April 6, 1990

Docket Nos. 50-315
and 50-316

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Mr. Milton P. Alexich
Indiana Michigan Power Company
c/o American Electric Power
Service Corporation
1 Riverside Plaza
Columbus, Ohio 43216

Dear Mr. Alexich:

SUBJECT: AMENDMENT NOS. 134 AND 119 TO FACILITY OPERATING LICENSE NOS. DPR-58 AND DPR-74: (TAC NOS. 61335, 61336, 61843, 61844, 62816, 62817, 65058, 65059, 65910, 65911, 65912, 65913, 68128, 68129, 69509, 69510)

The Commission has issued the enclosed Amendment No. 134 to Facility Operating License No. DPR-58 and Amendment No. 119 to Facility Operating License No. DPR-74 for the Donald C. Cook Nuclear Plant, Unit Nos. 1 and 2. The amendments consist of changes to the Technical Specifications (TS) in response to your application dated July 31, 1987 (supplemented October 26, 1987).

The proposed amendments would incorporate TS associated with the radiation monitoring requirements set forth in NUREG-0737 and clarified in Generic Letter 83-37.

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,

Original signed by

Joseph Giitter, Project Manager
Project Directorate III-1
Division of Reactor Projects - III,
IV, V & Special Projects
Office of Nuclear Reactor Regulation

Enclosures:
1. Amendment No. 134 to DPR-58
2. Amendment No. 119 to DPR-74
3. Safety Evaluation

cc w/enclosures:
See next page

| LA/PD31:DRSP | PM/PD31:DRSP | PRPB | (A)D/PD31:DRSP | OGC |
|---|---|---|---|---|
| MRShuttleworth | JGiitter | JCunningham | JThoma JD | |
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UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

April 6, 1990

Docket Nos. 50-315
and 50-316

Mr. Milton P. Alexich
Indiana Michigan Power Company
c/o American Electric Power
Service Corporation
1 Riverside Plaza
Columbus, Ohio 43216

Dear Mr. Alexich:

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The proposed amendments would incorporate TS associated with the radiation monitoring requirements set forth in NUREG-0737 and clarified in Generic Letter 83-37.

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,

Joseph Giitter

Joseph Giitter, Project Manager
Project Directorate III-1
Division of Reactor Projects - III,
IV, V & Special Projects
Office of Nuclear Reactor Regulation

Enclosures:
1. Amendment No. 134 to DPR-58
2. Amendment No. 119 to DPR-74
3. Safety Evaluation

cc w/enclosures:
See next page

Mr. Milton Alexich
Indiana Michigan Power Company

Donald C. Cook Nuclear Plant

cc:
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Monitoring Section Office
Division of Radiological Health
Department of Public Health
3500 N. Logan Street
Post Office Box 30035
Lansing, Michigan 48909

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

INDIANA MICHIGAN POWER COMPANY

DOCKET NO. 50-315

DONALD C. COOK NUCLEAR PLANT, UNIT NO. 1

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 134
License No. DPR-58

1. The Nuclear Regulatory Commission (the Commission) has found that:

   A. The application for amendment by Indiana Michigan Power Company (the licensee) dated July 31, 1987, 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-58 is hereby amended to read as follows:

   Technical Specifications

   The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 134 , 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

William O. Long

for John O. Thoma, Acting Director
Project Directorate III-1
Division of Reactor Projects - III, IV, V & Special Projects
Office of Nuclear Reactor Regulation

Attachment:
Changes to the Technical Specifications

Date of Issuance: April 6, 1990

ATTACHMENT TO LICENSE AMENDMENT NO. 134

FACILITY OPERATING LICENSE NO. DPR-58

DOCKET NO. 50-315

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 | INSERT |
|---|---|
| 6-14 | 6-14 |
| * | 6-14a |
| 3/4 3-36 | 3/4 3-36 |
| 3/4 3-36a | 3/4 3-36a |
| 3/4 3-36b | 3/4 3-36b |
| 3/4 3-37 | 3/4 3-37 |
| 3/4 3-38 | 3/4 3-38 |
| 3/4 3-38a | 3/4 3-38a |
| 3/4 3-38b | 3/4 3-38b |
| B 3/4 3-1 | B 3/4 3-1 |
| B 3/4 3-1a | B 3/4 3-1a |
| B 3/4 3-1b | B 3/4 3-1b |
| B 3/4 3-1c | B 3/4 3-1c |

6.8.3 Temporary changes to procedures of 6.8.1 above may be made provided:

a. The intent of the original procedure is not altered.

b. The change is approved by two members of the plant management staff, at least one of whom holds a Senior Reactor Operator's License on the unit affected.

c. The change is documented, reviewed by the PNSRC and approved by the Plant Manager within 14 days of implementation.

6.8.4 A plant program for post-accident sampling shall be established, implemented, and maintained which will ensure the capability to obtain and analyze reactor coolant samples, containment atmosphere noble gas samples, and unit vent gaseous effluent samples for iodines and particulates under accident conditions. The program will include the following:

a. Training of personnel,

b. Procedures for sampling and analysis,

c. Provisions for maintenance of sampling and analysis equipment.

## 6.9 REPORTING REQUIREMENTS

### ROUTINE REPORTS AND REPORTABLE OCCURRENCES

6.9.1 In addition to the applicable reporting requirements of Title 10, Code of Federal Regulations, the following reports shall be submitted to the Director of the Regional Office of Inspection and Enforcement unless otherwise noted.

### STARTUP REPORT

6.9.1.1 A summary of plant startup and power escalation testing shall be submitted following (1) receipt of an operating license, (2) amendment to the license involving a planned increase in power level, (3) installation of fuel that has a different design or has been manufactured by a different fuel supplier, and (4) modifications that may have significantly altered the nuclear, thermal, or hydraulic performance of the plant.

6.9.1.2 The startup report shall address each of tests identified in the FSAR and shall include a description of the measured values of the operating conditions or characteristics obtained during the test program and a comparison of these values with design predictions and specifications. Any corrective actions that were required to obtain satisfactory operation shall also be described. Any additional specific details required in license conditions based on other commitments shall be included in this report.

TABLE 3.3-6

RADIATION MONITORING INSTRUMENTATION

(OPERABILITY BASES DISCUSSED IN BASES SECTION 3/4.3.3.1)

| OPERATION MODE/INSTRUMENT | MINIMUM CHANNELS OPERABLE | ALARM SETPOINT | TRIP SETPOINT | ACTION |
|---|---|---|---|---|
| 1. Modes 1, 2, 3, & 4 | | | | |
| A) Area Monitors | | | | |
| i) Upper Containment+ (VRS 1101/1201) | 1 | N/A | ≤54 mR/hr | 21 |
| ii) Containment - High Range (VRA 1310/1410) | 2 | ≤10R/hr | N/A | 22A |
| B) Process Monitors | | | | |
| i) Particulate Channel+ (ERS 1301/1401) | 1 | N/A | ≤2.52 uCi | 20 |
| ii) Noble Gas Channel+ (ERS 1305/1405) | 1 | N/A | $\leq 4.4 \times 10^{-3} \frac{uCi}{cc}$ | 20 |
| C) Noble Gas Effluent Monitors | | | | |
| i) Unit Vent Effluent Monitor | | | | |
| a) Low Range (VRS 1505) | ----------------(See T/S Section 3.3.3.10)---------------- | | | |
| b) Mid Range (VRS 1507) | 1 | N/A | N/A | 22B |
| c) High Range (VRS 1509) | 1 | N/A | N/A | 22B |
| ii) Steam Generator PORV | | | | |
| a) MRA 1601 (Loop 1) | 1 | N/A | N/A | 22B |
| b) MRA 1602 (Loop 4) | 1 | N/A | N/A | 22B |
| c) MRA 1701 (Loop 2) | 1 | N/A | N/A | 22B |
| d) MRA 1702 (Loop 3) | 1 | N/A | N/A | 22B |

TABLE 3.3-6 (Cont'd)

