

August 6, 2007

Mr. J. R. Morris
Site Vice President
Catawba Nuclear Station
Duke Power Company LLC
4800 Concord Road
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SUBJECT: CATAWBA NUCLEAR STATION, UNITS 1 AND 2, EVALUATION OF RELIEF
REQUEST CN-SRP-CA-01 ASSOCIATED WITH THE THIRD 10-YEAR
INTERVAL INSERVICE TESTING PROGRAM FOR PUMPS AND VALVES
(TAC NOS. MD3526 AND MD3527)

Dear Mr. Morris:

By letter dated August 15, 2006, Duke Power Company LLC (the licensee), submitted a request for relief from the American Society of Mechanical Engineers (ASME), *Boiler and Pressure Vessel Code* (Code), Section XI requirements for the Catawba Nuclear Station, Units 1 and 2, for the third 10-year interval inservice testing program for pumps and valves. By letter dated April 9, 2007, the licensee provided additional information. Based on its review, the Nuclear Regulatory Commission (NRC) staff found the proposed alternative to be acceptable. Therefore, pursuant to Title 10 of the *Code of Federal Regulations*, Part 50, Section 50.55a(a)(3)(ii), relief request CN-SRP-CA-01 is authorized on the basis that complying with the specified ASME OM Code requirements results in a hardship without a compensating increase in the level of quality and safety.

The NRC staff's evaluation and conclusions are contained in the enclosed Safety Evaluation.

Sincerely,

/RA/

Evangelos C. Marinos, Chief
Plant Licensing Branch II-1
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket Nos. 50-413 and 50-414

Enclosure:
Safety Evaluation

cc w/encl: See next page

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SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

THIRD 10-YEAR INTERVAL INSERVICE TESTING PROGRAM INTERAVAL

DUKE POWER COMPANY LLC.

CATAWBA NUCLEAR STATION, UNITS 1 AND 2

DOCKET NOS. 50-413 AND 50-414

1.0 INTRODUCTION

By letter dated August 15, 2006 (Agencywide Documents Access and Management System (ADAMS), Accession No. ML062340363), Duke Power Company LLC (the licensee), submitted relief request CN-SRP-CA-01 for the third 10-year interval inservice testing (IST) program at the Catawba Nuclear Station, Units 1 and 2 (Catawba 1/2). The licensee requested relief from certain IST requirements of the 1998 edition through 2000 addenda of the American Society of Mechanical Engineers (ASME), *Code for Operation and Maintenance of Nuclear Power Plants (OM Code)*. The Catawba 1/2 third 10-year IST interval commenced on August 19, 2005. By letter dated April 26, 2006 (ADAMS Accession No. ML071280289) the licensee provided additional information.

2.0 REGULATORY EVALUATION

Title 10 of the *Code of the Federal Regulations* (10 CFR), Part 50, Section 50.55a, requires that IST of certain ASME Code Class 1, 2, and 3 pumps and valves be performed at 120-month (10-year) IST program intervals in accordance with the specified ASME Code incorporated by reference in the regulations, except where alternatives have been authorized or relief has been requested by the licensee and granted by the Nuclear Regulatory Commission (NRC) pursuant to Paragraphs (a)(3)(i), (a)(3)(ii), or (f)(6)(i) of 10 CFR 50.55a. In accordance with 10 CFR 50.55a(f)(4)(ii), licensees are required to comply with the requirements of the latest edition and addenda of the ASME Code incorporated by reference in the regulations 12 months prior to the start of each 120-month IST program interval. In accordance with 50.55a(f)(4)(iv), IST of pumps and valves may meet the requirements set forth in subsequent editions and addenda that are incorporated by reference in 10 CFR 50.55a(b), subject to NRC approval. Portions of editions or addenda may be used provided that all related requirements of the respective editions and addenda are met. 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 the facility. Section 50.55a authorizes the Commission to approve alternatives and to grant relief from ASME Code requirements upon making necessary findings. NRC guidance contained in

Enclosure

Generic Letter (GL) 89-04, "Guidance on Developing Acceptable Inservice Testing Programs," provides alternatives to ASME Code requirements which are acceptable. Further guidance is given in GL 89-04, Supplement 1, and NUREG-1482, Revision 1, "Guidance for Inservice Testing at Nuclear Power Plants."

The Catawba 1/2 third 10-year IST interval commenced on August 19, 2005. The program was developed in accordance with the 1998 Edition through the 2000 Addenda of the ASME OM Code. By letter dated August 15, 2006, the licensee requested relief from certain requirements of the OM Code for the Catawba 1/2 third 10-year IST interval.

