



## Nebraska Public Power District

NEBRASKA PUBLIC POWER DISTRICT  
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**GUY R. HORN**  
Vice-President, Nuclear  
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NLS940005  
September 26, 1994

U. S. Nuclear Regulatory Commission  
Document Control Desk  
Washington, DC 20555

Subject: Exigent Amendment Request  
Proposed Change No. 136 to Technical Specifications  
High Pressure Coolant Injection (HPCI) System  
Cooper Nuclear Station  
NRC Docket No. 50-298, DPR-46

Gentlemen:

In accordance with the applicable revisions specified in 10 CFR 50, the Nebraska Public Power District (District) requests that the Cooper Nuclear Station (CNS) Technical Specifications be revised as specified in the attachment. This proposed change revises CNS Technical Specification Limiting Conditions For Operation 3.5.C.1 and 3.5.C.4 to increase the minimum pressure at which the High Pressure Coolant Injection system is required to be operable from greater than 113 psig to greater than 150 psig. This change is being made to provide additional operating margin between the HPCI steam low pressure isolation setpoint, and the required HPCI availability pressure.

This proposed change has been classified as "exigent" as the District has determined that this change is required prior to startup from the current outage. During review of surveillance data for the HPCI low steam supply pressure switches it was determined that these switches would not reset within the allowable operable range. Additionally, no switches can be located that have an acceptable operating range, when switch tolerances, and instrument accuracies are applied that will allow enough margin for the District to be confident in their ability to remain within the required Technical Specification operating range.

The attachment contains a description of the proposed changes, the attendant 10CFR50.92 evaluation, and the applicable revised Technical Specifications pages in both final and marked up forms for your convenience. This proposed change has been reviewed by the necessary Safety Review Committees and incorporates all amendments to the CNS Facility Operating License through Amendment 165 issued July 16, 1993.

By copy of this letter and attachment the appropriate State of Nebraska official is being notified in accordance with 10CFR50.91(b)(1). Copies to the NRC Region IV Office and CNS NRC Resident Inspector are also being sent in accordance with 10CFR50.4(b)(2).

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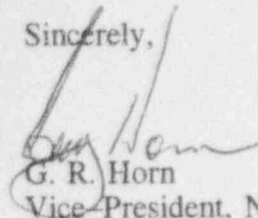
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U. S. Nuclear Regulatory Commission  
September 26, 1994  
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Should you have any questions or require additional information, please contact me.

Sincerely,



G. R. Horn  
Vice-President, Nuclear

GRH/tja:pc-136  
Attachment

cc: H. R. Borchert  
Department of Health  
State of Nebraska

NRC Regional Office  
Region IV  
Arlington, TX

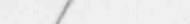
NRC Resident Inspector  
Cooper Nuclear Station

NPG Distribution

STATE OF NEBRASKA )  
 )SS  
PLATTE COUNTY )

G. R. Horn, being first duly sworn, deposes and says that he is an authorized representative of the Nebraska Public Power District, a public corporation and political subdivision of the State of Nebraska; that he is duly authorized to submit this request on behalf of Nebraska Public Power District; and that the statements contained herein are true to the best of his knowledge and belief.

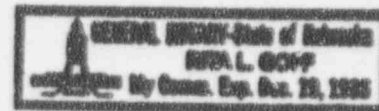
and belief.

  
C. R. Horn

Subscribed in my presence and sworn to before me this

26<sup>th</sup> day of September, 1994.

