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July 14, 2003

U. S. Nuclear Regulatory Commission  
Washington, DC 20555-0001

ATTENTION: Document Control Desk

SUBJECT: Duke Energy Corporation

McGuire Nuclear Station Units 1 and 2  
Docket Nos. 50-369, 50-370  
Catawba Nuclear Station Units 1 and 2  
Docket Nos. 50-413, 50-414

Application for Technical Specification  
Improvement to Extend the Completion Time  
for Condition B of Technical Specification  
3.5.1, "Accumulators," Using the  
Consolidated Line Item Improvement Process

In accordance with the provisions of 10CFR50.90, Duke Energy Corporation (Duke) proposes a revision to the McGuire and Catawba Nuclear Station Facility Operating Licenses and Technical Specifications (TS) and Bases. The proposed amendment would extend the completion time from 1 hour to 24 hours for Condition B of Technical Specification (TS) 3.5.1, "Accumulators." The change is consistent with NRC approved Industry/Technical Specification Task Force (TSTF) Standard Technical Specification Change Traveler, TSTF-370, "Risk Informed Evaluation of an Extension to Accumulator Completion Times for Westinghouse Plants." The availability of this technical specification improvement was announced in the *Federal Register* on March 12, 2003 as part of the consolidated line item improvement process (CLIIP).

The contents of this amendment package are as follows:

Attachment 1 provides a description of the proposed change and confirmation of applicability. Attachment 2A provides

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U.S. Nuclear Regulatory Commission  
Page 2  
July 14, 2003

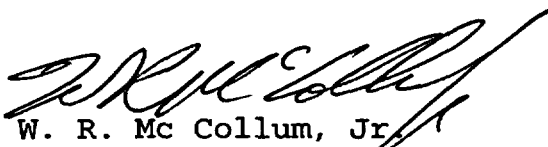
marked copies of the affected TS and Bases pages for McGuire showing the proposed changes. Attachment 2B provides marked copies of the affected TS and Bases pages for Catawba showing the proposed changes. Attachment 3A, containing reprinted pages of the affected TS and Bases pages for McGuire, will be provided to the NRC upon issuance of the approved amendment. Attachment 3B, containing reprinted pages of the affected TS and Bases pages for Catawba, will be provided to the NRC upon issuance of the approved amendment. There are no new regulatory commitments associated with this proposed change.

Since the proposed license amendment is a CLIIP item, Duke requests approval by October 17, 2003, with the amendment being implemented within 30 days of the receipt of NRC approval.

In accordance with Duke administrative procedures and the Quality Assurance Program Topical Report, the site-specific changes contained in this LAR have been reviewed and approved by the respective McGuire and Catawba Plant Operations Review Committee. This LAR has also been reviewed and approved on an overall basis by the Duke Corporate Nuclear Safety Review Board. Pursuant to 10CFR50.91, a copy of this LAR is being sent to the State of North Carolina and the State of South Carolina.

Inquiries on this matter should be directed to J. A. Effinger at (704) 382-8688.

Very truly yours,



W. R. Mc Collum, Jr.  
Senior Vice President  
Nuclear Support

U.S. Nuclear Regulatory Commission  
Page 3  
July 14, 2003

W. R. Mc Collum, Jr., being duly sworn, affirms that he is the person who subscribed his name to the foregoing statement, and that all matters and facts set forth herein are true and correct to the best of his knowledge.



W. R. Mc Collum, Jr., Senior Vice President, Nuclear Support

Subscribed and sworn to me: July 14, 2003  
Date

Mary P. Nehus, Notary Public

My commission expires: JAN 22, 2006

SEAL

U.S. Nuclear Regulatory Commission  
Page 4  
July 14, 2003

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U.S. Nuclear Regulatory Commission  
Page 5  
July 14, 2003

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Catawba Owners: NCMPPA-1, SREC, PMPA, NCEMC  
McGuire Master File (MG01DM)  
Catawba Document Control File 801.01 (CN04DM)  
ELL

**ATTACHMENT 1**

**DESCRIPTION OF THE PROPOSED CHANGE AND CONFIRMATION OF  
APPLICABILITY**

## DESCRIPTION AND ASSESSMENT

### 1.0 DESCRIPTION

The proposed License amendment extends the completion time from 1 hour to 24 hours for Condition B of Technical Specification (TS) 3.5.1, "Accumulators."

