Nebraska Public Power District

GENERAL OFFICE
P.O. BOX 499, COLUMBUS, NEBRASKA 68602-0499
TELEPHONE (402) 564-8561
FAX (402) 563-5551

NSD920058
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U.S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, D.C. 20555

Gentlemen:

Subject: Response to NRC Request for Additional Information Regarding Proposed Change No. 93 to Technical Specifications Clarification of System/Subsystem Terms (TAC M81856) Cooper Nuclear Station NRC Docket No. 50-298, DPR-46

References: 1. Letter from R. B. Bevan to G. R. Horn dated December 27, 1991, "Request for Additional Information, Cooper Nuclear Station (M81856)"

2. Letter from G. R. Horn to NRC dated September 30, 1991, "Proposed Change No. 93 to Technical Specifications, Clarification of System/Subsystem Terms"

The Nebraska Public Power District (District) hereby provides its response to the NRC Staff Request For Additional Information (RAI) dated December 27, 1991 (Reference 1) concerning the District's Proposed Change No. 93, "Clarification of System/Subsystem Terms" (Reference 2). The RAI requested the District to provide further information to support the proposed change to Section 3.10.F of the Cooper Nuclear Station (CNS) Technical Specifications, which specifies the minimum combination of operable low pressure core cooling systems required during refueling operations. The District's responses to the NRC Staff's questions are provided below.

It should be noted that the District's primary intent in changing Section 3.10.F of the CNS Technical Specifications was to provide clarification of the requirements contained therein to assist operators in its interpretation. In effecting this change, the District proposed an additional, conservative requirement to require that during refueling operations, the minimum complement of low pressure core cooling systems always include at least one Low Pressure Coolant Injection (LPCI) subsystem. With this preface, the District's response to the NRC Staff's questions is provided below.

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QUESTION Why isn't at least one of the LPCS [Low Pressure Core Spray] subsystems required to be operable during refueling when fuel is [in] the core?

RESPONSE During refueling, with fuel in the core, requirements for the low pressure emergency core cooling systems consist of providing standby cooling capability in the event a loss of coolant inventory is experienced. Since during refueling operations the system is not pressurized, pipe breaks are not postulated to occur; therefore, this standby makeup capability is provided as protection should an inadvertent draining of the coolant in the vessel and refueling cavity occur. In providing backup capability for meeting this requirement, there are no unique requirements attached to the Core Spray System.

Should events occur during the refueling mode which inadvertently initiate draining of the reactor vessel and refueling cavity, need only exists to flood the reactor core. If required, one subsystem of either the Core Spray or the Low Pressure Coolant Injection (LPCI) System is alone capable of providing adequate core flooding under these conditions. These low pressure core cooling systems serve as a backup to the condensate transfer system, normally used to flood the refueling cavity. Therefore, by ensuring that at least two of the four low pressure core cooling subsystems are operable to provide core flooding under these circumstances, a single-failure proof backup means exists to reflood the core, and accordingly, no special requirements are attached to the Core Spray System.

QUESTION Why is one of the LPCI subsystems required to be operable during refueling when fuel is in the core?

RESPONSE In Proposed Technical Specification Change No. 93, the District proposed that Section 3.10.F. be changed to specify that while fuel is in the core, refueling operations may continue provided one Core Spray subsystem and one LPCI subsystem is available, or two LPCI subsystems are available. In proposing this change, it is the District's intent to ensure, through the Technical Specifications, that during refueling operations, at least one Shutdown Cooling subsystem is available, while ensuring that at least two of four low pressure cooling subsystems are available

for core cooling in the unlikely event that inadvertent vessel draining were to occur.

At CNS, the Residual Heat Removal (RHR) System provides a number of functions. It consists of two subsystems, each containing two high-flowrate pumps with independent suction off the torus, and each also capable of taking suction from the condensate storage tanks. This system is capable of operating in a number of different modes, which include, but are not limited to the LPCI mode and the Shutdown Cooling mode. However, for the purpose of clarity and compliance, the LPCI mode of RHR system operation is considered a discreet "system," comprised of two, distinct subsystems. Each LPCI subsystem contains two LPCI (RHR) pumps, normally aligned to and capable of taking independent suction from the torus, and also capable of taking suction from the condensate storage tanks.

During LPCI operation, suction is taken from the torus, routed through and around the RHR Heat Exchangers, and discharged through the LPCI injection valve into the recirculation discharge piping. During Shutdown Cooling operation, suction is taken from the suction leg of recirculation loop "A," through the Shutdown Cooling isolation valves, and discharged through one or both RHR Heat Exchangers, and returned to the recirculation discharge line via the LPCI injection valve. Therefore, with the exception of initiation and control logic and subsystem suction, the Shutdown Cooling mode of the RHR System is essentially congruent to the LPCI system. Therefore, it was the District's intent that, in the absence of any Shutdown Cooling Technical Specifications, requiring in Section 3.10.F that at least one LPCI subsystem of the low pressure core cooling systems be available would ensure that at least one Shutdown Cooling subsystem was also available during refueling operations.

QUESTION What is the safety significance of requiring the LPCI subsystem to be operable but not the LPCS subsystem?

RESPONSE There is no great safety significance in requiring the LPCI subsystem to be operable, while not requiring the Core Spray System to be operable. As discussed above, the intent of requiring at least one LPCI subsystem to be operable in Section 3.10.F was to ensure that during refueling operations with fuel in the core, at least one Shutdown Cooling subsystem be operable, as the Shutdown Cooling and LPCI systems share many integral components. In this manner, the District believed this proposed

change was proactive and conservative in the absence of more structured Shutdown Cooling Technical Specifications. Also as discussed above, any one of the four core cooling subsystems can provide adequate makeup capability during the refueling mode if called upon to do so. Therefore, there is no special safety significance attached to the Core Spray System during the refueling mode of operation.

Should you have any questions or require any additional information, please contact me.

Sincerely,

G. R. Horn
Nuclear Power Group Manager

GRH/mjb
Attachment

cc: NRC Regional Office
Region IV

NRC Resident Inspector
Cooper Nuclear Station