

August 6, 2004

Mr. Thomas J. Palmisano
Site Vice President
Monticello Nuclear Generating Plant
Nuclear Management Company, LLC
2807 West County Road 75
Monticello, MN 55362-9637

SUBJECT: MONTICELLO NUCLEAR GENERATING PLANT— EXEMPTION FROM THE
REQUIREMENTS OF 10 CFR PART 50, APPENDIX R, SECTION II.G.2.B.
(TAC NO. MC0751)

Dear Mr. Palmisano:

The U.S. Nuclear Regulatory Commission has approved the enclosed exemption from the automatic fire suppression system requirements of Title 10 of the *Code of Federal Regulations*, Part 50, Appendix R, Section II.G.2.b. as it applies to Fire Area IV/Fire Zone 1F. Fire Area IV/Fire Zone 1F corresponds to the Monticello Nuclear Generating Plant torus compartment located in the reactor building. This action is in response to your letter of September 15, 2003, as supplemented February 24, 2004.

A copy of the exemption has been forwarded to the Office of the *Federal Register* for publication.

Sincerely,

/RA/

L. Mark Padovan, Project Manager, Section 1
Project Directorate III
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket No. 50-263

Enclosure: Exemption

cc w/enclosure: See next page

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UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION
NUCLEAR MANAGEMENT COMPANY, LLC
MONTICELLO NUCLEAR GENERATING PLANT
DOCKET NO. 50-263
EXEMPTION

1.0 BACKGROUND

The Nuclear Management Company, LLC (NMC) is the holder of Facility Operating License No. DPR-22 which authorizes operation of the Monticello Nuclear Generating Plant (MNGP). NMC provides, among other things, that the facility is subject to all rules, regulations, and orders of the U.S. Nuclear Regulatory Commission (NRC, the Commission) now or hereafter in effect. The facility consists of a boiling-water reactor located in Wright County, Minnesota.

2.0 REQUEST/ACTION

Title 10 of the *Code of Federal Regulations* (10 CFR), Section 50.48(b), "Fire Protection," specifies that Appendix R, "Fire Protection Program for Nuclear Power Facilities Operating Prior to January 1, 1979," established fire protection requirements to satisfy 10 CFR Part 50, Appendix A, General Design Criterion 3, "Fire Protection." Appendix R, Section III.G.2.b, specifies that (1) cables and equipment and associated non-safety circuits of redundant trains be separated by a horizontal distance of more than 20 feet with no intervening combustible or fire hazards, and (2) fire detectors and an automatic fire suppression system be installed in the fire area.

In Northern States Power's (the licensee for Monticello at that time) letter of June 30, 1982, it requested a permanent exemption from the automatic suppression system requirements of Appendix R, Section III.G.2.b for the suppression pool torus area. Northern States Power justified the exemption by stating the following:

. . . the area is separated from other plant areas by three-hour fire rated barriers. Fire protection consists of smoke detectors, manual hose stations, and portable fire extinguishers. The only redundant safe shutdown equipment in the area consists of instrumentation for measuring the water temperature and level in the torus. The redundant trains are separated by one hundred feet and are free of intervening combustibles. Essentially no combustible material is stored or located in the area. Furthermore, all surfaces are concrete except for the torus, which is steel. All cables are installed in conduit.

The technical requirements of Section III.G.2 were not met in fire zone 1F (the torus compartment at MNGP) because cables and components of redundant shutdown divisions were not protected with area-wide automatic sprinkler system.

The NRC's letter of June 16, 1983, granted the exemption request, citing the following:

. . . because of the restricted access to this area, the probability of an exposure fire from the accumulation of transient combustibles, during normal operation, is low. We find that this feature, in conjunction with the one hundred feet of separation between redundant trains and early warning fire detection, provides reasonable assurance that one train will be maintained free of fire damage.

