



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
OF THE SECOND 10-YEAR INTERVAL INSERVICE TESTING PLAN

REQUEST FOR RELIEF NO. 99-03

DUKE ENERGY CORPORATION

CATAWBA NUCLEAR STATION, UNITS 1 AND 2

DOCKET NOS. 50-413 AND 50-414

1.0 INTRODUCTION

Title 10 of the *Code of Federal Regulations*, (10 CFR) Section 50.55a, requires that inservice testing (IST) of certain American Society of Mechanical Engineers (ASME) Code Class 1, 2, and 3 pumps and valves be performed in accordance with Section XI of the ASME *Boiler and Pressure Vessel Code* (the Code) and applicable addenda, except where alternatives have been authorized or relief has been requested by the licensee and granted by the Commission pursuant to Sections (a)(3)(i), (a)(3)(ii), or (f)(6)(i) of 10 CFR 50.55a. In proposing alternatives or requesting relief, the licensee must demonstrate that: (1) the proposed alternatives provide an acceptable level of quality and safety; (2) compliance would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety; or (3) conformance is impractical for its facility. Section 50.55a authorizes the Commission to approve alternatives and to grant relief from ASME Code requirements upon making the necessary findings. Guidance related to the development and implementation of IST programs is given in Generic Letter (GL) 89-04, "Guidance on Developing Acceptable Inservice Testing Programs," issued April 3, 1989, and its Supplement 1 issued April 4, 1995. Also see NUREG-1482, "Guidelines for Inservice Testing at Nuclear Power Plants," and NUREG/CR-6396, "Examples, Clarifications, and Guidance on Preparing Requests for Relief from Pump and Valve Inservice Testing Requirements."

The 1989 Edition of the ASME Code is the latest edition incorporated by reference in Paragraph (b) of Section 50.55a. Subsection IWV of the 1989 Edition, which delineates the requirements for IST of valves, references Part 10 of the American National Standards Institute/ASME *Operations and Maintenance Standards* (OM-10) as the rules for IST of valves. OM-10 replaces specific requirements in previous editions of Section XI, Subsection IWV, of the ASME Code. Subsection IWP of the 1989 Edition, which gives the requirements for IST of pumps, references Part 6 of the American National Standards Institute/ASME *Operations and Maintenance Standards* (OM-6) as the rules for IST of pumps. OM-6 replaces specific requirements in previous editions of Section XI, Subsection IWP, of the ASME Code.

Enclosure

By letter dated July 29, 1999, Duke Energy Corporation (DEC) submitted a valve relief request for Catawba Nuclear Station (CNS), Units 1 and 2, regarding full-stroke testing of certain solenoid and check valves. The staff and DEC personnel discussed by telephone the relief request on October 5, 1999. In response to the staff's questions and comments, DEC provided additional information and revised the relief request in a letter dated October 7, 1999. The staff has completed its review of the relief request and is providing the following evaluation.

2.0 VALVE RELIEF REQUEST 99-03

Relief Request 99-03 applies to certain Diesel Generator (DG) valves listed below for both CNS Units 1 and 2. The licensee requests relief from stroke testing the following valves individually in accordance with Paragraphs 4.2.1.2 and 4.3.2.2 of OM-10.

1VG25, 1VG27 (DG 1A Starting Air Inlet Solenoid Valves Right Bank)
1VG26, 1VG28 (DG 1A Starting Air Inlet Solenoid Valves Left Bank)
1VG29, 1VG31 (DG 1A Starting Air Inlet Check Valves Right Bank)
1VG30, 1VG32 (DG 1A Starting Air Inlet Check Valves Left Bank)
1VG69, 1VG71 (DG 1B Starting Air Inlet Solenoid Valves Right Bank)
1VG70, 1VG72 (DG 1B Starting Air Inlet Solenoid Valves Left Bank)
1VG73, 1VG75 (DG 1B Starting Air Inlet Check Valves Right Bank)
1VG74, 1VG76 (DG 1B Starting Air Inlet Check Valves Left Bank)
2VG25, 2VG27 (DG 2A Starting Air Inlet Solenoid Valves Right Bank)
2VG26, 2VG28 (DG 2A Starting Air Inlet Solenoid Valves Left Bank)
2VG29, 2VG31 (DG 2A Starting Air Inlet Check Valves Right Bank)
2VG30, 2VG32 (DG 2A Starting Air Inlet Check Valves Left Bank)
2VG69, 2VG71 (DG 2B Starting Air Inlet Solenoid Valves Right Bank)
2VG70, 2VG72 (DG 2B Starting Air Inlet Solenoid Valves Left Bank)
2VG73, 2VG75 (DG 2B Starting Air Inlet Check Valves Right Bank)
2VG74, 2VG76 (DG 2B Starting Air Inlet Check Valves Left Bank)

