September 28, 199

Mr. E. E. Fitzpatrick, Vice President
Indiana Michigan Power Company
c/o American Electric Power Service Corporation
1 Riverside Plaza
Columbus, OH 43215

Dear Mr. Fitzpatrick:

SUBJECT: DONALD C. COOK NUCLEAR PLANT, UNIT NOS. 1 AND 2 - ISSUANCE OF AMENDMENT RE: LINE-ITEM TECHNICAL SPECIFICATIONS IMPROVEMENTS TO REDUCE SURVEILLANCE REQUIREMENTS FOR TESTING DURING POWER OPERATION, GENERIC LETTER 93-05 (TAC NOS. M88890 AND M88891)

The Commission has issued the enclosed Amendment No. 183 to Facility Operating License No. DPR-58 and Amendment No. 168 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 February 22, 1994.

The amendments revise the TS to reduce surveillance requirements for testing during power operation in the areas of control rod movement testing, radiation monitors, containment spray system, hydrogen recombiners, emergency diesel generators, special test exceptions - shutdown margin, and radioactive effluents - waste gas storage tanks.

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

John B. Hickman, Project Manager
Project Directorate III-1
Division of Reactor Projects - III/IV
Office of Nuclear Reactor Regulation

Docket Nos. 50-315 and 50-316

Enclosures: 1. Amendment No. 183 to DPR-58
2. Amendment No. 168 to DPR-74
3. Safety Evaluation

cc w/encls: See next page

OFFICE	LA:PD31	PM:PD31	LPM:PD3-2	OGC	D:PD31
NAME	LLessler	JHickman:gll	TBergman	RBachmann	LBMarsh
DATE	09/7/94	09/7/94	09/7/94	09/15/94	09/27/94

OFFICIAL RECORD COPY FILENAME: G:\WPDOCS\DCCOOK\DC88890.AMD

DF01

cc:

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DATED: September 28, 1994

AMENDMENT NO. 183 TO FACILITY OPERATING LICENSE NO. DPR-58-D. C. COOK
AMENDMENT NO. 168 TO FACILITY OPERATING LICENSE NO. DPR-74-D. C. COOK

Docket File
NRC & Local PDRs
PDIII-1 Reading
J. Roe
E. Adensam
J. Zwolinski
L. Lessler
L. B. Marsh
J. Hickman (2)
OGC-WF
D. Hagan
G. Hill (4)
C. Grimes, O-11F23
T. Dunning, O-14D1
ACRS (10)
OPA
OC/LFDCB
W. Kropp, RIII
SEDB

cc: Plant Service list

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

INDIANA MICHIGAN POWER COMPANY

DOCKET NO. 50-315

DONALD C. COOK NUCLEAR PLANT, UNIT NO. 1

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 183
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 February 22, 1994, 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. 183 , 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 issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

L B Marsh

Ledyard B. Marsh, Director
Project Directorate III-1
Division of Reactor Projects - III/IV
Office of Nuclear Reactor Regulation

Attachment:
Changes to the Technical
Specifications

Date of Issuance: September 28, 1994

ATTACHMENT TO LICENSE AMENDMENT NO. 183

TO 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 vertical lines indicating the area of change.

REMOVE	INSERT
3/4 1-19	3/4 1-19
3/4 3-32	3/4 3-32
3/4 3-38	3/4 3-38
3/4 3-38a	3/4 3-38a
3/4 3-38b	3/4 3-38b
3/4 6-10	3/4 6-10
3/4 6-24	3/4 6-24
3/4 8-1	3/4 8-1
3/4 8-2	3/4 8-2
3/4 8-6	3/4 8-6
3/4 10-1	3/4 10-1
3/4 11-14	3/4 11-14

LIMITING CONDITION FOR OPERATION (Continued)

c) A power distribution map is obtained from the movable incore detectors and $F_Q(Z)$ and $F^N_{\Delta H}$ are verified to be within their limits within 72 hours, and

d) Either the THERMAL POWER level is reduced to less than or equal to 75% of RATED THERMAL POWER within one hour and within the next 4 hours the high neutron flux trip setpoint is reduced to less than or equal to 85% of RATED THERMAL POWER, or

e) The remainder of the rods in the group with the inoperable rod are aligned to within ± 12 steps of the inoperable rod within one hour while maintaining the rod sequence and insertion limits as specified in the COLR; the THERMAL POWER level shall be restricted pursuant to Specification 3.1.3.5 during subsequent operation.

