



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

SUPPORTING EXEMPTION FROM CERTAIN REQUIREMENTS

OF APPENDIX R TO 10 CFR 50

THE TOLEDO EDISON COMPANY

THE CLEVELAND ELECTRIC ILLUMINATING COMPANY

DAVIS-BESSE NUCLEAR POWER STATION, UNIT NO. 1

DOCKET NO. 50-346

1.0 Introduction

By letter dated April 29, 1982 (No. 815), the licensees requested an exemption from certain technical requirements of Section III.G of Appendix R to 10 CFR 50. Specifically, the licensees request exemption from the requirement for the installation of a fixed fire suppression system in the control room and from the requirement for one-hour-fire-rated barriers where less than 20 feet of separation exists between redundant trains of equipment in the component cooling water heat exchanger and pump room (Fire Zone T-1).

2.0 Discussion and Evaluation

Toledo Edison Company has indicated in its April 29, 1982 letter, that the fire protection features currently installed in the control room/cabinet room and the continuous manning of the control room provide adequate defense-in-depth fire fighting capability for these areas. The licensees have stated that the control room/cabinet room is equipped with area fire detectors and internal cabinet fire detectors for safety related control panels. The control room/cabinet room is provided with both a hose station and fire extinguishers for manual fire fighting, and fire load in the area is low.

In addition, an alternate shutdown system is available which provides remote control capabilities for those systems necessary to maintain safe-shutdown capability from outside the main control room.

Plant Technical Specifications require continuous occupancy of the control room by the operators. Because the operators constitute a continuous fire watch, manual fire suppression in event of a fire would be prompt and effective and, thus, a fixed suppression system is not necessary to achieve adequate fire protection in this area.

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The component cooling water heat exchanger and pump room is an L-shaped room. The approximate length of the room is 67'-6"; the width of the room in the area of the heat exchanger and the crossover valves at the north end is approximately 26'-3", and at the south end of the room, the approximate width increases to 35'-6" to accommodate the CCW pumps.

The walls, floor, and ceiling slabs of the CCW heat exchanger and pump room are three-hour-fire-rated barriers. Access door 332 leading into the area is a Class "A" three-hour-fire-rated door assembly. The piping and electrical penetrations in the CCW room boundary are filled with silicone foam fire barrier sealant material which provides a seal equivalent to the wall in which it is installed. Where the HVAC ducting penetrates the CCW room enclosure, the duct opening is protected by three-hour-fire-rated dampers installed in accordance with the manufacturer's recommendations.

The fixed combustibles associated with this area consist of 6 gallons of lubricating oil. Each CCW pump and motor contains 2 gallons of oil. The lube oil in the CCW pumps and pump motors is enclosed in a self-contained non-pressurized lubricating system. The lube oil utilized has a flash point of 450°F and an ignition temperature of approximately 700°F. All the power and instrumentation cabling associated with the equipment located in the room is routed in Schedule 40 conduit. There are no cable trays routed in or through the room. The fire load based on the amount of fixed combustibles located in the CCW heat exchanger and pump room is 392 BTU/FT<sup>2</sup>.

The following equipment and its associated cabling is located in this room:

- a. CCW pumps
- b. CCW valving
- c. CCW flow switches for pump discharge header
- d. CCW temperature indicators
- e. Service water valves serving the CCW heat exchangers
- f. CCW pump room ventilation fans C75-1 and C75-2, associated dampers motorized inlet louvers and temperature interlocks.

The three CCW pumps are located at the south end of the room. Pumps 1 and 2, which are normally used during plant operations, are separated from one another, pump center line to center line, by 22 feet. Pump 3 is a swing pump and is located between CCW pumps 1 and 2. The center line of pump 3 is 11 feet from the center line of pump 1 and 2. One CCW pump is needed for safe shutdown.

The CCW heat exchanger and pump room is protected by an automatic sprinkler system. Each of the CCW pump motors is baffled to protect it from the impingement of water. The motor is protected from water impinging vertically by its drip proof design. The sprinkler system also covers the floor area of the room for protection from an exposure fire. This includes sprinklers under the mezzanine floor grating and under CCW crossover header valves at the opposite end of the room from the pumps.

Conduits and valves which are required for safe shutdown are protected by a one-hour-fire-rated barrier. The barrier consists of two 1-inch thick Kaowool blankets wrapped around and banded to the conduit and valves with 1/2-inch wide type 316 stainless steel bands and buckles.

