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July 16, 2003

U.S. Nuclear Regulatory Commission  
ATTENTION: Document Control Desk  
Washington, DC 20555-0001

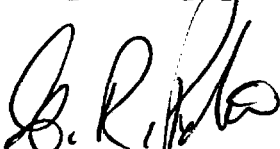
Subject: McGuire Nuclear Station Unit 1  
Docket No. 50-369  
Request for Additional Information  
Inservice Testing Program  
Request for Relief for Isolation Valve Testing, MC-  
SRV-CA-01

Reference: Duke Energy Corporation (Duke) letter to Nuclear  
Regulatory Commission (NRC), dated July 15, 2003

This letter provides additional information that was requested by the NRC staff in a teleconference call on July 15, 2003. The NRC staff requested Duke to provide more detailed information regarding the testing performed on valve 1CA42B to determine Operability. This information is provided in the attachment.

Please contact Norman T. Simms of Regulatory Compliance at 704-875-4685 with any questions with respect to this matter.

Very truly yours,



G.R. Peterson

Attachment

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xc:

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**ATTACHMENT**

## RESULTS of 1CA42B TESTING

### 1CA42B Testing and Evaluation (2/8/2003)

#### Testing Description

Post-maintenance testing included:

- Manual stroking to verify smooth alignment
- Electrical functional stroke to verify limit switch setup
- Motor power monitor (MPM) diagnostic, 2 strokes
- IST stroke time
- Radiography of 1CA42B

Manual strokes proved to be smooth and required minimal effort of technician to open and close valve. Visual inspection revealed no indications of misalignment between drive bushing and new stem section.

Electrical functional testing verified the limit switch setup meets procedure guidelines. Stroke times met stroke time allowance.

MPM testing showed an increase in motor power at the end of the close stroke that was not present on previous MPM tests for 1CA42B. Also, a slight increase in open stroke time was observed when compared to previous tests. No trace anomalies were observed on the open stroke. Previous test dates are 06/20/98 and 10/04/99. It was determined that the reason for the increase in motor power at the end of the close stroke is due to the system being filled with water and the valve was compressing this water once the seats are covered (i.e. end of the close stroke). Previous testing performed for 1CA42B was accomplished with the system drained. The 6/20/98 date corresponds to valve/actuator installation and the 10/04/99 date corresponds to post-maintenance testing. Both tests were performed with the system drained. Comparisons to MPM tests performed with the system filled for another identical CA MOV showed similar power increase on the close stroke. This behavior was also observed during flow loop qualification testing.

The increase in open stroke time is attributed to a combination of limit setup variations, minor compression of the pressure seal, and minor damage in the carrier ring to stem thread connection.

## RESULTS of 1CA42B TESTING

IST testing provided stroke times which met acceptance criteria.

Radiography was performed prior to MPM testing to verify position of valve internals. RT shots were taken with the valve in the full open, mid and full closed position. No concerns were identified as a result of RT, and valve internals were confirmed to be in the expected positions.

### **Operability Determination**

Degradation is suspected in the carrier ring to stem connection as a result of the 2/4/03 failure, but the evaluation documented in PIP M03-543 determined 1CA42B to be operable based on the above testing and MOV capability calculations. The closing stroke of the quarterly stroke time test creates a compressive load which does not challenge a stem thread to carrier ring connection. However, the associated opening stroke (especially under differential pressure) creates a tensile load on the stem thread to carrier ring connection and thus could serve to fail this connection. Based on previous stroke time testing results since the modification, the closing function is not in question. The act of opening the valve to realign to normal operation may place excessive stress on the internals unnecessarily. Therefore, steps were taken to revise all Operations procedures to prevent 1CA42B from being stroked open against differential pressure, which would serve to load the carrier ring to stem connection.

### **1CA42B Testing and Evaluation (3/25/2003)**

#### **Testing Description**

Testing performed for 1CA42B included:

- Motor power monitor (MPM) diagnostic, 2 strokes
- IST stroke time (concurrent with MPM)

IST testing provided stroke times which met acceptance criteria.

MPM testing identified a power increase anomaly in the open direction. The MPM trace in the open direction on 3/25/03 showed minor loading on the valve internals and increases the possibility of further degradation. The power increase in the closing direction noted during the 2/8/03 testing was present.

## RESULTS of 1CA42B TESTING

### Operability Assessment

During the 2/8/03 test, 1CA42B was tested starting from the closed position. 1CA42B was stroked open and then closed. After approximately 7 minutes, 1CA42B was opened and closed again. The MPM test data showed no loading in the opening direction but loading in the close direction. However, 1CA42B was tested starting in the open direction during the 3/25/03 test. 1CA42B was closed and after 3 to 5 seconds re-opened. 1CA42B was then closed again and opened after 3 to 5 seconds. The MPM test data for both strokes showed loading in the open direction. The loading was repeatable. The analysis of the 3/25/03 MPM test data concluded that the anomaly in the open direction is due to entrapment of system pressure/liquid in the valve bonnet during valve closure and subsequent relieving of that pressure/liquid during valve opening. The 2/8/03 test did not show this loading because after valve closure there was sufficient time to allow the entrapped bonnet pressure to relieve.

Therefore, it was concluded that the anomaly noted in the 3/25/03 test for 1CA42B opening direction, is due to entrapment of pressure/liquid in the valve bonnet and subsequent relieving of that pressure/liquid during valve opening.

It was determined that there is no adverse impact to the Operability Evaluation performed under PIP M03-00543 as a result of the 3/25/03 test. There are no operability concerns as a result of the 3/25/03 test, and 1CA42B will perform its safety function.