SURVEILLANCE REQUIREMENTS

4.1.3.1.1 The position of each full length rod shall be determined to be within the group demand limit by verifying the individual rod positions at least once per 12 hours except during time intervals when the Rod Position Deviation Monitor is inoperable, then verify the group positions at least once per 4 hours.

4.1.3.1.2 Each full length rod not fully inserted shall be determined to be OPERABLE by movement of at least 8 steps in any one direction at least once per 92 days.

TABLE 4.3-2 (Continued)

ENGINEERED SAFETY FEATURED ACTUATION SYSTEM INSTRUMENTATION
SURVEILLANCE REQUIREMENTS

FUNCTIONAL UNIT	CHANNEL CHECK	CHANNEL CALIBRATION	CHANNEL FUNCTIONAL TEST	TRIP ACTUATING DEVICE OPERATIONAL TEST	MODES IN WHICH SURVEILLANCE REQUIRED
3. CONTAINMENT ISOLATION					
a. Phase "A" Isolation					
1) Manual----------	See Functional Unit 9 ----------				
2) From Safety Injection Automatic Actuation Logic	N.A.	N.A.	M(2)	N.A.	1,2,3,4
b. Phase "B" Isolation					
1) Manual ----------	See Functional Unit 9 ----------				
2) Automatic Actuation Logic	N.A.	N.A.	M(2)	N.A.	1,2,3,4
3) Containment Pressure-High-High	S	R	M(3)	N.A.	1,2,3
c. Purge and Exhaust Isolation					
1) Manual----------	See Functional Unit 9 ----------				
2) Containment Radioactivity-High	S	R	Q	N.A.	1,2,3,4

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	Q	1, 2, 3, 4
ii) Containment - High Range (VRS 1310/1410)	S	R	Q	1, 2, 3, 4
B) Process Monitors				
i) Particulate Channel (ERS 1301/1401)	S*	R	Q	1, 2, 3, 4
C) Noble Gas Effluent Monitors				
i) Unit Vent Effluent Monitors	--------(see Table 4.3-9, Item 3.a, 4.a, 5.a)--------			
a) Low Range (VRS 1505)	S	R	N/A	1, 2, 3, 4
b) Mid Range (VRS 1507)	S*	R	N/A	1, 2, 3, 4
c) High Range (VRS 1509)				
ii) Steam Generator PORV				
a) MRA 1601 (Loop 1)	S*	R	Q	1, 2, 3, 4
b) MRA 1602 (Loop 4)	S*	R	Q	1, 2, 3, 4
c) MRA 1701 (Loop 2)	S*	R	Q	1, 2, 3, 4
d) MRA 1702 (Loop 3)	S*	R	Q	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	Q	1, 2, 3, 4
c) High Range (SRA 1909)	S*	R	N/A	1, 2, 3, 4
2. MODE 6				6
A) Train A				
i) Containment Area Radiation Channel (VRS 1101)	S*	R	Q	
ii) Particulate Channel (ERS 1301)	S*	R	Q	
iii) Noble Gas Channel (ERS 1305)	S*	R	Q	
				6
B) Train B				
i) Containment Area Radiation Channel (VRS 1201)	S*	R	Q	
ii) Particulate Channel (ERS 1401)	S*	R	Q	

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	Q	6
3. MODE**				
A) Spent Fuel Storage (RRC-330)	S	R	Q	**

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

3/4.6.2 DEPRESSURIZATION AND COOLING SYSTEMS

CONTAINMENT SPRAY SYSTEM

LIMITING CONDITION FOR OPERATION

3.6.2.1 Two independent containment spray systems shall be OPERABLE with each spray system capable of taking suction from the RWST and transferring suction to the containment sump.

APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION:

With one containment spray system inoperable, restore the inoperable spray system to OPERABLE status within 72 hours or be in at least HOT STANDBY within the next 6 hours; restore the inoperable spray system to OPERABLE status within the next 48 hours or be in COLD SHUTDOWN within the following 30 hours.

SURVEILLANCE REQUIREMENTS

4.6.2.1 Each containment spray system shall be demonstrated OPERABLE:

a. At least once per 31 days by verifying that each valve (manual, power operated or automatic) in the flow path that is not locked, sealed, or otherwise secured in position, is in its correct position.

b. By verifying, that on recirculation flow, each pump develops a discharge pressure of greater than or equal to 255 psig at a flow of greater than or equal to 700 gpm, when tested pursuant to Specification 4.0.5.

c. At least once per 18 months during shutdown, by:

   1. Verifying that each automatic valve in the flow path actuates to its correct position on a Containment Pressure -- High-High test signal.

   2. Verifying that each spray pump starts automatically on a Containment Pressure -- High-High test signal.

d. At least once per 10 years by performing an air or smoke flow test through each spray header and verifying each spray nozzle is unobstructed.

ELECTRIC HYDROGEN RECOMBINERS - W

LIMITING CONDITION FOR OPERATION

3.6.4.2 Two independent containment hydrogen recombiner systems shall be OPERABLE.

APPLICABILITY: MODES 1 and 2.

ACTION:

With one hydrogen recombiner system inoperable, restore the inoperable system to OPERABLE status within 30 days or be in at least HOT STANDBY within the next 6 hours.

SURVEILLANCE REQUIREMENTS

4.6.4.2 Each hydrogen recombiner system shall be demonstrated OPERABLE:

a. At least once per 18 months by verifying during a recombiner system functional test that the minimum heater sheath temperature increases to $\geq 700^{\circ}F$ within 90 minutes and is maintained for at least 2 hours.

b. At least once per 18 months by:

1. Performing a CHANNEL CALIBRATION of all recombiner instrumentation and control circuits.

2. Verifying through a visual examination that there is no evidence of abnormal conditions within the recombiners (i.e., loose wiring or structural connections, deposits of foreign materials, etc.)

3/4.8 ELECTRICAL POWER SYSTEMS

3/4.8.1 A.C. SOURCES

OPERATING

LIMITING CONDITION FOR OPERATION

3.8.1.1 As a minimum, the following A.C. electrical power sources shall be OPERABLE:

a. Two physically independent circuits between the offsite transmission network and the onsite Class 1E distribution system, and

b. Two separate and independent diesel generators, each with:

1. A separate day fuel tank containing a minimum of 70 gallons of fuel,

2. A separate fuel storage system* containing a minimum indicated volume of 46,000 gallons of fuel, and

3. A separate fuel transfer pump.

APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION:

a. With an offsite circuit of the above required A.C. electrical power sources inoperable, demonstrate the OPERABILITY of the remaining A.C. offsite source by performing Surveillance Requirement 4.8.1.1.1.a within 1 hour and at least once per 8 hours thereafter; restore at least two offsite circuits and two diesel generators to OPERABLE status within 72 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

b. With a diesel generator of the above required A.C. electrical power sources inoperable, demonstrate the OPERABILITY of the A.C. offsite sources by performing Surveillance Requirement 4.8.1.1.1.a within 1 hour and at least once per 8 hours thereafter; and if the diesel generator became inoperable due to any cause other than an inoperable support system, an independently testable component, or preplanned preventive maintenance or testing, demonstrate the OPERABILITY of the remaining OPERABLE diesel generator by performing Surveillance Requirement 4.8.1.1.2.a.4 within 8 hours, unless the absence of any potential common mode failure for the remaining diesel generator is demonstrated; restore diesel generators to OPERABLE status within 72 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours. At the number of failures for the inoperable diesel indicated in Table 4.8-1 perform the Additional Reliability Actions prescribed in Table 4.8-1.

*Tanks are separate between diesels but shared between Units 1 and 2.