NMC's letter of September 15, 2003, as supplemented February 24, 2004, resubmitted its request for a permanent exemption from the requirements of Section III.G.2.b for fire area IV/fire zone 1F, stating the following:

. . . in 1985, a new safe shutdown analysis crediting only the minimum systems and equipment required to achieve safe shutdown was developed. This new shutdown methodology required the use of Core Spray, Safety Relief Valves and Residual Heat Removal (RHR) in the Suppression Pool Cooling mode. Prior to that time, these systems were not required to achieve safe shutdown given a fire in Fire Area IV/Fire Zone 1F. Both Division I and Division II components and cables for the Core Spray and Residual Heat Removal systems are contained within this fire area. Only one division of Safety Relief Valve control and indicating cables is located with this fire area. The impact of this revised shutdown methodology on the Fire Area IV/Fire Zone 1F exemption was not addressed when the shutdown model was revised. In addition, the Division II suppression pool temperature cable exit from the Torus Compartment and the

location of the Division II suppression pool level transmitter were incorrectly depicted in Enclosure 2 of Reference G.2.

. . . As a result of internal assessments of the MNGP Fire Protection Program, NMC determined that the existing exemption from 10 CFR 50, Appendix R, Section III.G.2.b for the Torus Compartment . . . did not bound the existing plant configuration and the current MNGP Appendix R Safe Shutdown Analysis. The NMC has completed an investigation into the Torus Compartment design basis and has determined that an exemption is appropriate for this area.

The results of the NRC staff's evaluation of NMC's request are provided below.

3.0 DISCUSSION

Pursuant to 10 CFR 50.12, the Commission may, upon application by any interested person or upon its own initiative, grant exemptions from the requirements of 10 CFR Part 50 when (1) the exemptions are authorized by law, will not present an undue risk to public health and safety, and are consistent with the common defense and security; and (2) when special circumstances are present. Special circumstances exist if it is not necessary to apply the technical requirements of 10 CFR Part 50 to achieve the underlying purpose of the regulation. The underlying purpose of Appendix R, Section III.G.2.b to 10 CFR Part 50 is to assure that one train of redundant safe shutdown equipment will be maintained free of fire damage.

The NRC staff analyzed the following items in the suppression pool torus area at MNGP to satisfy the requirements of 10 CFR 50.12 for granting the exemption from the automatic suppression system requirements of Appendix R, Section III.G.2.b:

- minimal amount of fixed and transient combustibles
- smoke detector provisions
- existing separation between redundant trains of core spray valves, RHR cooling valves, suppression pool level transmitters, and the suppression pool temperature monitoring system (SPOTMOS)

NMC's letter of September 15, 2003, stated that fixed combustibles consist of a single 3/4-inch diameter radiax antenna cable, routed around approximately 70 percent of the perimeter wall. Other cables within the torus compartment are in conduit except for short runs of exposed cable that may exist between a device and its associated junction box or conduit. This amount of fixed combustibles is negligible. NMC also said that transient combustibles were controlled by procedure.

The NRC staff sent NMC a request for additional information (RAI) dated January 30, 2004, asking NMC to clarify the type and quantity of transient combustibles it allowed into fire zone 1F. NMC's RAI response letter of February 24, 2004, disclosed the transient combustible loading for fire zone 1F. The loading consisted of two gallons of general-purpose solvent and three fiberglass ladders for a total of 1.7 million British thermal units (BTUs) equating to 142 BTUs per square foot. NMC evaluated additional combustibles for outage pre-staging that have been in the fire zone and totaled them to be 2.4 million BTUs. This is less than 1100 BTUs per square foot. These amounts of transient combustibles are minimal.

The arrangement of the core spray valves is shown on Figure 1 of NMC's September 15, 2003, submittal. Division 1 core spray valve MO-1749 is located just below the ceiling of the torus compartment near column lines N and 8.9. Division 2 core spray valve MO-1750 is located in the same compartment near column lines N and 3.1. Approximately 130 feet separate these valves and their associated cables. The drywell also blocks the direct line-of-sight. Smoke detectors, that are annunciated in the control room, are near each core spray valve with three more detectors intervening on each of the two paths around the torus compartment.

