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Docket No. 50-461

10CFR50.55a

Document Control Desk
Nuclear Regulatory Commission
Washington, D.C. 20555

Subject: Supplement/Followup to Request for Authorization Pursuant to 10CFR50.55a to Utilize ASME Section XI Code Cases N-498-1, N-416-1 and N-517

Dear Sir:

On August 8,1994, Illinois Power (IP) submitted a letter (U-602322) to the Nuclear Regulatory Commission (NRC) to request approval for use of the following three American Society of Mechanical Engineers (ASME) Section XI, Division 1 code cases at the Clinton Power Station (CPS):

1. Code case N-498-1, "Alternative Rules for 10-Year System Hydrostatic Testing for Class 1, 2 and 3 Systems,"

2. Code case N-416-1, "Alternative Pressure Test Requirement for Welded Repairs or Installation of Replacement Items by Welding, Class 1, 2 and 3,"

3. Code case N-517, "Quality Assurance Program Requirements for Owners."

These code cases were approved by the ASME Boiler and Pressure Vessel code committee, but they are not included in the most recent listing of NRC-approved code cases in Revision 11 of Regulatory Guide 1.147, "Inservice Inspection Code Case Acceptability-ASME Section XI Division 1." IP is therefore requesting NRC approval to utilize these code cases (except as noted below), and as requested in the August 8 letter, is asking that approval be granted in time to support use of these code cases in the upcoming refueling outage (RF-5) at CPS. This letter is being submitted to support IP's request.

10CFR50.55a, "Codes and Standards," requires systems and components of boiling and pressurized water-cooled nuclear power reactors to meet the requirements of the ASME Boiler and Pressure Vessel Code as specified in certain paragraphs of 10CFR50.55a. Subsection 10CFR50.55a(a)(3) states that proposed alternatives to the requirements of those particular paragraphs of 10CFR50.55a may be used when

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authorized by the Director of the Office of Nuclear Reactor Regulation. This subsection further states the applicant shall demonstrate that (i) the proposed alternatives would provide an acceptable level of quality and safety, or (ii) compliance with the specified requirements of 10CFR50.55a would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety.

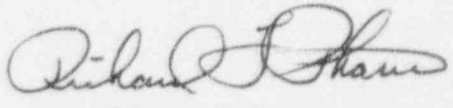
Following submittal of IP's August 8, 1994 letter requesting use of the noted code cases pursuant to 10CFR50.55a, several discussions with the NRC Licensing Project Manager for CPS were held concerning IP's request. It was determined that IP should provide additional information concerning its need to utilize the code cases with particular regard to justifying why compliance with the specified requirements of 10CFR50.55a would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety. This additional information is herein provided to support IP's request to utilize code cases N-498-1 and N-416-1 as separately and respectively provided in Attachments 1 and 2 to this letter.

With respect to code case N-517 (as also addressed in IP's August 8 letter/ request), IP hereby withdraws its request for authorization to utilize that particular code case. After further consideration, IP has confirmed no urgent or particular need to utilize the code case in the near future. IP believes code case N-517 could provide flexibility and cost-savings for the purchase of ASME code-approved material and replacement parts or components in the future, but at this time, no request for authorization to utilize code case N-517 per 10CFR50.55a(a)(3) is warranted, and IP will await the results of the NRC's generic review of that code case.

With particular regard to code cases N-498-1 and N-416-1, however, IP has identified definite needs to utilize these code cases (as further explained in Attachments 1 and 2). Use of these code cases can yield substantial savings in man-hours and radiation exposure in the forthcoming refueling outage. Therefore, IP requests NRC's authorization to allow use of these code cases at CPS in a time frame that will support the forthcoming refueling outage currently scheduled to begin March 12, 1995.

Your prompt attention to this matter is appreciated.

Sincerely yours,



Richard F. Phares
Director, Licensing

SSG/csm

Attachments

cc: NRC Clinton Licensing Project Manager
NRC Resident Office, V-690
Regional Administrator, Region III, USNRC
Illinois Department of Nuclear Safety

Code Case N-498-1

ASME Section XI requires hydrostatic testing of class 1, 2 and 3 systems to be performed at the end of each ten-year inservice inspection interval. Approved code case N-498 provides alternative requirements that may be met in lieu of the code requirements for the ten-year hydrostatic test for class 1 and 2 systems. Code case N-498-1 expands the scope of code case N-498 to include class 3 systems. For the latter, in lieu of the ten-year system hydrostatic test required by ASME Section XI (Division 1) Table IWD-2500-1, code case N-498-1 permits alternative requirements to be met. Summarily, these requirements are as follows:

(1) A system pressure test shall be conducted at or near the end of each inspection interval.

(2) The test boundary shall extend to all class 3 components included in those portions of systems required to operate or support the safety function up to and including the first normally closed valve (including a safety or relief valve) or valve capable of automatically closing when the safety function is required.

(3) A VT-2 visual examination shall be performed with the system maintained at nominal operating pressure. The system shall be pressurized to nominal operating pressure for at least 4 hours for insulated systems and 10 minutes for noninsulated systems, prior to performing the VT-2 visual examination.

(4) The VT-2 visual examination shall include all components identified in part (2) above.

(5) The test instrumentation requirements of IWA-5260 are not applicable.

It is IP's position that these ASME committee-approved requirements provide an acceptable level of quality and safety in lieu of the requirements for performing a system hydrostatic test.

As noted above, the ASME Section XI test schedule specified for performing periodic class 3 system hydrostatic tests requires such tests to be completed at (or near) the end of the ten-year inservice inspection interval. Accordingly, due to the large scope of affected systems, system hydrostatic testing at CPS is currently included in the workscope for the upcoming refueling outage (RF-5) and the next refueling outage (RF-6) since the ten-year inservice inspection interval concludes with RF-6. Authorization to utilize code case N-498-1 therefore affects the scheduled workscope of RF-5 and RF-6.