2.1 Licensee's Basis for the Relief Request

The licensee states:

Each solenoid valve receives an open signal upon DG auto-start. Each check valve then opens to supply starting air to the diesel. All valves are normally closed and shut upon successful diesel start. Only one solenoid valve and its corresponding check valve are required to open for a successful diesel start. The solenoid valves are 3" California Controls air valves, and the check valves are 3" Williams Gauge Company flanged center guided valves. All are supplied as part of the DG skid package. These valves are required to be full-stroke exercised every three months to the position required to fulfill their function. ASME Code requirements dictate that each valve be separately tested and be determined capable of fulfilling its design function. ASME/ANSI OM-1987 Edition, Part 10, including OMA-1988, paragraph 4.3.2.2, specifies that each valve shall be exercised or examined in a manner which verifies obturator travel to the required position. Because the D/G can start off of one air line from one bank (right and left bank, two lines per bank, one solenoid and one check valve per line), Catawba has no means to separately verify each valve's ability to function.

The solenoid valves supplied with the DG as part of the starting air support package from the vendor did not provide specific valve indication for these valves and individual testing of these valves is not feasible without extensive valve modification. As indicated above, the DG can start from one air line on either bank. Tests are being performed during cold shutdown which isolates each bank and starts the DG. This test however, cannot verify that both solenoid valves and both check valves on one bank open. The alternate method used at Catawba is the application of "skid mounted" criteria as discussed in Section 3.4 of NUREG-1482, "Guidelines for Inservice Testing at Nuclear Power Plants." By this method, successful demonstration of the starting air system is verified. Redundancy has not been compromised. The DG can start in the specified time using one line from one bank. While not being able to directly verify a stroke of each valve, isolating each bank and starting the DG does verify system performance. There will be no adverse impact upon public safety.

2.2 Alternative Testing

The licensee states:

Each DG is operated once monthly per procedure PT/1(2)/A/4350/002A,B, "DG Operability Test," to prove operability. A successful DG start in the required time verifies the starting air system is functioning properly. During cold shutdown, isolating each bank verifies the starting air system is capable of starting the DG in the required time and has suitable redundancy. The testing which is being recommended is currently being performed. Monthly DG operability tests are conducted as well as cold shutdown testing which isolates each starting air bank and starts the DG.

3.0 EVALUATION

Paragraph 4.2.1.2 of OM-10 requires full stroking of certain valves to the position required to fulfill its function. Paragraph 4.3.2.2 of OM-10 requires that each check valve shall be exercised or examined in a manner which verifies obturator travel to the required position to fulfill its function. However, the licensee requests relief from these requirements and proposes to verify the operability of the affected valves by successful demonstration of starting the DG monthly and during cold shutdown.

The purpose of IST is to provide assurance of the operability of components and to detect degradation in their performance. Where a particular component is integrated with other component in a system, it may be difficult to perform an individual test of that sub component. In specific cases for which individual testing is not feasible, an alternative test may be proposed. In Section 3.4 of NUREG-1482 the staff has determined that the testing of major component, such as the DG, is an acceptable means for verifying the operational readiness of "the skid-mounted and component subassemblies" if the licensee documents this approach in the IST program.

The solenoid and check valves of the associated DG are skid-mounted components. Individual testing of these valves is not feasible without disassembling the check valves and extensive modification of the solenoid valves. The proposed DG startup test will verify the operability of these valves on a monthly basis, and the proposed cold shutdown test by isolating each bank will verify that the starting air system is capable of starting the DG in the required time.

Therefore, the staff finds that the proposed test provides reasonable assurance of the valve operability, and imposition of Code requirements would result in hardship without a compensating increase in the level of quality or safety.

4.0 CONCLUSION

In summary, the staff finds that it is impractical for the licensee to test the affected valves individually as is required by the Code. The licensee's proposed alternative has been documented in the IST program, meets the guidance of Section 3.4 of NUREG-1482 for skid-mounted components, and provides reasonable assurance of valve operability. The staff, therefore, grants the requested relief pursuant to 10 CFR 50.55a(a)(3)(ii) on the basis that imposition of Code requirements would result in hardship without a compensating increase in the level of quality or safety. The staff determines that the relief is authorized by law and will not endanger life or property or the common defense and security and are otherwise in the public interest giving due consideration to the burden on the licensee if the requirements were imposed on the facility.

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Date: