7590-01

UNITED STATED NUCLEAR REGULATORY COMMISSION

In the Matter of Indiana and Michigan Electric Company (Donald C. Cook Nuclear Power Plant Unit Nos. 1 and 2)	)	Docket Nos. 50-315 50-316

EXEMPTION

I.

Indiana and Michigan Electric Company (the licensee) is holder of Facility Operating License Nos. DPR 58 and DPR-74, which authorize operation of the Donald C. Cook Nuclear Power Plant, Unit Nos. 1 and 2 (Cook or the facilities). These licenses provide, among other things, that they are subject to all rules, regulations and Orders of the Nuclear Regulatory Commission (the Commission) now or hereafter in effect.

The facilities are pressurized water reactors located at the licensee's site in Berrien County, Michigan.

II.

Section III.G.2 of Appendix R to 10 CFR Part 50 requires that one train of cables and equipment necessary to achieve and maintain safe shutdown 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 3-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 combustibles or fire hazards. In addition, fire detectors and an automatic fire suppression system shall be installed in the fire area; or

c. Enclosure of cables and equipment and associated non-safety circuits of one redundant train in a fire barrier having a 1-hour rating. In addition, fire detectors and an automatic fire suppression system shall be installed in the fire area.

If these conditions are not met, Section III.G.3 requires alternative shutdown capability independent of the fire area of concern. It also requires a fixed suppression system in the fire area of concern if it contains a large concentration of cables or other combustibles.

Section III.O of Appendix R to 10 CFR Part 50 requires that the reactor coolant pump shall be equipped with an oil collection system if the containment is not inerted during normal operation. Section III.O. also requires, among other things, that the leakage shall be collected and drained to a vented closed container that can hold the entire lube oil system inventory.

III.

By letters dated December 30, 1982, March 31, 1983 and August 22, 1983, the licensee requested exemptions from Section III.G and one exemption from Section III.O of Appendix R to 10 CFR 50.

Fire Zone 1 contains eight individual cubicles containing the redundant residual heat removal (RHR) pumps and containment spray (CTS) pumps for both units. Each pump cubicle has a controlled access screen mesh door which is located behind a missile shield wall.

Manual fire suppression equipment and a detection system are provided in the area. The fire load in the area is low. The licensee proposes to upgrade the walls between the redundant pumps to a 3 hour fire resistance rating by sealing all penetration openings and installing fire dampers in common HVAC duct work. One train of power cables will be enclosed in a 1-hour rated barrier. The entrances to the RHR pumps have screen mesh doors which are not fire barrier.

This area does not comply with Section III.G. because it does not have automatic suppression, the entrances to the RHR pump are not fire barriers, and the unprotected pump power cables are located less than 20 feet from each other.

The combustible loading in this area is low. An early warning smoke detection system is provided. If a fire occurred in this area, it is our opinion that the 3-hour walls between the RHR pumps and 1-hour barrier on one train of cables in the corridor will provide reasonable assurance that

one train of RHR pumps will be maintained free of fire damage in the interval needed for the fire brigade to respond and manually extinguish the fire.

Based on the above evaluation, the existing protection for the RHR pumps in conjunction with the proposed fire barrier modifications provide a level of fire protection equivalent to the technical requirements of Section III.G. The exemption should, therefore, be granted.

The Unit 1 and Unit 2 transformer rooms, fire zones 14 and 20, contain the pressurizer heater transformer and the emergency diesel test breakers. The two fire zones are separated by several hundred feet. If a fire occurred in either area, the equipment of one unit could be used to safely shut down the other unit. Manual fire suppression equipment is provided in the area. The licensee proposes to install a detection system in the area.

These areas do not meet Section III.G. because fixed suppression systems are not provided in an area where alternative shutdown capability is provided.

These two areas contain primarily electrical equipment in metal cabinets, and have a low in-situ combustible loading. With a detection system installed as proposed, a fire in either of these areas would be of limited severity and duration. The installation of a fixed suppression system would not appreciably enhance the fire protection for safe shutdown capability.

