

June 16, 1988

Docket Nos.: 50-369
and 50-370

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Mr. R. B. Tucker, Vice President
Nuclear Production Department
Duke Power Company
422 South Church Street
Charlotte, North Carolina 28242

Dear Mr. Tucker:

SUBJECT: SUPPLEMENTAL REQUEST FOR ADDITIONAL INFORMATION REGARDING INSERVICE
TESTING PROGRAM - MCGUIRE NUCLEAR STATION, UNITS 1 AND 2
(TACS 61271/61272)

The NRC staff, with technical assistance from EG&G Idaho, Inc., is reviewing the McGuire Nuclear Station Pump and Valve Inservice Testing (IST) Program for the first 10 years of operation. The review is based upon Unit 1 revisions through Revision 10 and Unit 2 revisions through Revision 6. We find that additional information, identified by the enclosure, is needed to complete this review. The enclosure is supplemental to the request to which you responded March 31, 1983.

As acknowledged in your letter of May 6, 1988, forwarding Unit 1 IST Revision 10 and Unit 2 IST Revision 6, the NRC and Duke have established a plan for completion of the review by the end of 1988. The plan includes a Charlotte meeting in early August for Duke to provide support information to finalize the IST Program. The purpose of the meeting is to resolve any outstanding review issues. The enclosure will be used as an agenda for the meeting to the extent that it contains outstanding items. You are encouraged to minimize the agenda items by responding in advance of the meeting where possible. Where written responses have not been provided in advance of the meeting, written responses should be provided during the meeting. It has been our experience elsewhere that the success of working meetings to finalize IST reviews in a timely manner is dependent upon substantive responses to issues and upon management support at the decision making level.

The reporting and/or recordkeeping requirements contained in this letter affect fewer than ten respondents; therefore, NMB clearance is not required under P.L. 96-511.

If you have questions regarding the enclosure, contact me at (301) 492-1442.

Sincerely,

Original signed by:

Darl Hood, Project Manager
Project Directorate II-3
Division of Reactor Projects I/II

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PDR ADOCK 05000369
PDR

Enclosure:
As stated

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Mr. H. B. Tucker, Vice President
Nuclear Production Department
Duke Power Company
422 South Church Street
Charlotte, North Carolina 28242

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Original signed by:

Earl Hood, Project Manager
Project Directorate II-3
Division of Reactor Projects I/II

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McGuire Nuclear Station

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ENCLOSURE

McGUIRE NUCLEAR STATION, UNITS 1 AND 2
PUMP AND VALVE INSERVICE TESTING PROGRAM
REQUEST FOR ADDITIONAL INFORMATION

1. VALVE TESTING PROGRAM

A. General Questions and Comments

1. Provide the documentation that ensures that IWV-3300 is being met (remote position indication verification).
2. The NRC has concluded that the applicable leak test procedures and requirements for containment isolation valves are determined by 10CFR50, Appendix J. Relief from paragraphs IWV-3421 through 3425 for containment isolation valves presents no safety problem since the intent of IWV-3421 through 3425 is met by Appendix J requirements, however, the licensee shall comply with Paragraphs IWV-3426 and 3427.
3. Provide a listing of all valves that are Appendix J, Type C, leak rate tested which are not included in the IST program and Categorized A or AC?
4. The NRC staff has identified rapid-acting power operated valves as those which stroke in 2 seconds or less. Relief may be obtained from the trending requirements of Section XI, Paragraph IWV-3417(a) however, in order to obtain this Code relief the staff does require that the licensee assign a maximum limiting stroke time of 2 seconds to these valves and comply with the requirements of IWV-3417(b) when the 2 second limit is exceeded. General Relief Request I does not comply with this staff position.
5. Provide the limiting values of full-stroke times for all power operated valves in the McGuire Nuclear Station, Units 1 and 2,

IST programs for our review. What are the bases used to assign the limiting values of full-stroke time for these valves?