RADIATION MONITORING INSTRUMENTATION

(OPERABILITY BASES DISCUSSED IN BASES SECTION 3/4.3.3.1)

| OPERATION MODE/INSTRUMENT | MINIMUM CHANNELS OPERABLE | ALARM SETPOINT | TRIP SETPOINT | ACTION |
|---|---|---|---|---|
| ii) Gland Steam Condenser Vent Monitor | | | | |
| a) Low Range (SRA 1805) | (See T/S Section 3.3.3.10) | | | |
| iii) Steam Jet Air Ejector Vent Monitor | | | | |
| a) Low Range (SRA 1905) | (See T/S Section 3.3.3.10) | | | |
| b) Mid Range (SRA 1907) | 1 | N/A | N/A | 22B |
| c) High Range (SRA 1909) | 1 | N/A | N/A | 22B |
| 2. Mode 6 | | | | |
| A) Train A | any 2/3 channels | | | 22 |
| i) Containment Area Radiation Channel (VRS 1101)+ | | N/A | $\leq$ 54 mR/hr | |
| ii) Particulate Channel+ (ERS 1301) | | N/A | $\leq$ 2.52 uCi | |
| iii) Noble Gas Channel+ (ERS 1305) | | N/A | $\leq 4.4 \times 10^{-3}$ $\frac{uCi}{cc}$ | |
| B) Train B | any 2/3 channels | | | 22 |
| i) Containment Area+ Radiation Channel (VRS 1201) | | N/A | $\leq$ 54 mR/hr | |
| ii) Particulate Channel+ (ERS 1401) | | N/A | $\leq$ 2.52 uCi | |

TABLE 3.3-6 (Cont'd)
RADIATION MONITORING INSTRUMENTATION
(OPERABILITY BASES DISCUSSED IN BASES SECTION 3/4.3.3.1)

| OPERATION MODE/INSTRUMENT | MINIMUM CHANNELS OPERABLE | ALARM SETPOINT | TRIP SETPOINT | ACTION |
|---|---|---|---|---|
| iii) Noble Gas Channel+ (ERS 1405) | | N/A | $\leq 4.4 \times 10^{-3}$ uCi/cc | 22 |
| 3. Mode *** | | | | |
| A) Spent Fuel Storage (RRC-330) | 1 | $\leq$ 15 mR/hr | $\leq$ 15 mR/hr | 21 |

***With fuel in storage pool or building.
\+ This specification applies only during purge.

TABLE 3.3-6 (Continued)
TABLE NOTATION

ACTION 20 - With the number of channels OPERABLE less than required by the Minimum Channels Operable requirement, comply with the ACTION requirements of Specification 3.4.6.1.

ACTION 21 - With the number of channels OPERABLE less than required by the Minimum Channels Operable requirement, perform area surveys of the monitored area with portable monitoring instrumentation at least once per day.

ACTION 22 - With the number of channels OPERABLE less than required by the Minimum Channels Operable requirements, comply with the ACTION requirements of Specification 3.9.9. This ACTION is not required during the performance of containment integrated leak rate test.

ACTION 22A - With the number of OPERABLE Channels less than required by the Minimum Channels OPERABLE requirements:

1. either restore the inoperable Channel(s) to OPERABLE status within 7 days of the event, or

2. prepare and submit a Special Report to the Commission pursuant to Specification 6.9.2 within 14 days following the event outlining the action taken, the cause of the inoperability and the plans and schedule for restoring the system to OPERABLE status.

3. Technical Specification Sections 3.0.3, 3.0.4 and 6.9.1.13 Not Applicable.

ACTION 22B - With the number of OPERABLE Channels less than required by the Minimum Channels OPERABLE requirements.

1. either restore the inoperable Channel(s) to OPERABLE status within 7 days of the event, or

2. prepare and submit a Special Report to the Commission pursuant to Specification 6.9.2 within 14 days following the event outlining the action taken, the cause of the inoperability and the plans and schedule for restoring the system to OPERABLE status.

3. In the event of an accident involving radiological releases initiate the preplanned alternate method of monitoring the appropriate parameter(s) within 72 hours.

4. Technical Specification Sections 3.0.3, 3.0.4 and 6.9.1.13 Not Applicable.

TABLE 4.3-3

RADIATION MONITORING INSTRUMENTATION SURVEILLANCE REQUIREMENTS

| Operation Mode/Instrument | CHANNEL CHECK | CHANNEL CALIBRATION | CHANNEL FUNCTIONAL TEST | MODES FOR WHICH SURVEILLANCE REQUIRED |
|---|---|---|---|---|
| 1. Modes 1, 2, 3 & 4 | | | | |
| A) Area Monitors | | | | |
| i) Upper Containment (VRS 1101/1201) | S* | R | M | 1, 2, 3, 4 |
| ii) Containment - High Range (VRS 1310/1410) | S | R | M | 1, 2, 3, 4 |
| B) Process Monitors | | | | |
| i) Particulate Channel (ERS 1301/1401) | S* | R | M | 1, 2, 3, 4 |
| C) Noble Gas Effluent Monitors | | | | |
| i) Unit Vent Effluent Monitor | | | | |
| a) Low Range (VRS 1505) | (See Table 4.3-9, Item 3.a, 4a, 5a) | | | |
| b) Mid Range (VRS 1507) | S | R | N/A | 1, 2, 3, 4 |
| c) High Range (VRS 1509) | S* | R | N/A | 1, 2, 3, 4 |
| ii) Steam Generator PORV | | | | |
| a) MRA 1601 (Loop 1) | S* | R | M | 1, 2, 3, 4 |
| b) MRA 1602 (Loop 4) | S* | R | M | 1, 2, 3, 4 |
| c) MRA 1701 (Loop 2) | S* | R | M | 1, 2, 3, 4 |
| d) MRA 1702 (Loop 3) | S* | R | M | 1, 2, 3, 4 |

TABLE 4.3-3 (Cont'd)

RADIATION MONITORING INSTRUMENTATION SURVEILLANCE REQUIREMENTS

| Operation Mode/Instrument | CHANNEL CHECK | CHANNEL CALIBRATION | CHANNEL FUNCTIONAL TEST | MODES FOR WHICH SURVEILLANCE REQUIRED |
|---|---|---|---|---|
| iii) Gland Steam Condenser Vent Monitor | | | | |
| a) Low Range (SRA 1805) | ---------------(See Table 4.3-9 Item 6.a)------------------- | | | |
| iv) Steam Jet Air Ejector Vent Monitor | | | | |
| a) Low Range (SRA 1905) | ---------------(See Table 4.3-9, Item 2.a)------------------- | | | |
| b) Mid Range (SRA 1907) | S | R | M | 1, 2, 3, 4 |
| c) High Range (SRA 1909) | S* | R | N/A | 1, 2, 3, 4 |
| 2. Mode 6 | | | | |
| A) Train A | | | | 6 |
| i) Containment Area Radiation Channel (VRS 1101) | S* | R | M | |
| ii) Particulate Channel (ERS 1301) | S* | R | M | |
| iii) Noble Gas Channel (ERS 1305) | S* | R | M | |
| B) Train B | | | | 6 |
| i) Containment Area Radiation Channel (VRS 1201) | S* | R | M | |
| ii) Particulate Channel (ERS 1401) | S* | R | M | |

TABLE 4.3-3 (Cont'd)
RADIATION MONITORING INSTRUMENTATION SURVEILLANCE REQUIREMENTS

| Operation Mode/Instrument | CHANNEL CHECK | CHANNEL CALIBRATION | CHANNEL FUNCTIONAL TEST | MODES FOR WHICH SURVEILLANCE REQUIRED |
|---|---|---|---|---|
| iii) Noble Gas Channel (ERS 1405) | S* | R | M | 6 |
| 3. Mode** | | | | |
| A) Spent Fuel Storage (RRC-330) | S | R | M | ** |

* To include Source Check per T/S Section 1.27.
** With fuel in storage pool or building.

3/4.3.1 and 3/4.3.2 PROTECTIVE AND ENGINEERED SAFETY FEATURES (ESF) INSTRUMENTATION

The OPERABILITY of the protective and ESF instrumentation systems and interlocks ensure that 1) the associated ESF action and/or reactor trip will be initiated when the parameter monitored by each channel or combination thereof exceeds its setpoint, 2) the specified coincidence logic is maintained, 3) sufficient redundancy is maintained to permit a channel to be out of service for testing or maintenance, and 4) sufficient system functional capability is available for protective and ESF proposes from diverse parameters.

The OPERABILITY of these system is required to provide the overall reliability, redundance and diversity assumed available in the facility design for the protection and mitigation of accident and transient conditions. The integrated operation of each of these system is consistent with the assumptions used in the accident analyses.

The surveillance requirements specified for these systems ensure that the overall system functional capability is maintained comparable to the original design standards. The periodic surveillance tests performed at the minimum frequencies are sufficient to demonstrate this capability.

The measurement of response time at the specified frequencies provides assurance that the protective and ESF action function associated with each channel is completed within the time limit assumed in the accident analyses. No credit was taken in the analyses for those channels with response times indicated as not applicable.