The changes are consistent with NRC approved Industry/Technical Specification Task Force (TSTF) Standard Technical Specification Change Traveler, TSTF-370, "Risk Informed Evaluation of an Extension to Accumulator Completion Times for Westinghouse Plants." The availability of this technical specification improvement was announced in the *Federal Register* on March 12, 2003 as part of the consolidated line item improvement process (CLIIP).

### 2.0 ASSESSMENT

#### 2.1 Applicability of Published Safety Evaluation

Duke has reviewed the safety evaluation published on July 15, 2002 (67 FR 46542) as part of the CLIIP. This verification included a review of the NRC staff's evaluation as well as the supporting information provided to support TSTF-370 (i.e., WCAP-15049-A, "Risk-Informed Evaluation of an Extension to Accumulator Completion Times") dated May 18, 1999. Duke has concluded that the justifications presented in the TSTF proposal and the safety evaluation prepared by the NRC staff are applicable to the McGuire and Catawba Nuclear Stations, Units 1 and 2, and justify this amendment for the incorporation of the changes to the McGuire and Catawba Nuclear Station Technical Specifications.

#### 2.2 Optional Changes and Variations

Duke is not proposing any variations or deviations from the technical specification changes described in TSTF-370 or the NRC staff's model safety evaluation published on July 15, 2002.

### 3.0 REGULATORY ANALYSIS

#### 3.1 No Significant Hazards Determination

Duke has reviewed the proposed no significant hazards consideration determination published on July 15, 2002 (67 FR 46542) as part of the CLIIP. Duke has concluded that the proposed determination presented in the notice is applicable to the McGuire and Catawba Nuclear Stations and the determination is hereby incorporated by reference to satisfy the requirements of 10 CFR 50.91(a).

#### 3.2 Verification and Commitments

There are no new regulatory commitments associated with this proposed change.

### 4.0 ENVIRONMENTAL EVALUATION

Duke has reviewed the environmental evaluation included in the model safety evaluation published on July 15, 2002 (67 FR 46542) as part of the CLIIP. Duke has concluded that the NRC staff's findings presented in that evaluation are applicable to the McGuire and Catawba Nuclear Stations and the evaluation is hereby incorporated by reference for this application.



ATTACHMENT 2A

McGUIRE UNITS 1 AND 2 TECHNICAL SPECIFICATIONS  
AND  
TECHNICAL SPECIFICATION BASES

MARKED COPY

### 3.5 EMERGENCY CORE COOLING SYSTEMS (ECCS)

#### 3.5.1 Accumulators

LCO 3.5.1 Four ECCS accumulators shall be OPERABLE.

APPLICABILITY: MODES 1 and 2,  
MODE 3 with RCS pressure > 1000 psig.

#### ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One accumulator inoperable due to boron concentration not within limits.	A.1 Restore boron concentration to within limits.	72 hours
B. One accumulator inoperable for reasons other than Condition A.	B.1 Restore accumulator to OPERABLE status.	1 hour 24
C. Required Action and associated Completion Time of Condition A or B not met.	C.1 Be in MODE 3.	6 hours
	<u>AND</u> C.2 Reduce RCS pressure to $\leq 1000$ psig.	12 hours
D. Two or more accumulators inoperable.	D.1 Enter LCO 3.0.3.	Immediately

## BASES

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### APPLICABILITY

In MODES 1 and 2, and in MODE 3 with RCS pressure > 1000 psig, the accumulator OPERABILITY requirements are based on full power operation. Although cooling requirements decrease as power decreases, the accumulators are still required to provide core cooling as long as elevated RCS pressures and temperatures exist.

