

December 23, 1991

Docket No. 50-316

Mr. E. E. Fitzpatrick, Vice President  
Indiana Michigan Power Company  
c/o American Electric Power Service Corporation  
1 Riverside Plaza  
Columbus, Ohio 43216

Dear Mr. Fitzpatrick:

SUBJECT: DONALD C. COOK NUCLEAR PLANT, UNIT 2 - AMENDMENT NO. 145 TO FACILITY  
OPERATING LICENSE NO. DPR-74 (TAC NO. M82290)

The Commission has issued the enclosed Amendment No. 145 to Facility Operating License No. DPR-74 for the Donald C. Cook Nuclear Plant, Unit No. 2. The amendment consists of changes to the Technical Specifications in response to your application dated December 16, 1991.

This amendment modifies Technical Specification (TS) 3.3.3.6 to allow the pressurizer safety valve position indicator acoustic monitor QR-107C (Instrument 14 in Table 3.3-10) to be exempt from the Table 3.3-10 requirements until the end of the current fuel cycle which is anticipated to end in February 1992. Currently, the TS allows the monitor to be inoperable for 30 days. The monitor was declared inoperable on November 30, 1991. This amendment is being treated as an emergency TS change in accordance with 10 CFR 50.91(a)(5). Also, as discussed with your staff, we are slightly modifying your proposed wording in the new Table 3.3-10 footnote to delete the words "and may be taken out of service" for clarity.

A copy of our related Safety Evaluation is also enclosed. Notice of Issuance will be included in the Commission's biweekly Federal Register notice.

Sincerely,

/s/

Timothy G. Colburn, Sr. Project Manager  
Project Directorate III-1  
Division of Reactor Projects III/IV/V  
Office of Nuclear Reactor Regulation

Enclosures:

- 1. Amendment No. 145 to DPR-74
- 2. Safety Evaluation

cc w/enclosures:  
See next page

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NAME	:MShuttleworth	:TColburn:jkd	:SNewberry	:LMarsh	
DATE	:12/20/91	:12/20/91	:12/20/91	:12/23/91	:12/23/91

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Donald C. Cook Nuclear Plant

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DATED: December 23, 1991

AMENDMENT NO. 145 TO FACILITY OPERATING LICENSE NO. DRP-74-D. C. COOK

**Docket File**

NRC & Local PDRs

PDIII-1 Reading

D.C. Cook Plant File

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cc: Plant Service list



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

INDIANA MICHIGAN POWER COMPANY

DOCKET NO. 50-316

DONALD C. COOK NUCLEAR PLANT, UNIT NO. 2

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 145  
License No. DPR-74

1. The Nuclear Regulatory Commission (the Commission) has found that:
  - A. The application for amendment by Indiana Michigan Power Company (the licensee) dated December 16, 1991, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations set forth in 10 CFR Chapter I;
  - B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;
  - C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;
  - D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and
  - E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.

2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and paragraph 2.C.(2) of Facility Operating License No. DPR-74 is hereby amended to read as follows:

Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 145 , are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications.

3. This license amendment is effective as of the date of its issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

*Timothy H. Collins*

L. B. Marsh, Director *for*  
Project Directorate III-1  
Division of Reactor Projects III/IV/V  
Office of Nuclear Reactor Regulation

Attachment:  
Changes to the Technical  
Specifications

Date of Issuance: December 23, 1991

ATTACHMENT TO LICENSE AMENDMENT NO. 145

FACILITY OPERATING LICENSE NO. DPR-74

DOCKET NO. 50-316

Revise Appendix A Technical Specifications by removing the pages identified below and inserting the attached pages. The revised pages are identified by amendment number and contain marginal lines indicating the area of change.

