Omaha Public Power District

*444 South 16th Street Mall*
*Omaha NE 68102-2247*

October 8, 2002
LIC-02-0090

U.S. Nuclear Regulatory Commission
ATTN.: Document Control Desk
Washington, DC 20555-0001

Reference: Docket No. 50-285

**SUBJECT: Fort Calhoun Station Unit No. 1 License Amendment Request, "Relocation of Nuclear Detector Cooling Technical Specification 2.13 to Updated Safety Analysis Report"**

Pursuant to 10 CFR 50.90, Omaha Public Power District (OPPD) hereby transmits an application for amendment to the Fort Calhoun Station Unit 1 (FCS) Operating License. Attachment 1 provides the No Significant Hazards Evaluation and the technical bases for this requested change to the Technical Specifications (TS). Attachments 2 and 3 contain marked-up and clean-typed Technical Specification pages reflecting the requested Technical Specification and Basis changes.

The proposed amendment relocates the requirements of TS 2.13, "Nuclear Detector Cooling System," to the FCS Updated Safety Analysis Report (USAR). The accident analyses do not assume operation of the nuclear detector cooling system. Therefore, this system does not meet the criteria set forth in 10 CFR 50.36(c)(2)(ii) for inclusion in the TS, and the requirements will be relocated to the USAR.

OPPD requests approval of the proposed amendment by March 24, 2003. OPPD requests 120 days to implement this amendment. No commitments are made to the NRC in this letter.

I declare under penalty of perjury that the forgoing is true and correct. (Executed on October 8, 2002.)

A001

If you have any questions or require additional information, please contact Dr. R. L. Jaworski of my staff at 402-533-6833.

Sincerely,

D. J. Bannister
Manager Fort Calhoun Station

DJB/TRB/trb

Attachments
1. Fort Calhoun Station's Evaluation for Amendment of Operating License
2. Mark-up of Technical Specifications
3. Clean-Typed Technical Specification Pages

c: E. W. Merschoff, NRC Regional Administrator, Region IV
A. B. Wang, NRC Project Manager
John G. Kramer, NRC Senior Resident Inspector
Division Administrator, Public Health Assurance, State of Nebraska
Winston & Strawn

**Attachment 1**

**Fort Calhoun Station's Evaluation**
**For**
**Relocation of Nuclear Detector Cooling Technical Specification 2.13**
**to Updated Safety Analysis Report**

## 1.0 INTRODUCTION

This letter is a request to amend Operating License DPR-40 for the Fort Calhoun Station (FCS) Unit No. 1.

Omaha Public Power District (OPPD) proposes to relocate the requirements of Technical Specification (TS) 2.13, "Nuclear Detector Cooling System," to the FCS Updated Safety Analysis Report (USAR). The accident analyses do not assume operation of the nuclear detector cooling system. Therefore, this system does not meet the criteria set forth in 10 CFR 50.36(c)(2)(ii) for inclusion in the TS, and the requirements will be relocated to the USAR.

## 2.0 DESCRIPTION OF PROPOSED AMENDMENT

The proposed change is to delete TS 2.13 and its Bases in their entirety and relocate this information to the FCS USAR.

## 3.0 BACKGROUND

The proposed amendment relocates the requirements of TS 2.13, "Nuclear Detector Cooling System," to the FCS USAR. The stated objective of TS 2.13 is to assure that the concrete in the biological shield surrounding the reactor vessel does not overheat. The accident analyses do not assume operation of the nuclear detector cooling system. Therefore, this system does not meet the criteria set forth in 10 CFR 50.36(c)(2)(ii) for inclusion in the TS, and the requirements will be relocated to the USAR.

USAR Section 9.10.2.3 states the following regarding the Nuclear Detector Cooling System:

> This system cools the out-of-core neutron detectors, which are located in tubes or wells in the reactor compartment annulus between the lower portion of the reactor vessel and the biological shield, and maintains the shield concrete temperature below 150°F. The system consists of two air handling units and vane axial fans installed in parallel in a closed loop. Air is ducted into the reactor compartment, where it passes up through the wells and past the detectors before recirculation to the air handling units. The closed loop arrangement limits argon-41 contamination of the containment air space. The system flow diagram is shown in P&ID 11405-M-1.
>
> Each air handling unit contains HEPA filters and cooling coils operating on the component cooling water system. The air handling units and fans are each rated at 100 percent system design capability and can be isolated from each other so that one unit and fan normally operate with the other fan in standby. The system design data are shown in Table 9.10-3. A differential pressure gauge is installed across the VA-11 A/B filters to provide a means of determining the condition of each filter.

USAR Table 9.10.3 currently provides the following information:

| | |
|---|---|
| Heat Removal Capacity, Btu/hr | 173,000 |
| Flow, CFM | 16,000 |
| Air Inlet Temperature at Unit, °F | 110 |
| Air Outlet Temperature from Unit, °F | 100 |
| Cooling Water Flow, gpm | 30 |
| Cooling Water Inlet Temperature, °F | 90 |
| Cooling Water Outlet Temperature, °F | 101.5 |

Relocation of the requirements of TS 2.13 to the USAR in conjunction with existing USAR information will continue to provide assurance that the biological shield structural concrete temperature will be maintained below 150°F.

