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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

REQUEST FOR RELIEF FROM SECTION XI HYDROSTATIC REQUIREMENTS

VIRGINIA ELECTRIC AND POWER COMPANY

SURRY POWER STATION, UNIT 2

DOCKET NO. 50-281

BACKGROUND

10 CFR 50.55a(g) requires examinations and tests of nuclear power facility piping and components be performed in accordance with the requirements of the applicable ASME Section XI Code edition and addenda. If it is impractical to meet a requirement, the licensee of the facility is required to notify the Commission and, upon making the necessary findings, the Commission may grant relief from the requirement giving due consideration to the burden upon the licensee that could result if the requirement were imposed on the facility.

By letter dated March 29, 1993, Virginia Electric and Power Company (the licensee) submitted to the NRC a request for relief from the hydrostatic test requirements of the 1980 Edition, Winter 1980 Addenda of Section XI of the ASME Code for a welded replacement valve in the Auxiliary Feedwater System at Surry Power Station, Unit 2. The information provided by the licensee is evaluated herein pursuant to 10 CFR 50.55a to determine if the necessary findings can be made to grant the request.

REQUEST AND SUPPORTING INFORMATION

A. RELIEF REQUESTED

Relief is requested from the hydrostatic test pressure requirement of the 1980 Edition, Winter 1980 Addenda of Section XI of the ASME Code for the weld on the inlet side of Class 3 check valve 2-FW-142.

B. SECTION XI CODE REQUIREMENT

A component repair or replacement shall be pressure tested as required by IWA-4400 and IWA-7000 prior to resumption of service. The test pressure and temperature, subsequent to component repair, shall conform with the system test pressure and temperature specified in IWD-5000. Where a repaired or replaced component is isolable within a portion of the system, only that portion need be pressure tested.

The system hydrostatic test pressure shall be a least 1.25 times the system pressure, Psv, for systems with design temperature above 200°F. The system pressure, Psv, shall be the lowest pressure setting among the number of safety or relief valves provided for overpressure protection within the boundary of the system to be tested.

The system test temperature during a system hydrostatic test in systems constructed of ferritic steel components shall satisfy either the requirements of fracture prevention criteria, as applicable, or the test temperature determined by the owner.

C. LICENSEE'S BASIS FOR REQUESTING RELIEF

Valve 2-FW-142 is the 6-inch discharge check valve for the steam driven auxiliary feedwater pump, 2-FW-P-2. This valve prevents reverse flow, while operating one of the two other parallel auxiliary feedwater pumps. Valve 2-FW-142 has experienced some internal leakage past the check valve disc. As a result of this internal leakage, replacement of the valve is being completed for this outage.

The upstream side of this valve cannot be isolated from the auxiliary feedwater pump (2-FW-P-2) during the required hydrostatic test since no intermediate isolation exists, and the pump discharge piping is welded directly to the pump connection. Additionally, some of the suction piping will be included in the hydrostatic test boundary. The pump suction connection is a flange connection. However, using this flange for isolation purposes is considered difficult and undesirable due to the piping arrangement, and susceptibility to cold spring misalignment problems.

The IWD-5223 test pressure based on the design requirements of 2-FW-142 is 1576 psig. The inlet piping design pressure to pump 2-FW-P-2 is only 150 psig. Conducting the required IWD-5223 test would result in overpressurization of the low pressure components.

IWA-5224(d) of ASME Section XI allows the use of the pressure rating for the suction piping out to the first discharge shut-off valve in the case of centrifugal pumps during hydrostatic tests. Use of this paragraph in this application would require that only a 165 psig hydrostatic test be performed on this replacement. Code Committee personnel have indicated that a normal hydrostatic test (1576 psig) should be required for this replacement, and that the use of IWA-5224(d) in this situation is not appropriate. As such, a relief request is needed due to the overpressure concerns.

D. LICENSEE'S PROPOSED ALTERNATIVES

It is proposed that a volumetric and surface examination be performed on the new upstream weld of 2-FW-142 in lieu of a hydrostatic test. In addition, a system functional test (IWD-5222) and the corresponding visual (VT-2) examination of the replacement will be conducted during the normal Technical Specification operability test of pump 2-FW-P-2. The Code requirements will

be met on the downstream weld of valve 2-FW-142. These alternative requirements are the same as those proposed for the replacement of 1FW-142, the discharge check valve for 1-FW-P-2 on Surry Unit 1, requested in the licensee's letter Serial No. 90-761, dated December 10, 1990, and approved by NRC letter dated January 23, 1991.

EVALUATION

The information submitted by the licensee included ISI Classification Boundary Drawing No. 11548-CBM-068A, REV. 4, that shows the location of the replaced valve (2-FW-142) in the discharge piping of the steam-driven auxiliary feedwater pump 2-FW-P-2. From the drawing, the low pressure suction piping to the pump cannot be isolated from the higher pressure discharge piping in which the weld required to be subjected to the hydrostatic test pressure of 1576 psig is located. It is therefore impractical to meet the hydrostatic test pressure requirements of Section XI in this situation without major modifications to the discharge piping of the pump. Imposition of the requirement on the licensee would cause a burden that would not be compensated by the increase in plant safety over that provided by the licensee's proposed alternative. The volumetric and surface examinations of the weld will provide sufficient information to assess its structural integrity.

CONCLUSION

Based on the above evaluation, the staff concludes that, pursuant to 10 CFR 50.55a(g)(6)(i), the relief from the hydrostatic test may be granted as requested. The staff has determined that 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.

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