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

March 15, 1996

MEMORANDUM TO: Herbert N. Berkow, Director
Project Directorate II-2
Division of Reactor Projects I/II

FROM: *TGS* Thomas G. Scarbrough, Acting Chief
Components & Testing Section
Mechanical Engineering Branch
Division of Engineering

SUBJECT: REVIEW OF RESPONSES TO NRC SAFETY EVALUATION ACTION ITEMS
FOR THE MCGUIRE NUCLEAR STATION, UNITS 1 AND 2, INSERVICE
TESTING PROGRAM (TAC NOS. M94053 AND M94054)

Duke Power Company responded to the NRC's safety evaluations (SEs) dated May 22, 1995, and October 21, 1994, for the McGuire Nuclear Station, Units 1 and 2, Inservice Testing (IST) Programs, in its letter dated October 19, 1995. The letter contained four attachments: (1) a description of the actions taken for each of the items identified in the SEs; (2) the enhancements and other changes not requiring relief request reviews that have been made to the program including the addition of a 10 CFR 50, Appendix B (supplemental test) program for components outside the ASME Section XI that have been determined to be important to safety; (3) a summary of the changes that have been made; and (4) the updated IST programs, Revision 22 (Unit 1) and Revision 17 (Unit 2). The regulatory requirements for an IST program are given in Title 10 of the *Code of Federal Regulations*, Section 50.55a, "Codes and Standards," which incorporates by reference the American Society of Mechanical Engineers (ASME) *Boiler and Pressure Vessel Code* (the Code). The second ten-year IST interval for the McGuire IST programs began March 1, 1994, and ends February 29, 2004. The IST programs comply with the 1989 Edition of Section XI, which, by reference, incorporates Part 6, "Inservice Testing of Pumps in Light-Water Reactor Power Plants," and Part 10, "Inservice Testing of Valves in Light-Water Reactor Power Plants," of the ASME Operations and Maintenance Standard OMa-1988.

The staff has reviewed the responses to the SEs and determined that the licensee has addressed the identified concerns with the exception of Action Item 5.3, which remains unresolved. Our review of the submittal indicates that no evaluation of the changes other than the responses to the action items is required since the relief requests were not affected in those areas. All actions are subject to further review through NRC inspection activities. The licensee's responses to the action items are evaluated below.

Action Item 5.1: The licensee has, as called for in this action item, described the process for including components in the IST program and for

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determining the applicable tests. The actions taken appear to adequately address this action item. The scope of the IST program is subject to further review through NRC inspection activities.

Action Item 5.2: The portion of the pump relief request RR-1.3.1 relating to the vibration instrument accuracy requirements that is the subject of this action item has been deleted; this action item is therefore resolved.

Action Item 5.3: This action item pertaining to pump relief request 1.4.2 remains unresolved. The licensee is currently reviewing potential options to resolve this action item. The SE dated May 22, 1995, granted an interim relief for one year (until May 22, 1996) to investigate options regarding the measurement of discharge pressure for the diesel generator fuel oil transfer pumps. The licensee is expected to resolve this action item by that date.

Action Item 5.4: This action item concerns anomalies identified in the pump relief requests 1.4.4, 1.4.5, and 1.4.6 relating to the use of pump curves as reference values and to the test instrument range and accuracy. The relief requests in question have been revised to show that the combination of the accuracy and range of the test instrumentation used is more accurate than the one that would result with instrumentation that meets the Code requirements. Further, the licensee has deleted the portions of the relief requests pertaining to the use of pump curves. These actions satisfy the provisions in the SE dated May 22, 1995, and action item 5.4 identified in the SE dated October 21, 1994. No further action is required.

Action Item 5.5: Pump relief request 1.4.7, which is the subject of this action item, has been deleted; this action item is therefore resolved.

Action Item 5.6: Valve relief request RR-NS1 proposed to group the six containment spray check valves and to disassemble and inspect all six valves every four refueling outages (six years). This action item states that the proposal to perform no inspection for up to six years would require meeting GL 89-02, Position 2, which states that extension of the inspection interval beyond one valve every other refueling outage should only be considered in cases of extreme hardship where the extension is supported by actual in-plant data from previous testing. The licensee indicates that "undue personnel safety risks [involving erection and removal of scaffold within the containment dome and valve testing] and refueling outage extension" would constitute the requirement of extreme hardship in this case. Further, a review of actual in-plant data from previous testing identified no indication of wear, corrosion, or degradation.

Generic Letter 89-10 states in Position 2 that extension of the valve disassembly/inspection interval to one valve every other refueling outage or expansion of the group size above four valves should only be considered in cases of extreme hardship where the extension is supported by actual in-plant data from previous testing. In response to a question on the acceptability of inspecting all grouped check valves on a 6-year frequency, Question Group 12 on GL 89-04 Position 2 (see NUREG-1482 at pp. A-9 and 10) states that, in order to alter the inspection frequency as suggested by the question, licensees should use the criteria in Position 2 to justify and to document the

proposed disassembly schedule. The staff's response to Question 12 then states that the justification should address the significance of the loss of benefits of sampling in light of the condition, service history, and application of the valves. In response to a question on the definition of extreme hardship when speaking with regard to extension of disassembly interval, the staff's response to Question Group 19 (see NUREG-1482 at pp. 13 to 14) states that the existence of "extreme hardship" that would allow extension of the disassembly schedule is dependent on the particular circumstances at the plant. To determine whether extreme hardship exists, the staff's response to Question 19 states that the licensee should conduct a detailed evaluation of the various competing factors:

First, the licensee should determine the effect on plant safety that would result for the proposed schedule extension. The maintenance history of the component and other information relevant to its reliability should be reviewed to determine whether the decrease in assurance of plant safety resulting from the schedule extension is justified. A need to offload the reactor core, such as when testing the combined injection header check valves at some plants, or to operate at mid-level of the reactor coolant loops may be considered. The radiation exposure that would result from disassembly and inspection is a factor to be considered under the ALARA principle, but it should be judged in combination with all of the other factors.