*Rita L. Sobb*  
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NOTARY PUBLIC



REVISED TECHNICAL SPECIFICATIONS  
Exigent Amendment Request  
Proposed Change No. 136  
High Pressure Coolant Injection System

Revised Pages

117 and 118

I. INTRODUCTION:

As discussed below, the Nebraska Public Power District (District) requests that the NRC approve Proposed Change No. 136 to the Cooper Nuclear Station (CNS) Technical Specifications as proposed herein. The proposed change revises Limiting Conditions for Operation (LCO) 3.5.C.1 and 3.5.C.4 to increase the minimum pressure at which the High Pressure Coolant Injection (HPCI) System is required to be OPERABLE from greater than 113 psig to greater than 150 psig. The proposed change is being made to provide additional operating margin between the HPCI steam low pressure isolation setpoint, presently established at greater than or equal to 100 psig, and the required HPCI availability pressure, presently established at greater than 113 psig.

II. DISCUSSION:

The proposed amendment will revise the CNS Technical Specifications section 3.5.C "HPCI System" to increase the minimum pressure at which the High Pressure Coolant Injection (HPCI) System is required to be OPERABLE from greater than 113 psig to greater than 150 psig.

The primary purpose of the HPCI System is to maintain reactor vessel inventory after small breaks which do not result in rapid depressurization of the reactor vessel. The Updated Safety Analysis Report (USAR) Section VI-4.1 describes the equipment and components that comprise the HPCI System, noting that HPCI consists of a steam turbine assembly driving a 4,250 gpm constant-flow pump assembly and system piping, valves, controls, and instrumentation.

During startup, the HPCI System can be placed in service as required by the Technical Specifications after the HPCI low steam supply pressure isolation switches have been reset. The actual setpoint for these pressure switches is established above the required minimum pressure of 100 psig to allow for instrument drift and inaccuracies. The resulting operating margin between the actual as-installed instrument setpoint and the minimum pressure at which the HPCI System is required OPERABLE is less than 13 psig. The narrow operating margin between the HPCI low steam supply isolation setpoint and the minimum HPCI operability pressure results in two potential problems: 1) during plant start-up these pressure switches may not reset in a timely manner and 2) the HPCI System may inadvertently isolate upon opening of the HPCI steam supply isolation valves. These operational problems can be avoided by increasing the operating margin between the actual as-installed instrument setpoint and the minimum pressure at which the HPCI System is required OPERABLE.



The Emergency Core Cooling Systems are designed to cover the spectrum of loss-of-coolant accidents. The HPCI System supplies the coolant when the reactor pressure vessel is pressurized near the normal operating conditions. The Automatic Depressurization System (ADS), Low Pressure Coolant Injection (LPCI), and Core Spray (CS) systems provide core standby cooling. If reactor vessel water level is not maintained by the HPCI System, or if the HPCI System is unavailable, ADS automatically reduces nuclear steam pressure to permit flow from the CS System and the LPCI System.

Presently, Technical Specification 3.5.C.1 requires that the HPCI System be "... operable whenever there is irradiated fuel in the reactor vessel, reactor pressure is greater than 113 psig, ...". The General Electric (GE) Emergency Core Cooling Systems (ECCS) accident analyses (NEDO 24045, "Loss-of-Coolant Accident Report", large breaks, and NEDO 21662-2, "Loss-of-Coolant Accident Analysis Report", small breaks) requires no coolant injection contribution into the reactor vessel from the HPCI System below 150 psig. Therefore, there is no reason to require the HPCI System to be OPERABLE below the design specification of 150 psig. Reactor pressures below 150 psig is where the low pressure systems are designed to provide the needed flow in GE's ECCS accident analyses. Additionally, the accident analysis indicates that the balance of the CNS Core Standby Cooling Systems can provide adequate core cooling at and below 150 psig reactor pressure without reliance on HPCI System operation.

Furthermore, to ensure that the District had not taken credit for HPCI operation in the region between 113 psig and 150 psig a review of design changes, calculations, the HPCI design criteria document, and operating determinations/evaluations relative to HPCI were conducted. This review did not identify any case where HPCI is relied upon to provide flow into the reactor vessel in the area between 113 psig and 150 psig.