Based on the above evaluation and with the proposed modification, the fire protection system for the transformer rooms of Unit 1 and 2 provides a level of protection equivalent to the technical requirements of Section III.G and therefore, the exemption should be granted.

Fire zones 29a, b, c, d, and f contains the essential service water (ESW) pumps and motor control centers. The ESW pumps of one unit can be used as a backup for the other unit. The fire load in the area is low. This exemption request is limited to the need for a fixed suppression system in the ESW pump rooms. Manual suppression equipment is provided in the area. The licensee proposes to install a detection system throughout the area.

This area does not comply with Section III.G because a fixed extinguishing system is not provided.

In this area, the only combustibles are a few cables and the 2 gallons of lubricating oil from the pump motors totally enclosed in the pump casing. With a detection system installed, as proposed, a fire in either of these areas would be of limited severity and duration. The installation of a fixed suppression system would not appreciably enhance the fire protection for safe shutdown capability.

Based on the above evaluation, with the proposed modifications, the fire protection for the ESW pumps of Units 1 and 2 provides a level of protection equivalent to the technical requirements of Section III.G and therefore, the exemption should be granted.

Fire zone 29G is the basement level below the essential service water pump rooms of both units and contains two motor control centers not requird for safe shutdown. The fire zone has an open hatch with a ladder up to the Unit 2 ESW southeast pump cubicle and a stairway which opens to the northwest Unit 1 pump cubicle.

The licensee proposes to modify the open hatchway to include a 3 hour hatch cover. The Unit 1 and Unit 2 ESW pumps will therefore be separated by a complete 3-hour barrier in compliance with Section III.G. This area does not meet the requirement, however, for installation of automatic suppression in areas where redundant trains of safe shutdown cables are routed.

The arrangement of the stairway and exhaust ventilation system provides a means for high-level venting of smoke, heat, and combustion products emanating from fire zone 29G. This will preclude a buildup of a hot gas layer at the ceiling level in fire zone 29G where the ESW pump cables are located. Additional protection is provided by one-hour rated fire barriers on all four trains of ESW pump cables. We agree that the proposed modifications in conjunction with the low fuel load in the area provides reasonable assurance that one train of ESW pump will be maintained free of fire damage.

Based on the above evaluation, the level of protection provided for the ESW pumps (Fire Zone 29G) provides a level of fire protection equivalent to the technical requirements of Section III.G. The exemption should be granted.

The Unit 1 and 2 east main steam enclosures, fire areas 33, 33a, 33b, 34, 34a and 34b, contain main steam lines and the non-essential service water valve gallery. These areas also contain the main steam pressure transmitters, the electropneumatic transmitters for the steam generator power operated relief valves, auxiliary feedwater inlet valves from the turbine driven pump, the local shutdown indication panel and the power operated relief valves and safety valves. The main steam valves are also located in these areas.

The combustible loading in the area is low. Alternate shutdown capability is provided independent of the areas. The licensee proposes to install a detection system and 1-hour rated fire dampers.

These areas do not comply with Section III.G because a fixed suppression system is not provided.

These areas contain primarily cable insulation, however the amount of insulation is distributed throughout the area and in its present configuration does not pose a significant hazard. With a detection system installed, as proposed, a fire in either of these areas would be of limited severity and duration. The installation of a fixed suppression system would not appreciably enhance the fire protection for safe shutdown capability. Based on the above evaluation and the proposed modification, the fire protection system for the Unit 1 and Unit 2 main steam enclosures provides a level of fire protection equivalent to the technical requirements of Section III.G. The exemption should, therefore, be granted.

The component cooling water pump area, fire zone 44S, contains a number of Unit 2 safe shutdown cables, five component cooling water (CCW) pumps, two Unit 2 CCW heat exchangers, and associated valves.

This area does not comply with Section III.G because the redundant CCW systems are not separated by 3-hour rated fire barriers.

The licensee proposes to install an increased coverage automatic suppression system over the CCW pumps and to separate the pumps by a partial height 3-hour barrier. It was our concern that due to the low ceiling, and close proximity of redundant equipment a fire in this area could damage all CCW pumps for both units prior to response of the fire brigade.

