

December 26, 2002

Mr. Lew W. Myers
Chief Operating Officer
FirstEnergy Nuclear Operating Company
Davis-Besse Nuclear Power Station
5501 North State Route 2
Oak Harbor, OH 43449-9760

SUBJECT: DAVIS-BESSE NUCLEAR POWER STATION, UNIT 1, EXEMPTION FROM
THE REQUIREMENTS OF 10 CFR PART 50, SECTION III.G OF APPENDIX R
(TAC NO. MB1078)

Dear Mr. Myers:

The Commission has approved the enclosed exemption from specific requirements of Title 10 of the *Code of Federal Regulations* (10 CFR) Part 50, Section III.G of Appendix R, for the Davis-Besse Nuclear Power Station, Unit 1. This action is in response to your letter of December 21, 2000, as supplemented by letter dated March 12, 2001, that submitted your request to amend the existing exemption concerning certain requirements of 10 CFR Part 50, Appendix R, Section III.G, "Fire Protection Program for Nuclear Power Facilities Operating Prior to January 1, 1979; Fire protection of safe shutdown capability."

A copy of the exemption is enclosed. The exemption has been forwarded to the Office of the Federal Register for publication.

Sincerely,

/RA/

Jon B. Hopkins, Senior Project Manager, Section 2
Project Directorate III
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket No. 50-346

Enclosure: Exemption

cc w/encl: See next page

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OGC ACRS GHill(2) HNieh GGrant, RIII
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ADAMS Accession Number: ML020100366 *See previous concurrence

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OFFICIAL RECORD COPY

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UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION
FIRSTENERGY NUCLEAR OPERATING COMPANY (FENOC)
DAVIS-BESSE NUCLEAR POWER STATION
DOCKET NO. 50-346
EXEMPTION

1.0 BACKGROUND

FENOC (the licensee) holds Facility Operating License No. NPF-3, which authorizes the operation of the Davis-Besse Nuclear Power Station (DBNPS). The license states that the licensee is subject to all rules, regulations, and orders of the Nuclear Regulatory Commission (NRC or the Commission) now or hereafter in effect.

The facility consists of a pressurized-water reactor at the licensee's site located in Ottawa County, Ohio.

2.0 REQUEST/ACTION

Title 10 of the Code of Federal Regulations (10 CFR), Part 50, Appendix R, "Fire Protection Program for Nuclear Power Facilities Operating Prior to January 1, 1979," establishes fire protection requirements to satisfy 10 CFR Part 50, Appendix A, General Design Criterion No. 3, "Fire Protection." By letter dated December 12, 2000, supplemented by letter dated March 12, 2001, FENOC requested a revision to an existing exemption from Appendix R, Section III.G.2, "Fire Protection of Safe Shutdown Capability."

During the course of this review, the following documents related to this exemption were reviewed by the NRC:

- DBNPS letters dated August 29, 1982, May 12, 1987, March 15, July 31, and December 18, 1989, February 16, 1990, November 1, 1991, December 8, 1994,

June 13, 1995, November 23, 1998, January 25, 1999, December 21, 2000, and March 12, 2001,

- DBNPS updated safety analysis report dated November 1998,
- Fire Hazard Analysis Report (FHA) dated December 29, 2000,
- NRC's License Amendment No. 18 dated July 26, 1979; Exemption dated November 23, 1982; Amendment No. 174 dated September 22, 1992; and
- Inspection Report 50-346/2000007 dated September 11, 2000.

The DBNPS, a Babcock and Wilcox Co. Pressurized Water Reactor, began operating prior to January 1, 1979, and thus is required to follow 10 CFR Part 50, Section III.G of Appendix R, which, in part, requires 20 foot separation or fire barriers between redundant cable and equipment used for safe shutdown (SSD). On November 23, 1982, the NRC granted DBNPS an exemption for the component cooling water (CCW) pumps, which have less than the required separation and no fire barriers. One of the features credited in this exemption was one hour fire rated barriers (fire wrap) on SSD cables and valves in the CCW pump room. At the time of the exemption, a one-inch thickness of Kaowool was provided for this protection. Since then, several re-evaluations and plant modifications have been performed to eliminate the need for this fire wrap. On December 21, 2000, the licensee submitted a request to amend the existing exemption from 10 CFR Part 50, Appendix R, for the CCW heat exchanger and pump room and requested a revision to the exemption to eliminate the requirement for fire wrap in the CCW pump room. The staff has reviewed the licensee's request and our evaluation contained within addresses this exemption request.

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 ... which are ... authorized by law, will not present an undue risk to the public health and safety, ... are

consistent with the common defense and security (and) ... special circumstances are present....” Special circumstances are present whenever, according to 10 CFR 50.12(a)(2)(ii), “Application of the regulation in the particular circumstances would not serve the underlying purpose of the rule or is not necessary to achieve the underlying purpose of the rule....”

The CCW pump room at the DBNPS is “L-”shaped and approximately 67 feet long and 26 feet to 35 feet wide. The entire room is a separate fire area bounded by fire barriers having a three hour rating. The room contains the following SSD components: three CCW pumps, heat exchangers, a ventilation system and associated flow switches, temperature indicators, isolation valves, controllers, and cabling. Only one operational CCW pump is required for SSD. Each CCW pump contains two gallons of Class III lube oil and is shielded to protect against sprinkler water spray. Control and power cables are in conduits and the FHA report contains data that indicate a combustible loading of 1,375 btu/ft². Smoke detectors, a wet pipe sprinkler system, a manual hose station, and portable extinguishers are provided for fire detection and suppression. The three CCW pumps are located in the 35 foot-wide section of the room and are separated 11 feet on-center. This configuration does not meet the 20 foot separation required in Appendix R, Section III.G.2.b. The 1982 exemption was granted due to the active fire protection features provided and the following passive fire protection features:

1. In-situ combustible loading is significantly less than one hour fire duration.
2. Redundant fire pumps are horizontally separated, 22 feet on-center. A spare third pump is between the redundant pumps with only two gallons of Class III lube oil comprising the only significant intervening combustible.
3. Curb/dikes are provided around each pump to contain potential oil leakage.
4. One hour fire rated barriers are provided on cables and valves.