## 4.0 REGULATORY REQUIREMENTS AND GUIDANCE

FCS was licensed for construction prior to May 21, 1971, and at that time committed to the preliminary General Design Criteria (GDC). These preliminary design criteria are contained in the FCS USAR Appendix G.

This activity complies with FCS Design Criterion 10, "Containment," which is similar to 10 CFR 50 Appendix A GDC 16, "Containment design." FCS Design Criterion 10 states that containment shall be provided. The containment structure shall be designed to sustain the initial effects of gross equipment failures, such as a large coolant boundary break, without loss of required integrity and, together with other engineered safety features as may be necessary, to retain for as long as the situation requires the functional capability to protect the public.

This activity also complies with FCS Design Criterion 40, "Missile Protection," which is similar to 10 CFR 50 Appendix A GDC 4, "Environmental and dynamic effects design bases." FCS Design Criterion 40 states that protection for engineered safety features shall be provided against dynamic effects and missiles that might result from plant equipment failures.

This activity also complies with FCS Design Criterion 49, "Containment Design Basis," which is similar to 10 CFR 50 Appendix A GDC 50, "Containment design basis." FCS Design Criterion 49 states that the containment structure, including access openings and penetrations, and any necessary containment heat removal systems shall be designed so that the containment structure can accommodate without exceeding the design leakage rate the pressures and temperatures resulting from the largest credible energy release following a loss-of-coolant accident, including a considerable margin for effects from metal-water or other chemical reactions that could occur as a consequence of failure of emergency core cooling systems.

This activity also complies with FCS Design Criterion 50, "NDT Requirement for Containment Material," which is similar to 10 CFR 50 Appendix A GDC 51, "Fracture prevention of containment pressure boundary." FCS Design Criterion 50 states that principal load carrying components of ferritic materials exposed to the external environment shall be selected so that their temperature under normal operating and testing conditions are not less than 30°F above nil ductility transition (NDT) temperature.

All of these FCS Design Criteria will continue to be satisfied after the change to relocate the requirements of TS 2.13, "Nuclear Detector Cooling System," to the FCS USAR. The FCS accident analyses do not assume operation of the nuclear detector cooling system.

## 5.0 TECHNICAL ANALYSIS

Evaluation

The proposed amendment relocates the requirements of TS 2.13, "Nuclear Detector Cooling System," to the FCS USAR. The accident analyses do not assume operation of the nuclear detector cooling system. Therefore, this system does not meet the criteria set forth in 10 CFR 50.36(c)(2)(ii) for inclusion in the TS, and the requirements will be relocated to the USAR. Any future changes to these requirements will be evaluated under 10 CFR 50.59.

Relocation of the requirements of TS 2.13 to the USAR in conjunction with existing USAR information will continue to ensure that the biological shield structural concrete temperature is maintained below 150°F.

Comparison to Screening Criteria of 10 CFR 50.36(c)(2)(ii):

Criterion 1

The nuclear detector cooling system is not an instrumentation system that is used to detect, and indicate in the control room, a significant abnormal degradation of the reactor coolant pressure boundary.

Criterion 2

The nuclear detector cooling system is not a process variable, design feature, or operating restriction that is an initial condition of a design basis accident or transient analysis that either assumes the failure of or challenge to the integrity of a fission product barrier.

Criterion 3

The nuclear detector cooling system is not a structure, system, or component that is part of the primary success path and which functions or actuates to mitigate a design basis accident or transient that either assumes the failure of or presents a challenge to the integrity of a fission product barrier.

Criterion 4

The FCS Probabilistic Safety Assessment does not address the nuclear detector cooling system. This system is considered to be a non-risk contributor to the core damage frequency and offsite releases.

Conclusion

Since the screening criteria have not been satisfied, the nuclear detector cooling system requirements may be relocated to licensee controlled documents outside the Technical Specifications.

Risk Evaluation

The proposed amendment does not involve application or use of risk-informed decisions. The risk to the health and safety of the public as a result of relocating requirements for Nuclear Detector Cooling to the USAR is minimal.

## 6.0 REGULATORY ANALYSIS

The proposed amendment relocates the requirements of TS 2.13, "Nuclear Detector Cooling System," to the FCS USAR. The accident analyses do not assume operation of the nuclear detector cooling system. Therefore, this system does not meet the criteria set forth in 10 CFR 50.36(c)(2)(ii) for inclusion in the TS, and the requirements will be relocated to the USAR. This complies with the regulatory requirements in FCS Design Criteria 10, 40, 49, and 50 by continuing to prevent damage to the containment structure.

In conclusion, based on the considerations discussed above, (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendment will not be inimical to the common defense and security or to the health and safety of the public.