In its submittal dated October 19, 1995, the licensee states that Containment Spray valves INS-13, 16, 30, 33, 41 and 46 are Aloyco/Walworth swing check valves that are normally closed providing Category C interior containment isolation for containment spray and auxiliary containment spray. The licensee states that these valves do not require leak rate testing due to their inability to release containment atmosphere during a LOCA. The licensee commits to verify full stroke operation of the check valves by disassembly and inspection as a group every fourth outage (6 years). In addition, the licensee commits to part stroke test each valve during each refueling outage. The licensee states that compliance with the Code requirements is impractical and would impose unnecessary hardship. The licensee states that accessing the valves requires construction of a temporary cantilevered scaffold. The licensee states that the hardship impact is one of undue personnel safety risk and refueling outage extension. The licensee states that the benefit from testing under the current scheme as compared to 6-year disassembly and inspection is negligible. The licensee stated that during their previous inspections all of the containment spray check valves showed no indications of wear, corrosion, or degradation. The licensee reviewed failure history of containment spray valves at McGuire and through NPRDS and found no related failures. The licensee reviewed the EPRI applications guide for check valves and found degradation focused on valves regularly in service.

The licensee's submittal summarizes its response to the factors outlined in NUREG-1482 in justifying the long disassembly and inspection interval. However, the staff's response to questions on GL 89-04 provided examples of reactor core offload and mid-level operation in defining extreme hardship.

The licensee's submittal reports that recent inspections of the containment spray check valves revealed no wear, corrosion or degradation. Further, the licensee commits to perform partial stroke testing of each valve during each RFO to help identify degradation. From the licensee's submittal, unique circumstances appear to exist regarding access to the containment spray check valves at McGuire. Therefore, relief request RR-NS1 is approved per GL 89-04, Position 2, contingent upon licensee demonstration during a future IST inspection that (1) partial stroke testing of the containment spray check valves is being conducted sufficiently to help identify potential degradation and (2) personnel safety during testing and construction and removal of safe scaffolding constitute an extreme hardship. With respect to the 6-year (4-outage) schedule, if the licensee anticipates during the third outage that the plant operation schedule might result in the disassembly and inspection schedule for the containment spray check valves exceeding 6 years, the licensee will be expected to take action to disassemble and inspect at least a sample of the containment spray check valves during the third outage.

Action Item 5.7: Valve relief request RR-VG1, which is the subject of this action item, has been deleted; this action item is therefore resolved.

Action Item 5.8: This action item indicates that justification of deferral for disassembly/inspection of valves at refueling outages should be resubmitted as relief requests under Position 2 of GL 89-04. However, as the licensee indicated in its response, a relief request in this case is not required since OM-10 allows for disassembly and inspection as an alternative to tests and allows for a refueling outage frequency if it is impracticable to conduct testing quarterly while in operation and during cold shutdowns. Further, additional information for deferral 1(2)-MC-RN6 as called for in this action item is no longer required since 1(2)-MC-RN6 has been deleted. The licensee's response adequately addresses this action item.

Action Items 5.9, 5.10, 5.11, and 5.13: These action items concern the following deferrals of valve testing to cold shutdowns and/or refueling outages: 1(2)-MC-CF1, -CF3, -CF4, -FW2, -KC1, -KC2, -KC3, -KC4, -KC5, -KC6, -KC7, -KC8, -NB1, -NC3, -NF1, -NI3, -NI6, -NI8, -NI11, -NI20, -NI23, -ND2, -ND3, -ND4, -ND5, -NM1, -NS1, -NV1, -NV2, -NV5, -NV8, -NV12, -NV13, -NV14, -RF1, -RN1, -RN2, -RN3, -RN4, -RV1, -VB1, -VG1, -VI2, -VI3, -VS1, -VX1, -WL1, -WL2, and -YM1. The action items requested additional information to clarify or enhance the bases for the deferral. OM-10 allows for disassembly and inspection as an alternative to tests and allows for extending the test interval to cold shutdowns or refueling outage frequency if it is impractical to conduct testing at a higher frequency specified in the Code. The applicable deferrals have been deleted or modified by the licensee to reflect the actions taken to address these action items. All bases for extending the test interval to cold shutdowns and/or refueling outages are subject to further review through NRC inspection activities. The licensee should have available for NRC inspection information to support testing deferrals as described in Sections 2.4.5, 3.1.1, and 3.1.2 of NUREG-1482, "Guidelines for Inservice Testing at Nuclear Power Plants."

Action Item 5.12: This action item requested specific information to clarify or enhance the scope of the IST programs relative to the chemical and volume

control system, the safety injection system, the residual heat removal system, and the nuclear service water system. The licensee has described the process for including components in the IST program and for determining the applicable tests. The actions adequately address this action item.

The scope of the IST program is subject to further review through NRC inspection activities.

This completes the technical review performed by the Mechanical Engineering Branch under TAC Number M94053 and M94054.

cc: IST Service List

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