

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

In the Matter of

NORTHERN STATES POWER COMPANY

(Prairie Island Nuclear Generating
Plant Unit Nos. 1 and 2)

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} Docket Nos. 50-282 and 50-306

EXEMPTION

I.

The Northern States Power Company (the licensee) is the holder of Facility Operating License Nos. DPR-42 and DPR-60 which authorize operation of the Prairie Island Nuclear Generating Plant, Unit Nos. 1 and 2. These licenses provide, among other things, that they are subject to all rules, regulations and Orders of the Commission now or hereafter in effect.

The facility comprises two pressurized water reactors at the licensee's site located in Goodhue County, Minnesota.

II.

On November 19, 1980, the Commission published a revised Section 10 CFR 50.48 and a new Appendix R to 10 CFR 50 regarding fire protection features of nuclear power plants (45 FR 76602). The revised Section 50.48 and Appendix R became effective on February 17, 1981. Section III of Appendix R contains fifteen subsections, lettered A through O, each of which specifies requirements for a particular aspect of the fire protection features at a nuclear power plant. Two of these fifteen subsections, III.G. and III.O, are the subject of this exemption request. Specifically, Subsection III.G.2 requires that one train of cables and equipment necessary to achieve and maintain safe shutdown be maintained free of fire damage by: "Separation of cable and equipment and associated non-safety circuits of

of redundant trains by a horizontal distance of more than 20 feet with with no intervening combustibles or fire hazards." This requirement is applicable because the fire areas being considered are inside a noninerted containment.

Subsection III.0 requires that the reactor coolant pumps shall be equipped with an oil collection system capable of collecting lube oil from all potential pressurized and unpressurized leakage sites and drained to a vented closed container that can hold the entire lube oil system inventory.

III.

By letter dated January 23, 1984 as supplemented by Letters dated April 5 and May 22, 1984, the licensee requested an exemption from the requirement of Subsection III.G.2 of Appendix R in two (2) fire areas as follows:

- Fire Area 1 containment Unit 1 all elevations
- Fire Area 71 containment Unit 2 all elevations

In the same submittals, the licensee also requested an exemption from the requirements of Subsection III.0 related to draining the reactor coolant pump lube oil leakage to a vented closed container.

IV.

Fire Area 1 (Unit 1 Containment) and Fire Area 71 (Unit 2 Containment)

The licensee requested an exemption from Subsection III.G.2 to the extent that these areas have intervening combustibles between components of redundant trains needed for safe shutdown. In addition, except for the redundant cabling associated with the pressurizer level transmitters for

unit 2 (Fire Area 71), all other redundant components are separated by twenty feet or more. The redundant cabling associated with the pressurizer level transmitters is separated by ten feet. For this cabling the licensee has committed to protecting one division with a one-hour fire barrier.

The combustibles in these fire areas are lubricating oil and cable insulation having a total fuel load of 22,520 Btu/ft² for Fire Area 1 (Unit 1 containment) and 22,915 Btu/ft² for Fire Area 71 (Unit 2 containment). Approximately 50% of this fuel load consists of the reactor coolant pump tube oil that, if a leak should occur, would drain to the containment sump. The ignition of the tube oil would result in fire damage to only one of the redundant trains since in the area of the sump fire the other train is protected by an 18 inches thick concrete floor spanning the entire horizontal plane of the containment building except for the stairwell at the perimeter of the building. The only other combustible existing within the spacing of the redundant trains in Fire Area 1 is cable insulation representing a fuel load of 9,965 Btu/ft² with no areas of concentrated combustibles. This fuel, if totally consumed, would correspond to a fire severity of 7.5 minutes on the ASTM E-119 standard temperature curve. Similarly, in Fire Area 71, the only other combustible existing within the spacing of the redundant trains is insulation cabling representing a fuel load of 10,320 Btu/ft². This fuel, if totally consumed, would yield a fire severity of 7.7 minutes on the ASTM E-119 standard time temperature curve. In addition, as stated by the licensee, all cabling in both fire areas is qualified to IEE-Std-383. The cable has a high resistance to flame propagation and excellent flame retardant qualities.

