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'S THIRD TEN-YEAR INTERVAL VIRGINIA ELECTRIC AND POWER COMPANY SURRY POWER STATION, UNITS 1 AND 2 DOCKET NUMBERS 50-280 50-281

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 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. NRC guidance contained in Generic Letter (GL) 89-04, *Guidance on Developing Acceptable Inservice Testing Programs*, provides alternatives to the Code requirements determined acceptable to the staff. Alternatives that conform with the guidance in GL 89-04 may be implemented without additional NRC approval. Relief requests that conform with GL 89-04 are not evaluated in the Techanical Evaluation Report (TER), though they have been reviewed to determine conformance and any concerns identified by such reviews are discussed in Appendix A, "IST Program Anomalies."

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).

This SE covers Revision 0 of the IST Program relief requests submitted for the Surry Power Station, Units 1 and 2, in a Virginia Electric and Power Company, the licensee, letter dated October 19, 1993. An additional relief request for each unit (V-52) was submitted in a letter dated April 26, 1994. The Surry 1 and 2 IST Program covers the third ten-year interval, which began on May 10, 1994, and will end on May 10, 2004. Their IST Program is based on the requirements in the 1989 Edition of ASME Section XI.

2.0 EVALUATION

The Mechanical Engineering Branch, with technical assistance from Idaho National Engineering Laboratory (INEL), has reviewed the information concerning Revision 0 of the Surry 1 and 2 IST Program relief requests submitted by the licensee in letters dated October 19, 1993 and April 26, 1994 (Relief Request V-52). The staff adopts the evaluations and recommendations for granting relief or authorizing alternatives contained in the attached Technical Evaluation Report

(TER), prepared by INEL. Table 1 of the SE lists each relief request and the status of approval.

For the Surry 1 and 2 IST Program, relief is granted from, or alternatives are authorized for, 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. Fourteen relief requests were granted provisionally or on an interim basis and require additional action by the licensee. No relief requests were denied. Appendix A of the TER summarizes the actions required of the licensee resulting from the evaluation of the new and revised relief requests. The requests which are granted or authorized are acceptable for implementation provided the anomalies identified in Appendix A of the TER are addressed within one year of the date of the SE or by the end of the next refueling outage, whichever is later. Additionally, 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 should be submitted to NRC for review. New or revised relief requests that meet the positions stated in GL 89-04, Attachment 1, should be submitted to the NRC but may be implemented provided the guidance in GL 89-04, Section D, is followed. Program changes that add or delete components from the IST Program should also be periodically provided to the NRC.

3.0 CONCLUSION

The Surry 1 and 2 IST program requests for relief from the Code requirements have been reviewed by the staff with the assistance of its contractor, INEL. The TER provides INEL's evaluation of these relief requests. The staff has reviewed the TER and concurs with the evaluations and recommendations for granting relief or authorizing alternatives. A summary of the relief request determinations is presented in Table 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 NRC.

The NRC has identified a number of generic deficiencies that affect plant safety and have frequently appeared as IST programmatic weaknesses. These are addressed by GL 89-04. In that letter, the Staff delineated positions that describe deficiencies and explained alternatives to the ASME Code that the staff considers acceptable. If alternatives are implemented in accordance with the relevant position in the generic letter, the staff has determined that relief should be granted pursuant to 10 CFR 50.55a(g)(6)(i) (now (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 has considered the burden on the licensee that would result if the requirements were imposed.

For any relief granted pursuant to GL 89-04 the staff (with technical assistance from INEL) has reviewed the information submitted by the licensee to determine whether the proposed alternative follows the relevant position in the generic letter. If an alternative conforms to a position of the generic letter, it is listed as having been approved pursuant to GL 89-04 in Table 1 of the SE. Any anomalies in the relief request are addressed in the TER and identified in Table 1.

The licensee should refer to the TER, Appendix A, for a discussion of recommendations identified during the review. The licensee should address each recommendation in accordance with the guidance therein. The IST Program relief requests are acceptable for implementation provided the anomalies identified in Appendix A are addressed within one year of the date of this SE or by the end of the next refueling outage, whichever is later. The licensee should 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.

The staff concludes that the relief requests as evaluated and modified by this SE will provide reasonable assurance of the operational readiness of the pumps and valves to perform their safety-related functions. The staff has determined that granting relief pursuant to 10 CFR 50.55a (f)(6)(i) and authorizing alternatives pursuant to 10 CFR 50.55a (a)(3)(i) or (a)(3)(ii) is authorized by law and will not endanger life or property, or the common defense and security and is otherwise in the public interest. In granting relief pursuant to 10 CFR 50.55a(f)(6)(i), the staff has considered the impracticality of performing the required testing and the burden on the licensee if the requirements were imposed.

