



Duke Power  
McGuire Nuclear Station  
12700 Hagers Ferry Road  
Huntersville, NC 28078-9340  
(704) 875-4000

D. M. Jamil  
Vice President, McGuire  
Nuclear Generation Department

(704) 875-5333 OFFICE  
(704) 875-4809 FAX

February 7, 2003

U.S. Nuclear Regulatory Commission  
Attention: Document Control Desk  
Washington, D.C. 20555

Subject: Duke Energy Corporation  
McGuire Nuclear Station, Unit 1  
Docket Number 50-369  
Notice of Enforcement Discretion (NOED) Request  
Technical Specifications (TS) 3.7.5 - Auxiliary  
Feedwater System and TS 3.6.3 - Containment Isolation  
Valves

Duke Energy Corporation (DEC) is requesting NRC discretion related to enforcing compliance with the requirements of McGuire Nuclear Station (MNS) Technical Specification (TS) 3.7.5, Auxiliary Feedwater (CA) System and TS 3.6.3, Containment Isolation Valves (CIV). Attached are the background and technical information supporting this request. This request was discussed with and verbally approved by the NRC staff in a telephone conference call on February 6, 2003.

The Limiting Condition for Operation (LCO) associated with TS 3.7.5 states that three CA trains shall be OPERABLE. This LCO is applicable in Modes 1, 2, and 3. It is also applicable in MODE 4 when steam generators are relied upon for heat removal. TS 3.7.5 Condition B states that, with one CA train inoperable in MODE 1, 2, or 3 for reasons other than Condition A, restore the CA train to OPERABLE status in 72 hours.

The LCO associated with TS 3.6.3 states that each containment isolation valve shall be OPERABLE. This LCO is applicable in Modes 1, 2, 3, and 4. TS 3.6.3 Condition C states that, with one or more penetration flow paths with one containment isolation valve inoperable, isolate the affected penetration flow path by use of at least one closed and de-activated

A001

automatic valve, closed manual valve, or blind flange in 72 hours.

Valve 1CA-42B is a motor operated isolation valve for the CA supply from 1B Motor Driven CA Pump to the D Steam Generator (S/G). This valve is currently INOPERABLE due to the failure of the valve stem. The apparent cause of the valve stem failure was a malfunction of the primary switch mechanism on the open limit switch combined with an improper open torque switch setting due to an error in the vendor analysis. A modification of the valve stem and replacement of the valve actuator is currently ongoing. The time to complete the modification, actuator replacement, and subsequent post-modification testing may exceed the 72 hour required action completion times of TS 3.7.5 Condition B and TS 3.6.3 Condition C.

Therefore, DEC is requesting that the NRC exercise discretion in enforcing compliance with the TS 3.7.5 and TS 3.6.3 requirements to allow sufficient time for completing all work associated with valve 1CA-42B. DEC's evaluation has concluded that this request is overall safety and risk neutral and represents no net increase in radiological risk. DEC maintains that granting of discretionary enforcement is in the best interests of the overall health and safety of the public since it will preclude an unnecessary plant transient.

DEC understands that, if granted, the requested enforcement discretion is for the conditions specified in this request. For any other conditions that would cause the valve or the B train of Unit 1 CA to become inoperable, the appropriate TS required actions would apply.

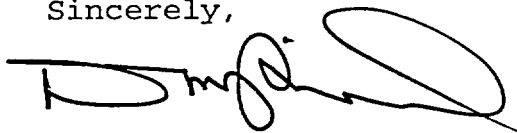
This is a one time request for an additional 3 days beyond the 72 hour required action completion times of TS 3.6.3 and TS 3.7.5. Since this is a one time request for less than 14 days, submittal of a follow-up license amendment would not be practical since compliance with TS 3.7.5 and TS 3.6.3 will be restored before a license amendment could be issued. In addition, prior adoption of line improvements in the TS's would not have obviated the need for this request.

This request for enforcement discretion was approved by the McGuire Plant Operations Review Committee on February 6, 2003.

U. S. Nuclear Regulatory Commission  
February 7, 2003  
Page 3 of 3

Should you have any questions concerning this information,  
please call J. W. Bryant at 704-875-4162.

Sincerely,

A handwritten signature in black ink, appearing to read 'D. M. Jamil', with a large, stylized flourish at the end.

