
Item C-7: PWR System Piping

DESCRIPTION

Combinations of fabrication, stress, and environmental conditions have resulted in isolated instances of stress corrosion cracking of low pressure Schedule 10 Type 304 stainless steel piping systems. Although these systems are not part of a reactor coolant pressure boundary, they are safety-related, e.g., the containment spray system. The incidence of cracking has been restricted to thin wall, low pressure, low flow systems. These cracks have occurred adjacent to the weld zones of the thin-walled piping after approximately three to five years of service and were identified by volumetric examination, by leak detection systems, or by visual inspection.

In each of the cracking events that have occurred to date, the affected piping was determined to have been sensitized and, therefore, particularly vulnerable to corrosive attack.

Current licensing criteria preclude the use of sensitized piping in safety-related piping systems and place increased emphasis on the use of corrosion resistant material in such systems. The purpose of this NUREG-0471¹ task is to continue to evaluate operating experience to determine if augmented ISI requirements should be established to further enhance the reliability of such piping systems.

Resolution of this issue was published in NUREG-0691.² DST has reviewed and prioritized recommendations concerned with thermal fatigue cracking and recommended³ that DE initiate a request for an augmented ISI program.

This item addresses cracking of thin-walled piping in PWRs. The issue of cracking of heavy wall piping in PWRs is addressed under Issue 14 in Section 1 of this report.

CONCLUSION

Based upon operating experience, it was concluded that current ISI requirements for thin-walled piping in PWRs are adequate.⁴ Thus, this issue has been RESOLVED.

¹ NUREG-0471, "Generic Task Problem Descriptions (Categories B, C, and D)," U.S. Nuclear Regulatory Commission, June 1978.

² NUREG-0691, "Investigation and Evaluation of Cracking Incidents in Piping in Pressurized Water Reactors," U.S. Nuclear Regulatory Commission, September 1980.

³ Memorandum for R. Vollmer from T. Murley, "PWR Feedwater Line Cracks—New Regulatory Requirements," March 10, 1981. [8103250569]

⁴ Memorandum for T. Speis from R. Vollmer, "Schedules for Resolving and Completing Generic Issues," February 1, 1983. [8401170076]