In summary, the Technical Specifications presently require that the HPCI System be OPERABLE when reactor pressure is greater than 113 psig; however, the minimum reactor pressure for HPCI rated flow is 150 psig. Based on 1) that the design specifications and design requirements for HPCI are to provide rated flow (4250 gpm) into the reactor vessel against a varying back pressure in the reactor vessel ranging from 1120 psig to 150 psig; and 2) that other backup core cooling systems (the ADS, LPCI and Core Spray systems) are required to be available, are capable of fulfilling their functions and provide the required flow below 150 psig, the minimum pressure for the HPCI System operability should be revised to be consistent with the actual minimum reactor pressure at which rated HPCI System flow is designed to be achieved (150 psig). Increasing the minimum reactor pressure at which HPCI System operability is required to 150 psig would eliminate the current operational constraints that result from the narrow operating margin between the as-installed HPCI steam supply pressure-low isolation signal and the minimum HPCI System operability pressure.

### III. DESCRIPTION OF CHANGES:

The District requests that the CNS Technical Specifications Section 3.5.C, "HPCI System" be revised to increase the minimum pressure at which the High Pressure Coolant Injection (HPCI) System is required to be OPERABLE from greater than 113 psig to greater than 150 psig. A mark-up of the affected CNS Technical Specifications pages are provided in Appendix A, and the new affected CNS Technical Specifications pages are provided in Appendix B. The specific changes proposed to the CNS Technical Specifications are detailed below:

Page 117 – Revise Specification 3.5.C.1, to increase the minimum reactor pressure required for HPCI to be OPERABLE from 113 psig to 150 psig.

Page 118 – Revise Specification 3.5.C.4, to require that reactor pressure be reduced to 150 psig or less within 24 hours if specification 3.5.C.1 cannot be met.

The proposed revisions to Technical Specification 3.5.C.1 (page 117), and 3.5.C.4 (page 118) will continue to ensure that the HPCI System can perform its designed safety function.

#### IV. SIGNIFICANT HAZARDS DETERMINATION:

10 CFR 50.91(a)(1), requires that licensee requests for operating license amendments be accompanied by an evaluation of significant hazards posed by the issuance of the amendment. This evaluation is to be performed with respect to the criteria given in 10 CFR 50.92(c). The following analysis meets these requirements.

##### Evaluation of this Amendment with Respect to 10 CFR 50.92

The enclosed revision to CNS Technical Specifications (Proposed Change No. 136) is judged to involve no significant hazards based on the following:

1. Does the proposed license amendment involve a significant increase in the probability or consequences of an accident previously evaluated?

##### Evaluation

The change in the reactor vessel pressure at which the High Pressure Coolant Injection (HPCI) System must be operable from 113 psig to 150 psig will not result in a significant increase in the probability or consequences of an accident previously evaluated. The HPCI System is designed to provide adequate reactor vessel coolant injection for small break accidents where the reactor vessel remains pressurized. Therefore, the HPCI System provides a means of responding to previously analyzed accidents. Changing the lower bound reactor vessel pressure limit at which the HPCI System must be operable does not affect any of the accident initiation sequences previously analyzed, and therefore this proposed change will not result in an increase in the probability of any accident previously analyzed.

The change in the required pressure at which the HPCI System must be operable from 113 psig to 150 psig will not involve a significant increase in the consequences of any accident previously evaluated. Increasing this minimum pressure at which the HPCI System must be OPERABLE will not affect the availability of other systems which provide standby core cooling. The CNS Core Standby Cooling Systems (CSCS), which consist of the HPCI System, the Automatic Depressurization System (ADS), the Low Pressure Coolant Injection (LPCI) System, and the Core Spray (CS) System, are designed to cover the spectrum of loss-of-coolant accidents. For large break events, the reactor vessel will depressurize below the point where the HPCI System is OPERABLE, and single failure proof core cooling is provided by a combination of the LPCI and CS systems. For small break events wherein the reactor vessel does not rapidly

depressurize, the HPCI System is designed to provide core cooling with a reactor vessel pressure range of 1120 psig to 150 psig. Upon failure of the HPCI System to provide adequate core cooling, the ADS in conjunction with the LPCI and CS systems provide single failure proof assurance of adequate core cooling. The Low Pressure Systems (LPCI and CS) are designed and required to provide core cooling at reactor pressures below 150 psig.

