cc w/encls: See next page

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

February 4, 1999

LICENSEE: Duke Energy Corporation

FACILITIES: McGuire Nuclear Station, Units 1 and 2

SUBJECT: MEETING SUMMARY - MEETING OF JANUARY 27, 1999, REGARDING SOLUBLE BORON AND BORAFLEX

REFERENCES: Meeting Notice by F. Rinaldi, dated January 11, 1999

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Frank Rinaldi

Frank Rinaldi, Project Manager
Project Directorate II-2
Division of Reactor Projects - I/II
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cc w/encls: See next page

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LIST OF PARTICIPANTS

MEETING WITH DUKE ENERGY CORPORATION

FEBRUARY 4, 1998

NAME	AFFILIATION
Frank Rinaldi	NRC/NRR/Project Directorate II-2
Mike Cash	Duke Energy Corporation, Regulatory Compliance
Julius Bryant	Duke Energy Corporation, Regulatory Compliance
Keith Waldrop	Duke Energy Corporation, Fuel Management/Criticality
Paul Guill	Duke Energy Corporation, Nuclear Engineering
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Carolyn Lauron	NRC/NRR/Materials and Chemical Engineering Branch
Larry Kopp	NRC/NRR/Reactor Systems Branch

Enclosure 1

Duke Power.
A Duke Energy Company

Management of Boraflex Issues at McGuire Nuclear Station

NRC Meeting

January 27, 1999

Enclosure 2

Duke Power
A Duke Energy Company

Meeting Purpose

- Review status of Boraflex degradation and subsequent corrective actions;
- Review and discuss proposed Technical Specification and regulatory commitments.

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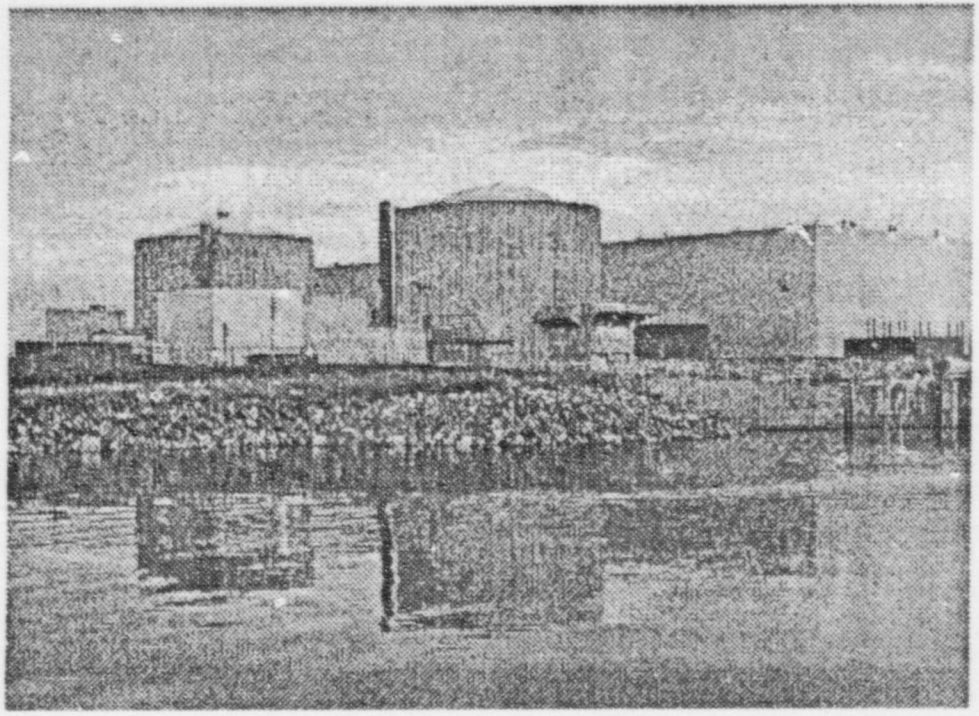
McGuire Nuclear Station (MNS)



- Westinghouse Two Unit PWR
- Dedicated Spent Fuel Pool for each unit.
- Each Spent Fuel Pool is a two region pool.

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MNS Spent Fuel Pool Overview

- High density re-rack with Boraflex design in both McGuire units;
- Duke has monitored pools and racks to detect degradation of Boraflex;
- There are indications of Boraflex degradation in both units' racks.

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Industry Experience

- Research started in 1987;
- Industry User's Group formed;
- Enhanced measurement and computer model for monitoring Boraflex health developed in 1996;

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McGuire Efforts

- Neutron "blackness" testing in 1991;
- Duke Power Company has provided responses to NRC Generic Letter 96-04;
- BADGER demonstration in January 1997;
- Criticality analysis revised;
- A MNS-specific RACKLIFE model was developed to assist in assessment of pool degradation;
- Monitoring pool chemistry.