The partial height barrier will prevent a floor level exposure fire from damaging redundant CCW pumps. A stratified layer of hot combustion gases will not form in the area immediately above the pumps due to the high level venting provided by the change in ceiling height in the area adjacent to the pumps. In addition, a high density sprinkler system will be provided over the pumps, with extended coverage heads provided at the height of the pumps, as well as the ceiling. This combination of protection provides reasonable assurance that one train of CCW pumps will remain functional until the response of the fire brigade.

Based on the above evaluation, the level of existing protection in conjunction with the proposed modifications provides a level of fire protection for the component cooling water pump area (Fire Zone 44S) equivalent to the technical requirements of Section III.G. The exemption should be granted.

Five areas 53 and 54 are the control rooms for Units 1 and 2. The control rooms contain all the normal control panels for plant operation and most relay and instrument cabinets associated with plant control. In addition, the Unit 2 hot shutdown panel is located in the south-west corner of the Unit 1 control room and vice versa.

The control room area is protected from other fire zones by three-hour rated floors, ceilings and walls except for 2 ceiling and 2 floor hatches, both of which have two-hour ratings. Also, the common connection door between the control rooms is unrated. There are ionization detectors located in each control room along with six CO_2 fire extinguishers and two 1-hour breathing apparatus. Located outside the control room are water hose reels and two CO_2 hose reels. The licensee proposes to upgrade the two floor hatches and the common connecting door to a 3-hour rating.

This area does not comply with Section III.G because the control room is not provided with fixed suppression where alternate shutdown capability exists.

The control room is equipped with area fire detectors, a hose station, and fire extinguishers for manual fire fighting. The fire load in the area is low. The fire protection features currently installed in the control

room and the continuous manning of the control room by operators that constitute a continous fire watch provide adequate defense-in-depth fire fighting capability for these areas. In addition, an alternate shutdown system is provided with control capabilities for those systems necessary to maintain safe-shutdown capability which is independent of the main control room. Manual fire suppression in event of a fire would be prompt and effective and, thus, a fixed suppression system will not enhance the fire protection in this area.

Based on the above evaluation, the existing fire protection program for the control room provides a level of fire protection equivalent to the technical requirements of Section III.G. The exemption should, therefore, be granted.

Each unit has four reactor coolant pumps with an oil collection system which drains to a vented closed collection tank. The quantity of lubricating oil in each pump is 265 gallons; the capacity of the oil collection tank is 275 gallons.

The collection tank is arranged such that if a failure of more than one RCP motor lube system occurred, the oil collection tank would overflow onto the lower containment floor. There are no ignition sources at the floor level of the lower containment.

The RCP motor lube oil system does not comply with Section III.O because the oil collection tank is not sized to contain the entire lube oil system inventory.

The RCP motor lube oil system is capable of withstanding the safe shutdown earthquake. The oil collection tank is provided with sufficient capacity to hold the total lube oil inventory of one reactor coolant pump with margin and is designed so that any overflow will be drained to a safe location. We agree with the licensee that this combination of features is acceptable.

Based on the above evaluation, the existing RCP motor lube oil collection system provides a level of safety equivalent to the technical requirements of Section III.O and, therefore, the exemption should be granted.

IV.

The exemptions are contingent upon the licensee's maintenance of administrative control of transient combustibles which are equivalent to those specified in Section III.K.1 through III.K.8 of Appendix R to 10 CFR 50 and any characterization of transient combustibles or design features which are specifically discussed in our Safety Evaluation (SE). This SE was transmitted to the licensee by letter dated December 23 , 1983.

Accordingly, the Commission has determined that, pursuant to 10 CFR 50.12, these exemptions in the areas identified above are authorized by law and will not endanger life or property or the common defense and security, are otherwise in the public interest, and are hereby granted.

The Commission has determined that the granting of this Exemption will not result in any significant environmental impact and that pursuant to 10 CFR §51.5(d)(4) an environmental impact statement or negative declaration and environmental impact appraisal need not be prepared in connection with this action.

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 23rd day of December 1983.