The District performed calculations which have determined that the low pressure Core Standby Cooling systems are capable of providing adequate core cooling with a reactor pressure of 150 psig under the most degraded pump conditions, i.e. pump performance at minimum Technical Specifications requirements. Additionally, the District reviewed applicable engineering calculations to ensure that no calculations were relying on the HPCI System to provide degraded flow to the reactor vessel during any accident scenario or transient. Based on the diverse means of providing adequate core cooling for the spectrum of loss-of-coolant accidents, and the capability of the low pressure core cooling systems to provide adequate core cooling at 150 psig and below, changing the required pressure at which HPCI must be operable from 113 psig to 150 psig will not change the capability to provide adequate core cooling following postulated events.

The proposed changes do not alter the conditions or assumptions in any of the Updated Safety Analysis Report (USAR) accident analyses. Since the USAR accident analyses remain bounding, the radiological consequences previously evaluated are not adversely affected by the proposed changes. Therefore, it can be concluded that the proposed changes do not involve a significant increase in the probability or consequences of an accident previously evaluated.

2. Does the proposed License Amendment create the possibility of a new or different kind of accident from any accident previously evaluated?

#### Evaluation

The proposed changes introduce no new failure modes for any plant system or component important to safety nor has any new limiting failure been identified as a result of the proposed changes. Increasing the minimum reactor pressure at which the HPCI System is required to be OPERABLE will not cause an unplanned initiation of the HPCI System or any other plant system or equipment, nor will the change impede the initiation of any required safety system. The HPCI System relies on the containment suppression pool, emergency condensate storage tanks, plant D.C. electrical system, and the reactor low water level and high drywell pressure instrumentation to adequately operate. The proposed increase in the minimum reactor pressure at which the HPCI System would be required OPERABLE will not affect the equipment of these systems, nor will the change affect the physical configuration of the HPCI System. There will be no change in the types or increase in the amount of effluents released offsite. Therefore, the proposed change does not create the possibility of a new or different kind of accident from any accident previously evaluated.

3. Does the proposed change create a significant reduction in the margin of safety?

Evaluation

Changing the reactor vessel pressure at which the HPCI System must be OPERABLE from 113 psig to 150 psig will not constitute a significant reduction in the margin of safety. As stated in the Technical Specifications Bases Section 3.5.C, the HPCI System is designed to provide rated cooling water flow for reactor pressures ranging from 1120 psig to 150 psig. The HPCI is not designed to provide rated cooling water flow at reactor pressures below 150 psig. At reactor operating pressures below 150 psig, the low pressure core cooling systems are required to be available, are capable of fulfilling their functions, and provide the required flow in the low pressure regions below 150 psig. Additionally, the combination of the ADS, LPCI and CS systems provide additional means of providing adequate core cooling at any reactor pressure. Therefore the proposed change to increase the minimum reactor pressure at which the HPCI System is required to be operable to greater than 150 psig will not significantly reduce the margin of safety.

V. CONCLUSION:

The District has evaluated the proposed changes described above against the criteria of 10CFR50.92(c) in accordance with the requirements of 10CFR50.91(a)(1). This evaluation has determined that Proposed Change No. 136 to the CNS Technical Specifications will not: 1) involve a significant increase in the probability or consequences of an accident previously evaluated; 2) create the possibility for a new or different kind of accident from any accident previously evaluated; or 3) create a significant reduction in the margin of safety. Therefore, the District requests NRC approval of proposed change No. 136 to the CNS Technical Specifications.



APPENDIX "A"