Nebraska Public Power District

COOPER NUCLEAR STATION
P.O. BOX 98, BROWNVILLE, NEBRASKA 68321
TELEPHONE (402)825-3811
FAX (402)825-5211

NLS940006
July 26, 1994

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

Subject: Proposed Change No. 135 to Technical Specifications
Control Room Emergency Filter System
Cooper Nuclear Station
NRC Docket No. 50-298, DPR-46

Gentlemen:

In accordance with the applicable provisions 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 the CNS Technical Specifications to increase the flow capacity of the Control Room Emergency Filter System. This proposed change, once approved, will provide an interim resolution for increasing the positive pressurization margin for the CNS Control Room envelope. A permanent resolution to this issue will be proposed for NRC approval, once finalized by the District, and will be implemented during the Spring 1995 refueling outage.

The attached contains a description of the proposed change, the attendant 10 CFR 50.92 evaluation, a mark-up showing the proposed changes to the CNS Technical Specification pages, and the new CNS Technical Specifications as proposed. This proposed change has been reviewed by the necessary District 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 the attached, the appropriate State of Nebraska official is being notified in accordance with 10 CFR 50.91(b)(1). Copies to the NRC Region IV Office and the CNS Resident Inspector are also being sent in accordance with 10 CFR 50.4(b)(2).

A001
1/1

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

Sincerely,

G. R. Horn
Vice President - Nuclear

/nr

Attachments

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)
)
NEMAHA 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.

G. R. Horn

Subscribed in my presence and sworn to before me this 27th day of July, 1994.

Mary Frances Armstrong
NOTARY PUBLIC

GENERAL NOTARY-State of Nebraska
MARY FRANCES ARMSTRONG
My Comm. Exp. Jan. 11, 1998

REVISED TECHNICAL SPECIFICATIONS
Proposed Change No. 135
Control Room Emergency Filter System

Revised Pages

215a

I. INTRODUCTION

The Nebraska Public Power District (District) requests that the NRC approve Proposed Change No. 135 to the Cooper Nuclear Station (CNS) Technical Specifications described below. The proposed change revises the existing Limiting Condition for Operation (LCO) 3.12.A.2.c to allow for increased flow capacity of the Control Room Emergency Filter System. By increasing the maximum allowed makeup capacity of this system, additional margin is provided for the positive pressurization of the Control Room envelope. This proposed change also provides a new surveillance requirement (SR) in order to periodically verify that the subject LCO has been satisfied.

The need for this proposed change is a result of recent extensive investigations where it has been determined that additional margin, regarding positive Control Room envelope pressurization, can be achieved by modifying the Control Room Emergency Filter System for increased makeup air capacity.

II. DISCUSSION

On April 18, 1994, the District requested, and received from the NRC, a Notice of Enforcement Discretion (NOED) from CNS Technical Specification Limiting Condition for Operation (LCO) 3.12.A.3 due to the inability to establish positive Control Room envelope pressurization. Subsequent to the NOED, the District has continued to investigate, and evaluate for implementation, various solutions which would improve the positive pressurization margin for the Control Room envelope. The District has concluded that the interim solution would be to significantly increase the Control Room Emergency Filter System flowrate by modifying the system through fan replacement and the addition of a third charcoal adsorber tray to the adsorber unit. This design change would be implemented upon review and approval of Proposed Change No. 135, submitted herein. The long term solution may include additional modifications, in response to test data collected subsequent to the fan replacement, in order to achieve higher Control Room envelope pressurization values. Any additional modifications required will be implemented during the Spring 1995 refueling outage. If required, an additional Technical Specification proposed change will be submitted for NRC approval to make any corresponding changes to the CNS Technical Specifications and to establish more restrictive operability criteria.

The purpose of the Control Room Emergency Filter System is to ensure that the Main Control Room remains habitable following design basis accidents resulting in radioactive contamination of adjacent areas. When a high

radiation condition is detected in the Control Room ventilation intake duct, it is annunciated in the Control Room and provides automatic initiation of the Emergency Filter System. All outside makeup air is then channelled through the Emergency Filter System before entering the air conditioning ductwork.

