



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
RELATED TO THE INSERVICE TESTING PROGRAM, SECOND TEN-YEAR INTERVAL
CAROLINA POWER AND LIGHT COMPANY
SHEARON HARRIS NUCLEAR POWER PLANT
DOCKET NUMBER 50-400

1.0 INTRODUCTION

The Code of Federal Regulations, 10 CFR 50.55a, requires that inservice testing (IST) of certain ASME Code Class 1, 2, and 3 pumps and valves are 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. NRC guidance contained in Generic Letter (GL) 89-04, "Guidance on Developing Acceptable Inservice Testing Programs," provides alternatives to the Code requirements determined to be acceptable to the staff. Alternatives that conform with the guidance in GL 89-04 may be implemented prior to receiving NRC approval, but should be included as relief requests for review by the staff. When alternatives are implemented in accordance with the relevant position in the GL, the staff has determined that relief should be granted pursuant to 10 CFR 50.55a(f)(6)(i) on the grounds that it is authorized by law, will not endanger life or property or the common defense and security, and is otherwise in the public interest. In making this determination, the staff considers the burden on the licensee that would result if the requirements were imposed.

Section 10 CFR 50.55a authorizes the Commission to approve alternatives and to grant relief from ASME Code requirements upon making the necessary findings. The NRC staff's findings with respect to authorizing alternatives and granting or not granting the relief requested as part of the licensee's IST program are contained in this Safety Evaluation (SE).

Carolina Power and Light Company (the licensee) based the Shearon Harris Nuclear Power Plant IST program on the requirements of the 1989 Edition of ASME Section XI, Subsections IWP and IWV, which is incorporated by reference in 10 CFR 50.55a. ASME Operations and Maintenance (OM) Standard Part 6, for IST of pumps is referenced by Subsection IWP and OM Standard, Part 10, for IST of valves is referenced by Subsection IWV. The relief requests were reviewed against the requirements of the 1989 Edition of ASME Section XI for pumps and valves. The second 10-year interval began on February 2, 1998, and ends on May 1, 2007. A summary of the NRC's action on each relief request is provided in Attachment 1. The test deferrals for valves which are in accordance with Part 10 have been reviewed and are summarized in Appendix C of the Technical Evaluation Report (TER), which is included as Attachment 2 to this SE.

ENCLOSURE

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2.0 EVALUATION

2.1 Relief Requests

The Mechanical Engineering Branch, with technical assistance from INEEL, has reviewed the information concerning IST program requests for relief submitted for the third 10-year interval for the Shearon Harris Nuclear Power Plant in a letter dated January 27, 1998. The staff adopts the evaluations and recommendations for granting relief or authorizing alternatives contained in the TER prepared by INEEL.

For the Shearon Harris IST Program, as summarized in Attachment 1 to the SE, relief is granted from, or alternatives are authorized in lieu of, the testing requirements which have been determined to be impractical to perform, where an alternative provides an acceptable level of quality and safety, or where compliance would result in a hardship or unusual difficulty without a compensating increase in quality or safety.

The granting of relief is based upon the fulfillment of any commitments made by the licensee in its basis for each relief request and the alternatives proposed. Program changes involving new or revised relief requests must be submitted to NRC for review. Program changes that add or delete components from the IST program should also be periodically provided to the NRC.

2.2 Deferred Test Justifications

The test deferrals of valves, as allowed by OM-10, were reviewed as part of INEEL's evaluation. Results of the review are provided in Appendix C of the TER with recommendations for further review by the licensee for specific deferrals. Results of the review of deferred test justifications do not necessarily constitute final approval and are subject to NRC inspection.

2.3 System Review

INEEL, using the Shearon Harris Updated Final Safety Analysis Report, conducted a scope review of the chemical volume control and component cooling water systems against the requirements of Section XI and the regulations. The review revealed several items that did not appear to be in compliance with the Code requirements (see Appendix B of the TER). In addition, editorial comments discovered during the system review are also noted in this Appendix. The licensee should review these items, as well as other systems that might contain similar issues, and revise their program and take any necessary actions as appropriate.

2.4 Relief Requests in Accordance with NRC GL 89-04

For any relief granted based on following the positions stated in GL 89-04, the staff (with technical assistance from INEEL) has reviewed the information submitted by the licensee to determine whether the proposed alternative testing follows the relevant position in the GL. New or revised relief requests that meet the positions stated in GL 89-04, Attachment 1, should be submitted to NRC but may be implemented prior to staff approval provided the guidance in GL 89-04, Section D, is followed.

2.5 Action Items

For several IST program relief requests, the staff identified certain action items for the licensee to complete. These action items are identified in Appendix A of the TER and should be addressed within one year from the date of this SE or by the end of the next refueling outage, whichever is later. In addition, the licensee should address program scope issues identified in Appendix B of the TER within one year from the date of this SE or by the end of the next refueling outage, whichever is later. Licensee actions to address the action items in this SE are subject to NRC inspection. The licensee is requested to respond to the NRC within one year of the date of this SE describing actions taken, actions in progress, or actions to be taken, to address each of these items.

