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Dated at Rockville, Maryland, this 29th day of December 1999.

For the Nuclear Regulatory Commission.

William F. Kane,

Director, Office of Nuclear Material Safety and Safeguards.

Samuel J. Collins,

Director, Office of Nuclear Reactor Regulation.

[FR Doc. 00-255 Filed 1-5-00; 8:45 am]

BILLING CODE 7590-01-P

NUCLEAR REGULATORY COMMISSION

[Docket Nos. 50-237 and 50-249]

Commonwealth Edison Company (Dresden Nuclear Power Station, Units 2 and 3); Exemption

I

Commonwealth Edison Company (ComEd, the licensee) is the holder of Facility Operating Licenses Nos. DPR-19 and DPR-25 for the Dresden Nuclear Power Station, Units 2 and 3. The licenses provide, among other things, that the licensee is subject to all rules, regulations, and orders of the Commission now or hereafter in effect.

Dresden Nuclear Power Station consists of two boiling water reactors located in Grundy County, Illinois.

II

Title 10 of the *Code of Federal Regulations* (10 CFR), Section 50.48, "Fire protection," paragraph (b) states, in part, that "all nuclear power plants licensed to operate prior to January 1, 1979 shall satisfy the applicable requirements of appendix R to this part, including specifically the requirements of sections III.G, III.J, and III.O." Appendix R, Section III.J, "Emergency lighting," requires that "Emergency lighting units with at least an 8-hour battery power supply shall be provided in all areas needed for operation of safe shutdown equipment and in access and egress routes thereto." This requirement applies to Dresden Nuclear Power Station, Units 2 and 3, since they were licensed to operate prior to January 1, 1979.

III

Section 50.12(a) of 10 CFR, "Specific exemptions," states:

The Commission may, upon application by any interested person or upon its own initiative, grant exemptions from the requirements of the regulations of this part, which are—

(1) Authorized by law, will not present an undue risk to the public health and safety, and are consistent with the common defense and security.

(2) The Commission will not consider granting an exemption unless special circumstances are present.

Section 50.12(a)(2) of 10 CFR states that special circumstances are present whenever "(ii) Application of the regulation in the particular circumstances * * * is not necessary to achieve the underlying purpose of the rule * * *."

Equipment needed for safe shutdown at Dresden, Units 2 and 3, is maintained inside the main power block and several buildings onsite. Emergency lighting is provided inside these buildings for areas needed for operation of safe shutdown equipment and for access and egress routes in accordance with 10 CFR Part 50, Appendix R, Section III.J. However, no emergency lighting meeting Section III.J requirements has been installed for outdoor routes between the main power block, the isolation condenser pumphouse, the cribhouse, or at the clean demineralized water storage tank (CDST). Because of cost and maintenance considerations, and after determining that application of Section III.J was not necessary to achieve the underlying purpose of the rule, the licensee submitted an exemption request with respect to emergency lighting for these outdoor routes and for reading the CDST level instrument.

The requested exemption from the requirements of Appendix R, Section III.J, would allow the use of hand-held portable lights, in the event that sufficient daylight or security lighting is not available, when transiting access and egress routes between the main power block, the isolation condenser pumphouse, the cribhouse, and the CDST, including reading the CDST level instrument. These buildings contain equipment relied upon in the detailed fire plans to mitigate the consequences of a fire that could affect the capability to place the reactor in cold shutdown. As stated above, emergency lighting is maintained within these structures as required by Appendix R, Section III.J. However, access and egress between these buildings, the CDST, and the main power block requires walking outdoors. These areas are normally lit by outdoor lighting powered by offsite power or emergency power from the security diesel. However, the normally installed

outdoor and security lighting does not meet the Appendix R requirements for an 8-hour battery power supply.