The scope of class 3 systems affected by this code case at CPS includes the following:

- Division 1, 2, and 3 Shutdown Service Water system (SX), including SX piping to the Fuel Pool Cooling and Cleanup system (FC) heat exchangers.
- Division 1 and 2 FC system, including the common supply and return piping.
- Instrument Air system (IA), including the charging line to the Automatic Depressurization System (ADS) backup air bottles, and piping to the ADS/non-ADS safety relief valve and feedwater check valve accumulators.
- Diesel Generator Air Start system, including piping to the accumulator relief valves.
- Diesel Fuel Oil system (DO), including suction and discharge piping to the first isolation valve.
- Nuclear Boiler system (NB), including the piping downstream of the reactor head vent isolation valve and various instrument lines.
- Reactor Core Isolation Cooling system (RI), including instrument lines from the steam flow element to the instrument panel.

The out-of-service time and costs (in terms of man-hours and radiation exposure) associated with performing code-required testing are considered unwarranted in light of the fact that system integrity can be adequately confirmed through alternative, less costly testing (per N-498-1) that has been determined to be just as effective.

The hardships involved in performing the code-required hydrostatic tests are due mainly to the shear magnitude of the test scope and the difficulties associated with isolating the system or portions of the system to perform the hydrostatic testing. For example, to perform the hydrostatic test on the Division II SX system (currently scheduled for RF-5), the equipment unavailability will be about 48 hours. This estimate is based on encountering minimal problems during performance of the test. If significant difficulties do occur in testing, which may be anticipated for the SX system, accumulated dose and equipment unavailability could be much higher.

The SX system includes approximately 4000 feet of large bore piping and 40 test boundary valves. Six of the boundary valves are large butterfly valves (greater than 8") which tend to leak under hydrostatic pressure. If leakage by these valves exceeds the capacity of the test pump, the test would have to be delayed until the valves are repaired. Clearly, this will have an adverse impact on the outage duration and personnel radiation

exposure. [Under system operating (non-test) conditions, leakage through these valves is not a concern, but such leakage can present a problem during testing due to the potential effect on the test results when the valves serve as test boundary valves.]

The hardships to perform the hydrostatic test on the other two divisions of the SX system are essentially the same. By implementing the alternative testing provisions of code case N-498-1, personnel radiation exposure, outage duration, and costs can be significantly reduced. Similar arguments apply to the other noted systems as well. Work plans for performing hydrostatic testing of the other noted systems have not yet been completed at this time, but a quantifiable, unnecessary amount of radiation exposure would certainly result from performing hydrostatic testing on these systems or portions of systems inside the drywell, such as the Instrument Air and Nuclear Boiler systems.

Code Case N-416-1

This code case of the ASME Boiler and Pressure Vessel Code addresses the use of a (post-maintenance) system leakage test as an alternative pressure test in lieu of performing the (post-maintenance) hydrostatic pressure test required by paragraph IWA-4000 following welded repairs or installation of replacement items by welding, provided the following requirements are met:

(a) Non Destructive Examinations (NDE) shall be performed in accordance with the methods and acceptance criteria of the applicable subsection of the 1992 Edition of ASME Section III.

(b) 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 Edition of ASME Section XI, in accordance with paragraph IWA-5000, at nominal operating pressure and temperature.

(c) Use of this code case shall be documented on an NIS-2 Form.

These alternative post-maintenance testing requirements have been evaluated by the ASME code case committee and determined to be acceptable for confirming piping integrity following repairs. It is therefore IP's position that an acceptable level of quality and safety will be maintained by following the requirements of code case N-416-1.

By permitting system leakage testing in lieu of hydrostatic testing, use of code case N-416-1 during the upcoming refueling outage would result in an immediate benefit associated with scheduled maintenance activities. Those activities (i.e., those known at this time) and the hardships involved in meeting current code requirements due to those activities are briefly described (by associated component number) below:

a) 1CC107B, Reactor Recirculation (RR) Pump 1B Seal Oil Cool Outlet Valve

This is a 2" gate valve scheduled for replacement in the upcoming refueling outage. This test will likely involve extensive work near the RR pump in the drywell basement resulting in significant radiation exposure to maintenance and test personnel. The test boundary is also large as it encompasses the outlet Component Cooling system piping from both the "A" and "B" RR pumps and the motor bearing coolers.

b) 1SX173A, Residual Heat Removal (RHR) Heat Exchanger 1A Bypass Valve

This is a 10" valve scheduled for replacement in the upcoming refueling outage. The associated hydrostatic test (if performed to current code requirements) will require removal of a flow orifice and the installation of an 18" "pancake." This work will have considerable impact on the outage schedule. Additionally, operation and test personnel will receive radiation exposure since the VT-2 inspection area is inside the RHR "A" heat exchanger room.

c) 1B21F001 and 1B21F002, Reactor Pressure Vessel Head Ventilation Valves

These valves are 2" valves scheduled for replacement in the upcoming refueling outage. Although the scope is not extensive, radiation exposure could be high due to preparation work required in the drywell.

d) 1C11F122, Control Rod Drive Water Supply Header Check Valves

This valve is a 2" outboard containment isolation check valve that may be replaced in the upcoming refueling outage. The test scope is small, but the test will be performed in the drywell, resulting in radiation exposure to operation and test personnel.

To repeat, the above activities have already been identified for RF-5. Additional savings in man-hours and exposure could be realized for emergent activities identified during the outage.