6. When flow through a check valve is used to indicate a full-stroke exercise of the valve disk, the NRC staff position is that verification of the maximum flow rate identified in any of the plant's safety analyses through the valve would be an adequate demonstration of the full-stroke requirement. Any flow rate less than this will be considered partial-stroke exercising unless it can be shown (by some means such as measurement of the differential pressure across the valve), that the check valve's disk position at the lower flow rate would permit maximum required flow through the valve. Does the test designated "MT" satisfy this NRC Staff position?
7. Provide the documentation that ensures that IWV-3415 is being met (fail-safe testing of valves).
8. Section XI specifically makes provisions for testing valves during cold shutdowns when it is impractical to exercise these valves quarterly during power operation. A formal relief request is not required, however, the licensee should include a cold shutdown justification in the IST program. The cold shutdown justification bases should indicate the negative consequences that make quarterly testing during operation impractical such as endangering personnel, damaging equipment, or resulting in a plant shutdown.
10. The valve testing frequency should be indicated in the valve tables. Only a portion of the valves in the McGuire IST programs currently have the testing frequency identified in the valve tables.
11. Does the fuel pool cooling system perform a safety function at the McGuire Nuclear Station? If so, the appropriate pumps and valves should be included in the IST programs and tested in

accordance with the requirements of Section XI to the extent practical.

12. What is the frequency of the testing designated SP in the valve test programs?
13. The NRC staff position is that valves that serve both a pressure boundary isolation function and a containment isolation function must be leak tested to both the Appendix J and the Section XI requirements. Identify the valves, if any, at McGuire Nuclear Station that serve both a pressure boundary isolation function and a containment isolation function. What leak rate testing is performed on these valves?

B. Annulus Ventilation System

1. Why are valves 1(2)IVE-10A identified as passive valves?
2. Review the safety function of valves 1(2)IVE-5A and 6B to determine if they should be categorized A.

C. Auxiliary Feedwater System

1. Concerning the relief request for valves 1(2)CA-60A, what prevents measuring the stroke time of these valves when they are exercised quarterly? What is the frequency of the stroke timing now being done, i.e., during ESF testing?
2. How are the following valves verified to full-stroke exercise quarterly?

1(2)CA-8
1(2)CA-22

1(2)CA-10
1(2)CA-26

1(2)CA-12
1(2)CA-31

3. What is the current frequency of the stroke timing for valves 1(2)CA-20AB?

4. What is the safety grade water source for the AFW pumps? Review the safety function of the following valves to determine if they should be included in the IST program and tested to Section XI requirements:

Valve	P&ID	Valve	P&ID
1(2)CA-3	1(2)592-1.1	1(2)CA-4	1(2)592-1.1
1(2)CA-5	1(2)592-1.1	1(2)CA-6	1(2)592-1.1
1(2)CA-5	1(2)592-1.1		

D. Boron Recycle System

1. If the only practical method of verifying valve closure is leak rate testing, then closure verification can be demonstrated each refueling outage. However, it must be done each refueling outage irrespective of the Appendix J required frequency. Does the testing frequency for valves 1(2)NB-262 conform to this position?

E. Breathing Air System

1. If the only practical method of verifying valve closure is leak rate testing, then closure verification can be demonstrated each refueling outage. However, it must be done each refueling outage irrespective of the Appendix J required frequency. Does the testing frequency for valves 1(2)VB-50 conform to this position?

F. Chemical and Volume Control System

1. Are valves 1(2)NV-94AC and 95B ever required to perform a containment isolation function?
2. Review the safety function of valves 1(2)NV-7B, 457A, 458A, and 459A to determine if they should be Categorized A.
3. Do valves 1(2)NV-12 perform a safety function in the closed position?
4. How will full-stroke exercising valves 1(2)NV-225 and 231 quarterly result in an increase in RCS boron inventory?

5. Review the safety function of the following valves to determine if they should be included in the IST program and tested to Section XI requirements:

Valve	P&ID	Valve	P&ID
1(2)NV-45	1(2)554-1.0	1(2)NV-29	1(2)554-1.0
1(2)NV-77	1(2)554-1.1	1(2)NV-61	1(2)554-1.1
1(2)NV-14	1(2)554-1.2	1(2)NV-15	1(2)554-1.2
1(2)NV-20	1(2)554-1.2	1(2)NV-841	1(2)554-1.2
1(2)NV-218	1(2)554-3.0	1(2)NV-241	1(2)554-3.0
2NV-1044	2554-3.0	2NV-1046	2554-3.0
1(2)NV-264	1(2)554-3.1	1(2)NV-472	1(2)554-3.1
1(2)NV-267A	1(2)554-3.1	1(2)NV-265B	1(2)554-3.1
1(2)NV-411	1(2)554-5.0	1(2)NV-413	1(2)554-5.0

G. Component Cooling System

1. Do valves 1(2)KC-5, 8, 11, and 14 perform a safety function in the open and closed positions? If so, the valves must be exercised to both positions.
2. Review the safety function of valves 1(2)KC-972 [P&ID 1(2)573-1.1] to determine if they should be included in the IST program and tested to Section XI requirements.
3. Review the safety function of valves 1(2)KC-315B, and 305B to determine if they should be categorized A.