The Control Room Emergency Filter System is required to be operable during all times when primary or secondary containment integrity is required. During a radiological event, this system provides filtered outside makeup air which maintains a positive Control Room envelope pressure. Positive Control Room envelope pressurization is necessary to prevent unfiltered inleakage of radioactive material into the Control Room envelope following a design basis accident.

Recent operating history of the current Control Room Emergency Filter System configuration has demonstrated that this system, at a design flowrate of 341 cubic feet per minute (CFM), is capable of providing a positive pressure of greater than 0.03" Wg. However, the District's objective is to increase the positive pressurization margin, both in the interim and in the long term. As an interim solution, the District proposes to increase the capacity of the Emergency Filter System by replacing the existing Emergency Filter System fan (1-BF-C-1A) with a fan of greater capacity, and to add a third charcoal tray to the charcoal adsorber unit. The modification to the Emergency Filter System will result in a greater system flowrate. Because CNS Technical Specifications currently specify a flow limit of 341 CFM $\pm$ 10 % for this system, approval of Proposed Change No. 135 is necessary in order to implement the modifications required to increase the flow capacity.

During the current maintenance outage, the District performed special testing, utilizing the Control Room Ventilation System, to determine what increases in positive pressurization would result from various increases in the ventilation flowrate. These tests indicate that a higher Control Room envelope pressurization level can be achieved at higher system flowrates.

The Control Room Emergency Filter System is currently balanced to supply a ventilation flowrate of 341 CFM $\pm$ 10% through the pre-filter (1-PF-C-1A), HEPA filter (1-HEF-C-1A), and charcoal adsorber (1-CF-C-1A), which are arranged in series. The actual flow capabilities of the adsorber and filter elements, however, are significantly greater. The pre-filter is designed for a > 1000 CFM flowrate, the HEPA filter is designed for a > 1000 CFM flowrate, and the charcoal adsorber is currently designed for a 666 CFM flowrate. The charcoal adsorber unit's configuration consists of the plenum box holding two charcoal trays and one sample canister. Each charcoal tray is tested and accepted for 333 CFM, which totals 666 CFM. By eliminating the sample canister tray and replacing it with a third charcoal tray, the capacity of the charcoal adsorber unit is increased by 333 CFM for a total capacity of approximately 1000 CFM.

The District has performed calculations to determine the effects of increasing the system flowrate from 341 CFM to 1000 CFM on radiological doses to the Control Room operators given the design basis Loss of Coolant Accident (LOCA), which is the limiting accident for Control Room dose. The following is a summary of integrated 30-day Control Room operator

doses, both whole body (WB) and thyroid, that can be expected due to the design basis accident at the current and proposed filter system flow capacity.

Individual Dose Sources	341 CFM ± 10% Flow**	< 1000 CFM Flow
Emergency Bypass Filter Shine:	0.018 Rem WB	0.049 Rem WB
Inleakage into Control Room:	0.043 Rem WB	0.066 Rem WB
through the Filter System	11.39 Rem Thyroid	12.81 Rem Thyroid
Reactor Building Shine*:	1.450 Rem WB	1.450 Rem WB
Core Spray Line*:	0.230 Rem WB	0.230 Rem WB
LOCA Cloud Shine*:	0.004 Rem WB	0.004 Rem WB
Totals:	**1.745 Rem WB**	**1.799 Rem WB**
	11.39 Rem Thyroid	**12.81 Rem Thyroid**

* The Control Room operator dose due to Reactor Building, 10" Core Spray Line, and LOCA Cloud Shine are strictly whole body doses and are unaffected by the Emergency Filter System flowrate.

** Calculation performed at 375 CFM to account for 10% margin.

WB = Whole Body dose.