ACTION (Continued)

c. With one offsite circuit and one diesel generator of the above required A.C. electrical power sources inoperable, demonstrate the OPERABILITY of the remaining A.C. offsite source by performing Surveillance Requirement 4.8.1.1.1.a within 1 hour and at least once per 8 hours thereafter and if the diesel generator became inoperable due to any cause other than an inoperable support system, an independently testable component, or preplanned preventive maintenance or testing, demonstrate the OPERABILITY of the remaining OPERABLE diesel generator by performing Surveillance Requirement 4.8.1.1.2.a.4 within 8 hours, unless the absence of any potential common mode failure for the remaining diesel generator is demonstrated; restore at least one of the inoperable sources to OPERABLE status within 12 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours. With the diesel generator restored to OPERABLE status, follow ACTION Statement a.* With the offsite circuit restored to OPERABLE status, follow ACTION Statement b.*

d. With two of the above required offsite A.C. circuits inoperable, restore at least one of the inoperable offsite sources to OPERABLE status within 24 hours or be in at least HOT STANDBY within the next 6 hours. With only one offsite source restored, follow ACTION Statement a.*

e. With two of the above required diesel generators inoperable, demonstrate the OPERABILITY of two offsite A.C. circuits by performing Surveillance Requirement 4.8.1.1.1.a within 1 hour and at least once per 8 hours thereafter; restore at least one of the inoperable diesel generators to OPERABLE status within 2 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours. With one diesel generator unit restored, follow ACTION Statement b* or c*.

* The ACTION statement time shall be based upon the time associated with the component inoperability, and is not reset when exiting this ACTION statement.

SURVEILLANCE REQUIREMENTS

4.8.1.1.1 Each of the above required independent circuits between the offsite transmission network and the onsite Class 1E distribution system shall be:

a. Determined OPERABLE at least once per 7 days by verifying correct breaker alignments and indicated power availability, and

b. Demonstrated OPERABLE at least once per 18 months by transferring the unit power source automatically from the normal auxiliary source to the preferred reserve source and by transferring manually to the alternate reserve source.

SURVEILLANCE REQUIREMENTS (Continued)

c) Verifying that all automatic diesel generator trips, except engine overspeed and generator differential, are automatically bypassed upon loss of voltage on the emergency bus and/or Safety Injection actuation signal.

7. Verifying that the diesel generator operates for at least 24 hours. During this test the diesel generator shall be loaded to 3500 kw. Within 5 minutes after completing this 24-hour test, perform Surveillance Requirement 4.8.1.1.2.a.4 (at existing conditions).*

8. Determine that the auto-connected loads to each diesel generator do not exceed 3500 kw.

9. Verifying the diesel generator's capability to:

a) Synchronize with the offsite power source while the generator is loaded with its emergency loads upon a simulated restoration of offsite power.

b) Transfer its loads to the offsite power source, and

c) Be restored to its standby status.

10. Verifying that with the diesel generator operating in a test mode while connected to its test load, a simulated Safety Injection signal overrides the test mode by:

a) Returning the diesel generator to standby operation, and

b) Verifying the emergency loads are serviced by offsite power.

11. Verifying that the automatic sequence timing relays are OPERABLE with each load sequence time within plus or minus 5% of its required value and that each load is sequenced on within the design allowable time limit.

f. At least once per 10 years by:

1) Employing one of the following cleaning methods to clean the fuel oil storage tanks:

a) Drain each fuel oil storage tank, remove the accumulated sediment, and clean the tank, or

* If Surveillance Requirement 4.8.1.1.2.a.4 is not satisfactorily completed, it is not necessary to repeat the preceding 24 hour test. Instead, the diesel generator may be operated at 3500 kw for 2 hours or until operating temperature has stabilized.

3/4.10 SPECIAL TEST EXCEPTIONS

SHUTDOWN MARGIN

LIMITING CONDITION FOR OPERATION

3.10.1 The SHUTDOWN MARGIN requirement of Specification 3.1.1.1 may be suspended for measurement of control rod worth and shutdown margin provided the reactivity equivalent to at least the highest estimated control rod worth is available for trip insertion from OPERABLE control rod(s).

APPLICABILITY: MODE 2.