H. Containment Air Release and Addition System

1. Clarify the testing being performed on valves 1(2)QV-1A, 2B, 5B, and 6A.

I. Containment Purge Ventilation

1. Clarify the proposed alternate testing in the relief request for all containment purge ventilation category A valves. The stroke time of all power operated valve must be measured every time the

valve is full-stroke exercised as required in Section XI, paragraph IWV-3413(b).

J. Containment Spray System

1. The NRC Staff position is that check valves must be full-stroke exercised. If Code required frequency is impractical, then the licensee must request relief to perform the testing at a lesser frequency. However, relief requests seeking exemption for never full-stroke exercising check valves will not be granted. The relief request for the following valves will be affected by this Staff position:

1(2)NS-13
1(2)NS-33

1(2)NS-16
1(2)NS-41

1(2)NS-30
1(2)NS-46

2. Review the safety function of the following valves to determine if they should be categorized A:

1(2)NS-12B
1(2)NS-32A

1(2)NS-15B
1(2)NS-38B

1(2)NS-29A
1(2)NS-43A

K. Diesel Generator Room Sump Pump System

1. Do valves 1(2)WN-3, 5, 11, and 13 perform a safety function in the closed position?

L. Diesel Generator Starting Air System

1. Provide P&IDs MC-1609-4.0 and 2609-4.0 for our review.

M. Equipment Decontamination System

1. What type of valve is 2WE-23? Is the AC categorization for this valve correct?

N. Liquid Waste Recycle System

1. Review the safety function of valve 1NI-266A to determine if it should be categorized A.

O. Main Steam Supply to Auxiliary Equipment

1. How are valves 1(2)SA-5 and 6 verified to full-stroke open quarterly?

P. Main Steam Vent to Atmosphere

1. Review the safety function of the following valves to determine if they should be included in the IST program and tested to Section XI requirements:

<u>Valve</u>	<u>P&ID</u>	<u>Valve</u>	<u>P&ID</u>
1(2)SV-25	1(2)593-1.3	1(2)SV-26	1(2)554-1.3
1(2)SV-27	1(2)593-1.0	1(2)SV-28	1(2)593-1.0

Q. Nuclear Sampling

1. What type of valves are 1(2)NM-420 and 421? Should these valves be categorized AC?

R. Nuclear Service Water System

1. Do valves 1(2)RN-28 and 30 perform a safety function in both the open and closed positions? If so, both positions must be verified during valve testing.
2. Valves 2RN-41B and 2RN-43A are listed in both Unit 1 and Unit 2 valve tables. Is this correct?

S. Reactor Coolant System

1. The NRC Staff position is that the PORVs should be exercised during cold shutdown or prior to establishing conditions where the PORVs are utilized for low temperature overpressure protection. The relief request for the PORVs will be affected by this Staff position.
2. What is the full-stroke test frequency for valves 1(2)NC-27C and 29C?
3. Provide P&ID MC-1553-2.1 for our review.
4. Are valves 1(2)NC-141 and 142 passive valves?

T. Refueling Water System

1. Provide a detailed technical justification for not full-stroke exercising valves 1(2)FW-28 during cold shutdowns.
2. Why are valves 1(2)FW-52 designated passive while all other small check valves that perform a thermal relief function are not?

U. Residual Heat Removal System

1. What type of leak testing is performed on valves 1(2)ND-1B and 2AC? Do these valves perform both a pressure isolation function and a containment isolation function? See general comment A.13.
2. Provide a detailed technical justification for not full-stroke exercising valves 1(2)ND-8 and 23 during cold shutdowns.
3. Provide a more detailed technical justification for not full-stroke exercising valves 1(2)ND-70 quarterly and during cold shutdowns.

