

Omaha Public Power District
444 South 16th Street Mall
Omaha, Nebraska 68102-2247
402/636-2000

February 23, 1996
LIC-96-0014

U.S. Nuclear Regulatory Commission
Attn: Document Control Desk
Mail Station P1-137
Washington, D.C. 20555

- References:
1. Docket No. 50-285
 2. American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code Section XI, 1939 Edition
 3. ASME Code Case N-416-1, *Alternative Pressure Test Requirement for Welded Repairs or Installation of Replacement Items by Welding, Class 1, 2, and 3, Section XI, Division 1*, approval date February 15, 1994
 4. NRC Regulatory Guide 1.147, *Inservice Inspection Code Case Acceptability - ASME Section XI, Division 1*, Revision 11, dated October 1994
 5. Letter from NRC (T. R. Quay) to OPPD (T. L. Patterson), dated January 30, 1995
 6. ASME Code Case N-498-2, *Alternative Rules for Ten Year System Hydrostatic Testing for Class 1, 2, and 3 Systems, Section XI, Division 1*, approval date June 9, 1995
 7. Fort Calhoun Station (FCS) Inservice Inspection (ISI) Program Plan for the Third Ten-Year Interval, Revision 3, dated September 1, 1995

SUBJECT: Request for Approval to Implement Provisions of the ASME Code Cases N-416-1 and N-498-2

Pursuant to 10CFR50.55a(a)(3), the Omaha Public Power District (OPPD) requests NRC approval for implementation of the alternative rules of the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code, Section XI, Code Cases N-416-1 and N-498-2 at the Fort Calhoun Station (FCS).

9602290218 960223
PDR ADOCK 05000285
P PDR

290033

The Code Case N-416-1 alternative rules would be used in lieu of the hydrostatic pressure test requirements of ASME Section XI for welded repairs or installation of replacement items by welding Class 1, 2 or 3 systems/components, with the following exception: OPPD would be using the 1989 Editions of ASME Sections III and XI in lieu of the 1992 Edition as stated in Code Case N-416-1. The 1989 Editions of ASME Sections III and XI post-repair/replacement pressure test requirements are similar to those of the 1992 Edition and would present the same level of safety assurance for verifying integrity of the system/components.

The NRC previously approved Code Case N-416, *Alternate Rules for Hydrostatic Testing of Repair or Replacement of Class 2 Piping Section XI, Division 1* in Reference 4. The revision to Code Case N-416 to eliminate the hydrostatic test was approved by the ASME consensus process, indicating the technical acceptability of Code Case N-416-1. Code Case N-416-1 was approved by ASME on February 15, 1994, but has not yet been approved by the NRC or incorporated into Regulatory Guide 1.147. Code Case N-416-1 (Reference 3) eliminates the required hydrostatic test for repair or welded replacement of ASME Class 1, 2 and 3 components, and allows a system leakage test in lieu of the hydrostatic test. In addition, Code Case N-416-1 allows a previously deferred Class 2 hydrostatic test to be eliminated when the requirements of Code Case N-416-1 have been met. Approval of Code Case N-416-1 will eliminate unnecessary hardships/costs during refueling outages and during online ASME repairs or welded replacements without decreasing the level of public safety.

The Code Case N-498-2 alternative rules would be used in lieu of the ten-year system hydrostatic pressure test holding time requirements of ASME Section XI, Table IWB-2500-1, Category B-P; Table IWC-2500-1, Category C-H; and Table IWD-2500-1, Categories, D-A, D-B and D-C (Reference 2). The NRC previously approved Code Case N-498-1, *Alternative Rules for Ten Year System Hydrostatic Testing for Class 1, 2, and 3 Systems, Section XI, Division 1*, for use at FCS (Reference 5). Code Case N-498-1 provides for use of a system leakage test as an alternative to the required Section XI ten-year system hydrostatic test. The revision to Code Case N-498-1 to eliminate the hold times was approved by the ASME consensus process, indicating the technical acceptability of Code Case N-498-2. Code Case N-498-2 was approved by ASME on June 9, 1995 and will be published in the 1995 ASME Code Case Supplement 1, but has not yet been incorporated into Regulatory Guide 1.147. Code Case N-498-2 (Reference 6) eliminates the required four-hour hold time for insulated components and the ten-minute hold time for non-insulated components, which is required by Code Case N-498-1.

Approval of Code Case N-498-2 will reduce unnecessary hardships/costs during refueling outages and during online pressure tests. In addition, operating systems/components in "other than normal" modes could be detrimental to systems/components. Installation of temporary pumps/configurations to maintain pressures for extended periods (i.e., 4 hours) could result in additional costs/operating concerns and additional radiation exposure. This defeats the intent of Code Case N-498-1, which was written, in part, to eliminate hardships and unnecessary costs associated with the performance of hydrostatic tests.

In conclusion, the use of the alternative rules of Code Cases N-416-1 and N-498-2 will result in lower total radiation exposures to personnel and provide significant economic benefits without any reduction in the level of quality or safety of the applicable systems/components at FCS.