Response time may be demonstrated by any series of sequential, overlapping or total channel test measurements provided that such tests demonstrate the total channel response time as defined. Sensor response time verification may be demonstrated by either 1) in place, onsite or offsite test measurements or 2) utilizing replacement sensors with certified response times.

3/4.3.3 MONITORING INSTRUMENTATION

3/4.3.3.1 RADIATION MONITORING INSTRUMENTATION

Noble gas effluent monitors provide information, during and following an accident, which is considered helpful to the operator in assessing the plant condition. It is desired that these monitors be OPERABLE at all times during plant operation, but they are not required for safe shutdown of the plant.

In addition, a minimum of two in containment radiation-level monitors with a maximum range of $10^7$ R/hr for photon only should be OPERABLE at all times except for cold shutdown and refueling outages. In case of failure of the monitor, appropriate actions should be taken to restore its operational capability as soon as possible.

Radiation Monitoring Instrumentation (Continued)

Table 3.3-6 is based on the following Alarm/Trip Setpoints and Measurement Ranges for each instrument listed. For the unit vent noble gas monitors, it should be noted that there is an automatic switchover from the low/mid-range channels to the high-range channel when the upper limits of the low- and mid-range channel measurement ranges are reached. In this case there is no flow to the low- and mid-range channels from the unit vent sample line. This is considered to represent proper operation of the this monitor. Therefore, if automatic switchover to the high-range should occur, and the low- and mid-range detectors are capable of functioning when flow is re-established, the low- and mid-range channels should not be declared inoperable and the ACTION statement in the Technical Specification does not apply. This is also true while purging the low- and mid-range chambers following a large activity excursion prior to resumption of low-level monitoring and establishment of a new background.

| INSTRUMENT | ALARM/TRIP SETPOINT | MEASUREMENT RANGE* |
|---|---|---|
| 1) Area Monitor- Upper Containment (VRS 1101/1201) | The monitor trip setpoint is based on 10 CFR 20 limits. A homogeneous mixture of the containment atmosphere is assumed. The setpoint value is defined as the monitor reading when the purge is operating at the maximum flow rate. | $10^{-4}$R/hr to 10R/hr. |
| 2) Area Monitor- Containment High Range (VRA 1310/ 1410) | The monitor setpoint was selected to reflect the guidance provided in Generic Letter 83-37 for NUREG-0737 Technical Specifications | 1R/hr to $1 \times 10^{7}$R/hr Photons. |
| 3) Process Monitor Particulate (ERS 1301/1401) | The monitor trip setpoint is based on 10 CFR 20 The setpoint was determined using the Noble gas setpoint and historical monitor data of the ratio of particulates to Noble gases. | $1.5 \times 10^{-4}$ uCi to 7.5 uCi. |

* This is the minimum required sensitivity of the instrument. Indicated values on these instruments above or below these minimum sensitivity ranges are acceptable and indicate existing conditions not instrument inoperability.

Radiation Monitoring Instrumentation (Continued)

| INSTRUMENT | ALARM/TRIP SETPOINT | MEASUREMENT RANGE* |
|---|---|---|
| 4) Process Monitor Noble Gas (ERS 1305/1405) | The monitor trip setpoint is based on 10 CFR 20 limits. A homogeneous mixture of the containment atmosphere is assumed. The setpoint value is defined as the monitor reading when the purge is operating at the maximum flow rate. | $5.8 \times 10^{-7}$ uCi/cc to $2.7 \times 10^{-2}$ uCi/cc |
| 5) Steam Generator PORV (MRA 1601) (MRA 1602) (MRA 1701) (MRA 1702) | Not Applicable.** | 0.1uCi/cc to $1.0 \times 10^{2}$ uCi/cc. |
| 6) Noble Gas Unit Vent Monitors | | |
| a) Low Range (VRS 1505) | See Bases Section 3/4.3.3.10 | $5.8 \times 10^{-7}$uCi/cc to $2.7 \times 10^{-2}$uCi/cc. |
| b) Mid Range (VRS 1507) | Not Applicable** | $1.3 \times 10^{-3}$uCi/cc to $7.5 \times 10^{2}$uCi/cc. |
| c) High Range (VRS 1509) | Not Applicable** | $2.9 \times 10^{-2}$uCi/cc to $1.6 \times 10^{4}$uCi/cc. |
| 7) Gland Steam Condenser Vent Noble Gas Monitor | | |
| a) Low Range (SRA 1805) | See Bases Section 3/4.3.3.10 | $5.8 \times 10^{-7}$uCi/cc to $2.7 \times 10^{-2}$uCi/cc. |

* This is the minimum sensitivity of the instrument for normal operation, to follow the course of an accident, and/or take protective actions. Values of the instrument above or below this minimum sensitivity range are acceptable.

** These monitors are used to provide data to assist in post-accident off-site dose assessment.

Radiation Monitoring Instrumentation (Continued)

| INSTRUMENT | ALARM/TRIP SETPOINT | MEASUREMENT RANGE* |
|---|---|---|
| 8) Steam Jet Air Ejector Vent Noble Gas Monitor | | |
| a) Low Range (SRA 1905) | See Bases Section 3/4.3.3.10 | $5.8\times10^{-7}$ uCi/cc to $2.7\times10^{-2}$ uCi/cc. |
| b) Mid Range (SRA 1907) | Not applicable.** | $1.3\times10^{-3}$ uCi/cc to $7.5\times10^{2}$ uCi/cc. |
| c) High Range (SRA 1909) | Not Applicable.** | $2.9\times10^{-2}$ uCi/cc to $1.6\times10^{4}$ uCi/cc. |
| 9) Spent Fuel Storage (RRC-330) | The monitor setpoint is selected to alarm and trip consistent with 10 CFR 70.24(a) (2) | $1\times10^{-1}$ mR/hr to $1\times10^{4}$ mR/hr |

The Radiation Monitoring Instrumentation Surveillance Requirements per Table 4.3-3 are based on the following interpretation:

1) The CHANNEL FUNCTIONAL TEST is successfully accomplished by the injection of a simulated signal into the channel, as close to the detector as practical, to verify the channel's alarm and/or trip function only.

2) The CHANNEL CALIBRATION as defined in T/S Section 1.9 permits the "known values" generated from radioactive calibration sources to be supplemented with "known values" represented by simulated signals for that subset of "known values" required for calibration and not practical to generate using the radioactive calibration sources.

* This is minimum sensitivity of the instrument for normal operation, to follow the course of an accident, and/or take protective actions. Values of the instrument above or below this minimum sensitivity range are acceptable.

** These monitors are used to provide data to assist in post-accident off-site dose assessment.

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. 119
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 July 31, 1987, 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. 119 , 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

Dominic C. Dilanni /JT

John O. Thoma, Acting Director
Project Directorate III-1
Division of Reactor Projects - III, IV, V & Special Projects
Office of Nuclear Reactor Regulation

Attachment:
Changes to the Technical Specifications

Date of Issuance: April 6, 1990

ATTACHMENT TO LICENSE AMENDMENT NO. 119

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 | INSERT |
|---|---|
| 6-14 | 6-14 |
| * | 6-14a |
| 3/4 3-35 | 3/4 3-35 |
| 3/4 3-35a | 3/4 3-35a |
| 3/4 3-35b | 3/4 3-35b |
| 3/4 3-36 | 3/4 3-36 |
| 3/4 3-37 | 3/4 3-37 |
| 3/4 3-37a | 3/4 3-37a |
| 3/4 3-37b | 3/4 3-37b |
| B 3/4 3-1 | B 3/4 3-1 |
| B 3/4 3-1a | B 3/4 3-1a |
| B 3/4 3-1b | B 3/4 3-1b |
| B 3/4 3-1c | B 3/4 3-1c |
| * | B 3/4 3-1d |
| B 3/4 3-2 | B 3/4 3-2 |
| B 3/4 3-2a | * |
| B 3/4 3-3 | B 3/4 3-3 |

6.8.3 Temporary changes to procedures of 6.8.1 above may be made provided:

a. The intent of the original procedure is not altered.

b. The change is approved by two members of the plant management staff, at least one of whom holds a Senior Reactor Operator's License on the unit affected.

c. The change is documented, reviewed by the PNSRC and approved by the Plant Manager within 14 days of implementation.

6.8.4 A plant program for post-accident sampling shall be established, implemented, and maintained which will ensure the capability to obtain and analyze reactor coolant samples, containment atmosphere noble gas samples, and unit vent gaseous effluent samples for iodines and particulates under accident conditions. The program will include the following:

a. Training of personnel,

b. Procedures for sampling and analysis,

c. Provisions for maintenance of sampling and analysis equipment.

