Docket File

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

December 20, 1988

Docket No. 50-285

Mr. Kenneth J. Morris
Division Manager - Nuclear Operations
Omaha Public Power District
1623 Harney Street
Omaha, Nebraska 68102

Dear Mr. Morris:

SUBJECT: FORT CALHOUN STATION, UNIT 1 - EXEMPTION FROM THE REQUIREMENTS OF APPENDIX R TO 10 CFR PART 50 (SECTION 111.0)

The Commission has issued the enclosed exemption from the fire protection requirements of Appendix R, Section III.0, to 10 CFR Part 50 for the Fort Calhoun Station, Unit 1. This section requires that the reactor coolant pump (RCP) oil collection system be capable of collecting lube oil from all pressurized and unpressurized leakage sites in the RCP lube oil system and that the leakage shall be collected in a vented enclosed container capable of holding the entire lube oil system inventory.

By letter dated November 28, 1988, Omaha Public Power District (OPPD) requested approval of an exemption from the technical requirements of Section III.0 of Appendix R to 10 CFR Part 50 in that the installed lube oil holdup tank capacity is 110 gallons, based on a maximum expected leak from a single failure, rather than a two pump inventory of 280 gallons.

Based on the staff's review and evaluation of the request, the Commission has determined that the RCP lube oil collection system provides an equivalent level of safety to that achieved by compliance with Appendix R. Therefore, the exemption request as described in the enclosed Exemption has been granted. Our Safety Evaluation is also enclosed.

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A copy of the "Environmental Assessment and Finding of No Significant Impact" was sent to you by letter dated December , 1988, and published in the Federal Register on December 20, 1988 (53 FR 51174).

The Exemption is being filed with the Office of the Federal Register for publication.

Sincerely,

/s/

Jose A. Calvo, Director
Project Directorate IV
Division of Reactor Projects - III,
IV, V and Special Projects
Office of Nuclear Reactor Regulation

Enclosure:
As stated

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Jose A. Calvo, Director
Project Directorate IV
Division of Reactor Projects - III,
IV, V and Special Projects
Office of Nuclear Reactor Regulation

Enclosure:
As stated

cc w/enclosure:
See next page

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UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

In the Matter of	)	
	)	
Omaha Public Power District	)	Docket No. 50-285
(Fort Calhoun Station, Unit 1)	)	

EXEMPTION

I.

Omaha Public Power District (OPPD or the licensee) is the holder of Facility Operating License No. DPR-40 which authorizes the operation of Fort Calhoun Station, Unit 1 (the facility), at a steady state power level not in excess of 1500 megawatts thermal. The license provides, among other things, that the facility is subject to all rules, regulations, and orders of the Nuclear Regulatory Commission (the Commission or the staff) now or hereafter in effect. The facility is a pressurized water reactor (PWR) located at the licensee's site in Washington County, Nebraska.

II.

10 CFR 50.48, "Fire Protection", and Appendix R to 10 CFR Part 50, "Fire Protection Program for Nuclear Facilities Operating Prior to January 1, 1979" set forth certain fire protection features required to satisfy the General Design Criterion related to fire protection (Criterion 3, Appendix A to 10 CFR Part 50).

Section III.O of Appendix R requires that facilities have reactor coolant pump oil collection system if the containment is not inerted during normal operation. This system must be designed, engineered, and installed so that failure during normal or design basis accident conditions will not lead to fire, and that there is reasonable assurance that the system will withstand a Safe Shutdown Earthquake. Additionally, the system must drain to a vented closed container that can hold the entire lube oil system inventory.

III.

By letter dated November 28, 1988, the licensee requested approval of an exemption from Appendix R, Section III.O to the extent that it requires the installation of a reactor coolant pump (RCP) oil collection system sized to accommodate the entire lube oil system inventory.

Exemption Requested

The licensee requested an exemption from the specific requirements of Section III.O that would require the reactor coolant pump oil collection system drain tank capacity to be capable of containing the entire reactor coolant pump lube oil inventory.

The licensee stated in a letter dated November 28, 1988 that the reactor coolant pump oil collection system capacity was designed such that oil leaks from the RCP lift pumps, oil coolers, flanged or gasketed oil connections, oil sight glasses, drain and fill connection points, and oil reservoir points would be contained. The system consists of sealed pans and covers enclosing the pressurized oil containing portions of each RCP and drain piping routed to one of two 150 gallon collection tanks. One tank is associated with each pair of

RCPs. The collection tank capacity was based on a maximum expected leak of 110 gallons for any single failure as opposed to a two pump inventory of 280 gallons for each tank.

IV.

Accordingly, the Commission has determined that, pursuant to 10 CFR 50.12, this Exemption is authorized by law, will not present an undue risk to the public health and safety, and is consistent with the common defense and security. The Commission has further determined that special circumstances, as set forth in 10 CFR 50.12(a)(2)(ii), are present justifying the Exemption, namely that the application of the regulation in the particular circumstances is not necessary to achieve the underlying purpose of the rule. In general, the underlying purpose of the rule is to accomplish safe shutdown in the event of a single fire and maintain the plant in a safe condition. Under a worst case scenario, reactor coolant pump lube oil would overflow from the collection tanks, due to the limited storage capacity, and will be channeled to the floor drains. Since no ignition sources are present in the area, no fire is likely to occur. Therefore, the limited lube oil collection system capacity does not pose a significant hazard to safe shutdown systems. Further, the Fort Calhoun Station Fire Hazards Analysis has evaluated the effect of a lube oil fire in the reactor coolant pump cavities and has shown that sufficient undamaged equipment would remain available to support safe shutdown.