## 7.0 NO SIGNIFICANT HAZARDS CONSIDERATION

OPPD has evaluated whether or not a significant hazards consideration is involved with the proposed amendment(s) by focusing on the three standards set forth in 10 CFR 50.92, "Issuance of Amendment," as discussed below:

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

   Response: No

   The proposed change relocates requirements for Nuclear Detector Cooling that do not meet the criteria for inclusion in the TS set forth in 10 CFR 50.36(c)(2)(ii). The requirements for Nuclear Detector Cooling are being relocated from TS to the USAR, which will be maintained pursuant to 10 CFR 50.59, thereby reducing the level of regulatory control. The level of regulatory control has no impact on the probability or consequences of an accident previously evaluated. Therefore, the change does not involve a significant increase in the probability or consequences of an accident previously evaluated.

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

   Response: No

   The proposed change relocates requirements for Nuclear Detector Cooling that do not meet the criteria for inclusion in TS set forth in 10 CFR 50.36(c)(2)(ii). The change does not involve a physical alteration of the plant (no new or different type of equipment will be installed) or make changes in the methods governing normal plant operation. The change will not impose different requirements, and adequate control of information will be maintained. This change will not alter assumptions made in the safety analysis and licensing basis. Therefore, the change does not create the possibility of a new or different kind of accident from any accident previously evaluated.

3. **Does this change involve a significant reduction in a margin of safety?**

   Response: No

   The proposed change relocates requirements for Nuclear Detector Cooling that do not meet the criteria for inclusion in TS set forth in 10 CFR 50.36(c)(2)(ii). The change will not reduce a margin of safety since the location of a requirement has no impact on any safety analysis assumptions. In addition, the relocated requirements for Nuclear Detector Cooling remain the same as the existing TS. Since any future changes to these requirements or the surveillance procedures will be evaluated per the requirements of 10 CFR 50.59, there will be no reduction in a margin of safety.

Based on the above, OPPD concludes that the proposed amendment presents no significant hazards consideration under the standards set forth in 10 CFR 50.92(c), and, accordingly, a finding of "no significant hazards consideration" is justified.

## 8.0 ENVIRONMENTAL CONSIDERATION

The proposed amendment relocates the requirements of TS 2.13, "Nuclear Detector Cooling System," to the FCS USAR. The accident analyses do not assume operation of the nuclear detector cooling system. Therefore, this system does not meet the criteria set forth in 10 CFR 50.36(c)(2)(ii) for inclusion in the TS, and the requirements will be relocated to the USAR. The changes meet the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9) for the following reasons:

- As demonstrated in Section 7.0, the proposed amendment does not involve a significant hazards consideration.

- The proposed amendment does not result in a significant change in the types or increase in the amounts of any effluents that may be released off-site. Also, the TS change does not introduce any new effluents or significantly increase the quantities of existing effluents. As such, the change cannot significantly affect the types or amounts of any effluents that may be released off-site.

- The proposed amendment does not result in a significant increase in individual or cumulative occupational radiation exposure. The proposed change does not result in any physical plant changes. No new surveillance requirements are anticipated as a result of these changes that would require additional personnel entry into radiation controlled areas. Therefore, the amendment has no significant affect on either individual or cumulative occupational radiation exposure.

Accordingly, the proposed amendment meets the eligibility criterion for categorical exclusion set forth in 10 CFR 51.22(c)(9). Therefore, pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the proposed amendment.

## 9.0 PRECEDENCE

None

## 10.0 REFERENCES

10.1 Fort Calhoun Station Updated Safety Analysis Report, Section 9.10.2.3

**Attachment 2**

**Markup of**
**Technical Specification Page**
**&**
**Bases Page**

## 2.0 LIMITING CONDITIONS FOR OPERATION

### 2.13 Nuclear Detector Cooling System

Applies to the operational status of the Nuclear Detector Cooling System.

Objective

To assure that the concrete in the biological shield surrounding the reactor vessel does not overheat.

Specifications

(1) The annulus exit temperature from the nuclear detector cooling system shall not exceed a temperature found to correlate to 150°F concrete temperature.

(2) There will be at least 2 temperature detectors in service to measure annulus exit air temperatures whenever the reactor is in service.

Basis

The Nuclear Detector Cooling System is used to cool the air in the annulus between the reactor vessel and the biological shield. While the nuclear detectors can withstand temperatures considerably higher than 150°F the elevated temperature could result in reduction in concrete strength through loss of moisture. Each nuclear detector well cooling unit is rated at 100% of the system design capability of 173,000 Btu/hr.[1]

A test was performed during Hot Functionals and/or Low Power Tests to determine (1) the correlation between annulus air temperature and concrete temperature; (2) rate at which the concrete will heat up if no cooling is available.

The results of these tests were used to provide control room indication of concrete temperatures (that is annulus air temperature) and allowable reactor operation time in the event both nuclear detector well cooling units were inoperable.

The objective for this specification is to hold the concrete bulk temperature to no greater than 150°F. The annulus exit temperature which correlated to 150°F (concrete temperature) was determined by testing. Temperature sensors are installed in the concrete and in the annulus air discharge. The sensors in the concrete are subjected to neutron flux during operation and are no longer functional. The value determined for annulus exit temperatures which correlate with concrete temperatures were determined and a maximum value used to comply with the Tech Spec limit.

References

(1) FSAR, Section 9.10.2.3

**Attachment 3**

**Clean-Typed Technical Specification Page**
**&**
**Bases Page**

NOT USED