

October 2, 2006

Mr. Randall K. Edington  
Vice President-Nuclear and CNO  
Nebraska Public Power District  
P.O. Box 98  
Brownville, NE 68321

SUBJECT: COOPER NUCLEAR STATION RE: FOURTH 10-YEAR INTERVAL  
INSERVICE INSPECTION REQUEST FOR RELIEF NO. PR-11  
(TAC NO. MD0515)

Dear Mr. Edington:

By letter dated February 23, 2006, Nebraska Public Power District (the licensee) submitted Relief Request No. PR-11, related to the Fourth 10-Year Interval Inservice Inspection (ISI) Program for the Cooper Nuclear Station. In Relief Request PR-11, the licensee proposed to perform a system leakage test of American Society of Mechanical Engineers Boiler and Pressure Vessel Code (ASME Code) Class 1 pressure retaining components in reactor coolant pressure boundary vent, drain, and branch lines and small bore connections ( $\leq 1$  inch) with the isolation valves closed, which would cause a small segment of Class 1 line to be excluded from the test boundary.

Based on the information provided in Relief Request No. PR-11, the Nuclear Regulatory Commission (NRC) staff concluded in the enclosed safety evaluation that the licensee's proposed alternative provides reasonable assurance of operational readiness, and compliance with the ASME Code requirements would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety. Therefore, pursuant to 10 CFR 50.55a(a)(3)(ii), the NRC staff authorizes the ISI program alternative proposed in Relief Request No. PR-11 for the fourth 10-year ISI interval for the Cooper Nuclear Station.

Sincerely,

*/RA/*

David Terao, Chief  
Plant Licensing Branch IV  
Division of Operating Reactor Licensing  
Office of Nuclear Reactor Regulation

Docket No. 50-298

Enclosure: Safety Evaluation

cc w/encl: See next page

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SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

FOURTH 10-YEAR INTERVAL INSERVICE INSPECTION PROGRAM

REQUEST FOR RELIEF PR-11

NEBRASKA PUBLIC POWER DISTRICT

COOPER NUCLEAR STATION

DOCKET NO. 50-298

1.0 INTRODUCTION

By letter dated February 23, 2006, Nebraska Public Power District (NPPD or the licensee) submitted Relief Request No. PR-11, related to the Fourth 10-Year Interval Inservice Inspection (ISI) Program for the Cooper Nuclear Station (CNS). In Relief Request PR-11, the licensee proposed to perform a system leakage test of American Society of Mechanical Engineers Boiler and Pressure Vessel Code (ASME Code) Class 1 pressure retaining components in reactor coolant pressure boundary (RCPB) vent, drain, and branch (VTDB) lines and small bore connections ( $\leq 1$  inch) with the isolation valves closed, which would cause a small segment of Class 1 line to be excluded from the test boundary. The licensee's request for relief is based on the hardship of making multiple entries into the drywell for the valve alignment. Multiple entries would expose personnel to high radiation and the risk of failure due to single valve isolation. The Nuclear Regulatory Commission (NRC) staff has evaluated the licensee's request for relief pursuant to Title 10 of the *Code of Federal Regulations* (10 CFR) 50.55a(a)(3)(ii) and has determined that compliance with the Code would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety.

2.0 REGULATORY EVALUATION

10 CFR 50.55a(g) requires that ISI of ASME Code Class 1, 2, and 3 components be performed in accordance with Section XI of the ASME Code and applicable addenda, except where specific written relief has been granted by the Commission pursuant to 10 CFR 50.55a(g)(6)(i). According to 10 CFR 50.55a(a)(3), alternatives to the requirements of section 50.55a(g) may be used, when authorized by the NRC, if an applicant demonstrates that the proposed alternatives would provide an acceptable level of quality and safety or if the specified requirement would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety.

Pursuant to 10 CFR 50.55a(g)(4), ASME Code Class 1, 2, and 3 components (including supports) shall meet the requirements, except the design and access provisions and the preservice examination requirements, set forth in the ASME Code, Section XI, "Rules for Inservice Inspection (ISI) of Nuclear Power Plant Components," to the extent practical within the

limitations of design, geometry, and materials of construction of the components. The regulations require that ISI of components and system pressure tests conducted during the first 10-year interval and subsequent intervals comply with the requirements in the latest edition and addenda of Section XI of the ASME Code incorporated by reference in 10 CFR 50.55a(b) 12 months prior to the start of the 120-month interval, subject to the limitations and modifications listed therein. The ISI Code of Record for the fourth 10-year inspection interval for CNS is the 2001 Edition through the 2003 Addenda of the ASME Code, Section XI.

### 3.0 BACKGROUND DISCUSSION

#### System/Component(s) for Which Relief is Requested

RCPB VTDB lines and small bore connections ( $\leq 1$  inch).