## 6.9 REPORTING REQUIREMENTS

### ROUTINE REPORTS AND REPORTABLE OCCURRENCES

6.9.1 In addition to the applicable reporting requirements of Title 10, Code of Federal Regulations, the following reports shall be submitted to the Director of the Regional Office of Inspection and Enforcement unless otherwise noted.

### STARTUP REPORT

6.9.1.1 A summary of plant startup and power escalation testing shall be submitted following (1) receipt of an operating license, (2) amendment to the license involving a planned increase in power level, (3) installation of fuel that has a different design or has been manufactured by a different fuel supplier, and (4) modifications that may have significantly altered the nuclear, thermal, or hydraulic performance of the plant.

6.9.1.2 The startup report shall address each of tests identified in the FSAR and shall include a description of the measured values of the operating conditions or characteristics obtained during the test program and a comparison of these values with design predictions and specifications. Any corrective actions that were required to obtain satisfactory operation shall also be described. Any additional specific details required in license conditions based on other commitments shall be included in this report.

6.9.1.3 Startup reports shall be submitted within (1) 90 days following completion of the startup test program, (2) 90 days following resumption or commencement of commercial power operation, or (3) 9 months following initial criticality, whichever is earliest. If the Startup Report does not cover all three events (i.e., initial criticality, completion of startup test program, and resumption or commencement of commercial power operation), supplementary reports shall be submitted at least every three months until all three events have been completed.

TABLE 3.3-6
RADIATION MONITORING INSTRUMENTATION
(OPERABILITY BASES DISCUSSED IN BASES SECTION 3/4.3.3.1)

| OPERATION MODE/INSTRUMENT | MINIMUM CHANNELS OPERABLE ' | ALARM SETPOINT | TRIP SETPOINT | ACTION |
|---|---|---|---|---|
| 1. Modes 1, 2, 3, & 4 | | | | |
| A) Area Monitors | | | | |
| i) Upper Containment+ (VRS 2101/2201) | 1 | N/A | ≤54 mR/hr | 21 |
| ii) Containment - High Range (VRA 2310/2410) | 2 | ≤10R/hr | N/A | 22A |
| B) Process Monitors | | | | |
| i) Particulate Channel+ (ERS 2301/2401) | 1 | N/A | ≤2.52 uCi | 20 |
| ii) Noble Gas Channel+ (ERS 2305/2405) | 1 | N/A | $\leq 4.4 \times 10^{-3} \frac{uCi}{cc}$ | 20 |
| C) Noble Gas Effluent Monitors | | | | |
| i) Unit Vent Effluent Monitor | | | | |
| a) Low Range (VRS 2505) | --- | (See T/S Section 3.3.3.10) | --- | |
| b) Mid Range (VRS 2507) | 1 | N/A | N/A | 22B |
| c) High Range (VRS 2509) | 1 | N/A | N/A | 22B |
| ii) Steam Generator PORV | | | | |
| a) MRA 2601 (Loop 1) | 1 | N/A | N/A | 22B |
| b) MRA 2602 (Loop 4) | 1 | N/A | N/A | 22B |
| c) MRA 2701 (Loop 2) | 1 | N/A | N/A | 22B |
| d) MRA 2702 (Loop 3) | 1 | N/A | N/A | 22B |

TABLE 3.3-6 (Cont'd)

RADIATION MONITORING INSTRUMENTATION

(OPERABILITY BASES DISCUSSED IN BASES SECTION 3/4.3.3.1)

| OPERATION MODE/INSTRUMENT | MINIMUM CHANNELS OPERABLE ' | ALARM SETPOINT | TRIP SETPOINT | ACTION |
|---|---|---|---|---|
| ii) Gland Steam Condenser Vent Monitor | | | | |
| a) Low Range (SRA 2805) | ------------------(See T/S Section 3.3.3.10)------------------ | | | |
| iii) Steam Jet Air Ejector Vent Monitor | | | | |
| a) Low Range (SRA 2905) | ------------------(See T/S Section 3.3.3.10)------------------ | | | |
| b) Mid Range (SRA 2907) | 1 | N/A | N/A | 22B |
| c) High Range (SRA 2909) | 1 | N/A | N/A | 22B |
| 2. Mode 6 | | | | |
| A) Train A | any 2/3 channels | | | 22 |
| i) Containment Area Radiation[+] Channel (VRS 2101) | | N/A | ≤ 54 mR/hr | |
| ii) Particulate Channel[+] (ERS 2301) | | N/A | ≤ 2.52 uCi | |
| iii) Noble Gas Channel[+] (ERS 2305) | | N/A | $\leq 4.4 \times 10^{-3} \frac{uCi}{cc}$ | |
| B) Train B | any 2/3 channels | | | 22 |
| i) Containment Area[+] Radiation Channel (VRS 2201) | | N/A | ≤ 54 mR/hr | |
| ii) Particulate Channel[+] (ERS 2401) | | N/A | ≤ 2.52 uCi | |

TABLE 3.3-6 (Cont'd)

RADIATION MONITORING INSTRUMENTATION

(OPERABILITY BASES DISCUSSED IN BASES SECTION 3/4.3.3.1)

| OPERATION MODE/INSTRUMENT | MINIMUM CHANNELS OPERABLE ' | ALARM SETPOINT | TRIP SETPOINT | ACTION |
|---|---|---|---|---|
| iii) Noble Gas Channel+ (ERS 2405) | | N/A | $\leq 4.4 \times 10^{-3}$ $\frac{uCi}{cc}$ | 22 |
| 3. Mode *** | | | | |
| A) Spent Fuel Storage (RRC-330) | 1 | $\leq$ 15 mR/hr | $\leq$ 15 mR/hr | 21 |

***With fuel in storage pool or building.

\+ This specification applies only during purge.

TABLE 3.3-6 (Continued)
TABLE NOTATION

ACTION 20 - With the number of channels OPERABLE less than required by the Minimum Channels Operable requirement, comply with the ACTION requirements of Specification 3.4.6.1.

ACTION 21 - With the number of channels OPERABLE less than required by the Minimum Channels Operable requirement, perform area surveys of the monitored area with portable monitoring instrumentation at least once per day.

ACTION 22 - With the number of channels OPERABLE less than required by the Minimum Channels Operable requirements, comply with the ACTION requirements of Specification 3.9.9. This ACTION is not required during the performance of containment integrated leak rate test.

ACTION 22A - With the number of OPERABLE Channels less than required by the Minimum Channels OPERABLE requirements:

1. either restore the inoperable Channel(s) to OPERABLE status within 7 days of the event, or

2. prepare and submit a Special Report to the Commission pursuant to Specification 6.9.2 within 14 days following the event outlining the action taken, the cause of the inoperability and the plans and schedule for restoring the system to OPERABLE status.

3. Technical Specification Sections 3.0.3, 3.0.4 and 6.9.1.13 Not Applicable.

ACTION 22B - With the number of OPERABLE Channels less than required by the Minimum Channels OPERABLE requirements.

1. either restore the inoperable Channel(s) to OPERABLE status within 7 days of the event, or

2. prepare and submit a Special Report to the Commission pursuant to Specification 6.9.2 within 14 days following the event outlining the action taken, the cause of the inoperability and the plans and schedule for restoring the system to OPERABLE status.

3. In the event of an accident involving radiological releases initiate the preplanned alternate method of monitoring the appropriate parameter(s) within 72 hours.