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SURRY POWER STATION UNITS 1 AND 2
SAFETY EVALUATION TABLE 1
SUMMARY OF RELIEF REQUESTS

Relief Request Number	TER Section	Section XI Requirement	Equipment Identification	Proposed Alternate Method of Testing	NRC Action
Pump P-1	2.1.1.1	OM-6, 4.3: Vibration measurement reference value requirements	All pumps in the IST program.	Set the minimum vibration velocity reference values for pumps with a measured vibration velocity below 0.05 in/sec. at 0.05 in/sec.	Alternative authorized on an interim basis pursuant to 10CFR50.55a(a)(3)(ii) with provision.
Pump P-7	2.2.1.1	OM-6, 5.1: Test frequency	Residual heat removal (RHR) pumps: 1(2)-RH-P-1A and 1(2)-RH-P-1B	Test during cold shutdowns, but not to exceed once every three months.	Relief granted pursuant to 10CFR50.55a(f)(6)(i)
Pump P-11 (Unit 1)	2.3.1.1	OM-6, 4.3 and 4.6.2.2: Reference value and differential pressure (d/p) measurement requirements	Emergency service water pumps: 1-SW-P-1A, 1-SW-P-1B, and 1-SW-P-1C	Tests pumps within the tide level limits of a pump reference curve. Compare pump flow rate (Q) to acceptance criteria based on reference curve and ranges given in OM Part 6, Table 3b. Discharge pressure will not be measured.	Interim relief granted pursuant to 10CFR50.55a(f)(6)(i) for one year or until the next refueling outage, whichever is later.
Pump P-16 (Unit 1)	2.4.1.1	OM-6, 4.3 and 4.6.2.2: Measure and evaluate flow rate	Main control room (MCR) air conditioning pumps: 1-VS-P-1A, 1-VS-P-1B, and 1-VS-P-1C.	Determine pump Q by measuring d/p across chiller condensers. Set alert value at 264 gpm, required action range at 240 gpm. Investigate system and pump if discharge pressure of at least 30 psig cannot be achieved with a shut backwash valve. Install inlet pressure and Q measuring instruments by the end of the Unit 1, cycle 12 refueling outage, which is scheduled for the second quarter of 1994.	Interim relief granted pursuant to 10CFR50.55a(f)(6)(i) for one year or until the next refueling outage, whichever is later.

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Relief Request Number	TER Section	Section XI Requirement	Equipment Identification	Proposed Alternate Method of Testing	NRC Action
Pump P-17 (Unit 1)	2.4.2.1	OM-6, 4.3: Set reference values at repeatable points of operation	MCR air conditioning system chilled water circulating pumps: 1-VS-P-2A, 1-VS-P-2B, and 1-VS-P-2C.	Use straight line approximation method to determine d/p reference points as a function of flow between test points. Set upper required action limit at 110% of reference d/p (P_{rdiff}), and lower required action limit at 90% of P_{rdiff}. No alert range will be assigned.	Relief granted pursuant to 10CFR50.55a(f)(6)(i) with provision.
Pump P-16 (Unit 2) P-19 (Unit 1)	2.5.1.1	OM-6, 4.3: Measure flow and differential pressure at repeatable points of operation	Component cooling pumps: 1-CC-P-1A, 1-CC-P-1B, 1-CC-P-1C, and 1-CC-P-lD	Use straight line approximation method to determine d/p reference points as a function of flow between test points. Set upper required action limit at 110% of reference d/p (P_{rdiff}), and lower required action limit at 90% of P_{rdiff}. No alert range will be assigned.	Relief granted pursuant to 10CFR50.55a(f)(6)(i) with provision.
Pump P-18 (Unit 2) P-21 (Unit 1)	2.6.1.1	OM-6, 4.6.1.1 and 4.6.1.2: Instrument accuracy and full-scale range requirements	Chemical and volume control pumps: 1-CH-P-2A, 1-CH-P-2B, 1-CH-P-2C, and 1-CH-P-2D.	Use inlet pressure gauges with a full-scale range of 0 to 15 psig and calibrated to an accuracy of $\pm 3\%$. Loop accuracies for discharge pressure gauges will be maintained to ensure the d/p error is below that allowed by Code.	Alternate authorized pursuant to 10CFR50.55a(a)(3)(i).
Valve V-5	N.A.	OM-10, 4.3.2.4(c): Disassembly frequency requirements	Main Feedwater check valves: 1(2)-FW-10, -41, -72	Disassemble and inspect on a sampling basis during refueling outages.	Approved by GL 89-04, Position 2, request not evaluated in SE/TER.