Additionally, the floor around each of the CCW pumps is curbed to confine oil leaking from any one pump or motor to the floor area directly around the affected pump. The curbing and the diked floor area around each CCW pump and motor is sized to contain the entire oil content of the pump and motor plus an additional 90% by volume for sprinkler flow.

An automatic smoke-detection system is installed to provide early warning detection in the area. Portable fire extinguishers are located on the north wall of the room. Additional 20-lb dry chemical extinguishers in the stairway and the turbine building are directly accessible to the area. A manual hose station is accessible to the CCW heat exchanger and pump room.

Section III.G.2 of Appendix R to 10 CFR 50 requires that one train of cables and equipment and associated non-safety circuits necessary to achieve and maintain hot shutdown conditions must be maintained free of fire damage by one of the following means:

- a. Separation of cables and equipment and associated non-safety circuits of redundant trains by a fire barrier having a three-hour rating. Structural steel forming a part of or supporting such fire barriers shall be protected to provide fire resistance equivalent to that required of the barrier;
- b. Separation of cables and equipment and associated non-safety circuits of redundant trains by a horizontal distance of more than 20 feet with no intervening combustible or fire hazards. In addition, fire detectors and an automatic fire suppression system shall be installed in the fire area; or
- c. Enclosure of cable and equipment and associated non-safety circuits of one redundant train in a fire barrier having a one-hour rating. In addition, fire detectors and an automatic fire suppression system shall be installed in the fire area:

We have evaluated the licensee's request on the basis of equivalent protection provided by the specific features of this fire area. The following features were identified as providing passive fire protection equivalent to a one hour fire rated enclosure or the 20 foot separation free of intervening combustibles for one of the redundant CCW pumps:

1. The in-situ combustible loading is significantly less than that needed for a fire of one hour duration;

2. The number 1 and number 2 CCW pumps are horizontally separated by 22 feet. The third pump, which is an installed spare pump for either of the other two and contains only 2 gallons of lubricating oil enclosed in a self-contained, non-pressurized lubricating system, comprises the only significant intervening combustible. If CCW pump number 3 is used for one of the other two, there is eleven feet of separation with no intervening combustibles. This condition would exist only a small fraction of time;
3. A curb is provided around each pump to contain any potential leakage of oil; and
4. A one hour fire rated barrier is provided for the cables and valves in the area.

We have concluded that, based on the above features, a one hour fire rated enclosure for one CCW pump will not enhance the fire protection features for accomplishing safe shutdown and is not required. We further conclude that in the event of a fire in this room, that the above features will provide ample time for the installed detection and automatic suppression system to detect and extinguish the fire prior to damaging both redundant trains of CCW equipment.

### 3.0 Conclusion

Based on our evaluation, we conclude that the licensees' fire protection features for the control room meet the objectives of Section III.G, Fire Protection of Safe Shutdown Capability, of Appendix R to 10 CFR 50, and that the installation of a fixed fire suppression system will not increase, significantly, the level of fire protection in the control room/cabinet room. Therefore, the licensees' request for exemption from the requirement to provide a fixed fire suppression system in the control room should be granted.

Based on our evaluation, we conclude that the existing arrangements in the component cooling water heat exchanger pump room provide a level of fire protection equivalent to that required by Appendix R to 10 CFR 50, and that the addition of a one-hour-fire-rated barrier around one of the component cooling water pumps will not increase, significantly, overall facility safety. Therefore, the licensees' request for exemption from the requirement for a one-hour-rated fire barrier around one of the component cooling water pumps should be granted.

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 the common defense and security and is otherwise in the public interest.



We have determined that the exemption does not authorize a change in effluent types or total amounts nor an increase in power level and will not result in any significant environmental impact. Having made this determination, we have further concluded that the exemption involves an action which is insignificant from the standpoint of environmental impact and, pursuant to 10 CFR §51.5(d)(4), that an environmental impact statement, or negative declaration and environmental impact appraisal need not be prepared in connection with the issuance of this action.

We have concluded, based on the considerations discussed above, that: (1) because the exemption does not involve a significant increase in the probability or consequences of an accident previously evaluated, does not create the possibility of an accident of a type different from any evaluated previously, and does not involve a significant reduction in a margin of safety, the exemption does not involve a significant hazards consideration, (2) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, and (3) such activities will be conducted in compliance with the Commission's regulations and the issuance of this exemption will not be inimical to the common defense and security or to the health and safety of the public.

Dated: November 23, 1982

The following NRC personnel have contributed to this Safety Evaluation:  
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