#### ASME Code Requirements

The 2001 Edition through the 2003 Addenda of ASME Code, Section XI, Table IWB-2500-1, Examination Category B-P (B15.50 and B15.70) requires the system leakage test include all ASME Code Class 1 piping and valves within the pressure retaining boundary.

#### Licensee's Request for Relief

Relief is requested from performing the system leakage test in accordance with the requirements of the 2001 Edition of the ASME Code, 2003 Addenda, Subsection IWB-2500, Table 2500-1 for the portion of the ASME Code Class 1 RCPB VTDB line and connection with the isolation valves closed, which would cause a small segment of Class 1 line to be excluded from the test boundary.

#### Licensee's Basis for Requesting Relief

The VTDB lines and connections 1-inch nominal pipe size and smaller off the RCPB are equipped with manual valves, which provide double valve isolation of the RCPB. Repositioning the inboard manual valves before and after the test will take considerable time and will result in an unnecessary increase in dose to plant personnel. Manual operation (opening and closing) of the VTDB valves is estimated to expose plant personnel to 0.5 man-rem per test. The requirement to extend the system leakage test boundary for the leakage test conducted at or near the end of each inspection interval to the outboard valve on these VTDB connections results in a hardship without a compensating increase in the level of quality and safety.

The 1-inch nominal pipe size and smaller VTDB connections are normally closed during plant operation. The outboard valves would only experience pressure if the inboard valve is open or leaks by the seat. Seat leakage, although undesirable, is not indicative of a flaw in the pressure boundary. Furthermore, these valves are in close proximity to the main runs of pipe. The non-isolable portion of these VTDB connections is pressurized and VT-2 examined during the test. The VT-2 examination performed each refueling outage extends to the outboard valve, even though it is not pressurized.

The CNS technical specifications (TSs) for RCPB leakage monitoring require appropriate actions, including plant shutdown if leakage exceeds specified limits. Based on the above,

NPPD requests approval to use the proposed alternative in lieu of the ASME Section XI, IWB-5222(b), requirements.

#### Licensee's Proposed Alternative

The RCPB VTDB lines and connections 1-inch nominal pipe size and smaller will be visually examined for leakage with the inboard isolation valves in the normally closed position during the system leakage test conducted at or near the end of each inspection interval IWB-5222(b). This test provides reasonable assurance of the structural integrity of the VTDB lines and connections.

#### 4.0 TECHNICAL EVALUATION

The ASME Code, Section XI of Record requires that all Class 1 components within the reactor coolant system (RCS) boundary undergo a system leakage test at the end of each refueling outage and a system hydrostatic test at or near the end of each inspection interval. In Relief Request No. PR-11, the licensee proposed an alternative to the required testing of the RCPB VTDB lines, which would cause some line segments to be excluded from the test boundary. The line segments include two manually operated valves separated by a short pipe that is connected to the RCS. The line configuration, as outlined, provides double-isolation of the RCS. Under normal plant operating conditions, the subject line segments would experience RCS temperature and pressure only if leakage through the inboard valves occurs. For the licensee to perform the ASME Code-required test, it would be necessary to manually open the inboard valves to pressurize the line segments. Pressurization by this method would preclude the RCS double valve isolation and may cause safety concerns for the personnel performing the examination.

Typical line/valve configurations are in close proximity of the RCPB main runs of pipe and thus, would require personnel entry into high radiation areas within the containment. Manual actuation (opening and closing) of these valves is estimated to expose plant personnel to 0.5 man-rem per test. The licensee proposed to visually examine the isolation valves in the normally closed position for leaks and any evidence of past leakage during system leakage test after each refueling outage. Also, the RCS vent and drain connections will be visually examined with the isolation valves in the normally closed position during the 10-year system hydrostatic test. The NRC staff believes that the licensee's proposed alternative will provide reasonable assurance of operational readiness for the RCPB VTDB line segments while keeping personnel radiation exposure as low as reasonably achievable. The NRC staff has further determined that compliance with the Code requirements would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety.

#### 5.0 CONCLUSION

Based on the NRC staff's evaluation of the request for relief, the licensee's proposed alternative provides reasonable assurance of operational readiness, and compliance with the ASME Code requirements would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety. Therefore, pursuant to 10 CFR 50.55a(a)(3)(ii), the proposed alternative in Relief Request No. PR-11 is authorized for the fourth 10-year ISI interval of CNS. All other requirements of the ASME Code, Section XI for which relief has not been specifically

requested remain applicable, including a third party review by the Authorized Nuclear Inservice Inspector.

Principal Contributor: P. Patniak

Date: October 2, 2006

Cooper Nuclear Station

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