Since the granting of the existing exemption, the licensee has re-evaluated the fire hazards and made modifications to eliminate the need for fire wrap on cabling and valves in the

CCW room. DBNPS informed the NRC of these evaluations and modifications in a series of letters. On March 15, 1989, the licensee submitted a letter postulating the loss of CCW room ventilation due to a fire and the effect on the CCW pumps. From manufacturer's data, the licensee determined that the maximum room temperature the pumps could remain operational was 185 °F. The licensee concluded that since the sprinkler system operated at 165 °F, the sprinkler system would keep the pumps from reaching 185 °F, allowing the pumps to remain operational. Therefore, the licensee concluded the CCW room ventilation was not necessary for SSD and fire wrap on the associated cabling for the ventilation system was no longer necessary.

On February 16, 1990, the licensee submitted a letter on new fire protection compliance approaches including a re-evaluation of the necessity for fire wrap on the CCW header valves. For SSD, these valves were originally credited with providing cooling for the makeup pumps and the immediate reestablishment of reactor coolant pump (RCP) seal cooling. The re-evaluation noted that the high pressure injection system will assure reactor coolant system injection inventory and reactivity control and RCP seal injection. The licensee reported the installation of new RCP seals that do not require immediate cooling, allowing time to manually line-up valves for RCP seal cooling. Therefore, the licensee concluded that the CCW header valves were not immediately required for SSD and fire wrap was no longer necessary.

During 1992, the licensee replaced service water (SW) valves on the CCW heat exchangers with fail-safe valves. The replacement valves use a single solenoid, and during a fire the valves fail in an open position allowing the SW flow through the CCW heat exchanger. The licensee concluded that fire wrap around these valves was no longer necessary.

On January 25, 1999, the licensee notified the NRC that circuit modifications had eliminated the need for fire wrap on the CCW pump control circuits. The licensee removed

local controllers and low-flow and high temperature limit switches from the CCW pump control circuits. Automatic start of redundant pump and valve transfer logic remained and local control would be done from the switchgear. The licensee concluded that removal of these circuits eliminated a potential source of spurious trips of an operating CCW pump and therefore fire wrap on this circuitry was no longer required. The licensee supplied, as part of the current exemption request, a table that identified the cabling and valves in the CCW room that originally required fire wrap and the corresponding evaluation and/or modification that eliminated the need for the fire wrap.

The underlying purpose of Appendix R, Section III.G is to provide reasonable assurance that at least one means of achieving and maintaining SSD conditions will remain available during and after any postulated fire. Exemptions to the specific requirements of the rule can be granted when, among other things, circumstances exist such that the underlying purpose of the rule is achieved, notwithstanding specific rule requirements are not met.

The SSD requirements at DBNPS require at least one CCW pump to remain operational during and after a fire. The November 23, 1982, exemption allowed less than 20 foot separation and no fire barriers between the CCW pumps. This was based on the existence of adequate active and passive fire protection features that provided reasonable assurance that one CCW pump would remain operational. The active protection features were smoke detectors, a wet pipe sprinkler system, a manual hose station, and portable fire extinguishers. The passive fire protection features provided were: low in-situ combustible loading, minimal intervening combustibles, and curbing around the pumps to contain an oil spill fire, in addition to the fire wrap that is the subject of the current exemption request.

Active fire protection features have not changed since the granting of the existing exemption and combustible loading remains low. Under the re-evaluations discussed earlier,

protection of CCW header valves and ventilation circuits is not necessary in order for at least one CCW pump to remain operational during and after a fire. Modifications have changed the SW valves to fail safe and removed circuits that would cause a spurious pump trip. In summary, DBNPS has demonstrated reasonable assurance of the availability of CCW during and after a postulated fire in the CCW pump room, notwithstanding less than 20 foot separation between the CCW pumps, the absence of fire barriers and no fire wrap on the SSD cables and valves in the CCW pump room. Therefore, under these circumstances, the underlying purpose of the regulation is still achieved.

4.0 CONCLUSION

On the basis of the staff review and evaluation of the information provided in the licensee's request to amend the existing exemption, the staff concludes that the request for exemption from the technical requirements of Section III.G.2 of Appendix R to 10 CFR Part 50 demonstrates that under the proposed alternative circumstances from original circumstances that existed at the time the existing exemption was granted, the underlying purpose of the regulation is still achieved. Thus, the NRC staff has determined that there are special circumstances present, as specified in 10 CFR 50.12(a)(2)(ii), in that application of Section III.G.2. of 10 CFR Part 50, Appendix R is not necessary in order to achieve the underlying purpose of the regulation.

The staff has further determined that 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. Accordingly, the Commission hereby grants the requested exemption, which supersedes the November 23, 1982, exemption, based on the circumstances set forth herein.

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 (67 FR 4763).

This exemption is effective upon issuance.

Dated at Rockville, Maryland, this 27th day of December, 2002.

FOR THE NUCLEAR REGULATORY COMMISSION

/RA/

Keith I. McConnell, Acting Director
Division of Licensing Project Management
Office of Nuclear Reactor Regulation