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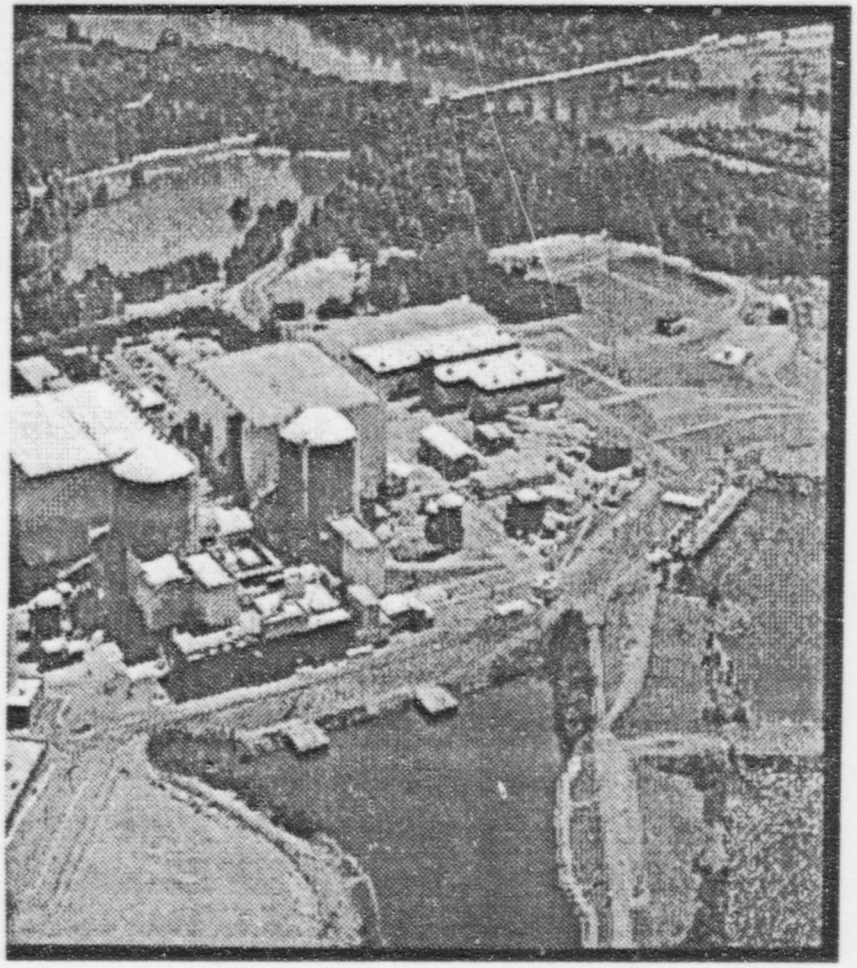
Current Condition at MNS



- Boraflex panels are degraded;
- Implemented admin controls to ensure design bases are maintained;
- Both pools are "Operable" with admin controls.

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MNS Options Considered

- Poison inserts;
- Restrictive storage patterns;
- Re-rack Region One;
- Boraflex degradation chemical inhibitors;
- Implement WCAP-14416 methodology.

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Option Chosen

MNS has chosen to implement WCAP-14416 methodology for taking credit for soluble boron in place of degrading Boraflex.

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Tech Spec Submittal

- Based on WCAP methodology;
- Criticality analysis indicates current fuel inventories cannot be accommodated using WCAP methodology alone;
- WCAP methodology does not consider degrading poison material;
- MNS seeking partial credit for Boraflex.

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Proposed TS Submittal

- Defines two sub-regions in Region 1:
  - Region 1A (partial Boraflex)
  - Region 1B (no Boraflex)
- Defines two sub-regions in Region 2:
  - Region 2A (partial Boraflex)
  - Region 2B (no Boraflex)
- 3 storage patterns in each region:
  - Unrestricted
  - Restricted w/ Filler
  - Checkerboard w/ empty cells
- New SLC for poison material limit;
- Propose defining sub-regions in Bases.

DRAFT SLC

Spent Fuel Pool Storage Rack Poison Material

LCO The storage rack poison material Boron 10 areal density shall be greater than or equal to:

0.005 gm B_{10}/cm^2 for Region 1A
0 gm B_{10}/cm^2 for Region 1B
0.003 gm B_{10}/cm^2 for Region 2A
0 gm B_{10}/cm^2 for Region 2B

APPLICABILITY: When a fuel assembly is stored in a spent fuel rack cell location.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
	----------NOTE---------- LCO 3.0.3 is not applicable. ----------	
A. Spent fuel pool storage rack poison material not within limit.	A.1 Perform SR 3.7.14.1	1 hour AND Once per 24 hours thereafter until affected fuel assembly moved
	AND	
	A.2 Verify fuel assembly in affected location meets 3.7.15(b) for Region 1 or 3.7.15(d) for Region 2	1 hour
B. Required Action and associated Completion Time of Condition A not met.	B.1 Initiate action to move affected fuel assembly to acceptable location	immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR	Verify the spent fuel pool storage rack poison material is within limits.	3 years

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Conclusions

- Tech Spec Submittal by 2/28/1999;
- Current Operability expires 12/31/1999;
- NRC approval needed by 12/31/1999;
- Dry Storage to begin in 2000 to provide additional storage capacity;
- Other options are still under consideration for long term resolution.

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Wrap-up

Questions