4. Technical Specification Sections 3.0.3, 3.0.4 and 6.9.1.13 Not Applicable.

TABLE 4.3-3

RADIATION MONITORING INSTRUMENTATION SURVEILLANCE REQUIREMENTS

| Operation Mode/Instrument | CHANNEL CHECK | CHANNEL CALIBRATION | CHANNEL FUNCTIONAL TEST | MODES FOR WHICH SURVEILLANCE REQUIRED |
|---|---|---|---|---|
| 1. Modes 1, 2, 3 & 4 | | | | |
| A) Area Monitors | | | | |
| i) Upper Containment (VRS 2101/2201) | S* | R | M | 1, 2, 3, 4 |
| ii) Containment - High Range (VRS 2310/2410) | S | R | M | 1, 2, 3, 4 |
| B) Process Monitors | | | | |
| i) Particulate Channel (ERS 2301/2401) | S* | R | M | 1, 2, 3, 4 |
| C) Noble Gas Effluent Monitors | | | | |
| i) Unit Vent Effluent Monitor | | | | |
| a) Low Range (VRS 2505) | (See Table 4.3-9, Item 3.a, 4a, 5a) | | | |
| b) Mid Range (VRS 2507) | S | R | N/A | 1, 2, 3, 4 |
| c) High Range (VRS 2509) | S* | R | N/A | 1, 2, 3, 4 |
| ii) Steam Generator PORV | | | | |
| a) MRA 2601 (Loop 1) | S* | R | M | 1, 2, 3, 4 |
| b) MRA 2602 (Loop 4) | S* | R | M | 1, 2, 3, 4 |
| c) MRA 2701 (Loop 2) | S* | R | M | 1, 2, 3, 4 |
| d) MRA 2702 (Loop 3) | S* | R | M | 1, 2, 3, 4 |

TABLE 4.3-3 (Cont'd)

RADIATION MONITORING INSTRUMENTATION SURVEILLANCE REQUIREMENTS

| Operation Mode/Instrument | CHANNEL CHECK | CHANNEL CALIBRATION | CHANNEL FUNCTIONAL TEST ' | MODES FOR WHICH SURVEILLANCE REQUIRED |
|---|---|---|---|---|
| iii) Gland Steam Condenser Vent Monitor | | | | |
| a) Low Range (SRA 2805) | ----------------(See Table 4.3-9 Item 6.a)-------------------- | | | |
| iv) Steam Jet Air Ejector Vent Monitor | | | | |
| a) Low Range (SRA 2905) | ---------------(See Table 4.3-9, Item 2.a)-------------------- | | | |
| b) Mid Range (SRA 2907) | S | R | M | 1, 2, 3, 4 |
| c) High Range (SRA 2909) | S* | R | N/A | 1, 2, 3, 4 |
| 2. Mode 6 | | | | |
| A) Train A | | | | 6 |
| i) Containment Area Radiation Channel (VRS 2101) | S* | R | M | |
| ii) Particulate Channel (ERS 2301) | S* | R | M | |
| iii) Noble Gas Channel (ERS 2305) | S* | R | M | |
| B) Train B | | | | 6 |
| i) Containment Area Radiation Channel (VRS 2201) | S* | R | M | |
| ii) Particulate Channel (ERS 2401) | S* | R | M | |

TABLE 4.3-3 (Cont'd)

RADIATION MONITORING INSTRUMENTATION SURVEILLANCE REQUIREMENTS

| Operation Mode/Instrument | CHANNEL CHECK | CHANNEL CALIBRATION | CHANNEL FUNCTIONAL TEST | MODES FOR WHICH SURVEILLANCE REQUIRED |
|---|---|---|---|---|
| iii) Noble Gas Channel (ERS 2405) | S* | R | M | 6 |
| 3. Mode** | | | | |
| A) Spent Fuel Storage (RRC-330) | S | R | M | ** |

* To include Source Check per T/S Section 1.27.

** With fuel in storage pool or building.

## 3/4.3.1 and 3/4.3.2 PROTECTIVE AND ENGINEERED SAFETY FEATURES (ESF) INSTRUMENTATION

The OPERABILITY of the protective and ESF instrumentation systems and interlocks ensure that 1) the associated ESF action and/or reactor trip will be initiated when the parameter monitored by each channel or combination thereof exceeds its setpoint, 2) the specified coincidence logic is maintained, 3) sufficient redundancy is maintained to permit a channel to be out of service for testing or maintenance, and 4) sufficient system functional capability is available for protective and ESF proposes from diverse parameters.

The OPERABILITY of these system is required to provide the overall reliability, redundance and diversity assumed available in the facility design for the protection and mitigation of accident and transient conditions. The integrated operation of each of these system is consistent with the assumptions used in the accident analyses.

Protection has been provided for main feedwater system malfunctions in MODES 3 and 4. This protection is required when main feedpumps are aligned to feed steam generators in MODES 3 and 4. The availability of feedwater isolation on high-high steam generator level terminates the addition of cold water to the steam generators in any main feedwater system malfunction. The total volume that can be added to the steam generators by the main feedwater system in MODES 3 and 4 is limited by this safeguards actuation and the fact that feedwater isolation on low $T_{avg}$ setpoint coincident with reactor trip can only be cleared above the low-low steam generator level trip setpoint.

The restrictions associated with bypassing ESF trip functions below either P-11 or P-12 provide protection against an increase in steam flow transient and are consistent with assumptions made in the safety analysis.

The surveillance requirements specified for these systems ensure that the overall system functional capability is maintained comparable to the original design standards. The periodic surveillance tests performed at the minimum frequencies are sufficient to demonstrate this capability.

The measurement of response time at the specified frequencies provides assurance that the protective and ESF action function associated with each channel is completed within the time limit assumed in the accident analyses. No credit was taken in the analyses for those channels with response times indicated as not applicable.

Response time may be demonstrated by any series of sequential, overlapping or total channel test measurements provided that such tests demonstrate the total channel response time as defined. Sensor response time verification may be demonstrated by either 1) in place, onsite or offsite test measurements or 2) utilizing replacement sensors with certified response times.

### 3/4.3.3 MONITORING INSTRUMENTATION

### 3/4.3.3.1 RADIATION MONITORING INSTRUMENTATION

Noble gas effluent monitors provide information, during and following an accident, which is considered helpful to the operator in assessing the plant condition. It is desired that these monitors be OPERABLE at all times during plant operation, but they are not required for safe shutdown of the plant.

In addition, a minimum of two in containment radiation-level monitors with a maximum range of $10^7$ R/hr for photon only should be OPERABLE at all times except for cold shutdown and refueling outages. In case of failure of the monitor, appropriate actions should be taken to restore its operational capability as soon as possible.



Radiation Monitoring Instrumentation (Continued)

Table 3.3-6 is based on the following Alarm/Trip Setpoints and Measurement Ranges for each instrument listed. For the unit vent noble gas monitors, it should be noted that there is an automatic switchover from the low/mid-range channels to the high-range channel when the upper limits of the low- and mid-range channel measurement ranges are reached. In this case there is no flow to the low- and mid-range channels from the unit vent sample line. This is considered to represent proper operation of the this monitor. Therefore, if automatic switchover to the high-range should occur, and the low- and mid-range detectors are capable of functioning when flow is re-established, the low- and mid-range channels should not be declared inoperable and the ACTION statement in the Technical Specification does not apply. This is also true while purging the low- and mid-range chambers following a large activity excursion prior to resumption of low-level monitoring and establishment of a new background.

| INSTRUMENT | ALARM/TRIP SETPOINT | MEASUREMENT RANGE* |
|---|---|---|
| 1) Area Monitor- Upper Containment (VRS 2101/2201) | The monitor trip setpoint is based on 10 CFR 20 limits. A homogeneous mixture of the containment atmosphere is assumed. The setpoint value is defined as the monitor reading when the purge is operating at the maximum flow rate. | $10^{-4}$ R/hr to 10R/hr. |

* This is the minimum required sensitivity of the instrument. Indicated values on these instruments above or below these minimum sensitivity ranges are acceptable and indicate existing conditions not instrument inoperability.

Radiation Monitoring Instrumentation (Continued)

| INSTRUMENT | ALARM/TRIP SETPOINT | MEASUREMENT RANGE* |
| --- | --- | --- |
| 2) Area Monitor-Containment High Range (VRA 2310/2410) | The monitor setpoint was selected to reflect the guidance provided in Generic Letter 83-37 for NUREG-0737 Technical Specifications | 1R/hr to 1 x $10^7$R/hr Photons. |
| 3) Process Monitor Particulate (ERS 2301/2401) | The monitor trip setpoint is based on 10 CFR 20 The setpoint was determined using the Noble gas setpoint and historical monitor data of the ratio of particulates to Noble gases. | 1.5 x $10^{-4}$ uCi to 7.5 uCi. |
| 4) Process Monitor Noble Gas (ERS 2305/2405) | The monitor trip setpoint is based on 10 CFR 20 limits. A homogeneous mixture of the containment atmosphere is assumed. The setpoint value is defined as the monitor reading when the purge is operating at the maximum flow rate. | 5.8 x $10^{-7}$ uCi/cc to 2.7 x $10^{-2}$ uCi/cc |
| 5) Steam Generator PORV (MRA 2601) (MRA 2602) (MRA 2701) (MRA 2702) | Not Applicable.** | 0.1uCi/cc to 1.0x$10^2$ uCi/cc. |
| 6) Noble Gas Unit Vent Monitors | | |
| a) Low Range (VRS 2505) | See Bases Section 3/4.3.3.10 | 5.8x$10^{-7}$uCi/cc to 2.7x$10^{-2}$uCi/cc. |

* This is the minimum sensitivity of the instrument for normal operation, to follow the course of an accident, and/or take protective actions. Values of the instrument above or below this minimum sensitivity range are acceptable.