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Relief Request Number	TER Section	Section XI Requirement	Equipment Identification	Proposed Alternate Method of Testing	NRC Action
Valve V-20	N.A.	OM-10, 4.3.2.4(c): Disassembly frequency requirements	Low head safety injection (LHSI) pump suction from containment sump check valves: 1(2)-SI-47 and -56	Disassemble and inspect on a sampling basis during refueling outages.	Approved by GL 89-04, Position 2, request not evaluated in SE/TER.
Valve V-26	3.2.1.1	OM-10, 4.3.2.2: Test frequency requirements	The accumulator discharge check valves: 1(2)-SI-107, -109, -128, -130, -145, and -147.	Verify a full-stroke exercise using non-intrusive techniques on a sampling basis during refueling outages. All valves will be tested with flow each refueling outage and one valve from each group will be verified open with nonintrusive methods during each outage on a rotating basis.	Relief granted with provision pursuant to 10CFR50.55a(f)(6)(i)
Valve V-27	3.2.1.2	OM-10, 4.3.2.2: Exercising method requirements	The safety injection to RCS hot legs check valves: 1(2)-SI-88, -91, -94, -238, -239, and -240	Exercise closed as pairs instead of individually at the frequency described in TS Table 4.1-2A. If a pair fails the test, both valves will be subject to inspection, repair, or replacement.	Relief granted with provisions pursuant to 10CFR50.55a(f)(6)(i)
Valve V-41	3.3.1.1	OM-10, 4.3.2.4(c): Disassembly frequency requirements	Auxiliary feedwater (AFW) pump recirculation line and pump oil cooler check valves: 1(2)-FW-144, -148, -159, -163, -174, and -178	Disassemble and inspect on a sampling basis at a refueling outage interval, but not necessarily during the refueling outage.	Relief granted pursuant to 10CFR50.55a(f)(6)(i) with provisions.

SURRY POWER STATION UNITS 1 AND 2
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Relief Request Number	TER Section	Section XI Requirement	Equipment Identification	Proposed Alternate Method of Testing	NRC Action
Valve V-42	3.3.1.1	OM-10, 4.3.2.4(c): Test frequency requirements	Main steam header supply check valves to the turbine driven AFW pump: 1(2)-MS-176, -178, and -182	Disassemble and inspect on a sampling basis at a refueling outage interval, but not necessarily during the refueling outage.	Relief granted pursuant to 10CFR50.55a(f)(6)(i) with provisions.
Valve V-43	N.A.	OM-10, 4.3.2.4(c): Disassembly frequency requirements	Containment spray pump discharge check valves: 1-CS-13, -24, -105, -127, 1-RS-11 and -17 (2-CS-13, -24, -104, -105, 1-RS-11 and -17)	Disassemble and inspect on a sampling basis during refueling outages.	Approved by GL 89-04, Position 2, request not evaluated in SE/TER.
Valve V-46 (Unit 1)	3.5.1.1	OM-10, 4.3.2.4(c): Disassembly frequency requirements	Service water check valves to the main control room air conditioning chillers: 1-SW-313, -323, and -333	Disassemble and inspect on a refueling outage interval, but not necessarily during the refueling outage, until a system modification is performed that will permit quarterly testing, after which they will be tested quarterly.	Relief granted pursuant to 10CFR50.55a(f)(6)(i) with provisions.
Valve V-46 (Unit 2)	3.5.1.2	OM-10, 4.3.2.4(c): Disassembly frequency requirements	Service water supply vent valves to the recirculation spray heat exchanger: 2-SW-247, -249, 251, and -253	Disassemble and inspect on a refueling outage interval, but not necessarily during the refueling outage, until a system modification is performed that will permit quarterly testing, after which they will be tested quarterly.	Relief granted pursuant to 10CFR50.55a(f)(6)(i) with provisions.

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Relief Request Number	TER Section	Section XI Requirement	Equipment Identification	Proposed Alternate Method of Testing	NRC Action
Valve V-47	3.1.1.1	OM-10, 1.3 and 4.2.1.8: Stroke time measurement and acceptance criteria requirements	The power operated valves listed in relief request V-47.	Measure the stroke times by observing the valve stems locally. The acceptance criteria of OM-10, 4.2.1.8 will not be applied.	Relief Granted pursuant to 10CFR50.55a(f)(6)(i)
Valve V-50	N.A.	OM-10, 4.3.2.4(c): Disassembly frequency requirements	Charging pump service water pump discharge check valves: 1-SW-108, -113, -130, -262, and -268 (2-SW-108, -113, -130, -442, and -445)	Disassemble and inspect on a sampling basis during refueling outages.	Approved by GL 89-04, Position 2, request not evaluated in SE/TER.
Valve V-51	3.1.2.1	OM-10, 4.2.2.3(f): Leak rate test corrective action requirements	All of the containment isolation valves (CIVs) in the IST program	Allow an evaluation of CIV leakage rates that are above the allowable leakage limits for individual valves as long as the overall containment leakage is less than $0.6L_a$. Valves with high leakage rates need not be repaired or replaced if the evaluation indicates that the containment leakage rate will remain below $0.6L_a$ until the next Type C tests.	Alternate authorized pursuant to 10CFR50.55a(a)(3)(ii) with provisions.

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Relief Request Number	TER Section	Section XI Requirement	Equipment Identification	Proposed Alternate Method of Testing	NRC Action
Valve V-52	3.1.3.1	OM-10, 4.2.2.3(f): Leak rate test corrective action requirements	The RWST isolation valves listed in the IST program	Allow an evaluation of RWST isolaiton valve leakage rates that are above the allowable leakage limits for individual valves as long as the overall leakage rate to the RWST is less than the limit. Valves with high leakage rates need not be repaired or replaced if the evaluation indicates that the overall leakage rate will remain below the limit until the next tests.	Alternate authorized pursuant to 10CFR50.55a(a)(3)(ii) with provisions.