



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

February 12, 1996

Mr. J. P. O'Hanlon
Senior Vice President - Nuclear
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5000 Dominion Blvd.
Glen Allen, Virginia 23060

SUBJECT: REVIEW OF RESPONSES TO ANOMALIES IN SAFETY EVALUATION SURRY POWER STATION, UNITS 1 AND 2 INSERVICE TESTING PROGRAM (TAC NOS. M93931 AND M93932)

Dear Mr. O'Hanlon:

In a letter dated October 12, 1995, Virginia Electric and Power Company, licensee for the Surry Power Station, responded to 14 anomalies identified in an NRC Safety Evaluation (SE) dated October 20, 1994, for the Surry Power Station, Units 1 and 2, Inservice Testing (IST) Program. The staff has reviewed the responses and determined that the licensee has addressed each one in a manner that established its position on the issue discussed in the anomaly. Where provisional relief was granted in the SE, the applicable relief requests have been modified to reflect the actions taken to address the specific provisions. All actions are subject to further review through NRC inspection activities. Each of the anomalies is discussed below.

Anomaly 1: The licensee has described the process for including components in the IST program and for determining the applicable tests. The actions taken appear to adequately address this anomaly.

Anomaly 2: The licensee indicates that the disassembly and inspection activity for certain check valves conforms with the sampling plan guidance in Generic Letter (GL) 89-04, unless specifically noted in the applicable relief requests. Relief Request V-50 was deleted and the licensee pointed out that the internals for valve 1(2)-SW-130 have been removed. Relief Requests V-5, V-20, and V-43 were not revised; therefore, as stated in the SE, the requests indicate compliance with GL 89-04, and it is assumed that for these three relief requests, the licensee complies with the guidance, and this anomaly has been adequately addressed.

Anomaly 3: The licensee has indicated that it is exploring alternative means of testing check valves where it may be feasible to use nonintrusive techniques. In some cases, nonintrusive techniques have already been ruled out, and for others, the techniques are being further evaluated. Relief Requests V-46 for Unit 1 and V-50 for both units are withdrawn.

Anomaly 4: For smooth-running pumps, the licensee has evaluated the operation of the applicable pumps for the time the pumps have been in service. Also, a review of the rigidity of the foundation of the pumps has indicated that none are susceptible to dampening to the point that vibration data is not

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trendable. The licensee has committed to adopt any requirements related to the acceptable levels for monitoring smooth-running pumps that become part of the Code as stipulated in the NRC's approval of the alternative acceptance criteria.

Anomaly 5: Interim relief was granted pursuant to 10 CFR 50.55a(f)(6)(i) for using pump curves to monitor the emergency service water pumps and to use suction pressure only rather than differential pressure. The licensee has determined that differential pressure may be determined using the measured tide level and discharge pressure, and has deleted this portion of the relief request. We consider this method of determining the differential pressure acceptable to meet the Code requirements as long as the calculation is included in the test procedure. Relative to the pump curve testing, the SE indicated that the request lacked the detail necessary to determine if the method of developing and maintaining the curves was acceptable. The licensee indicates that it complies with the seven elements identified in the SE, which are basically the same elements listed in NUREG-1432, "Guidelines for Inservice Testing at Nuclear Power Plants," for using pump curves for IST with the exception of a minimum of five points for establishing the curve. Because the test to develop the curve is directly dependent on the tide level, which varies over an 11-hour period, and because the maximum change over the range of the tide variation (approximately 1000 gallons per minute (gpm) for each 3 feet of tide level change compared to a mid-reference value of 17,000 gpm for the pumps), only three points will be used to establish and reestablish, following maintenance, the curves for the pumps. Relief is therefore granted pursuant to 10 CFR 50.55a(f)(6)(i) based on the impracticality of performing the testing in accord with the Code requirements (i.e., a single reference point). The relief is no longer considered "interim." In granting this relief, the staff considered the burden on the licensee if the Code requirements were imposed, as discussed in the SE. If at a later time the licensee determines that the curves do not provide an adequate means for monitoring degrading conditions (e.g., an unanticipated pump failure due to degraded hydraulic performance), an evaluation should be performed to determine an adequate number of points for the curve.

Anomaly 6: The relief request for an interim period of time necessary to install adequate instrumentation for the main control room air conditioning pumps has been withdrawn. The installation has been completed.