Please find the attached discussion and justification for OPPD's request for exemption from performing the repair/replacement hydrostatic pressure test (Code Case N-416-1) and the ten-year hydrostatic pressure tests with required hold times on ASME Code Class 1, 2 and 3 components and systems (Code Case N-498-2). NRC approval to implement the ASME Code Cases N-416-1 and N-498-2 at FCS is requested to allow implementation prior to the 1996 Refueling Outage, which is scheduled to commence on September 21, 1996. Therefore, it is requested that the NRC provide approval for using ASME Code Cases N-416-1 and N-498-2 prior to August 1, 1996.

If you should have any questions, please contact me.

Sincerely,



T. L. Patterson
Division Manager
Nuclear Operations

TLP/d11

Attachments

c: Winston & Strawn
L. J. Callan, NRC Regional Administrator, Region IV
L. R. Wharton, NRC Project Manager
W. C. Walker, NRC Senior Resident Inspector

DISCUSSION AND JUSTIFICATION

Code Case N-416-1:

The Fort Calhoun Station (FCS) Inservice Inspection (ISI) Program Plan presently conforms (except for previously docketed relief requests) with the Hydrostatic Test Requirements for Repair/Replacements, Subsection IWA-5214 and applicable Repair/Replacement Articles of the 1939 Edition to the ASME Boiler and Pressure Vessel Code, Section XI, *Rules for Inservice Inspection of Nuclear Power Plant Components*.

ASME Code Case N-416-1, *Alternative Pressure Test Requirement for Welded Repairs or Installation of Replacement Items by Welding, Class 1, 2 and 3, Section XI, Division 1*, was approved by the ASME Code Committee on February 15, 1994. The inquiry to the ASME Code Committee was:

"What alternative pressure test may be performed in lieu of the hydrostatic pressure test required by para. IWA-4000 for welded repairs or installation of replacement items by welding?"

The ASME Code Committee replied that as an alternative to the hydrostatic pressure test required by para. IWA-4000 for welded repairs or installation of replacement items by welding, a system leakage test may be used provided the following requirements are met:

- (1) NDE (Non-destructive Examinations) shall be performed in accordance with the methods and acceptance criteria of the applicable Subsection of the 1992 (1989*) Edition of Section III.
- (2) Prior to or immediately upon return to service, a visual examination (VT-2) shall be performed in conjunction with a system leakage test, using the 1992 (1989*) Edition of Section XI, in accordance with para. IWA-5000, at nominal operating pressure and temperature.
- (3) Use of this Case shall be documented on an NIS-2 Form.

If the previous version of this case were used to defer a Class 2 hydrostatic test, the deferred test may be eliminated when the requirements of this revision are met.

* Please note that OPPD is requesting to use the 1989 Editions of ASME Sections III and XI as written above in lieu of the 1992 Edition as stated in Code Case N-416-1. The applicable requirements for hydrostatic pressure tests for welded repairs or installation of replacement items by welding Class 1, 2 and 3 components is similar in the 1989 and 1992 Editions of ASME Sections III and XI.

Code Case N-498-2:

The FCS ISI Program Plan presently conforms (except for previously docketed relief requests) with the Hydrostatic Test Requirements of Subsections IWB-2500, IWC-2500 and IWD-2500 of the 1989 Edition to the ASME Boiler and Pressure Vessel Code, Section XI, *Rules for Inservice Inspection of Nuclear Power Plant Components*.

For Class 1 systems, Table IWB-2500-1, Category B-P, Note 6 states, "The system hydrostatic test (IWB-5222) shall be conducted at or near the end of each inspection interval." For Class 2 systems, Table IWC-2500-1, Category C-H, Note 5, states, "The system hydrostatic test (IWC-5222) shall be conducted at or near the end of each inspection interval of Inspection Program B." For Class 3 systems, Table IWD-2500-1, Categories D-A, D-B and D-C, Note 2, states, "The system hydrostatic test shall be conducted at or near the end of each inspection interval or during the same inspection period of each inspection interval for Inspection Program B."

ASME Code Case N-498-2, *Alternative Requirements for Ten-Year System Hydrostatic Testing for Class 1, 2 and 3 Systems, Section XI, Division 1*, was approved by the ASME Code Committee on June 9, 1995. The inquiry to the ASME Code Committee was:

"What alternative rules may be used in lieu of those required by Section XI, Division 1, Table IWB-2500-1, Category B-P; Table IWC-2500-1, Category C-H; and Table IWD-2500-1, Categories D-A, D-B and D-C; as applicable, for the 10-year system hydrostatic test?"

- (a) The ASME Code Committee replied that as an alternative to the ten-year system hydrostatic pressure test required by Table IWB-2500-1, Category B-P, the following rules shall be used:
- (1) A system leakage test (IWB-5221) shall be conducted at or near the end of each inspection interval, prior to reactor startup.
 - (2) The boundary subject to test pressurization during the system leakage test shall extend to all Class 1 pressure retaining components within the system boundary.
 - (3) Prior to performing VT-2 visual examination, the system shall be pressurized to nominal operating pressure. No holding time is required prior to performing the VT-2 visual examination. The system shall be maintained at nominal operating pressure during the performance of the VT-2 visual examination.