Under the proposed exemption, in the worst-case scenarios that postulate a fire concurrent with a loss of offsite power, the hand-held, battery-powered, portable lighting units currently maintained on site near the main control room would be used by the operations staff to allow transit between buildings and reading the CDST level instrument as required by the fire plans and operations procedures. The transit routes through these areas are along normally traveled and paved plant roadways that are maintained clear of obstructions and are provided snow removal. The portable lighting units provide an adequate level of illumination for transit and reading the CDST level instrument.

The hand-held, battery-powered, portable lighting units are administratively controlled and dedicated for operator use to perform safe shutdown activities during and following plant fires. These portable lighting units are verified to be functional in quarterly surveillance.

The underlying purpose of 10 CFR Part 50, Appendix R, Section III.J, is to provide adequate illumination to assure the capability of performing all necessary safe shutdown functions, as well as to assure personnel movement to and from the equipment and components that must be manually operated by plant personnel to effect safe shutdown during emergencies. In addition, the illumination must have a capability to allow sufficient time for normal lighting to be restored.

The availability of hand-held, battery-powered portable lights would serve the underlying purpose of the rule with respect to transit between the main power block, the isolation condenser pumphouse, the cribhouse, and the CDST, in that the use of such hand-held lights would provide adequate illumination to permit access to and egress from buildings containing safe shutdown equipment and components and reading the CDST level instrument. In addition, such hand-held lights would be available for use during an 8-hour period as required by the regulation.

The implementation of outdoor battery powered lighting units would result in expenditure of engineering, construction, and plant resources for their installation, maintenance, and operation. The associated costs would include engineering and installation of additional lighting units and supporting structures and increase surveillance and

maintenance of the additional lighting units.

On the basis of its evaluation, the staff concludes that with the availability of hand-held battery-powered portable lights for use during transit between site structures described above and for reading the CDST level instrument, the installation of emergency lighting units with at least an 8-hour battery supply for these transit routes and the CDST level instrument is not necessary to achieve the underlying purpose of Section III.J of Appendix R to 10 CFR Part 50. Thus, special circumstances are present as defined in 10 CFR 50.12(a)(2)(ii). The staff has further determined that, pursuant to 10 CFR 50.12, the requested 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 licensee's request for an exemption from the requirements of Section III.J to 10 CFR Part 50 to allow the use of alternate means of lighting for access and egress routes between the main power block, the isolation condenser pumphouse, the cribhouse, the CDST, and for reading the CDST level instrument at Dresden, Units 2 and 3, is acceptable to the staff.

In consideration of the foregoing, the Commission hereby grants the licensee an exemption from the requirements of 10 CFR Part 50, Appendix R, Section III.J, to provide emergency lighting units with at least an 8-hour battery power supply in all areas needed for operation of safe shutdown equipment and in access and egress routes thereto, for access and egress routes between the main power block, the isolation condenser pumphouse, the cribhouse, the CDST, and for reading the CDST level instrument at Dresden, Units 2 and 3, to the extent alternative means of lighting as described herein are available.

Pursuant to 10 CFR 51.32, the Commission has determined that granting of this exemption will have no significant effect on the quality of the human environment (64 FR 72701).

This exemption is effective upon issuance.

Dated at Rockville, Maryland, this 30th day of December 1999.

For the Nuclear Regulatory Commission.

Suzanne C. Black,

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

[FR Doc. 00-254 Filed 1-5-00; 8:45 am]

BILLING CODE 7590-01-P

NUCLEAR REGULATORY COMMISSION

[Docket No. 50-346]

FirstEnergy Nuclear Operating Company, Davis-Besse Nuclear Power Station, Unit 1; Environmental Assessment and Finding of No Significant Impact

