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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO THE INSERVICE TESTING PROGRAM

AND REQUEST FOR RELIEF

VIRGINIA ELECTRIC AND POWER COMPANY

SURRY POWER STATION, UNIT NOS. 1 AND 2

DOCKET NOS. 50-280 AND 50-281

1.0 INTRODUCTION

By letter dated November 30, 1990, Virginia Electric and Power Company submitted a relief request related to the inservice pump testing program for Surry Power Station, Units 1 and 2. Relief request P-4 requested relief from requirements for outside recirculation spray pumps concerning inlet pressure measurements.

2.0 RELIEF REQUEST P-4

The licensee requested relief from ASME Section XI, IWP-4200, pump test requirements to measure differential pressure. This relief request is applicable only for testing of the outside recirculation spray pumps 1-RS-P-2A, 1-RS-P-2B, 2-RS-P-2A and 2-RS-P-2B.

2.1 Basis for Relief

The outside recirculation spray pumps obtain flow through a suction bell immersed in the pump casing. During testing, a casing level is established by filling the casing with primary grade water to provide net positive suction head (NPSH) to the pump. Flow is recirculated through the pump, recirculation line, and back to the casing. By establishing a casing level and maintaining it constant for all tests, any variation in pump differential pressure would be directly indicated by monitoring pump discharge pressure. The static inlet pressure will be calculated and subtracted from the discharge pressure to yield a differential pressure.

2.2 Alternate Testing

The licensee proposes to maintain a constant pump casing water level from test to test by filling the casing with primary grade water to yield the same suction pressure for each test, then measure discharge pressure. The static inlet pressure will be calculated and subtracted from the discharge pressure to yield a differential pressure.

2.3 EVALUATION

The licensee proposes to test these pumps quarterly to verify operability using recirculation test loops. The recirculation test loops for these pumps are closed paths with flow through the pump, recirculation line, and back to the casing and pump inlet. The recirculation test loop will be verified to be filled with water and vented to establish initial test conditions. The pump takes suction from and discharges to the same sump in a closed loop during testing. Therefore, the pump suction pressure will remain constant for the test loop from test to test. The licensee's proposed alternate method to monitor discharge pressure and subtract the calculated static suction pressure, based on head, from the measured discharge pressure to determine the differential pressure developed by the pump is acceptable. Furthermore, instrumentation does not exist in the pump inlet and, therefore, pressure measurements cannot be taken.

If relief from the requirement to measure differential pressure is not granted, a system modification would be necessary to allow direct measurement of pump inlet pressure. This modification would be impractical and burdensome for the licensee in that the additional information provided would have minimal impact on the licensee's ability to detect pump operational readiness or degradation.

3.0 CONCLUSION

Based on the impracticality of obtaining suction pressure measurements, the burden on the licensee if these code requirements were imposed, and the licensee's proposed alternate testing methods, we conclude that relief may be granted from the requirements of IWP-4200 pursuant to 10 CFR 50.55a(g)(6)(i). Interim approval of the relief request was verbally granted by the NRC on November 30, 1990.

This relief 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 this relief, the staff has given due consideration to the burden that could result if the requirements were imposed on the facility.

Principal Contributor: F. Grubelich

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