- (4) Test temperatures and pressures shall not exceed limiting conditions for the hydrostatic test curve as contained in the plant Technical Specifications.
 - (5) The VT-2 visual examination shall include all components within the boundary identified in (a) (2) above.
 - (6) Test instrumentation requirements of IWA-5260 are not applicable.
- (b) It is the opinion of the (ASME Code) Committee that, as an alternative to the ten-year system hydrostatic test required by Table IWC-2500-1, Category C-H, the following rules shall be used:
- (1) A system pressure test shall be conducted at or near the end of each inspection interval or during the same inspection period of each inspection interval of Inspection Program B.
 - (2) The boundary subject to test pressurization during the system pressure test shall extend to all Class 2 components included in those portions of systems required to operate or support the safety system function up to and including the first normally closed valve, including a safety or relief valve, or valve capable of automatic closure when the safety function is required.
 - (3) Prior to performing the VT-2 visual examination, the system shall be pressurized to nominal operating pressure. No holding time is required prior to performing the VT-2 visual examination. The system shall be maintained at nominal operating pressure during performance of the VT-2 visual examination.
 - (4) The VT-2 visual examination shall include all components within the boundary identified in (b)(2) above.
 - (5) Test instrumentation requirements of IWA-5260 are not applicable.
- (c) It is also the opinion of the (ASME Code) Committee that, as an alternative to the ten-year system hydrostatic test required by Table IWD-2500-1, Categories D-A, D-B, or D-C, (D-B for the 1989 Edition with the 1991 and subsequent Addenda), as applicable, the following rules shall be used:
- (1) A system pressure test shall be conducted at or near the end of each inspection interval or during the same inspection period of each inspection of Inspection Program B.

- (2) The boundary subject to test pressurization during the system pressure test shall extend to all Class 3 components included in those portions of systems required to operate or support the safety system function up to and including the first normally closed valve, including a safety or relief valve or valve capable of automatic closure when the safety function is required.
- (3) Prior to performing the VT-2 visual examination, the system shall be pressurized to nominal operating pressure. No holding time is required prior to performing the VT-2 visual examination. The system shall be maintained at nominal operating pressure during performance of the VT-2 visual examination.
- (4) The VT-2 visual examination shall include all components within the boundary identified in (c)(2) above.
- (5) Test instrumentation requirements of IWA-5260 are not applicable.

Please note that OPPD has been complying with ASME Code Case N-498-1 for ASME Class 1, 2 and 3 systems in lieu of the Code-required system ten-year hydrostatic tests since January 30, 1995, as approved by the NRC in Reference 5.

OPPD requests approval to perform the system leakage and system pressure tests, where applicable, for ASME Code Class 1, 2 and 3 systems/piping using the ASME Code Case N-498-2 alternative testing rules stated above, in lieu of the ten-year hydrostatic tests presently in the FCS ISI Program Plan, Revision 3 (Reference 7). Specifically, OPPD requests to perform these system leakage and system pressure tests, where applicable, without the four-hour and ten-minute hold times that are required for the hydrostatic testing. These hold times would not be necessary during testing for indicating small through-wall leaks as these leaks would be detected under normal operating conditions.

For example, for the Raw Water (RW), Component Cooling Water (CCW) and Chemical and Volume Control (CVCS) systems, which run at normal operating pressure and temperature, any small through-wall leaks would be identified by required shiftly operator rounds, periodic surveillance tests, daily inspections and system walkdowns, in addition to system/tank level indications/alarms, etc. As for the Safety Injection (SI) System, these lines are stainless steel and most of them are not insulated; therefore, any small through-wall leaks would be visibly detected. For those SI lines that are insulated, through-wall leaks may be detected during normal operator rounds, by presence of boric acid crystals on the insulation or sump level changes, etc.

Small through-wall leaks in the Reactor Coolant System (RCS) may be detected during normal operation by level variances in the Reactor Coolant Drain Tank, Quench Tank, Volume Control Tank (VCT) (i.e., level changes requiring additional VCT make-up) or the containment sump. Also, the RCS daily leak rate results would be indicative of through-wall leakage.

Finally, since the majority of the system pressure tests are performed at a frequency of once per 40 months, a small through-wall leak would most likely be identified as a result of the processes currently in place at FCS, rather than during the Code required 40-month pressure tests.

Upon NRC approval of the proposed alternate testing requirements (with exception of the 1989 Edition of Sections III and XI being used vice the 1992 Edition), the FCS ISI Program Plan will be revised to incorporate these alternative testing requirements.

Conclusion:

Use of the alternative rules discussed above will reduce the testing duration and result in lower total radiation exposures to personnel without any reduction in the level of quality or safety of the applicable systems.

The NRC's approval to implement ASME Code Cases N-416-1 and N-498-2, with the exception of using the 1989 Edition of Sections III and XI in lieu of the 1992 Edition stated in Code Case N-416-1, is requested to allow implementation prior to the 1996 Refueling Outage, which is scheduled to commence on September 21, 1996. Therefore, OPPD requests that the NRC provide approval for implementation of ASME Code Cases N-416-1 and N-498-2 prior to August 1, 1996.