REMOVE

3/4 3-46

INSERT

3/4 3-46

TABLE 3.3-10  
POST-ACCIDENT MONITORING INSTRUMENTATION

<u>INSTRUMENT</u>	<u>MINIMUM CHANNELS OPERABLE</u>
1. Containment Pressure	2
2. Reactor Coolant Outlet Temperature - T <sub>HOT</sub> (Wide Range)	2
3. Reactor Coolant Inlet Temperature - T <sub>COLD</sub> (Wide Range)	2
4. Reactor Coolant Pressure - Wide Range	2
5. Pressurizer Water Level	2
6. Steam Line Pressure	2
7. Steam Generator Water Level - Narrow Range	2/Steam Generator
8. Refueling Water Storage Tank Water Level	1/Steam Generator
9. Boric Acid Tank Solution Level	2
10. Auxiliary Feedwater Flow Rate	1
11. Reactor Coolant System Subcooling Margin Monitor	1/Steam Generator*
12. PORV Position Indicator - Limit Switches***	1**
13. PORV Block Valve Position Indicator - Limit Switches	1/Valve
14. Safety Valve Position Indicator - Acoustic Monitor*****	1/Valve
15. Incore Thermocouples (Core Exit Thermocouples)	1/Valve
16. Reactor Coolant Inventory Tracking System (Reactor Vessel Level Indication)	2/Core Quadrant One Train (3 channels/Train)
17. Containment Sump Level	1****
18. Containment Water Level	2****

- \* Steam Generator Water Level Channels can be used as a substitute for the corresponding auxiliary feedwater flow rate channel instrument.
- \*\* PRODAC 250 subcooling margin readout can be used as a substitute for the subcooling monitor instrument.
- \*\*\* Acoustic monitoring of PORV position (1 channel per three valves - headered discharge) can be used as a substitute for the PORV Indicator - Limit Switches instruments.
- \*\*\*\* The requirements for these instruments will become effective after the level transmitters are modified or replaced and become operational. The schedule for modification or replacement of the transmitters is described in the Bases.
- \*\*\*\*\* Pressurizer safety valve (SV-45C) position indicator acoustic monitor QR-107C is exempted from the above requirements until the end of Cycle 8.
- (Amendment No. 92, 95 ~~Effective before startup following refueling outage currently scheduled in early 1988~~)



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 145 TO FACILITY OPERATING LICENSE NO. DPR-74

INDIANA MICHIGAN POWER COMPANY

DONALD C. COOK NUCLEAR PLANT, UNIT NO. 2

DOCKET NO. 50-316

1.0 INTRODUCTION

By letter dated December 16, 1991, the Indiana Michigan Power Company (the licensee) requested an amendment to the Technical Specifications (TS) appended to Facility Operating License No. DPR-74 for the Donald C. Cook Nuclear Plant, Unit No. 2. The proposed amendment would modify TS 3.3.3.6 to allow pressurizer safety valve position indicator acoustic monitor QR-107C (Instrument 14 in Table 3.3-10) to be exempted from Table 3.3-10 requirements until the end of the current fuel cycle, which is anticipated to be February 1992. Currently, the TS only allow this monitor to be inoperable for 30 days, with a subsequent action to be in hot shutdown within the next 12 hours. As a result of a spurious alarm from this instrument, on November 30, 1991, the licensee entered the TS action statement. Due to subsequent alarms that have occurred intermittently since that time, despite their troubleshooting efforts, the licensee has remained in the action statement. This 30-day period expires December 30, 1991 at 0353 hours. Due to insufficient time to allow for 30-day notice in the Federal Register, the licensee has submitted this change as an emergency TS change request.

2.0 EVALUATION

The D. C. Cook Nuclear Plant, Unit 2 reactor coolant system is protected against overpressurization by control and protective circuits such as the pressurizer pressure high reactor trip and by the three power-operated relief and three safety valves connected to the top of the pressurizer. Upon opening, these valves discharge steam into the pressurizer relief tank which condenses and collects the valve effluent.