** These monitors are used to provide data to assist in post-accident off-site dose assessment.

Radiation Monitoring Instrumentation (Continued)

| INSTRUMENT | ALARM/TRIP SETPOINT | MEASUREMENT RANGE* |
|---|---|---|
| b) Mid Range (VRS 2507) | Not Applicable** | $1.3\times10^{-3}$ uCi/cc to $7.5\times10^{2}$ uCi/cc. |
| c) High Range (VRS 2509) | Not Applicable** | $2.9\times10^{-2}$ uCi/cc to $1.6\times10^{4}$ uCi/cc. |
| 7) Gland Steam Condenser Vent Noble Gas Monitor | | |
| a) Low Range (SRA 2805) | See Bases Section 3/4.3.3.10 | $5.8\times10^{-7}$ uCi/cc to $2.7\times10^{-2}$ uCi/cc. |
| 8) Steam Jet Air Ejector Vent Noble Gas Monitor | | |
| a) Low Range (SRA 2905) | See Bases Section 3/4.3.3.10 | $5.8\times10^{-7}$ uCi/cc to $2.7\times10^{-2}$ uCi/cc. |
| b) Mid Range (SRA 2907) | Not applicable.** | $1.3\times10^{-3}$ uCi/cc to $7.5\times10^{2}$ uCi/cc. |
| c) High Range (SRA 2909) | Not Applicable.** | $2.9\times10^{-2}$ uCi/cc to $1.6\times10^{4}$ uCi/cc. |
| 9) Spent Fuel Storage (RRC-330) | The monitor setpoint is selected to alarm and trip consistent with 10 CFR 70.24(a) (2) | $1\times10^{-1}$ mR/hr to $1\times10^{4}$ mR/hr |

* This is minimum sensitivity of the instrument for normal operation, to follow the course of an accident, and/or take protective actions. Values of the instrument above or below this minimum sensitivity range are acceptable.

** These monitors are used to provide data to assist in post-accident off-site dose assessment.

The Radiation Monitoring Instrumentation Surveillance Requirements per Table 4.3-3 are based on the following interpretation:

1) The CHANNEL FUNCTIONAL TEST is successfully accomplished by the injection of a simulated signal into the channel, as close to the detector as practical, to verify the channel's alarm and/or trip function only.

2) The CHANNEL CALIBRATION as defined in T/S Section 1.9 permits the "known values" generated from radioactive calibration sources to be supplemented with "known values" represented by simulated signals for that subset of "known values" required for calibration and not practical to generate using the radioactive calibration sources.

3/4.3.3.2 MOVABLE INCORE DETECTORS

The OPERABILITY of the movable incore detectors with the specified minimum complement of equipment ensures that the measurements obtained from use of this system accurately represent the spatial neutron flux distribution of the reactor core.

3/4.3.3.3 SEISMIC INSTRUMENTATION

The OPERABILITY of the seismic instrumentation ensure that sufficient capability is available to promptly determine the magnitude of a seismic event and evaluate the response of those features important to safety. This capability is required to permit comparison of the measured response to that used in the design basis for the facility.

3/4.3.3.4 METEOROLOGICAL INSTRUMENTATION

The OPERABILITY of the meteorological instrumentation ensures that sufficient meteorological data is available for estimating potential radiation doses to the public as a result of routine or accidental release of radioactive materials to the atmosphere. This capability is required to evaluate the need for initiating protective measures to protect the health and safety of the public.

3/4.3.3.5 REMOTE SHUTDOWN INSTRUMENTATION

The OPERABILITY of the remote shutdown instrumentation ensures that sufficient capability is available to permit shutdown and maintenance of HOT STANDBY of the facility from locations outside of the control room. This capability is required in the event control room habitability is lost and is consistent with General Design Criteria 19 of 10 CFR 50.

3/4.3.3.5.1 APPENDIX R REMOTE SHUTDOWN INSTRUMENTATION

The OPERABILITY of the Appendix R remote shutdown instrumentation ensures that sufficient instrumentation is available to permit shutdown of the facility to COLD SHUTDOWN conditions at the local shutdown indication (LSI) panel. In the event of a fire, normal power to the LSI panels may be lost. As a result, capability to repower the LSI panels from Unit 1 has been provided. If the alternate power supply is not available, fire watches will be established in these fire areas where loss of normal power to the LSI power could occur in the event of fire. This will consist of either establishing continuous fire watches or verifying OPERABILITY of fire detectors per Specification 4.3.3.7 and establishing hourly fire watches. The details of how these fire watches are to be implemented are included in a plant procedure.

3/4.3.3.6 POST-ACCIDENT INSTRUMENTATION

The OPERABILITY of the post-accident instrumentation ensures that sufficient information is available on selected plant parameters to monitor and assess these variables during and following an accident.

3/4.3.3.7 AXIAL POWER DISTRIBUTION MONITORING SYSTEM (APDMS)

OPERABILITY of the APDMS ensures that sufficient capability is available for the measurement of the neutron flux spatial distribution within the reactor core. This capability is required to 1) monitor the core flux patterns that are representative of the peak core power density and 2) limit the core average axial power profile such that the total power peaking factor $F_Q$ is maintained within acceptable limits.

3/4.3.3.8 FIRE DETECTION INSTRUMENTATION

OPERABILITY of the fire detection instrumentation ensures that adequate warning capability is available for the prompt detection of fires. This capability is required in order to detect and locate fires in their early stages. Prompt detection of fires will reduce the potential for damage to safety-related equipment and is an integral element in the overall facility fire protection program.

In the event that a portion of the fire detection instrumentation is inoperable, the establishment of frequent fire patrols in the affected areas is required to provide detection capability until the inoperable instrumentation is restored to OPERABILITY. Use of containment temperature monitoring is allowed once per hour if containment fire detection is inoperable.

3/4.3.3.9 RADIOACTIVE LIQUID EFFLUENT INSTRUMENTATION

The radioactive liquid effluent instrumentation is provide to monitor and control, as applicable, the release of radioactive material in liquid effluents during actual or potential releases. The alarm/trip setpoints for these instruments shall be calculated in accordance with NRC approval methods in the ODCM to ensure that the alarm/trip will occur prior to exceeding the limits of 10 CFR Part 20. The OPERABILITY and use of this instrumentation is consistent with the requirements of General Design Criteria specified in Section 11.3 of the Final Safety Analysis Report for the Donald C. Cook Nuclear Plant.

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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 134 TO FACILITY OPERATING LICENSE NO. DPR-58

AND AMENDMENT NO. 119 TO FACILITY OPERATING LICENSE NO. DPR-74

INDIANA MICHIGAN POWER COMPANY

DONALD C. COOK NUCLEAR PLANT, UNIT NOS. 1 AND 2

DOCKET NOS. 50-315 AND 50-316

## 1.0 INTRODUCTION

By letter dated July 31, 1987, (supplemented October 26, 1987) the Indiana Michigan Power Company (IMPC or licensee) requested amendments to the Technical Specifications (TS) appended to Facility Operating License Nos. DPR-58 and DPR-74 for the Donald C. Cook Nuclear Plant, Unit Nos. 1 and 2. The proposed amendments would incorporate TS associated with the radiation monitoring requirements set forth in NUREG-0737 and clarified in Generic Letter (GL) 83-37.

Although the proposed TS were written in accordance with Generic Letter 83-37, there are differences between the proposed TS and GL 83-37, in part, because of unique plant design features at D. C. Cook. In the July 31, 1987, letter IMPC requested NRC approval of previously submitted requests for exemption from certain NUREG-0737 requirements. This letter also requested NRC concurrence with IMPC's position on compliance with specific NUREG-0737 items. This safety evaluation focuses on the concurrences and exemptions requested by IMPC.

## 2.0 EVALUATION

### 2.1 Post-Accident Sampling (Item II.B.3)

On June 27, 1986, IMPC submitted a letter that provided a detailed description of the Post Accident Sampling System at Cook and requested exemptions from certain requirements of NUREG-0737, Item II.B.3. The exemptions are discussed below.

Analysis of diluted grab samples of containment atmosphere for determination of hydrogen concentration is not within the measurement capability of the laboratory gas chromatograph (GC). The PASS system at Cook provides the capability to obtain and analyze hydrogen concentration in undiluted containment using an in-line GC.

In-line monitoring of primary coolant for pH and dissolved oxygen and hydrogen is utilized in lieu of grab sample analysis.