The U.S. Nuclear Regulatory Commission (the Commission) is considering the issuance of exemptions from the provisions of: (1) 10 CFR 50.44, "Standards for Combustible Gas Control System in Light-Water-Cooled Power Reactors," which states requirements to control the hydrogen generated by Zircaloy or ZIRLO fuel cladding after a postulated loss-of-coolant accident (LOCA); (2) 10 CFR 50.46, "Acceptance Criteria for Emergency Core Cooling Systems for Light-Water Nuclear Power Reactors," which requires the calculated emergency core cooling system (ECCS) performance for reactors with Zircaloy or ZIRLO fuel cladding to meet certain criteria; and (3) Appendix K to 10 CFR Part 50, "ECCS Evaluation Models," which presumes the use of Zircaloy or ZIRLO fuel cladding when doing calculations for energy release, cladding oxidation and hydrogen generation after a postulated LOCA, for Facility Operating License No. NPF-3, issued to the FirstEnergy Nuclear Operating Company (the licensee), for operation of the Davis-Besse Nuclear Power Station, Unit 1, located in Ottawa County, Ohio.

Environmental Assessment

Identification of the Proposed Action

The licensee has requested exemptions from 10 CFR 50.44, 10 CFR 50.46 and 10 CFR 50 Appendix K regarding the proposed use of M5 advanced alloy for fuel assemblies. The proposed action would allow the licensee to use fuel assemblies with fuel rod cladding that falls outside of the definition of Zircaloy and ZIRLO in the cited regulations. These assemblies would be loaded into the Davis-Besse reactor during the refueling outage in the spring of 2000. The proposed action is in accordance with the licensee's application for exemption dated September 15, 1998.

Need for the Proposed Action

10 CFR 50.46(a)(1)(i) and Appendix K to 10 CFR Part 50 require the demonstration of adequate ECCS performance for light-water reactors that contain fuel consisting of uranium oxide pellets enclosed in Zircaloy or ZIRLO tubes. In addition, 10 CFR 50.44(a) addresses requirements to control

hydrogen generated by Zircaloy or ZIRLO fuel after a postulated LOCA. Each of these three regulations, either implicitly or explicitly, assume that either Zircaloy or ZIRLO is used as the fuel rod cladding material. In order to accommodate the high fuel rod burnups that are required for modern fuel management and core designs, Framatome Technologies, Inc. developed the M5 advanced fuel rod cladding and fuel assembly structural material. M5 is an alloy comprised primarily of zirconium (~99 percent) and niobium (~1 percent) that has demonstrated superior corrosion resistance and reduced irradiation induced growth relative to both standard and low-tin Zircaloy. However, since the chemical composition of the M5 advanced alloy differs from the specifications of either Zircaloy or ZIRLO, use of the M5 advanced alloy falls outside of the strict interpretation of these regulations. Therefore, approval of these exemptions is needed to permit the use of the M5 advanced alloy as a fuel rod cladding material at the Davis-Besse Nuclear Power Station.

10 CFR 50.12 permits the Nuclear Regulatory Commission to grant exemptions which are authorized by law, will not present an undue risk to the health and safety of the public, and are consistent with the common defense and security, provided that special circumstances are present. Pursuant to 10 CFR 50.12(a)(2)(ii), the Commission believes that special circumstances exist since application of the rule in this case would not achieve the underlying purpose of the rule. The underlying purpose of 10 CFR 50.46 and Appendix K to 10 CFR Part 50 is to establish requirements for emergency core cooling systems. The underlying purpose of 10 CFR 50.44 is to control hydrogen generated by the metal/water reaction after a postulated LOCA, regardless of fuel cladding material. The licensee addressed the safety impact of using M5 fuel in its amendment application dated September 8, 1998.

The staff has evaluated this impact and has concluded that use of the M5 advanced alloy as a fuel rod cladding material remains bounded by the original design basis for the Davis-Besse facility. Therefore, since the underlying purposes of 10 CFR 50.44, 10 CFR 50.46, and 10 CFR 50 Appendix K are achieved through the use of the M5 advanced alloy as a fuel rod cladding material, the special circumstances required by 10 CFR 50.12(a)(2)(ii) for the granting of exemptions are met.