3.0 CONCLUSION

The Shearon Harris IST program requests for relief from the Code requirements have been reviewed by the staff with the assistance of its contractor, INEEL. The TER provides INEEL's evaluation of these relief requests. The staff has reviewed the TER and adopts the evaluations and recommendations for granting relief or authorizing alternatives for implementation for the second 10-year interval with the exception of CE-VR1, which is authorized for one year or until the next refueling outage. A summary of the relief request determinations is presented in Attachment 1. The authorizing of alternatives or granting of relief is based upon the fulfillment of any commitments made by the licensee in its basis for each relief request and the alternatives proposed. The implementation of IST program and relief requests is subject to inspection by the NRC.

The licensee should refer to Appendices A and B of the TER for a discussion of recommendations identified during the review. The licensee should address each recommendation in accordance with the guidance therein. The action items identified in Appendix A of the TER should be addressed within one year of the date of this SE or by the end of the next refueling outage, whichever is later, unless otherwise specified in the TER.

The staff concludes that the relief requests as evaluated and modified by this SE provide reasonable assurance of the operational readiness of the pumps and valves to perform their safety-related functions. With respect to reliefs CB-VR1 and IA-VR1, the staff has determined that the requirements of the code are impractical and relief is granted pursuant to 10 CFR 50.55a (f)(6)(i). The relief granted is authorized by law and will not endanger life or property, or the common defense and security, and is otherwise in the public interest giving due consideration to the burden on the licensee if the requirements were imposed. The alternatives in relief requests AF-PR1, CC-VR1, CC-VR2, CE-VR1, CT-VR1, MS-VR1, and SI-VR1 are authorized pursuant to 10 CFR 50.55a (a)(3)(ii) in that compliance with the code would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety.

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Date: February 1, 1999

Attachment 1
SE Table 1
Shearon Harris Nuclear Power Plant

Summary of Relief Requests

<i>Request No.</i>	<i>TER Section</i>	<i>Test Requirements</i>	<i>Equipment Identification</i>	<i>Proposed Alternative</i>	<i>NRC Action</i>
AF-PR1	3.1.1	OM-6, Para. 4.6.1.2(a)	AF1A-SA and -SB	The existing permanently installed pump instrument is acceptable because the indicated accuracy is less than or equal to +6% as calculated at the reference value. No alternate testing or instrumentation will be utilized.	Alternative Authorized according to 10 CFR 50.55a(a)(3)(ii)
CB-VR1	4.3.1.1	OM-1, Para. 1.3.4.3(a)	1CB-3 and -7	The subject valves shall be tested to verify their open and close capability and set pressure in accordance with the requirements of OM-1 each refueling outage.	Relief Granted according to 10 CFR 50.55a(f)(6)(i)
CC-VR1	4.2.1.1	OM-10, Para. 4.3.2.	1 CC-306 and -307	A full-stroke closure exercise of the subject valves will be verified by a sample disassembly and inspection program as outlined in NRC Staff Position 2 in USNRC Generic Letter 89-04 "Guidance On Developing Acceptable Inservice Testing Programs." The subject valves are of the same design (manufacturer, size, model number and materials of construction) and have the same service conditions including valve orientation and together consist of one group. One of the subject valves shall be disassembled each refueling outage. During valve disassembly, the valve internals will be visually inspected for worn or corroded parts, and the valve disk shall be manually exercised. If the disassembled valve is not capable of being full-stroke exercised or if there is binding or failure of the valve internals, the other valve in this group shall also be disassembled, inspected, and manually full-stroke exercised during the same refueling outage.	Alternative Authorized according to 10 CFR 50.55a(e)(3)(ii)
CC-VR2	4.2.1.2	OM-10, Para. 4.3.2.	1CC-216, -227 and -236	A full-stroke closure exercise of the subject valves will be verified by a sample disassembly and inspection program as outlined in NRC Staff Position 2 in USNRC Generic Letter 89-04 "Guidance On Developing Acceptable Inservice Testing Programs." The subject valves are of the same design (manufacturer, size, model number and materials of construction) and have the same service conditions including valve orientation and together consist of one group. One of the subject valves shall be disassembled each refueling outage. During valve disassembly, the valve internals will be visually inspected for worn or corroded parts, and the valve disk shall be manually exercised. If the disassembled valve is not capable of being full-stroke exercised or if there is binding or failure of the valve internals, the other two valves in this group shall also be disassembled, inspected, and manually full-stroke exercised during the same refueling outage.	Alternative Authorized according to 10 CFR 50.55a(a)(3)(ii)