Heat-tracing of containment air sample lines to prevent plate-out of iodine is unnecessary since iodine and non-volatile fission products in the reactor coolant and containment sump (i.e., liquid samples) are analyzed by PASS for assessment of core damage.

On November 4, 1986, the staff issued a safety evaluation to IMPC which concluded that the PASS at D. C. Cook, with the three above modifications, meets the criteria of Item II.B.3 in NUREG-0737 and is acceptable. The staff's approval was acknowledged in IMPC's July 31, 1987 submittal.

Generic Letter 83-37 states that an administrative program should be established, implemented, and maintained by the licensee to ensure that their plant has the capability to obtain and analyze reactor coolant and containment atmosphere samples under accident conditions.

IMPC's July 31, 1987, submittal proposed changes to Section 6.8.4 for both Units 1 and 2 that would reference the program for post accident sampling at D. C. Cook. This change is consistent with Generic Letter 83-37 guidance and is acceptable to the staff.

### 2.2 Noble Gas Effluent Monitors (Item II.F.1-1)

In their July 31, 1987, amendment application, IMPC proposed revising TS Tables 3.3-6 and 4.3-3 for both Units 1 and 2 that incorporate extended range noble gas effluent channels. The proposed changes were predicated on staff approval of the previously submitted exemption and concurrence requests. The staff has determined that the proposed changes to TS related to noble gas monitoring are consistent with the guidance of Generic Letter 83-37 and are acceptable. The staff's assessment of the exemption and concurrence requests related to noble gas monitoring is summarized in the following subsections.

#### 2.2.1 Exemption on NG Monitor Range for GSL Exhaust

In a June 23, 1986, letter IMPC requested an exemption from the Section II.F.1-1 requirement for a design range of 1 E+5 μCi/cc for noble gas monitoring of the gland seal leak off (GSL) exhaust. IMPC intends to rely on a low-range noble gas detector with a maximum range of 5.8 E-7 to 2.7 E-2 μCi/cc to monitor the GSL pathway.

In the analysis supporting the June 23, 1986, letter IMPC calculated the maximum concentration of noble gas at the GSL exhaust to be 5.48 E-3 μCi/cc. The analysis was for a steam generator tube rupture with 1% of the gap inventory released into the coolant. The SGTR represents the most limiting design basis event for radionuclide transport to the secondary system.

Assumptions used in determining the noble gas concentration at the GSL were consistent with the FSAR (e.g., one percent of the fuel rods defective).

Because FSAR assumptions are conservative, the actual concentration of noble gases at the GSL would likely be well below IMPC's calculated maximum concentration of 5.48 E-3 μCi/cc and well within the 2.7 E-2 μCi/cc upper limit on the GSL exhaust noble gas monitor. Additionally, steam to the turbine bypass header, which supplies the turbine gland seal should be isolated from the faulted generator within 30 minutes of a SGTR event. Thus, the GSL exhaust does not represent a long term effluent pathway. IMPC also has provisions for estimating the release rate of effluent through the GSL exhaust pathway as discussed in Subsection 2.2.6. Based on the previously discussed considerations, the staff has determined that the deviation on the GSL noble gas monitor upper range is acceptable.

### 2.2.2 Concurrence on the use of the Eberline SPING

In order to comply with NUREG-0737 requirements for noble gas effluent monitoring, IMPC installed a Eberline SPING monitoring system. However, IE Information Notice 86-30, dated April 29, 1986, stated that SPING would be inappropriate for this purpose since "...its associated microcomputer is vulnerable to radiation damage from a total integrated dose greater than 1000 rads." The results of IMPC's analysis showed that the noble gas monitors at D. C. Cook would not be expected to receive more than 1000 rads of integrated dose during the course of an accident. In their July 31, 1987, submittal IMPC requested NRC concurrence in using the SPING system for post-accident noble gas monitoring.

IMPC has provided the necessary information, including an internal calculation via letter dated October 5, 1989, showing that the radiation monitor could survive in a post accident environment. This calculation showed that the monitor will not receive a total integrated dose greater than 1000 rads. It was the intent of the information notice, to alert licensees to design limitations noted in the use of Eberline SPING-4. The staff concurs with the use of the SPING system for noble gas monitoring at D. C. Cook.

### 2.2.3 Xenon-133 Equivalent Correction Curves

The noble gas monitoring system at D. C. Cook does not have the capability to correct automatically for the changing gas mixture prior to its reading out (displaying) or recording. Instead, the Xe-133 equivalent correction curve is included in the Offsite Dose Assessment Program (DAP) and is implemented through written procedures. In a July 23, 1986, submittal and later in a July 31, 1987, submittal, IMPC requested an exemption from the requirements stated in Table II.F.1-1 of NUREG-0737: "DISPLAY - Continuous and recording as equivalent Xe-133 concentrations or μCi/cc of actual noble gases."

IMPC has provided documents to justify this proposed deviation. Explicit information showing how the data provided by the readout can be directly translated into doses from airborne gamma emitting radionuclides at off-site locations was demonstrated during a November 6, 1989, visit to the site. In addition, appropriate correction factors have been incorporated into IMPC's Dose Assessment Program (DAP). Therefore, the staff finds the deviation acceptable.

2.2.4 Unit Vent/SJAE NG Monitor Upper Range

In a letter dated June 23, 1986, IMPC submitted a justification for an upper range of 1 E+4 μCi/cc for the unit vent and steam jet air ejector (SJAE) noble gas monitors. This justification and a request for NRC concurrence with this upper range for these two pathways was reiterated in the July 31, 1987, submittal.

IMPC's justification for the upper range on the unit vent was based on the fact that the containment exhaust pathway is through the unit vent, which is always diluted by the auxiliary building exhaust air.

The justification for the upper range on the SJAE was based on IMPC's analysis that showed that the concentration in the SJAE exhaust would not exceed 2 E+3 μCi/cc. Following a SGTR, the SJAE effluent path would be isolated from the faulted SG after steam generator stop valve closure as discussed in Subsection 2.2.1. In addition, IMPC has provisions for estimating the release rate of effluent through the SJAE and unit vent exhaust pathways as discussed in Subsection 2.2.6.

The staff finds the above deviations acceptable. The upper range on the unit vent noble gas monitors meets the intent of NUREG-0737, Table II.F.1-1, which provides for a design basis maximum range of 1 E+4 μCi/cc for diluted exhaust gases from containment. The upper range for the SJAE is also acceptable based on the analysis indicating that the noble gas concentration from the steam jet air ejector would be less than 1 E+4 μCi/cc. If existing radiation monitors were to malfunction or go off scale, the licensee would still have the capability to estimate the release rate through these pathways.

2.2.5 PORV NG Monitor Upper Range

In a letter dated September 8, 1986, IMPC requested an exemption from the NUREG-0737 upper limit range requirement for noble gases monitoring of main steam power operated relief valves (PORVs). This exemption was again requested in IMPC's July 31, 1987, submittal. This request was based on IMPC's analysis which showed that for a steam generator tube rupture (SGTR) the maximum radionuclide concentration would be 0.263 μCi/cc Xe-133 equivalent. On this basis, IMPC requested an upper limit of 1 E+2 μCi/cc Xe-133 equivalent rather than the NUREG-0737 upper limit of 1 E+3 μCi/cc Xe-133 equivalent.

As explained in IMPC's September 8 submittal, the PORV noble gas monitor geometry results in a high degree of attenuation of low energy gamma rays. The monitor is calibrated to account for the low energy gamma rays, but the calibration constant limits the range capability of the monitor. Studies of mock-ups of the SG PORVs by IMPC's consultant indicate that the count rate remains linear up to about 2 E+5 cpm, which corresponds to effluent concentration of about 1.6 E+2 μCi/cc Xe-133 equivalent. Thus, the upper limit requested by IMPC is consistent with the upper range of linear response for the detector.

As discussed in Subsection 2.2.1, IMPC's analysis of the maximum release rate associated with a SGTR is consistent with FSAR assumptions. SGTR represents the most limiting design basis event for radionuclide transport to the secondary system. Because FSAR assumptions are conservative, the actual concentration of noble gases released via the steam generator PORV pathway would likely be well below IMPC's calculated maximum concentration of 2.63 E-1 μCi/cc and well within the 1 E+2 μCi/cc upper limit on the main steam effluent released from the steam generator PORV. Furthermore, IMPC has provisions for obtaining a secondary system grab sample as a back-up means of determining the concentration of noble gas effluent released via the SG PORV. Additional methods for determining release levels from the main steam system in the event that the PORV noble gas monitor is unavailable or off scale are also available as discussed in Subsection 2.2.6.