Accordingly, the Commission hereby grants the exemption from the requirements of 10 CFR 50, Appendix R, as described in Section III above.

Pursuant to 10 CFR 51.32, the Commission has determined that the granting of this Exemption will have no significant impact on the environment (53 FR 51174).

The Safety Evaluation concurrently issued and related to this action and the above referenced submittals by the licensee are available for public inspection at the Commission's Public Document Room, 2120 L Street, N.W., Washington, D.C., and at the local public document room located at the W. Dale Clark Library, 215 South 15th Street, Omaha, Nebraska 68102.

This Exemption is effective upon issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

Gary M. Holahan

Gary M. Holahan, Acting Director
Division of Reactor Projects - III,
IV, V and Special Projects
Office of Nuclear Reactor Regulation

Dated at Rockville, Maryland
this 20th day of December, 1988

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

EVALUATION OF FIRE PROTECTION EXEMPTION REQUEST

FACILITY OPERATING LICENSE NO. DPR-40

OMAHA PUBLIC POWER DISTRICT

FORT CALHOUN STATION, UNIT 1

DOCKET NO. 50-285

1.0 INTRODUCTION

By letter dated November 28, 19[illegible], the licensee requested approval of an exemption from the technical requirements of Section III.O. of Appendix R to 10 CFR Part 50 to the extent that it requires the installation of a reactor coolant pump (RCP) oil collection system sized to accommodate the entire lube oil system inventory.

2.0 DISCUSSION

Each of the four reactor coolant pumps at Fort Calhoun Station contain 140 gallons of lube oil. The lube oil collection system is designed to contain oil leaks from the lift pumps, oil coolers, flanged or gasketed oil connections, oil level sight glasses, drain and fill connection points, and oil reservoirs. The system consists of three sealed pans and covers that enclose the pressurized oil containing components of each reactor coolant pump with a two inch drain line routed to one of the two 150 gallon collection tanks, one for each pair of reactor coolant pumps. The collection tank capacity is based on a maximum expected leak of 110 gallons for any single failure as opposed to a total system inventory of 280 gallons for each tank.

Each horizontally positioned tank is equipped with an overflow drain located at the top of the tank which drains to the floor. The tanks are located between and below the reactor coolant pump cavities at basement elevation 994 ft. approximately 23 ft. below the collection pans. Assuming a simultaneous failure of all four lubricating oil systems, the entire inventory of oil is assumed to be discharged to the collection system. This would result in a maximum of 130 gallons of lube oil overflowing onto the containment basement floor at each tank location from the overflow drains and into the nearest 4 inch floor drain. The basement floor in the area of each tank is sloped to the nearest floor drain, which is within 12 feet of the collection tank for reactor coolant pumps RC-3C and RC-3D, and within 4 feet of the collection tank for pumps RC-3A and RC-3B. In each area oil would temporarily pool and would be contained by the floor drain.

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The licensee conducted a walkdown of the area to determine if any potential ignition sources are located in the vicinity of the tanks and floor drains. Based on the results of this walkdown, no potential ignition sources were identified at or below the level of the tank.

The licensee justified the exemption on the basis of the design of the existing lube oil system and the absence of sources of ignition in the area where potential lube oil overflow would occur.

3.0 EVALUATION

The technical requirements of Section III.O of Appendix R to 10 CFR Part 50 are not met because the existing oil collection system is not designed to hold the lube oil inventory from all four of the reactor coolant pumps.

The staff initially had several concerns with the existing system. The first was that during a seismic event, the lube oil collection system might lose its integrity, resulting in oil leaking onto hot surfaces and causing a fire. The licensee, however, affirmed in the November 28, 1988 letter that the system was designed to survive a safe shutdown earthquake (SSE) with its leak integrity intact.

The staff was also concerned that all unpressurized leakage points were not encompassed by the oil collection system. The licensee indicated that oil piping that is unpressurized is either internal to the reactor coolant pump (RCP) motor bearing assembly or qualified to withstand the elevated pressures anticipated during a seismic event.

The staff was also concerned that there may be hot surfaces or other potential sources of ignition in proximity to where lube oil overflow would likely occur. The licensee affirmed that on the basis of a walkdown of the system, no such ignition sources exist in the vicinity of the tanks and four drains.

Under the worse-case scenario, lube oil will drain into the two holding tanks. Because of the limited storage capacity, the oil will overflow onto the floor and will be channeled to the floor drains. Since no ignition sources are present in the area, no fire is likely to occur. The staff, therefore, agrees with the licensee's analysis that the pumps do not pose a significant hazard to safe shutdown systems.

4.0 CONCLUSION

Based on the above evaluation, the staff concludes that the existing RCP lube oil collection system provides an equivalent level of safety to that achieved by compliance with the requirement of Section III.O of Appendix R to 10 CFR Part 50. Therefore, the licensee's request for exemption should be granted.

Dated: December 20, 1988
Principle Contributor: D. Kubicki