4. Why must both trains of the residual heat removal system be removed from service to test the 1(2)ND-58A valves?

V. Safety Injection System

1. Review the safety function of valves 1(2)NI-12 to determine if they should be categorized AC.
2. Review the safety function of valves 1(2)NI-11 [P&ID 1(2)562-1.0] to determine if they should be included in the IST program and tested to Section XI requirements.
3. How are valves 1(2)NI-59, 70, 81, and 93 verified to full-stroke open during refueling outages?
4. How are valves 1(2)NI-60, 71, 82, and 94 verified to full-stroke open during cold shutdowns?
5. Review the safety function of valves 1(2)NI-121A and 152B to determine if they should be categorized A.
6. What is the safety function of valves 1(2)NI-122B?
7. Describe the procedure used to full-stroke exercise the following valves during refueling outages:

1(2)NI-124	1(2)NI-128	1(2)NI-156
1(2)NI-157	1(2)NI-159	1(2)NI-160
8. How are valves 1(2)NI-125, 126, 129, and 134 verified to full-stroke during cold shutdowns.
9. Review the safety function of the following valves to determine if they should be categorized A:

1(2)NI-162A	1(2)NI-173A	1(2)NI-178B
1(2)NI-184B	1(2)NI-185A	

10. Review the safety function of the following valves to determine if they should be included in the IST program as category A valves and tested to Section XI requirements:

Valve	P&ID
1(2)NI-163	1(2)562-3.1
1(2)NI-174	1(2)562-3.1
1(2)NI-179	1(2)562-3.1

11. Describe how the interlocks mentioned in the relief request for valves 1(2)NI-184B and 185A preclude valve operation.
12. How are valves 1(2)NI-175, 176, 180, and 181 full-stroke exercised during cold shutdowns?
13. The NRC Branch Technical Position, RSB 5-1, establishes requirements for taking reactor plants from power operation to cold shutdown using only safety-grade equipment. To comply with this position, credit is normally taken for the safety injection accumulator vent paths and/or the accumulator motor operated isolation valves. Evaluate the safety function of the following valves to determine if they should be included in the IST program and tested to the Code requirements:

Valve	P&ID	Valve	P&ID
1(2)NI-50	1(2)562-2.0	1(2)NI-54A	1(2)562-2.0
1(2)NI-61	1(2)562-2.0	1(2)NI-65B	1(2)562-2.0
1(2)NI-72	1(2)562-2.1	1(2)NI-76A	1(2)562-2.1
1(2)NI-83	1(2)562-2.1	1(2)NI-84	1(2)562-2.1
1(2)NI-88B	1(2)562-2.1		

14. Review the safety function of the following valves to determine if they should be included in the IST program and tested to Section XI requirements:

Valve	P&ID	Valve	P&ID
1(2)NI-242B	1(2)562-4.0	1(2)NI-243A	1(2)562-4.0
1(2)NI-244B	1(2)562-4.0	1(2)NI-245A	1(2)562-4.0
1NI-265A	1562-4.0		

15. What type of the valves are the following:

1NI-248
1NI-251

1NI-249
1NI-252

1NI-250
1NI-253

2. PUMP TESTING PROGRAM

1. The deviations from the Code requirements discussed in Item I.A and B, page I.1-1, have not been indicated on the pump table.
2. Section XI requires that both flow and differential pressure be measured during the performance of pump testing, i.e., all quantities required by Table IWP-3100-1 should be recorded and that lack of installed instrumentation is not a suitable long term justification for not performing the required Section XI testing. Item I.C does not agree with this Staff position.
3. Has McGuire Nuclear Station attempted to procure portable vibration instrumentation that meets the accuracy requirements of Section XI?
4. Is the pump vibration monitoring program conducted utilizing units of vibration displacement or vibration velocity?
5. Relief may be granted from the requirement of Section XI to measure pump bearing temperature annually, however, specific relief must be requested describing the difficulties encountered in each case. These relief requests will then be reviewed on a case by case basis. Item I.E does not agree with this Staff position.
6. Is the flow rate of the diesel generator fuel oil transfer pumps determined while the diesel engine is running?
7. In those cases where instrumentation is not installed to permit monitoring pump performance, individual specific relief must be

requested. This requirement will affect the pump test program for the diesel fuel oil transfer pumps, diesel generator room sump pumps, and the standby makeup pumps.