3.0 TECHNICAL EVALUATION

3.1 Pump Relief Request CN-SRP-CA-01

3.1.1 Code Requirements

Paragraph ISTB-3510(b)(1) states that the full-scale range of each analog instrument shall be not greater than three times the reference value.

3.1.2 Licensee's Basis for Requesting Relief

The licensee requested relief from the Code requirements of paragraph ISTB-3510(b)(1) for the auxiliary feedwater system pump suction pressure analog gauges for quarterly Group B tests. The auxiliary feedwater pumps are classified as Group B pumps. The gauges affected are:

1(2)CAPG5020	1A/2A Auxiliary Feedwater Pump Suction Pressure Gauge
1(2)CAPG5030	1B/2B Auxiliary Feedwater Pump Suction Pressure Gauge

The licensee's basis for relief is as follows:

There are two sets of gauges available to read auxiliary feedwater pump suction pressure, one local and one remote (in the control room). The local gauges do not meet the ASME OM Code required limit of no more than three times the reference value for the full scale reading of the gauge. The local gauges are the preferred location for reading the suction pressure during the quarterly Group B tests.

The installed process instrumentation for the auxiliary feedwater pump suction pressure measurement is as follows:

<u>Pump</u>	<u>Local</u>	<u>Control Room</u>
1A/2A	0-160 psig (0.5% error)	0-90 psig (1.12% error)
1B/2B	0-160 psig (0.5% error)	0-90 psig (1.12% error)

The control room and local gauges are calibrated to their piping instrument tap and readings are water leg adjusted for the difference between the tap and pump centerline. Both gauges come off of the same piping tap. The only difference then is the error associated with the gauge reading itself. The difference in suction pressure between using the control room gauge

(1.12% error) and the local gauge (0.5% error) is approximately 0.2 psi, which is negligible from both absolute and trending standpoints when differential pressures are in the range of 1550 psid.

The typical range of values for the suction pressure of the auxiliary feedwater pumps during testing is 33-38 psig. Therefore, the local process instrumentation on the pumps does not meet the criteria of ISTB-3510(b)(1). The accuracy of the process instrumentation (0.5%) is well below the 2.0% requirement specified in Table ISTB-3500-1 for pressure instrumentation accuracy. The actual reading error at test pressure due to the process instrumentation accuracy is $0.5\% \times 160/33 = 2.42\%$. If a 0-90 psig test instrument is used (which meets the requirement of ISTB-3510(b)(1)) and it has an accuracy of 2.0%, then the reading error due to instrument accuracy would be $2\% \times 90/33 = 5.45\%$. When the requirements of paragraph ISTB-3500 and Table ISTB-3500-1 are compared, the actual instrument error introduced to the test is less than the Code allowable (2.42% vs. 5.45%). Using the process instrument for suction pressure data does not degrade the quality of the test, and meets the intent of the instrumentation requirements of the Code.

For total error measurement, the accuracy of the loop should be considered. The error could then be calculated by the square root sum of the square (SRSS) method. As the same discharge pressure gauge is used, the difference in error using the SRSS method would be a function of the different suction pressure gauges used. Focusing on the suction pressure gauges alone, the quality of the test data when using either suction pressure gauge is not compromised.

3.1.4 Evaluation

The 2000 Addenda of the OM Code, ISTB-3510(a), requires that the accuracy of pressure instruments for Group B tests be within $\pm 2\%$ of full-scale for analog instruments. Additionally, ISTB-3510(b)(1) requires the full-scale range of each analog instrument be no greater than three times the reference value. The NRC in NUREG-1482, Rev. 1, Section 5.5.1 addresses the situation where the range of an analog instrument is greater than 3 times the reference value, but the accuracy is more conservative than the Code. The NUREG states that the NRC may grant relief when the combination of the range and accuracy yields a reading that is at least equivalent to the reading achieved from instruments that meet the Code requirements (i.e., up to $\pm 6\%$).

In this relief request the accuracy meets the Code requirements, however, the range exceeds the Code requirements. Considered together, the reading accuracy achieved from the installed instruments is 2.4%, which meets the intent of the Code and yields an acceptable level of quality and safety. Compliance with the Code would require the licensee to replace the existing instrumentation which would be burdensome to the licensee without a compensating increase in the level of quality and safety.

4.0 CONCLUSION

Based on the determination that the proposal provides reasonable assurance of operational readiness pursuant to 10 CFR 50.55a(a)(3)(ii), the NRC staff authorizes the licensee's proposed alternative on the basis that complying with the specified ASME OM Code

requirements results in hardship without a compensating increase in the level of quality and safety.

All other requirements of ASME Code, Section XI for which relief has not been specifically requested remain applicable, including third-party by the Authorized Nuclear Inservice Inspector.

Principal Contributor: R. Wolfgang

Date: August 6, 2007