D. M. Jamil

Attachment

cc w/attachment:

Mr. L. A. Reyes  
U.S. Nuclear Regulatory Commission  
Region II  
Atlanta Federal Center  
61 Forsyth St., SW, Suite 23T85  
Atlanta, GA 30303

Mr. R. E. Martin  
U.S. Nuclear Regulatory Commission  
Office of Nuclear Reactor Regulation  
Washington, D.C. 20555-0001

Ms. B. O. Hall, Section Chief  
Division of Radiation  
State of North Carolina  
1625 Mail Service Center  
Raleigh, N.C. 27699-1625

Mr. S.M. Shaeffer  
NRC Resident Inspector  
McGuire Nuclear Station

bxc: (with attachment):

G. D. Gilbert (CN01RC)  
L. E. Nicholson (ONO3RC)  
M. T. Cash (EC050)  
M. J. Barrett (EC08I)  
H. D. Brewer (EC08I)  
Lisa Vaughn (EC11X)  
NSRB Support Staff (EC05N)

Paper Distribution:

Master File (3.3.7)  
ELL (EC050)  
RGC File

Attachment  
McGuire Nuclear Station, Unit 1  
Request for Enforcement Discretion  
TS 3.7.5 - Auxiliary Feedwater System  
TS 3.6.3 - Containment Isolation Valves

The 1B CA train is currently inoperable due to ongoing work associated with valve 1CA-42B, the isolation valve for the CA supply from the 1B Motor Driven CA Pump to the D S/G, to correct a condition where the valve stem failed during post maintenance testing. The time to complete the work may exceed the 72 hour required action completion time of TS 3.7.5 Condition B and TS 3.6.3 Condition C.

Valve 1CA-42B was declared INOPERABLE on February 4, 2003 at 0826 to perform scheduled maintenance. While electrically stroking the valve following maintenance, the valve stem failed. Modification of the valve stem to restore OPERABILITY of this valve may exceed the 72 hour required action completion time of TS 3.7.5, CA System, Condition B and TS 3.6.3, CIVs, Condition C. In such a case, McGuire Nuclear Station (MNS) would be required to comply with the requirements of TS 3.7.5 Condition C and TS 3.6.3 Condition F. This would require that Unit 1 be in MODE 3 within 6 hours and MODE 4 within 12 hours.

Duke Energy Corporation (DEC) is requesting that the NRC exercise discretion in enforcing compliance with the TS 3.7.5 and TS 3.6.3 requirements for an additional 3 days beyond the 72 hour required action completion times (for a total of 6 days). Therefore the requested duration of this enforcement discretion is from February 7, 2003 at 0826 hours until February 10, 2003 at 0826 hours. This will allow Unit 1 to remain in Mode 1 (Power Operation) until the work is completed. DEC's evaluation has concluded that this request is overall safety and risk neutral and represents no net increase in radiological risk. DEC maintains that granting of discretionary enforcement with regard to the requirements of TS 3.7.5 and TS 3.6.3 is in the best interests of the overall health and safety of the public, since it will preclude an unnecessary plant transient.

## 1. Technical Specifications or License Conditions that will be Violated

The LCO associated with TS 3.7.5 states that three CA trains shall be OPERABLE. This LCO is applicable in Modes 1, 2, and 3. It is also applicable in MODE 4 when steam generators are relied upon for heat removal. TS 3.7.5 Condition B states that, with one CA train inoperable in MODE 1, 2, or 3 for reasons other than Condition A, restore the CA train to OPERABLE status in 72 hours. Condition C states that if the required action and associated completion for Condition B are not met, the unit must be in Mode 3 in 6 hours and in Mode 4 in 12 hours.

The LCO associated with TS 3.6.3 states that each containment isolation valve shall be OPERABLE. This LCO is applicable in Modes 1, 2, 3, and 4. TS 3.6.3 Condition C states that, with one or more penetration flow paths with one containment isolation valve inoperable, isolate the affected penetration flow path by use of at least one closed and de-activated automatic valve, closed manual valve, or blind flange in 72 hours. Condition F states that if the required action and associated completion time is not met, the unit must be in Mode 3 in 6 hours and in Mode 5 in 36 hours.

## 2. Circumstances Surrounding the Situation including Apparent Causes

Valve 1CA-42B, the isolation valve for the CA supply from the 1B Motor Driven CA Pump to the D S/G, was declared INOPERABLE on February 4, 2003 at 0826 to perform scheduled maintenance. While electrically stroking the valve following maintenance, the open limit switch malfunctioned causing a failure of the valve stem. The valve motor continued to operate until the valve stem sheared.

Inspection of the valve actuator has provided high confidence that the cause of the valve stem failure was a malfunction of the primary switch mechanism on the open limit switch combined with an improper open torque switch setting due to an error in the vendor analysis. The open limit switch slipped, which prevented the valve motor from stopping as expected. This caused the valve actuator to generate excessive loads in the open direction, which

resulted in stem failure at its weakest point as predicted by vendor analysis.

McGuire has found no additional damage to valve 1CA-42B beyond what is described above. The failure investigation included analysis of the bonnet and load key for the experienced back-seating load, inspection for leakage past the graphite pressure seal gasket, analysis of the expected back-seat failure loading, analysis of the potential for internal damage to the disk and carrier ring, and inspection of the next two possible weak links (per vendor calculations), the clamp nut and the anti-rotation device. The analysis and inspections confirmed no further damage to valve 1CA-42B.

### 3. The Safety Basis for the Request, including the Evaluation of Safety Significance and Potential Consequences of the Proposed Action

The CA System automatically supplies feedwater to the steam generators to remove decay heat from the Reactor Coolant System upon the loss of normal feedwater supply. The steam generators function as a heat sink for core decay heat. The CA System consists of two motor driven pumps and one steam turbine driven pump configured into three trains. Each of the motor driven pumps supplies 100% of the flow requirements to two steam generators, although each pump has the capability to be realigned to feed other steam generators. The turbine driven pump provides 200% of the flow requirements and supplies water to all four steam generators.

Valve 1CA-42B is a motor driven isolation valve on the line to the D S/G from the 1B Motor Driven CA Pump discharge. The safety functions for this valve are containment isolation, to remain open to align CA to the D S/G, and to close to isolate CA from the D S/G following a S/G tube rupture or faulted S/G.

The containment isolation valves form part of the containment pressure boundary and provide a means for isolating containment if isolation of this pathway becomes necessary. This helps ensure that the containment atmosphere will be isolated from the environment in the event of a release of fission product radioactivity to the

containment atmosphere as a result of a Design Basis Accident.

### Quantitative Analysis

Failure of valve 1CA-42B to remain open is the only failure mode of significance. For event sequences requiring isolation of the CA flow path to the D S/G, there are redundant means of isolation. These actions are proceduralized. Thus, the inability of valve 1CA-42B to close results in no measurable increase in core damage frequency (CDF). Leaving the valve in the open position would not result in any measurable increase in CDF or large early release frequency (LERF). During modification and testing of valve 1CA-42B, this valve may be placed in the closed position. Placing the valve in the closed position does result in some small increase in CDF and LERF. However, for the time period it is necessary to be closed, the change in CDF and LERF is insignificant.

In summary, the PRA model review indicates that extending the required action times as requested is risk neutral and represents no net increase in radiological risk.

### Other Considerations

It is noted that valve 1CA-42B has no automatic functions and therefore receives no safety function actuation signals.

The following are additional qualitative considerations that reduce risk:

- Entry into and operation of shutdown cooling involves plant manipulations and evolutions on both the primary and secondary side by Operations personnel. These manipulations and evolutions are averted by remaining at power.
- With the compensatory actions from section 7 considered, the likelihood that flow through the line could not be terminated if required, is judged to be very low.



## Large Early Release Frequency (LERF)

Regarding Large Early Release Frequency (LERF), the major contributor to the LERF for McGuire is the Interfacing Systems LOCA. The inability to remotely close valve 1CA-42B has no impact on the Interfacing Systems LOCA analysis.

Section 7 describes the redundancy and diversity available to terminate flow to the D S/G. Given the redundancy and diversity available to terminate flow to the D S/G should a rupture occur in that generator, any contribution to LERF that could result due to overflow of the generator is judged to be very low.

## Conclusions

Taking into consideration the proposed compensatory actions from section 7 and other considerations noted above, it is believed that this request is overall safety and risk neutral and represents no net increase in radiological risk as a result of having valve 1CA-42B out of service.

Based on the above discussion it has been determined that the requested period of non-compliance with the Technical Specifications does not present an undue risk to the plant or to the health and safety of the public.

### 4. Justification for the Duration of the Noncompliance

Failure of valve 1CA-42B to remain open is the only failure mode of significance. For event sequences requiring isolation of the CA flow path to D S/G, there are redundant means of isolation. These actions are proceduralized. Thus, the inability of valve 1CA-42B to close results in no measurable increase in CDF. Leaving the valve in the open position would not result in any measurable increase in CDF or LERF. During modification and testing of valve 1CA-42B, this valve may be placed in the closed position. Placing the valve in the closed position does result in some small increase in CDF and LERF. However, for the time period it is necessary to be closed, the change in CDF and LERF is insignificant.

Given the above and the compensatory measures described in Section 7, there is no net increase in the radiological

risk as a result of 1CA-42B being out of service for an additional 72 hours beyond the required action time of TS 3.7.5 Condition B and TS 3.6.3 Condition C. Consequently, the requested duration of non-compliance with the Technical Specifications does not present an undue risk to the plant or to the health and safety of the public.

5. The Basis for the Licensee's Conclusion That Noncompliance Will Not Be of Potential Detriment to the Public Health and Safety and That Neither an Unreviewed Safety Question Nor a Significant Hazard Consideration is Involved

Based upon the information provided in Sections 3 and 4, NRC granting of this request for enforcement discretion will not have any adverse consequences from the standpoint of public health and safety.

There are no significant hazards considerations associated with this request for enforcement discretion. This is demonstrated as follows:

This request for enforcement discretion does not involve a significant increase in the probability or consequences of an accident previously evaluated. Extending the required action time for TS 3.7.5 Condition B and TS 3.6.3 Condition C by an additional 72 hours will have no effect on accident probabilities or consequences.

This request for enforcement discretion does not create the possibility of a new or different kind of accident from any accident previously evaluated. No new accident causal mechanisms are created as a result of the NRC granting of this request for enforcement discretion. This request for enforcement discretion does not impact any plant systems that are accident initiators.

This request for enforcement discretion does not involve a significant reduction in a margin of safety. Margin of safety is related to the confidence in the ability of the fission product barriers to perform their design functions during and following an accident situation. These barriers include the fuel cladding, the reactor coolant system, and the containment system. Due to the short duration of this condition, the low probability of an event while this condition exists, the availability of other means to isolate containment, and the presence of a check valve in the flow path to the D SG which would prevent backflow, the

performance of these fission product barriers will not be impacted by the NRC's granting of this request. Consequently, no safety margins will be impacted.

6. The Basis for the Licensee's Conclusion that the Noncompliance will not involve Adverse Consequences to the Environment

This request for enforcement discretion will not result in any changes in the types, or increase in the amounts, of any effluents that may be released offsite. In addition, no increase in individual or cumulative occupational radiation exposures will be involved. Therefore, it can be concluded that the NRC's granting of this request for enforcement discretion will not involve any adverse consequences to the environment.

7. Any Proposed Compensatory Measures

Except for the time period it is necessary to be closed, valve 1CA-42B will be left in the open position. Because providing secondary side heat removal is the most important function of the CA system, this is the safest position for the valve. Should it be necessary to isolate flow through this path, the air operated control valve from the 1B Motor Driven CA pump to the D S/G, 1CA-40B, provides an alternative means as does manual valve, 1CA-39, upstream of valve 1CA-42B. For the period of time that valve 1CA-42B is closed, it is important to ensure availability of secondary side heat removal from other paths.

A qualitative assessment of the need to maintain the capability to isolate the line and to maintain secondary side heat removal resulted in the development of several compensatory measures. These measures will be implemented during the period of non-compliance with the Technical Specifications. They include:

- No unnecessary maintenance or testing that would make the air supply or DC power unavailable to valve 1CA40B (valve 1CA-40B should be capable of closing).

- No unnecessary maintenance or testing that would make 1CA-39 unavailable.
- No unnecessary maintenance or testing that would render any other Unit 1 CA components unavailable.
- No unnecessary work that would have a high likelihood of causing a plant trip or transient.
- No unnecessary work that would render risk significant equipment unavailable.
- Procedural guidance exists to provide alternatives to manually isolate flow should it be needed.
- Operators will be briefed on existing procedures to address control of CA following a loss of instrument air.

8. Statement that the Request has been approved by the Facility Organization that normally reviews Safety Issues

This request for Notification of Enforcement Discretion (NOED) was reviewed and approved by the McGuire Plant Operations Review Committee (PORC) in a special meeting on February 6, 2003.

9. Which of the NOED Criteria for appropriate Plant Conditions specified in Section B of NRC Inspection Manual, Part 9900 Technical Guidance, is satisfied

This request is intended to avoid an undesirable unit shutdown transient as a result of requiring compliance with TS 3.7.5 and TS 3.6.3 and thus, minimize potential safety consequences and operational risks.

10. If a follow-up License Amendment is required, the Written NOED Request and the License Amendment Request must be Submitted within two working days

Since this was a one time request for less than 14 days, no follow-up license amendment is required in conjunction with this NOED request.