This LCO is only applicable at pressures > 1000 psig. At pressures  $\leq$  1000 psig, the rate of RCS blowdown is such that the ECCS pumps can provide adequate injection to ensure that peak clad temperature remains below the 10 CFR 50.46 (Ref. 3) limit of 2200°F for small break LOCAs and there is a high level of probability that the peak cladding temperature does not exceed 2200°F for large break LOCAs.

In MODE 3, with RCS pressure  $\leq$  1000 psig, and in MODES 4, 5, and 6, the accumulator motor operated isolation valves are closed to isolate the accumulators from the RCS. This allows RCS cooldown and depressurization without discharging the accumulators into the RCS or requiring depressurization of the accumulators.

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### ACTIONS

#### A.1

If the boron concentration of one accumulator is not within limits, it must be returned to within the limits within 72 hours. In this Condition, ability to maintain subcriticality or minimum boron precipitation time may be reduced. The boron in the accumulators contributes to the assumption that the combined ECCS water in the partially recovered core during the early reflooding phase of a large break LOCA is sufficient to keep that portion of the core subcritical. One accumulator below the minimum boron concentration limit, however, will have no effect on available ECCS water and an insignificant effect on core subcriticality during reflood. Boiling of ECCS water in the core during reflood concentrates boron in the saturated liquid that remains in the core. In addition, current analysis techniques demonstrate that the accumulators do not discharge following a large main steam line break for the plant. Even if they do discharge, their impact is minor and not a design limiting event. Thus, 72 hours is allowed to return the boron concentration to within limits.

#### B.1

If one accumulator is inoperable for a reason other than boron concentration, the accumulator must be returned to OPERABLE status within 24 hours. In this Condition, the required contents of three accumulators cannot be assumed to reach the core during a LOCA. Due to the severity of the consequences should a LOCA occur in these

24

## BASES

### ACTIONS (continued)

conditions, the <sup>(24)</sup>hour Completion Time to open the valve, remove power to the valve, or restore the proper water volume or nitrogen cover pressure ensures that prompt action will be taken to return the inoperable accumulator to OPERABLE status. The Completion Time minimizes the potential for exposure of the plant to a LOCA under these conditions. ↑

#### C.1 and C.2

If the accumulator cannot be returned to OPERABLE status within the associated Completion Time, the plant must be brought to a MODE in which the LCO does not apply. To achieve this status, the plant must be brought to MODE 3 within 6 hours and RCS pressure reduced to  $\leq 1000$  psig within 12 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required plant conditions from full power conditions in an orderly manner and without challenging plant systems.

#### D.1

If more than one accumulator is inoperable, the plant is in a condition outside the accident analyses; therefore, LCO 3.0.3 must be entered immediately.

### SURVEILLANCE REQUIREMENTS

#### SR 3.5.1.1

Each accumulator valve should be verified to be fully open every 12 hours. This verification ensures that the accumulators are available for injection and ensures timely discovery if a valve should be less than fully open. If an isolation valve is not fully open, the rate of injection to the RCS would be reduced. Although a motor operated valve position should not change with power removed, a closed valve could result in not meeting accident analyses assumptions. This Frequency is considered reasonable in view of other administrative controls that ensure a mispositioned isolation valve is unlikely.

#### SR 3.5.1.2 and SR 3.5.1.3

Every 12 hours, borated water volume and nitrogen cover pressure are verified for each accumulator. This is typically performed using the installed control room indication. This Frequency is sufficient to ensure adequate injection during a LOCA. Because of the static design of the accumulator, a 12 hour Frequency usually allows the operator to identify

THE 24 HOURS ALLOWED TO RESTORE AN INOPERABLE ACCUMULATOR TO OPERABLE STATUS IS JUSTIFIED IN WCAP-15049-A, REV 1 (REF 6)

BASES

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SURVEILLANCE REQUIREMENTS (continued)

changes before limits are reached. Operating experience has shown this Frequency to be appropriate for early detection and correction of off normal trends.