The purpose of the pressurizer safety valve acoustic monitor is to provide the operator with information regarding safety valve position. Two independent monitoring systems exist that alert the operator to the passage of steam from the safety valves due to valve lift. An acoustic flow monitor on the discharge of each safety valve detects acoustic vibrations generated from the steam flowing through the valve, and actuates an alarm in the control room. Due to the magnitude of the acoustic vibrations and the sensitivity of the instrumentation, all three monitors will sense when one of the pressurizer safety valves lift. The acoustic monitors were added to meet the requirements of NUREG-0578, "TMI-2 Lessons Learned Task force Status Report and Short Terms Recommendations," and NUREG-0737, "Clarification of TMI Action Plan Requirements," and are environmentally qualified, unlike the downstream temperature sensors.

During normal operation the acoustic monitors are not used to detect valve leakage. A temperature sensor downstream of the acoustic sensor generates a signal that actuates a control room alarm when a temperature increase is experienced in the line, as would be the case if the valve released steam.

The licensee plans to utilize the temperature sensor installed downstream of the affected pressurizer safety valve as backup indication of flow through this valve. This sensor provides indication and alarm in the control room and on the plant computer. The licensee's experience has shown that these sensors perform effectively to detect leakage.

In addition, the identical system in Unit 1 has shown that when one of the pressurizer safety valves opens, all three safety valve acoustic leak detection channels are actuated. This is caused by the sensitivity of the accelerometers and the fact that the three safety valves and their associated acoustic monitor sensors are in close proximity to each other. If the safety valve associated with the inoperable valve position acoustic monitor channel discharges, the remaining two valve acoustic monitor channels would alert the operator. Further, the safety valves discharge into the pressurizer relief tank. The temperature, pressure, and liquid level of the tank are indicated and alarmed in the control room. A change in these parameters would alarm and alert the operator of a safety valve discharge condition. Also, when a pressurizer safety valve lifts, it can be heard in the control room, and would therefore alert the operators.

While the licensee would not state unequivocally that if the affected safety valve were to lift, that the acoustic monitors would continue to indicate that condition until the valve fully reseats, they believe the sensitivity of the remaining operable acoustic monitors is sufficient to detect any substantial flow through the affected safety valve discharge line.

In a conference call on December 17, 1991, with NRC headquarters and Region III staff, the licensee confirmed that the electronics of the acoustic monitors are sufficiently independent to allow isolation of the affected acoustic monitor without affecting the remaining operable acoustic monitors. Additionally, the licensee committed to review all emergency and abnormal procedures and instructions which may reference the affected acoustic monitor and revise them as necessary to properly reflect the use or reference to the backup instrumentation which will be used. In response to concerns that the temperature sensor downstream of the pressurizer safety valves may not receive routine surveillance to verify operability, the licensee committed to perform appropriate surveillance, i.e., channel check to determine functionality and an appropriate frequency. These actions are to be completed prior to December 30, 1991.

The licensee's proposed Technical Specification change request has the impact of extending the allowable outage time for the acoustic monitor position indication for one of three pressurizer safety valves from one month to approximately two and one-half months. Based on the above discussions regarding the existence of backup instrumentation and the licensee's commitments to modify procedures as necessary and perform surveillance on backup instrumentation, the staff finds the proposed Technical Specification change to be acceptable.

### 3.0 EMERGENCY CIRCUMSTANCES

In its letter dated December 16, 1991, the licensee indicated that unless this proposed change were approved, they would at 0356 on December 30, 1991 exceed the action statement time limit for this component and be required to be in hot shutdown within the following 12 hours. The licensee indicated that their troubleshooting efforts have conclusively proven that the cause of the erratic operation and spurious alarms with the acoustic monitor is not any of the components located in the control room. The licensee has further verified by monitoring pressure relief tank level and temperature and the discharge temperature sensor that the alarm is spurious and not the result of actual discharge (leakage) past the safety valve. The cause is believed to be the charge converter located in the pressurizer doghouse. The only portion of the instrumentation that has not been conclusively tested is the in-containment hardware (accelerometer, charge converter and cabling).

The licensee postulates that the charge converter (in-containment) is failing and, thus, periodically generates a noise signal which is interpreted by the signal conditioning module located in the control room as an alarm condition.

