



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

ENCLOSURE

SAFETY EVALUATION REPORT BY THE OFFICE OF NUCLEAR REACTOR REGULATION

REQUEST FOR RELIEFS FROM HYDROSTATIC TEST

REQUIREMENTS FOLLOWING VALVE REPLACEMENTS

VIRGINIA ELECTRIC AND POWER COMPANY

SURRY POWER STATION UNITS 1 AND 2

DOCKET NOS. 50-280 AND 50-281

I. BACKGROUND INFORMATION

By letter dated February 13, 1987, Virginia Power Company (the licensee) informed the NRC of the replacement of three isolation valves at Surry Units 1 and 2 during outages in February 1987 and October 1986, respectively. The licensee provided information concerning the replacements and requested relief from the hydrostatic pressure test requirements of the 1980 Edition through Winter 1980 Addenda of Section XI of the ASME Boiler and Pressure Vessel Code pursuant to 10 CFR 50.55a(g)(5)(iii). In accordance with 10 CFR 50.55a(g)(6)(i), this report provides an evaluation of the licensee's request, supporting information, and alternative examinations or tests as well as the staff's bases for granting the request.

II. RELIEF REQUESTED, SUPPORTING INFORMATION, AND EVALUATIONS

- A. Relief Request - Relief was requested from the hydrostatic test requirements following the replacement of a four (4)-inch manual isolation valve, 2-MS-86, that isolates the "A" steam generator power operated relief valve (PORV) in Unit 2.

Code Requirement (1980 Edition, Winter 1980 Addenda)

ASME Section XI, Subarticle IWA-4400, requires a hydrostatic test to be performed after repairs by welding on a pressure retaining boundary of Code Class 1, 2, and 3 piping or components. The Code requires the system hydrostatic test pressure to be at least 1.25 times the system pressure Psv for systems with design temperature above 200°F. The Code delineates that 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 pressure for the piping containing the welds required to be hydrostatically tested is 1085 psig and, therefore, the test pressure is required to be 1356 psig.

8807050142 880617  
PDR ADOCK 05000280  
PDR

### Licensee's Bases for Requesting Relief

The licensee stated that the welds required to be tested cannot be isolated from the "A" steam generator (2-RC-E-1A), thereby placing it within the hydrostatic test boundary. The licensee further stated that hydrostatic tests which include steam generators are extremely difficult and deemed impractical when compared to other possible alternatives.

### Licensee's Proposed Alternatives

The licensee proposed the volumetric (RT) and surface examinations (PT) performed on the welds as alternatives to the Code-required hydrostatic test. The welds were visually inspected during normal operations and no leakage was detected.

### Staff Evaluation and Conclusion

The valve replaced is a 4-inch manual isolation valve used to isolate the steam generator "A" PORV for maintenance purposes. The replacement valve cannot be isolated from the steam generator "A" secondary side and imposition of the hydrostatic test requirements would therefore necessitate pressurizing the steam generator and main steam piping to approximately 1356 psig. Pressurizing the steam generator to an additional test cycle that was not accounted for in its design life is impractical and unwarranted when the licensee's proposed alternative examinations, inspections, and the Code-required welding procedures are considered.

The licensee proposed radiography and surface examinations of the two welds joining the valve and piping. In addition, the welds were visually inspected during normal plant operation with no leakage detected. The staff finds that the requirements of the Code are impractical and will unnecessarily burden licensee's equipment. The proposed nondestructive examinations and the leakage test are adequate to assess the structural integrity of the welds made in replacing the manual isolation valve 2-MS-86. We therefore conclude that relief from the Code hydrostatic test requirements may be granted as requested.

- B. Relief Request - Relief was requested from the hydrostatic test requirements following the replacement of a 2-inch steam generator nitrogen isolation valve, 1-GN-3, and a 1½-inch main steam drain isolation valve, 1-MS-80 in Unit 1.

### Code Requirement

ASME Section XI, Subarticle IWA-4400, requires a hydrostatic test to be performed after repairs by welding on a pressure retaining boundary of Code Class 1, 2, and 3 piping or components. The Code requires the system hydrostatic test pressure to be at least 1.25 times the system pressure  $P_{sv}$  for systems with design temperature above 200°F. The Code delineates that the system pressure  $P_{sv}$  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 pressure for the piping containing these valves is 1085 psig, therefore, the test pressure required is 1356 psig.

### Licensee's Bases for Requesting Relief

The licensee stated that the Code-required hydrostatic test would place the "A" and "C" steam generators (1-RC-E-1A and 1-RC-E-1C) within the test boundary. Hydrostatic tests which include steam generators are extremely difficult and deemed impractical when compared to other possible alternatives.

### Licensee's Proposed Alternative

The licensee proposed surface (PT) and visual (VT-2) examinations of the welds as alternatives for the Code required hydrostatic test.

### Staff Evaluation and Conclusion

The valves replaced by the licensee are Class 2, 2-inch and 1½-inch valves used to isolate nitrogen and a main steam drain, respectively. The location of these valves necessitates pressurizing the steam generators in order to comply with the Code hydrostatic test requirements. Imposition of the Code requirements on the licensee would cause the steam generators to be subjected to additional test cycles that were not accounted for in their design.

The licensee proposed surface examinations and visual inspections of the welds as alternatives to the hydrostatic test, the visual inspection to be performed during a system functional test. The staff finds the requirements of the Code are impractical and will unnecessarily burden licensee's equipment. The proposed nondestructive examinations and the visual inspection of the welds are adequate to assess weld structural integrity. We therefore conclude that relief from the Code hydrostatic test requirements may be granted as requested.

The staff has determined that based on the alternatives proposed, the relief requested by the licensee may be granted, as described above, pursuant to 50.55a(g)(6)(i). With respect to the above relief requests, the staff has determined that the requirements of the Code are impractical and 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 upon the licensee that could result if the requirements were imposed on the facility.

Dated: June 17, 1988

### Principal Contributor:

G. Johnson