As summarized above, the integrated 30-day Control Room operator dose due to a design basis accident is 1.799 Rem whole body and 12.81 Rem thyroid at the proposed system maximum flowrate of < 1000 CFM. These doses are not significantly different than the doses received at a system flowrate of 341 CFM. These doses are well within the limits of 10 CFR 20, 10 CFR 50, Appendix A, General Design Criteria 19, and the guidance provided in NUREG 0800, which require that doses be limited to less than 5 Rem whole body, or its equivalent to any part of the body, and 30 Rem thyroid, for the duration of any design basis accident. The 5 and 30 Rem limits are from Standard Review Plan Section 6.4 (NUREG 0800); these limits also meet both the old (effective prior to January 1, 1994) and revised (effective January 1, 1994) 10 CFR 20. Calculations have been performed to ensure that the above identified doses are also within the Updated Safety Analysis Report (USAR) Section XII-3.3.1 requirement of 0.5 Rem, whole body dose from the reactor building, in any eight-hour period.

It is evident that increasing the Control Room Emergency Filter System maximum flowrate does not significantly increase Control Room personnel dose, while increasing positive pressurization in the Control Room envelope. Increasing the positive pressurization in the Control Room envelope ensures that all leakage will be away from the Control Room envelope, and therefore ensures that unfiltered inleakage to the Control Room envelope is minimized following an accident.

The District has also evaluated the charcoal adsorber's capability to accommodate the upgrade from 341 CFM to 1000 CFM. The District has calculated a minimum charcoal adsorber inlet face velocity of 39 feet per minute (FPM), as opposed to the current value of 22 FPM, for halogenated hydrocarbon removal testing. Testing performed in accordance with the District's charcoal adsorber purchase certification for the CREFS ensures adsorber efficiencies > 99% with a face velocity > 39 feet per minute.

III. DESCRIPTION OF CHANGES

The changes to the CNS Technical Specifications consist of:

1) Revising existing LCO 3.12.A.2.a to reflect the need to test at system design flowrate for in-place testing of filter components;

2) Revising existing LCO 3.12.A.2.c to reflect a new flowrate of < 1000 CFM for the Control Room Emergency Filter System;

3) Revising the required inlet velocity contained in existing LCO 3.12.A.2.b from ≥ 22 FPM to ≥ 39 FPM;

4) Adding a new Surveillance Requirement (No. 4.12.A.1.i) to verify, at least once every operating cycle, that the Control Room Emergency Filter System can maintain positive pressure relative to adjacent areas;

5) Replacing the word "shown" with the word "demonstrated" in LCO 3.12.A.1.c;

6) Moving LCOs 3.12.A.2.a and 3.12.A.2.b over to the Surveillance Requirements (SR) column;

7) Combining LCO 3.12.A.1 and 3.12.A.1.c;

8) Renumbering LCOs and SRs;

9) Capitalizing defined terms; and

10) Clarifying LCO 3.12.A.1 to be applicable when either primary or secondary containment integrity is required.

The first four specific proposed changes identified above are related to increasing the flow capacity of the Control Room Emergency Filter System, and is evaluated below. The maximum flowrate of < 1000 CFM is based on the limiting filter train component design flowrate capacity. The ≥ 39 FPM velocity corresponds to the 1000 CFM flowrate and represents the calculated flow velocity through the charcoal adsorbers at 1000 CFM. Past testing demonstrates that minimum filter efficiency requirements are met at flowrates greater than 39 FPM. The change to require in-place DOP and halogenated hydrocarbon removal at the system flowrate ensures that testing is conducted, and therefore, filter component efficiencies are verified at the most demanding conditions allowable, i.e. up to 1000 CFM.

The remaining changes are editorial in nature and do not involve a significant hazards determination. The clarification for LCO 3.12.A.1 and the relocation of LCO 3.12.A.2.a & b, do not represent new or revised requirements, nor change in intent. A mark-up and typed version of the affected CNS Technical Specification page is provided in Appendix A of this submittal.