SR 3.5.1.4

The boron concentration should be verified to be within required limits for each accumulator every 31 days since the static design of the accumulators limits the ways in which the concentration can be changed. The 31 day Frequency is adequate to identify changes that could occur from mechanisms such as stratification or inleakage. Sampling the affected accumulator within 6 hours after a 1% tank volume increase will identify whether inleakage has caused a reduction in boron concentration to below the required limit. It is not necessary to verify boron concentration if the added water inventory is from the refueling water storage tank (RWST), because the water contained in the RWST is within the accumulator boron concentration requirements. This is consistent with the recommendation of NUREG-1366 (Ref. 6).

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SR 3.5.1.5

⑧

Verification every 31 days that power is removed from each accumulator isolation valve operator (see Ref. 7) when the RCS pressure is > 1000 psig ensures that an active failure could not result in the undetected closure of an accumulator motor operated isolation valve. If this were to occur, only two accumulators would be available for injection given a single failure coincident with a LOCA. Since power is removed under administrative control, the 31 day Frequency will provide adequate assurance that power is removed.

This SR allows power to be supplied to the motor operated isolation valves when RCS pressure is  $\leq 1000$  psig, thus allowing operational flexibility by avoiding unnecessary delays to manipulate the breakers during plant startups or shutdowns. Even with power supplied to the valves, inadvertent closure is prevented by the RCS pressure interlock associated with the valves.

Should closure of a valve occur in spite of the interlock, the SI signal provided to the valves would open a closed valve in the event of a LOCA.

BASES

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REFERENCES

1. IEEE Standard 279-1971.
2. UFSAR, Chapter 6.
3. 10 CFR 50.46.
4. DPC-NE-3004.
5. 10 CFR 50.36, Technical Specification, (c)(2)(ii).
- ⑦ 6. NUREG-1366, February 1990.
- ⑧ 7. Duke letter to NRC, "Cold Leg Accumulator Isolation Valves", dated September 8, 1987

6. WCAP-15049-A, REV 1, APRIL 1999

ATTACHMENT 2B

CATAWBA UNITS 1 AND 2 TECHNICAL SPECIFICATIONS  
AND  
TECHNICAL SPECIFICATION BASES

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### 3.5 EMERGENCY CORE COOLING SYSTEMS (ECCS)

#### 3.5.1 Accumulators

LCO 3.5.1 Four ECCS accumulators shall be OPERABLE.

APPLICABILITY: MODES 1 and 2,  
MODE 3 with RCS pressure > 1000 psig.

#### ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One accumulator inoperable due to boron concentration not within limits.	A.1 Restore boron concentration to within limits.	72 hours
B. One accumulator inoperable for reasons other than Condition A.	B.1 Restore accumulator to OPERABLE status.	<del>72 hours</del> 24
C. Required Action and associated Completion Time of Condition A or B not met.	C.1 Be in MODE 3.	6 hours
	<u>AND</u> C.2 Reduce RCS pressure to $\leq 1000$ psig.	12 hours
D. Two or more accumulators inoperable.	D.1 Enter LCO 3.0.3.	Immediately



BASES

APPLICABILITY (continued)

This LCO is only applicable at pressures > 1000 psig. At pressures ≤ 1000 psig, the rate of RCS blowdown is such that the ECCS pumps can provide adequate injection to ensure that peak clad temperature remains below the 10 CFR 50.46 (Ref. 3) limit of 2200°F for small break LOCAs and there is a high level of probability that the peak cladding temperature does not exceed 2200°F for large break LOCAs.

In MODE 3, with RCS pressure ≤ 1000 psig, and in MODES 4, 5, and 6, the accumulator motor operated isolation valves are closed to isolate the accumulators from the RCS. This allows RCS cooldown and depressurization without discharging the accumulators into the RCS or requiring depressurization of the accumulators.