ACTION:

a. With the reactor critical ($K_{eff} \geq 1.0$) and with less than the above reactivity equivalent available for trip insertion, immediately initiate and continue boration at $\geq$ 10 gpm of 20,000 ppm boric acid solution or its equivalent until the SHUTDOWN MARGIN required by Specification 3.1.1.1 is restored.

b. With the reactor subcritical ($K_{eff} < 1.0$) by less than the above reactivity equivalent, immediately initiate and continue boration at $\geq$ 10 gpm of 20,000 ppm boric acid solution or its equivalent until the SHUTDOWN MARGIN required by Specification 3.1.1.1 is restored.

SURVEILLANCE REQUIREMENTS

4.10.1.1 The position of each full length rod either partially or fully withdrawn shall be determined at least once per 2 hours.

4.10.1.2 Each full length rod not fully inserted shall be demonstrated OPERABLE by verifying its rod drop time to be $\leq$ 2.4 seconds within 7 days prior to reducing the SHUTDOWN MARGIN to less than the limits of Specification 3.1.1.1.

RADIOACTIVE EFFLUENTS

GAS STORAGE TANKS

LIMITING CONDITION FOR OPERATION

3.11.2.6 The quantity of radioactivity contained in each gas storage tank shall be limited to 43,800 curies noble gas (considered as Xe-133).

APPLICABILITY: At all times.

ACTION:

a. With the quantity of radioactive material in any gas storage tank exceeding the above limit, without delay suspend all additions of radioactive material to the tank and within 48 hours reduce the tank contents to within the limit.

b. The provisions of Specifications 3.0.3 and 3.0.4 are not applicable.

SURVEILLANCE REQUIREMENTS

4.11.2.6 The quantity of radioactive material contained in each gas storage tank shall be determined to be within the above limit at least once per 7 days whenever radioactive materials are added to the tank and at least once per 24 hours during primary coolant system degassing operations, by analysis of the Reactor Coolant System noble gases.

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

INDIANA MICHIGAN POWER COMPANY

DOCKET NO. 50-316

DONALD C. COOK NUCLEAR PLANT, UNIT NO. 2

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 168
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 February 22, 1994, 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. 168 , 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 issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

LB March

Ledyard B. Marsh, Director
Project Directorate III-1
Division of Reactor Projects - III/IV
Office of Nuclear Reactor Regulation

Attachment:
Changes to the Technical
Specifications

Date of Issuance: September 28, 1994

ATTACHMENT TO LICENSE AMENDMENT NO. 168

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 vertical lines indicating the area of change.

REMOVE	INSERT
3/4 1-19	3/4 1-19
3/4 3-31	3/4 3-31
3/4 3-37	3/4 3-37
3/4 3-37a	3/4 3-37a
3/4 3-37b	3/4 3-37b
3/4 6-10	3/4 6-10
3/4 6-34	3/4 6-34
3/4 8-1	3/4 8-1
3/4 8-2	3/4 8-2
3/4 8-6	3/4 8-6
3/4 10-1	3/4 10-1
3/4 11-14	3/4 11-14

LIMITING CONDITION FOR OPERATION (Continued)

c) A power distribution map is obtained from the movable incore detectors and $F_Q(Z)$ and $F^N_{\Delta H}$ are verified to be within their limits within 72 hours; and

d) Either the THERMAL POWER level is reduced to less than or equal to 75% of RATED THERMAL POWER within one hour and within the next 4 hours the high neutron flux trip setpoint is reduced to less than or equal to 85% of RATED THERMAL POWER, or

e) The remainder of the rods in the group with the inoperable rod are aligned to within ± 12 steps of the inoperable rod within one hour while maintaining the rod sequence and insertion limits as specified in the COLR; the THERMAL POWER level shall be restricted pursuant to Specification 3.1.3.6 during subsequent operation.

SURVEILLANCE REQUIREMENTS

4.1.3.1.1 The position of each full length rod shall be determined to be within the group demand limit by verifying the individual rod positions at least once per 12 hours except during time intervals when the Rod Position Deviation Monitor is inoperable, then verify the group positions at least once per 4 hours.

4.1.3.1.2 Each full length rod not fully inserted in the core shall be determined to be OPERABLE by movement of at least 8 steps in any one direction at least once per 92 days.