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 giver 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 Technical Specifications change is judged to involve no significant hazards based on the following:

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

   Evaluation

   This license amendment request involves the upgrading of the Control Room Emergency Filter System from 341 cubic feet per minute (CFM) ±10% to a maximum of < 1000 CFM. By establishing a new maximum flowrate for this system, additional filtered makeup air can be supplied to the Control Room, thus increasing the positive pressure in the Control Room envelope. The purpose of the Control Room Emergency Filter System is to remove radioactive iodine and other radioactive materials from the makeup air during design basis accidents. Therefore, any change to this system will not increase the probability of an accident previously evaluated. Radiological calculations show that the increased flowrate of this system will not result in a significant increase in Control Room operator dose during a design basis accidents, and these doses remain well below the established limits. Therefore, the consequences of an accident previously evaluated are not significantly increased. The addition of the new Surveillance Requirement provides a Technical Specification required periodic demonstration of the positive pressurization function of the system. This requirement has previously been implemented per existing surveillance procedures as part of the overall Control Room Emergency Filter System operability demonstration, and does not represent a new requirement. This proposed change does not introduce any new modes of plant operation nor affect any operational setpoints. The change does not degrade the performance of any safety system assumed to function in the accident analysis. Therefore, the proposed change does not involve a significant increase in the probability or consequences of an accident previously evaluated.

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

Evaluation

This license amendment request involves the upgrading of the Control Room Emergency Filter System from 341 cubic feet per minute (CFM) ±10% to a maximum of < 1000 CFM. This proposed change involves a physical modification to the Control Room Emergency Filter System where the filter fan is replaced with a new fan with greater capacity. To accommodate the additional flow capacity of the system, an additional charcoal tray is installed in the charcoal adsorber unit. The District has evaluated the potential effects of this modification and has determined that the increased air flowrate is within the system capacity and that radiological doses, through the filter system, during the design basis accident are largely unaffected. Because this is a modification of an existing system with no direct interface with other systems responsible for prohibiting or mitigating design basis events, the District has concluded that this proposed change cannot create the possibility for a new or different kind of accident. This proposed change does not involve the creation, deletion, or modification of the function of any structure or system, except as described above, nor does this change introduce or change any mode of plant operation. This proposed change does not create the possibility for 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

This license amendment request involves the upgrading of the Control Room Emergency Filter System from 341 cubic feet per minute (CFM) ±10% to a maximum of < 1000 CFM. By establishing this new maximum flowrate for the Emergency Filter System, additional filtered makeup air can be supplied to the Control Room envelope, thus improving the margin for positive pressurization with respect to adjacent areas. Recent tests, utilizing the Main Control Room Air Conditioning System, have provided information that supports an increase in the Emergency Filter System flowrate, from 341 CFM to the proposed maximum system capability of approximately 1000 CFM. These tests indicate that an increase of positive pressure can be achieved by this increased flowrate. This positive pressure increase provides additional margin of Control Room envelope positive pressure.

The District has performed radiological calculations to determine the increase in Control Room operator dose during the 30-day design basis LOCA event, as a result of increased system air flow. These calculations show increasing the Control Room Emergency Filter System to a maximum of 1000 CFM results in a dose of 1.799 Rem whole body and 12.81 Rem thyroid. These doses are not significantly different than the doses received at a system flowrate of 341 CFM, which is 1.745 Rem whole body and 11.39 Rem thyroid. These doses are well within the limits of 10 CFR 20, 10 CFR 50, Appendix A,

General Design Criteria 19, and the guidance provided in NUREG 0800, which require that doses be limited to less than 5 Rem whole body, or its equivalent to any part of the body including 30 Rem thyroid, for the duration of any design basis accident. The above calculated values have also been evaluated and determined to be within the Updated Safety Analysis Report (USAR) Section XII requirement of 0.5 Rem in any eight-hour period, whole body from the reactor building. Increasing the Control Room Emergency Filter System maximum flowrate has a minimal effect on quantifiable dose rates, while increasing positive pressurization in the Control Room envelope. By increasing the positive pressurization in the Control Room envelope, the possibility of non quantifiable radiation dose to the Control Room operators, through inleakage, is reduced. This proposed change does not involve any change to instrument setpoints or operation. Therefore, the District has concluded that this proposed change does not create a significant reduction in the margin of safety.

V. CONCLUSION

The District has evaluated the proposed change, described above, against the criteria given in 10 CFR 50.92(c) in accordance with the requirements of 10 CFR 50.91 (a)(1). This evaluation has determined that this proposed change 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, for the reasons detailed above, the District requests NRC approval of this Proposed Change No. 135.