Since access to the suspect components is not possible at power, the licensee would otherwise be required to shutdown at the end of the 30-day allowable outage time for this equipment, which would then allow them to enter containment and repair the affected components. Hence, there is not time to publish Notice of Consideration in the Federal Register.

The licensee has also, in accordance with 10 CFR 50.91(a)(5), provided information that the need for the emergency arose as a result of the declaration of inoperability and entry into a 30-day allowable outage time which occurred on November 30, 1991. Subsequent troubleshooting efforts to confirm that repairs could not be finished at power were only recently completed. Thus, the need for the emergency change could not have been avoided.

### 4.0 FINAL NO SIGNIFICANT HAZARDS CONSIDERATION DETERMINATION

The Commission's regulations in 10 CFR 50.92 state that the Commission may make a final determination that a license amendment involves no significant hazards consideration if operation of the facility, in accordance with the amendment, would not:

- (1) Involve significant increase in the probability or consequences of an accident previously evaluated; or
- (2) Create the possibility of a new or different kind of accident from any accident previously evaluated; or
- (3) Involve a significant reduction in a margin of safety.

The proposed changes do not involve a significant hazards consideration because the operation of Donald C. Cook, Unit 2 in accordance with these changes would not:

- (1) Involve a significant increase in the probability or consequences of an accident previously evaluated.

Although the proposed exemption results in the operator having one less source of information on plant status, it does not create a significant increase in the probability or consequences of an accident previously evaluated. Acoustic monitor QR-107C does not perform a function vital to safe shutdown or to the isolation of the reactor or the reactor coolant system pressure boundary. These monitors were added to meet the requirements of NUREG-0578 and NUREG-0737. Other instrumentation exists that provides the operator with indication of safety valve actuation. In addition, the subject acoustic monitor being inoperable will not result in an uncontrolled release of radiation to the environment and will not initiate an accident.

- (2) Create the possibility of new or different kind of accident from any accident previously evaluated.

As previously stated, the purpose of the acoustic monitor is to provide the operator with information regarding safety valve position that may assist in the mitigation of the consequences of an accident. However, the operator has other mechanisms for obtaining equivalent information. In addition, the signals generated by this monitor do not initiate any other equipment actuation, nor will its inoperability initiate any accident. Consequently, the proposed TS change does not create the possibility of a new or different kind of accident from any previously evaluated.

- (3) Involve a significant reduction in a margin of safety.

The proposed change results in the operator having one less source of information on plant status. Consequently, the margin of safety is reduced slightly. However, this reduction in safety is not significant for several reasons. First, the operator is provided with other viable flow detection devices to determine safety valve position, i.e., the temperature sensor on the discharge line, and pressurizer relief tank level, temperature, and pressure indications. In addition, previous experience with an identical system in Cook Nuclear Plant Unit 1 has shown that, when one of the pressurizer safety valves open, the other two safety valve acoustic monitor channels are actuated. The operators will also be aware of a safety valve opening, since it can be heard in the control room.

Accordingly, the Commission has determined that this amendment to Facility Operating License No. DPR-74 involves no significant hazards consideration.

#### 5.0 STATE CONSULTATION

In accordance with the Commission's regulations, the Michigan State official was notified of the proposed issuance of the amendments. The State official had no comments.

## 6.0 ENVIRONMENTAL CONSIDERATION

This amendment changes the requirements with respect to the installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20 or changes in surveillance requirements. The staff has determined that the amendments involve no significant increase in the amounts, and no significant change in the types, of any effluents that may be released offsite, and that there is no significant increase in individual or cumulative occupational radiation exposure. The Commission made a final determination that this amendment involves no significant hazards consideration. Accordingly, this amendment meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the issuance of these amendments.

## 7.0 CONCLUSION

The staff has concluded, based on the considerations discussed above that (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendments will not be inimical to the common defense and security or to the health and safety of the public.

Principal Contributor: T. Colburn

Date: December 23, 1991