The fire protection in these areas consists of ionization smoke detectors on all floor levels with alarms to the control room and standpipe hose stations on each floor level. In addition, access to these fire areas is restricted during power operation due to existing high radiation fields during these periods.

We agree with the licensee that, because of the relatively small amount of intervening combustibles in the areas between redundant trains, and because all cables in the fire areas are IEEE-383 qualified, any postulated fire of potentially hazardous size would be caused by transient combustibles. Hazardous quantities of transient combustibles would not be expected in these fire areas for the reason mentioned above (restricted during operation). Transient combustibles are not normally allowed in containment. On rare occasions, when a limited amount of transient combustibles is permitted, administrative controls require, as a minimum, a dedicated fire watch armed with a fire extinguisher. The existing passive protection is adequate for redundant cabling until the fire brigade can extinguish the fire.

Based on our evaluation, the level of existing protection for Fire Areas 1 and 71 provides a level of protection equivalent to the requirements specified in Subsection III.G.2 of Appendix R. Therefore, the exemption from the requirements specified in Subsection III.G.2 for these fire areas is granted.

Reactor Coolant Pump Lube Oil Collection System - Subsection III. 0 of Appendix R

The licensee requested an exemption from Subsection III.0 to the extent that the reactor coolant pump lube oil collection system is piped to the sump inside containment. The contents of the sump can be pumped to a closed vented container located in the auxiliary building. The licensee states that the sump in the basement of the containment is a concrete pit having a capacity of 990 gallons, which is more than the capacity needed to contain the total inventory of lube oil for the two reactor coolant pumps for each unit. There is no safe shutdown equipment in the area. The sump is designed to automatically pump down at a prescribed sump level and an alarm will sound in the control room if this level is exceeded. The operator can initiate manual control of the sump pump at any time, overriding the automatic control of sump level. The sump is normally drained to vented containers in the auxiliary building having a total capacity of 2600 gallons. The basis for the design of this collection system is to collect any contaminated water from the pump seal leakage as well as any oil leakage.

In addition, the pipe from the sump to the vented container in the auxiliary building has been designed to seismic category Class III which meets the requirement of Regulatory Guide 1.29, paragraph C-2. If failure of this pipe were to occur during a seismic event, the functions of plant features described in paragraph 1 (a through q) of Regulatory Guide 1.29 will not be affected and the plant can be brought to cold shutdown. This is based on a review conducted by the licensee and confirmed by letter dated May 22, 1984.

We agree with the licensee that, although lube oil leakage is collected in the sump before it is pumped to a vented container, the sump design at this plant assures us that oil collected there will not lead to fire during normal or design basis accident conditions. The capacity of the sump and the vented containers is adequate to safely contain any anticipated lube oil leakage and the existing controls provide reasonable assurance that any lube oil collected in the sump can be safely pumped to the vented container in the auxiliary building.

Based on our evaluation, the existing lube oil collection system for reactor coolant pumps provides a level of protection equivalent to the requirements specified in Subsection III.0 of Appendix R. Therefore, the exemption from the requirements specified in Subsection III.0 for the lube oil collection system is granted.

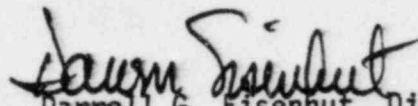
V.

Accordingly, the Commission has determined that, pursuant to 10 CFR 50.12, an exemption is authorized by law and will not endanger life or property or common defense and security and is otherwise in the public interest and hereby grants an exemption from the requirements of Subsections III.G.2 and III.0 of Appendix R to 10 CFR 50 to the extent discussed in Section IV above.

Pursuant to 10 CFR 51.32, the Commission has determined that the issuance of the exemption will have no significant impact on the environment (49 FR 29169).

This Exemption is effective upon issuance.

FOR THE NUCLEAR REGULATORY COMMISSION



Darrell G. Eisenhut, Director
Division of Licensing
Office of Nuclear Reactor Regulation

Dated at Bethesda, Maryland
this 31 day of July, 1984