TABLE 4.3-2 (Continued)
ENGINEERED SAFETY FEATURED ACTUATION SYSTEM INSTRUMENTATION
SURVEILLANCE REQUIREMENTS

FUNCTIONAL UNIT	CHANNEL CHECK	CHANNEL CALIBRATION	CHANNEL FUNCTIONAL TEST	TRIP ACTUATING DEVICE OPERATIONAL TEST	MODES IN WHICH SURVEILLANCE REQUIRED
c. Purge and Exhaust Isolation					
1) Manual	---------- See Functional Unit 9 ----------				
2) Containment Radioactivity-High	S	R	Q	N.A.	1,2,3,4
4. STEAM LINE ISOLATION					
a. Manual	---------- See Functional Unit 9 ----------				
b. Automatic Actuation Logic	N.A.	N.A.	M(2)	N.A.	1,2,3
c. Containment Pressure--High-High	S	R	M(3)	N.A.	1,2,3
d. Steam Flow in Two Steam Lines--High Coincident with T_{avg}--Low-Low	S	R†	M	N.A.	1,2,3
e. Steam Line Pressure--Low	S	R	M	N.A.	1,2,3
5. TURBINE TRIP AND FEEDWATER ISOLATION					
a. Steam Generator Water Level--High-High	S	R	M	N.A.	1,2,3
6. MOTOR DRIVEN AUXILIARY FEEDWATER PUMPS					
a. Steam Generator Water Level--Low-Low	S	R	M	N.A.	1,2,3
b. 4 kV Bus Loss of Voltage	S	R	M	N.A.	1,2,3
c. Safety Injection	N.A.	N.A.	M(2)	N.A.	1,2,3
d. Loss of Main Feed Pumps	N.A.	N.A.	R†	N.A.	1,2

† The provisions of Technical Specification 4.0.8 are 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	Q	1, 2, 3, 4
ii) Containment - High Range (VRS 2310/2410)	S	R	Q	1, 2, 3, 4
B) Process Monitors				
i) Particulate Channel (ERS 2301/2401)	S*	R	Q	1, 2, 3, 4
C) Noble Gas Effluent Monitors				
i) Unit Vent Effluent Monitors				
a) Low Range (VRS 2505)	--------(see Table 4.3-9, Item 3.a, 4.a, 5.a)--------			
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	Q	1, 2, 3, 4
b) MRA 2602 (Loop 4)	S*	R	Q	1, 2, 3, 4
c) MRA 2701 (Loop 2)	S*	R	Q	1, 2, 3, 4
d) MRA 2702 (Loop 3)	S*	R	Q	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	Q	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	Q	
ii) Particulate Channel (ERS 2301)	S*	R	Q	
iii) Noble Gas Channel (ERS 2305)	S*	R	Q	
B) Train B				6
i) Containment Area Radiation Channel (VRS 2201)	S*	R	Q	
ii) Particulate Channel (ERS 2401)	S*	R	Q	

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	Q	6
3. MODE**				
A) Spent Fuel Storage (RRC-330)	S	R	Q	**

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

3/4.6.2 DEPRESSURIZATION AND COOLING SYSTEMS

CONTAINMENT SPRAY SYSTEM

LIMITING CONDITION FOR OPERATION

3.6.2.1 Two independent containment spray systems shall be OPERABLE with each spray system capable of taking suction from the RWST and transferring suction to the containment sump.

APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION:

With one containment spray system inoperable, restore the inoperable spray system to OPERABLE status within 72 hours or be in at least HOT STANDBY within the next 6 hours; restore the inoperable spray system to OPERABLE status within the next 48 hours or be in COLD SHUTDOWN within the following 30 hours.

SURVEILLANCE REQUIREMENTS

4.6.2.1 Each containment spray system shall be demonstrated OPERABLE:

a. At least once per 31 days by verifying that each valve (manual, power operated or automatic) in the flow path that is not locked, sealed, or otherwise secured in position, is in its correct position.

b. By verifying, that on recirculation flow, each pump develops a discharge pressure of greater than or equal to 255 psig at a flow of greater than or equal to 700 gpm, when tested pursuant to Specification 4.0.5.

c. At least once per 18 months during shutdown, by: †

1. Verifying that each automatic valve in the flow path actuates to its correct position on a Containment Pressure--High-High test signal.