<i>Request No.</i>	<i>TER Section</i>	<i>Test Requirements</i>	<i>Equipment Identification</i>	<i>Proposed Alternative</i>	<i>NRC Action</i>
CE-VR1	4.1.1.1	OM-10, Para. 4.3.2.	1CE-36, -46 and -56	<p>A full-stroke closure of the subject valves will be verified by a sample disassembly and inspection program as outlined in NRC Staff Position 2 in USNRC Generic Letter 89-04 "Guidance On Developing Acceptable Inservice Testing Programs." The subject valves are of similar design (manufacturer, model number and materials of construction) and have the same service conditions including valve orientation. The only Position 2 criterion not met is the common size for all valves in the sampling group. 1CE-36 and 1CE-46 are 6 inch valves and 1CE-56 is an 8 inch valve. As identified in the NRC safety evaluation/technical evaluation (page 38 dated April 27, 1988) of the HNP 1st Ten-Year Interval IST Program, "Since all other factors are identical for these valves, the reviewer feels that even with the size disparity, these valves should be allowed to be grouped together because any failure mechanism should be common for all three valves."</p> <p>Since the failure mechanism should be common for all three valves, only one of the subject valves shall be disassembled each refueling outage. During valve disassembly, the valve internals will be visually inspected for worn or corroded parts, and the valve disk will be manually exercised. If the disassembled valve is not capable of being full-stroke exercised or if there is binding or failure of the valve internals, the other two valves in this group will also be disassembled, inspected, and manually full-stroke exercised during the same refueling outage.</p>	Alternative Authorized on an interim basis according to 10 CFR 50.55a(a)(3)(ii), for one year or until the next refueling outage.
CT-VR1	4.4.1.1	OM-10, Para. 4.3.2	1C-53 and -91	<p>A full-stroke opening exercise of the subject valves will be verified by a sample disassembly and inspection program as outlined in NRC Staff Position 2 in USNRC Generic Letter 89-04 "Guidance On Developing Acceptable Inservice Testing Programs." The subject valves are of the same design (manufacturer, size, model number and materials of construction) and have the same service conditions including valve orientation and together consist of one group. One of the subject valves shall be disassembled each refueling outage. During valve disassembly, the valve internals will be visually inspected for worn or corroded parts, and the valve disk shall be manually exercised. If the disassembled valve is not capable of being full-stroke exercised or if there is binding or failure of the valve internals, the other valve in this group shall also be disassembled, inspected, and manually full-stroke exercised during the same refueling outage.</p> <p>After the disassembly of the subject valves, these valves will be local leakage rate tested in accordance with the requirements of 10 CFR 50, Appendix J.</p>	Alternative Authorized according to 10 CFR 50.55a(a)(3)(ii)

<i>Request No.</i>	<i>TER Section</i>	<i>Test Requirements</i>	<i>Equipment Identification</i>	<i>Proposed Alternative</i>	<i>NRC Action</i>
IA-VR1	4.5.1.1	OM-10, Para. 4.3.2	1IA-786, -787, -788 and -789	<p>These valves shall be tested as a pairs as identified in section 4.1.1 of USNRC NUREG-1482 each refueling outage since only one of the two valves is required by the system design. Pair # 1 will consist of valves 1 IA-786 & 1 IA-787. Pair #2 will consist of valves 1 IA-788 and 1IA-789. These valves and the air accumulators are presently tested as a pair by a pressure decay test of the subject valves and associated accumulator.</p> <p>Since all of the subject valves are ASME Section III Class 2 valves, they will have equivalent quality assurance requirements.</p>	Relief Granted according to 10 CFR 50.55a(f)(6)(i)
MS-VR1	4.6.1.1	OM-10, Para. 4.3.2	1MS-71 and -73	<p>Full-stroke closure of the subject valves will be verified by a sample disassembly and inspection program as outlined in NRC Staff Position 2 in USNRC Generic Letter 89-04 "Guidance On Developing Acceptable Inservice Testing Programs." The subject valves are of the same design (manufacturer, size, model number and materials of construction) and have the same service conditions including valve orientation and together consist of one group. One of the subject valves shall be disassembled each refueling outage. During valve disassembly, the valve internals will be visually inspected for worn or corroded parts, and the valve disk shall be manually exercised. If the disassembled valve is not capable of being full-stroke exercised or if there is binding or failure of the valve internals, the other valve in this group shall also be disassembled, inspected, and manually full-stroke exercised during the same refueling outage.</p>	Alternative Authorized according to 10 CFR 50.55a(a)(3)(ii)
SI-VR1	4.7.1.1	OM-10, Para. 4.3.2	1SI-249, -250, -251, -252, -253 and -254	<p>A full-stroke opening exercise of the subject valves will be verified by a sample disassembly and inspection program as outlined in NRC Staff Position 2 in USNRC Generic Letter 89-04 "Guidance On Developing Acceptable Inservice Testing Programs." The subject valves are of the same design (manufacturer, size, model number and materials of construction) and have the same service conditions including valve orientation and together consist of two groups.</p> <p>Group #1 consists of the check valves closest to the safety injection accumulators (1SI-249, 1SI-251 and 1S I-253). Group #2 consists of the check valves closest to the reactor coolant system (1SI-250, 1SI-252, and 1SI-254). One of the subject valves in each group shall be disassembled each refueling outage. During valve disassembly, the valve internals will be visually inspected for worn or corroded parts, and the valve disk shall be manually exercised. If the disassembled valve is not capable of being full-stroke exercised or if there is binding or failure of the valve internals, the other two valves in the specific group shall also be disassembled, inspected, and manually full-stroke exercised during the same refueling outage. Valves will be part stroke open exercised after reassembly.</p>	Alternative Authorized according to 10 CFR 50.55a(a)(3)(ii)