Anomaly 7: Relief was granted to use pump curves for monitoring the main control room air conditioning system chilled water circulating pumps. Relief was granted with the provision that the licensee implement seven specific elements for developing and maintaining the pump curves. The licensee indicates that the testing will comply with the elements with the exception that only three points rather than five points will be used to establish the curves. The licensee's basis for the adequacy of three points is that in the range of the testing, the curve approximates a straight line; therefore, three points would adequately establish the curves. The staff finds this acceptable and the relief granted is modified accordingly. If at a later time the licensee determines that the curves do not provide an adequate means for

monitoring degrading conditions (e.g., an unanticipated pump failure due to degraded hydraulic performance), an evaluation should be performed to determine an adequate number of points for the curve.

Anomaly 8: Relief was granted to use pump curves for monitoring the component cooling water pumps. Relief was granted with the provision that the licensee implement seven specific elements for developing and maintaining the pump curves. The licensee indicates that the testing will comply with the elements with the exception that only three points rather than five points will be used to establish the curves. The licensee's basis for the adequacy of three points is that in the range of the testing, the curve approximates a straight line; therefore, three points would adequately establish the curves. The staff finds this acceptable and the relief granted is modified accordingly. If at a later time the licensee determines that the curves do not provide an adequate means for monitoring degrading conditions (e.g., an unanticipated pump failure due to degraded hydraulic performance), an evaluation should be performed to determine an adequate number of points for the curve. NOTE: The SE incorrectly referred to the licensee's request as "interim" relief; however, the relief granted was not considered interim.

Anomaly 9: The anomaly pointed out that if a means of more accurately measuring the stroke times for the applicable valves becomes available, the licensee should use the more accurate method (i.e., diagnostic testing). The licensee has included diagnostic testing in the program for the tests performed following maintenance or when an air-operated valve fails the less rigorous IST (i.e., measuring stroke times by observing the valve stems locally). The valves are in the service water system and are subject to internal fouling, which is perhaps the greatest concern related to operability of the valves. The licensee believes that the less rigorous method will identify gross failure (i.e., failure due to internal fouling of the working mechanisms of the valve), supplemented by the diagnostic testing as needed. This approach is acceptable for long-term monitoring of the valves.

Anomaly 10: The anomaly recommended that the licensee document how it will evaluate excessive leakage rates for containment isolation valves in lieu of repair or replacement. The licensee indicates that it will determine the cause for the leakage, evaluate the effect of the degradation, and assess the ability of the valve to maintain the overall leakage limits for the containment. The evaluations will be documented in plant records and will be subject to NRC inspection and review.

Anomaly 11: This anomaly concerned the grouping of check valves for performing disassembly and inspection. Valve 1(2)-SI-109 will be grouped with SI-130 and SI-147 (Relief Request V-26 has been revised to reflect the change) based on the conditions the valve is subjected to during normal operations as related to the remaining valves. The grouping is subject to further NRC review through inspection.

Anomaly 12: The licensee indicated that the upstream valves in the accumulator discharge line were added during construction to provide double isolation between the reactor coolant system and sensitized stainless steel piping. The series of two valves are to be tested as one barrier for the purpose of closure verification. The anomaly indicated that the request was approved with the provision that only one valve is credited in the plant's safety analysis. Whether the valves perform the same function and whether the testing adequately demonstrates that at least one of the pair of valves can close are issues subject to inspection. If the only function in the closed direction is isolation of the reactor coolant boundary during normal isolation, the valves (one or both) may have a "protection" function but may not have a function to shut down the reactor, maintain safe shutdown, or mitigate the consequences of an accident; however, the licensee has determined that the valves are subject to closure testing, so it is assumed that the barrier is required to function following discharge of the tanks. The design or licensing basis function(s) of these valves is subject to further review during NRC inspection efforts.

Anomaly 13: This anomaly related to the licensee's request to perform disassembly and inspection of check valves during power operations rather than during a refueling outage. The licensee has reviewed the staff's recommendations regarding the disposition of valves in the same group when an inspected valve has failed and indicates that the portion of the relief request dealing with disassembly while the station is at power has been withdrawn.

Anomaly 14: The anomaly discussed whether valves designated as pressure isolation valves (PIVs) in the licensee's response to Generic Letter 87-06, "Periodic Verification of Leak Tight Integrity of Pressure Isolation Valves," should be tested to verify the capability to close. The licensee has reviewed the discussion and has provided information on the valve configurations at issue, concluding that the valves need not be tested for the closed function in the IST program, relying on the licensing basis for the plant. The licensee's assessment appears to consider all NRC guidance issued on the subject and appears acceptable to address the concerns identified in the anomaly.

This completes the technical review of this issue and we are, therefore, closing out TAC Numbers M93931 and M93932.

Sincerely,
 (Original Signed By)
 David B. Matthews, Director
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 Division of Reactor Projects - I/II
 Office of Nuclear Reactor Regulation

Docket Nos. 50-280 and 50-281

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