Based on the above, the staff has determined that the deviation on the main steam effluent noble gas monitor upper range is acceptable.

### 2.2.6 Location of SG PORV Monitor

The acceptable location for externally mounted monitors specified by NUREG-0737, Item II.F.1, Attachment 1, Clarification (3), "Noble Gas Effluent Monitor," is on the main steam line upstream of the safety valves/PORV pathway. The post-accident noble gas effluent monitoring system at D. C. Cook deviates from this specification in that the monitors are located on the PORV discharge vent to atmosphere. A justification of this deviation was requested by the staff on December 19, 1985. In a letter dated May 20, 1986, IMPC justified the deviation and applied to the NRC staff to obtain approval of this deviation.

On October 18, 1988, IMPC met with the NRC staff to further justify their deviation from NUREG-0737. At the conclusion of the meeting, the staff recommended that IMPC perform a reliability study on the SG PORVs to show that they would be highly likely to function upon demand. IMPC provided the result of this study in a letter dated February 7, 1989.

On November 6, 1989, an NRR representative visited the D. C. Cook site to examine the location of the monitors on the PORV discharge vent. There are five safety valve discharge lines on each of the four main steam lines for each unit. The area is extremely congested, and the temperature on the outside of the steam lines exceeds the monitors' operational temperature limit of 180 degrees F. The space available on the main steam line is insufficient to mount the noble gas monitors directly on this line. There does not appear to be any practical alternative location for these monitors in order to allow for monitoring the safety relief valves except by providing individual monitors for each of the 40 valve-to-atmosphere stacks.

IMPC has procedures to monitor a radiation release from the main steam line in the event that the SG PORV monitor is bypassed during a SGTR event. Operators would be aware of SG PORV noble gas monitor bypass from indications in the control room. PORV status can be determined from the SG PORV hand auto station (valve open or closed indication based on limit switch) or from an indicator that shows valve position (percent open). Although the SG PORV block valve is a manual isolation valve, operators would know this valve was closed because procedures require a tag to be hung in the control room.

The Cook plant has in place an emergency plan procedure that contains diverse methods for determining release levels from the main steam system in the event that the PORV vent path is unavailable. IMPC stepped through these procedures during the November 6, 1989, meeting.

The procedure, entitled "Alternate Release Level Determinations" (PMP 2081 EPP.107), would be used if the radiation data display system (includes all CRT's, and local indications at the SPINGs) is inoperable or if a radiation monitor is off scale or bypassed. Four major effluent paths are considered in the procedure: the gland seal leak off, the SJAE exhaust, the unit vent, and main steam (SG safeties/PORV). The method of estimating a release rate involves sending out radiation monitoring teams to predesignated locations to obtain dose rate measurements or grab samples. Release rate is then determined by multiplying the dose rate (R/hr) or grab sample results (μCi/cc) by the appropriate correction factors.

EPP.107 also includes a method to estimate release rate if sampling and monitoring data is unavailable or cannot be obtained in time to support a dose assessment. This method involves the use of a logic diagram that utilizes information on plant conditions, when it is available, and utilizes conservative default values when information on plant conditions is unavailable.

Based on previous discussion, the staff finds IMPC's deviation from NUREG-0737 on the location of the SG PORV noble gas monitor to be acceptable.

## 2.3 Sampling and Analysis of Plant Effluent (Item II.F.1-2)

### 2.3.1 Iodine/Particulate Sampling Capability for the SJAE and GSL Exhaust

In their June 23, 1986, submittal IMPC requested exemptions from NUREG-0737 requirements on the following items related to iodine/particulate capability for the SJAE and GSL exhaust.

1. Iodine/particulate source term requirement in Section II.F.1-2 for the SJAE and GSL exhaust systems.

2. Iodine and particulate grab and continuous sampling capability for the SJAE and GSL exhaust pathways as required in Section II.F.1-2.

This exemption was again requested in IMPC's July 31, 1987, submittal.

For a SGTR (the most limiting design basis event for GSL and SJAE exhaust activity), IMPC calculated a maximum iodine concentration of 1.5 E-6 at the SJAE exhaust and 1.0 E-8 at the GSL exhaust. IMPC's calculations further indicated that no particulates would be released through the GSL or SJAE pathways. For this analysis, a number of highly conservative assumptions were made.

a. The break occurred high up on the steam generator tube bundles.

b. No credit was taken for the transfer of radionuclides to the steam generator water. All radionuclides (including particulates and iodine) assumed to enter the main steam system.

c. Iodine spike of 500 times normal coolant concentration.

d. The primary to secondary leak rate remained constant.

e. No deposition of iodine on any surface.

f. One percent of the fuel was assumed to have cladding defects (see Subsection 2.2.1).

Thus, taking into account the previously listed conservative assumptions, the actual concentrations of iodine and particulates at the GSL and SJAE exhausts during a SGTR event would be considerably lower than the maximum concentrations calculated by IMPC.

In lieu of taking grab samples and having a continuous sampling system, IMPC proposes to estimate the iodine concentration at the GSL and SJAE exhaust by applying a predetermined iodine to noble gas ratio correction factor to the noble gas readings at these locations.

Based on the above, the staff has determined that the exemption requested on iodine/particulate grab and continuous sampling is acceptable.

2.3.2 Filter Change Out

In a July 23, 1986, submittal IMPC requested NRC concurrence with their interpretation of NUREG-0737 with respect to continuous sampling of iodine/particulate for unit vent effluent. Although IMPC has a system that is capable of continuous sampling, a brief sampling interruption (i.e., 2-3 minutes) may be required in order to change out iodine and particulate filters.

Interruption of continuous sampling to change filters is acceptable. NUREG-0737, Table II.F.1-2, "Design Basis Shielding Envelope," allows personnel to perform these duties. Monitors should be designed to allow personnel to remove, replace, and transport sampling media without exceeding the General Design Criterion 19 of five rem to the whole body and 75 rem to the extremities. IMPC meets the intent of this NUREG-0737 requirement.

2.3.3 Sampling Time

NUREG-0737 Section II.F.1-2 requires a 30-minute sampling time for obtaining an iodine/particulate grab sample of effluent releases. In their July 23, 1986, letter IMPC requested an exemption from the requirement for a 30-minute sampling time, in part, because of ALARA concerns.

The 30-minute sampling time is part of the design basis envelope for shielding, handling, and analytical purposes and is used to develop a source term by assuming 30 minutes of integrated sampling time at sampler design flow, an average concentration of 1E+2 μCi/cc of radionuclides in gaseous or vapor form, an average concentration of 1E+2 of particulate radioiodines, and an average gamma photon energy of 0.5 MeV per disintegration. It is not a requirement to sample for 30 minutes, but establishes the need to provide sufficient shielding to allow the operator to do so if the circumstances so requires. Therefore, no deviation is necessary.

## 2.4 Containment High Range Radiation Monitor (Item II.F.1-3)

In a letter dated July 31, 1987, IMPC requested changes to the D. C. Cook Units 1 and 2 Technical Specifications related to requirements set forth in NUREG-0737. IMPC submitted additional information in their October 26, 1987, response to staff questions. IMPC's submittal addresses the requirements of NUREG-0737, Item II.F.1-3 "Containment High-Range Radiation Monitor," clarified in Generic Letter 83-37.

The TS changes are in accordance with the guidance and intent of NUREG-0737, Item II.F.1-3, which requires that containment high-range radiation monitors be installed with a maximum range of 10 E+8 rad/hr (total radiation) or 10 E+7 R/hr (photon radiation only). IMPC has installed two high range containment radiation monitors in each unit. One monitor is installed in the lower containment volume and the other in the upper containment volume. These monitors are physically separated to monitor widely separated spaces within containment, as addressed in NUREG-0737, II.F.1, Attachment 3.

The staff concludes that IMPC has adequately addressed the criteria of Item II.F.1-3 of NUREG-0737 and finds the containment high-range area radiation monitors as presently installed at the D. C. Cook Plant meet the redundancy requirements of NUREG-0737 with regard to monitor location (i.e., one monitor in the lower containment volume and the other in the upper containment volume) and the specification of Table II.F.1-3 of NUREG-0737 and are acceptable.

## 3.0 ENVIRONMENTAL CONSIDERATION

These amendments involve a change in a requirement with respect to the installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20 and a change in a surveillance requirement. We have 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 has previously issued a proposed finding that these amendments involve no significant hazards consideration and there has been no public comment on such finding. Accordingly, these amendments meet 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 amendment.

## 4.0 CONCLUSION

We have 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.

Date: April 6, 1990

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