The arrangement of the RHR cooling valves is also shown on Figure 1 of NMC's submittal. Division 1 RHR cooling valves MO-2006 and MO-2008 are located in the torus compartment between column lines N and P and 7.9. Division 2 RHR cooling valve MO-2009 is located in the

same compartment between column lines N and P and 4.1 and 5.1. Approximately 130 feet separate the Division 1 valves and their associated cables from the Division 2 valves. The drywell also blocks the direct line-of-sight. Smoke detectors, that are annunciated in the control room, are near each RHR cooling valve with three more detectors intervening on each of the two paths around the torus compartment.

As previously discussed in Section 2.0 of this evaluation, the NRC's letter of June 16, 1983, granted an exemption for the suppression pool level transmitters. However, during the NRC staff's evaluation of NMC's September 15, 2003, exemption request, the staff identified discrepancies between Figures 1 and 2 concerning the routing of conduit for Division 1 and Division 2 suppression pool level transmitters LT7338A and LT338B. The NRC's RAI of January 30, 2004, questioned the location of the conduit and the associated penetrations exiting the fire zone. NMC's RAI response corrected the location and placed all of the information on Figure 2 of the revised submittal. Division 1 and Division 2 components are separated by at least 75 feet. Smoke detectors that are annunciated in the control room are near each level transmitter, with additional detectors intervening between the divisions in the torus compartment.

The SPOTMOS at MNGP consists of two redundant divisions. Each of the divisions has eight resistance temperature detectors (RTDs). Cabling inside conduit connects the RTDs in each division, runs around the suppression pool in close proximity to each other, and then exits the fire zones at least 75 feet apart. NMC's letter of September 15, 2003, stated that the system could operate in an "operable but degraded" mode to support post-fire safe shutdown with as little as one detector in one train being operable.

Due to the close proximity of the conduits, and the concern that a single fire could involve both Division 1 and Division 2 conduits, the NRC staff requested further information on the SPOTMOS in its RAI. Specifically, the NRC staff requested NMC to address how the

SPOTMOS would automatically eliminate 1) a failed temperature sensor, and 2) a fire-induced failure (hot short, short to ground, open, or increased/decreased resistance or voltage) of the cable to the temperature elements that is inside conduit. NMC's RAI response of February 24, 2004, described the operation of the system, addressing each of the failure modes. The critical distance between Division 1 and Division 2 for operation in the operable-but-degraded mode is at least 85 feet (where the cables enter the torus compartment). Smoke detectors, that annunciate in the control room, are located near each cable entry. Additional smoke detectors are distributed throughout the torus compartment.

The NRC staff concludes that NMC has met the underlying purpose of Appendix R, Section III.G.2.b, without having an automatic fire suppression system in the suppression pool torus area at MNGP considering the following:

- minimal amount of fixed and transient combustibles present
- smoke detector provisions
- separation between redundant trains of core spray valves, RHR cooling valves, and suppression pool level transmitters
- ability of SPOTMOS to continue to operate with at least one RTD on one train in the operable-but-degraded mode for any fire in fire zone 1F that involved both conduit trains

The NRC staff further concludes that pursuant to 10 CFR 50.12(a)(2)(ii), application of the regulation in these particular circumstances is not necessary to achieve the underlying purpose of the rule. Therefore, NMC's exemption request is acceptable.

4.0 CONCLUSION

Accordingly, the Commission has determined that, pursuant to 10 CFR 50.12(a), the 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. Also, special circumstances are present. Therefore, the Commission hereby grants NMC a permanent exemption from the

requirements of 10 CFR Part 50, Appendix R, Section III.G.2.b, to not provide an automatic fire suppression system for fire area IV/fire zone 1F at MNGP.

Pursuant to 10 CFR 51.32, the Commission has determined that the granting of this exemption will not have a significant effect on the quality of the human environment (69 FR 46187).

This exemption is effective upon issuance.

Dated at Rockville, Maryland, this 6th day of August.

FOR THE NUCLEAR REGULATORY COMMISSION

/RA/

Ledyard B. Marsh, Director
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Monticello Nuclear Generating Plant

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