ACTIONS

A.1

If the boron concentration of one accumulator is not within limits, it must be returned to within the limits within 72 hours. In this Condition, ability to maintain subcriticality or minimum boron precipitation time may be reduced. The boron in the accumulators contributes to the assumption that the combined ECCS water in the partially recovered core during the early reflooding phase of a large break LOCA is sufficient to keep that portion of the core subcritical. One accumulator below the minimum boron concentration limit, however, will have no effect on available ECCS water and an insignificant effect on core subcriticality during reflood. Boiling of ECCS water in the core during reflood concentrates boron in the saturated liquid that remains in the core. In addition, current analysis techniques demonstrate that the accumulators do not discharge following a large main steam line break for the plant. Even if they do discharge, their impact is minor and not a design limiting event. Thus, 72 hours is allowed to return the boron concentration to within limits.

B.1

If one accumulator is inoperable for a reason other than boron concentration, the accumulator must be returned to OPERABLE status within 24 hours. In this Condition, the required contents of three accumulators cannot be assumed to reach the core during a LOCA. Due to the severity of the consequences should a LOCA occur in these conditions, the 24 hour Completion Time to open the valve, remove power to the valve, or restore the proper water volume or nitrogen cover pressure ensures that prompt action will be taken to return the inoperable accumulator to OPERABLE status. The Completion Time minimizes the potential for exposure of the plant to a LOCA under these conditions.

THE 24 HOURS ALLOWED TO RESTORE AN INOPERABLE ACCUMULATOR TO OPERABLE STATUS IS JUSTIFIED IN WCAP-15049-A, REV 1 (REF 6).

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BASES

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**SURVEILLANCE REQUIREMENTS (continued)**

**SR 3.5.1.4**

The boron concentration should be verified to be within required limits for each accumulator every 31 days since the static design of the accumulators limits the ways in which the concentration can be changed. The 31 day Frequency is adequate to identify changes that could occur from mechanisms such as stratification or inleakage. Sampling the affected accumulator within 6 hours after a 75 gallon increase will identify whether inleakage has caused a reduction in boron concentration to below the required limit. It is not necessary to verify boron concentration if the added water inventory is from the refueling water storage tank (RWST), because the water contained in the RWST is within the accumulator boron concentration requirements. This is consistent with the recommendation of NUREG-1366 (Ref. 8).

⑦

**SR 3.5.1.5**

Verification every 31 days that power is removed from each accumulator isolation valve operators for NI54A, NI65B, NI76A, and NI88B when the RCS pressure is > 1000 psig ensures that an active failure could not result in the undetected closure of an accumulator motor operated isolation valve. If this were to occur, only two accumulators would be available for injection given a single failure coincident with a LOCA. Since power is removed and circuit breakers padlocked under administrative control, the 31 day Frequency will provide adequate assurance that power is removed.

This SR allows power to be supplied to the motor operated isolation valves when RCS pressure is  $\leq 1000$  psig, thus allowing operational flexibility by avoiding unnecessary delays to manipulate the breakers during plant startups or shutdowns. Even with power supplied to the valves, inadvertent closure is prevented by the RCS pressure interlock associated with the valves.

Should closure of a valve occur in spite of the interlock, the SI signal provided to the valves would open a closed valve in the event of a LOCA.

## BASES

### REFERENCES

1. IEEE Standard 279-1971.
2. UFSAR, Chapter 6.
3. 10 CFR 50.46.
4. DPC-NE-3004.
5. 10 CFR 50.36, Technical Specification, (c)(2)(ii).
6. NUREG-1366, February 1990.

7. WCAP-15049-A, REV 1, APRIL 1999

ATTACHMENT 3A

McGUIRE UNITS 1 AND 2 TECHNICAL SPECIFICATIONS  
AND  
TECHNICAL SPECIFICATION BASES

(TO BE PROVIDED TO THE NRC UPON ISSUANCE OF APPROVED  
AMENDMENT)

ATTACHMENT 3B

CATAWBA UNITS 1 AND 2 TECHNICAL SPECIFICATIONS  
AND  
TECHNICAL SPECIFICATION BASES

(TO BE PROVIDED TO THE NRC UPON ISSUANCE OF APPROVED  
AMENDMENT)