2. Verifying that each spray pump starts automatically on a Containment Pressure--High-High test signal.

d. At least once per 10 years by performing an air or smoke flow test through each spray header and verifying each spray nozzle is unobstructed.

† The provisions of Technical Specification 4.0.8 are applicable.

ELECTRIC HYDROGEN RECOMBINERS - W

LIMITING CONDITION FOR OPERATION

3.6.4.2 Two independent containment hydrogen recombiner systems shall be OPERABLE.

APPLICABILITY: MODES 1 and 2.

ACTION:

With one hydrogen recombiner system inoperable, restore the inoperable system to OPERABLE status within 30 days or be in at least HOT STANDBY within the next 6 hours.

SURVEILLANCE REQUIREMENTS

4.6.4.2 Each hydrogen recombiner system shall be demonstrated OPERABLE:

a. At least once per 18 months by verifying during a recombiner system functional test that the minimum heater sheath temperature increases to $\geq 700\ ^{\circ}F$ within 90 minutes and is maintained for at least 2 hours.

b. At least once per 18 months by:

1. Performing a CHANNEL CALIBRATION of all recombiner instrumentation and control circuits.

2. Verifying through a visual examination that there is no evidence of abnormal conditions within the recombiners (i.e., loose wiring or structural connections, deposits of foreign materials, etc.).

3. Verifying during a recombiner system functional test that the heater sheath temperature increases to $\geq 1200^{\circ}F$ within 5 hours and is maintained for at least 4 hours.

4. Verifying the integrity of all heater electrical circuits by performing a continuity and resistance to ground test following the above required functional test. The resistance to ground for any heater phase shall be $\geq 10{,}000$ ohms.

3/4.8 ELECTRICAL POWER SYSTEMS

3/4.8.1 A.C. SOURCES

OPERATING

LIMITING CONDITION FOR OPERATION

3.8.1.1 As a minimum, the following A.C. electrical power sources shall be OPERABLE:

a. Two physically independent circuits between the offsite transmission network and the onsite Class 1E distribution system, and

b. Two separate and independent diesel generators, each with:

1. A separate day fuel tank containing a minimum of 70 gallons of fuel,

2. A separate fuel storage system* containing a minimum indicated volume of 46,000 gallons of fuel, and

3. A separate fuel transfer pump.

APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION:

a. With an offsite circuit of the above required A.C. electrical power sources inoperable, demonstrate the OPERABILITY of the remaining A.C. offsite source by performing Surveillance Requirement 4.8.1.1.1.a within 1 hour and at least once per 8 hours thereafter; restore at least two offsite circuits and two diesel generators to OPERABLE status within 72 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

b. With a diesel generator of the above required A.C. electrical power sources inoperable, demonstrate the OPERABILITY of the A.C. offsite sources by performing Surveillance Requirement 4.8.1.1.1.a within 1 hour and at least once per 8 hours thereafter; and if the diesel generator became inoperable due to any cause other than an inoperable support system, an independently testable component, or preplanned preventive maintenance or testing, demonstrate the OPERABILITY of the remaining OPERABLE diesel generator by performing Surveillance Requirement 4.8.1.1.2.a.4 within 8 hours, unless the absence of any potential common mode failure for the remaining diesel generator is demonstrated; restore diesel generators to OPERABLE status within 72 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours. At the number of failures for the inoperable diesel indicated in Table 4.8-1 perform the Additional Reliability Actions prescribed in Table 4.8-1.

*Tanks are separate between diesels but shared between Units 1 and 2.

ACTION (Continued)

c. With one offsite circuit and one diesel generator of the above required A.C. electrical power sources inoperable, demonstrate the OPERABILITY of the remaining A.C. offsite source by performing Surveillance Requirement 4.8.1.1.1.a within 1 hour and at least once per 8 hours thereafter and if the diesel generator became inoperable due to any cause other than an inoperable support system, an independently testable component, or preplanned preventive maintenance or testing, demonstrate the OPERABILITY of the remaining OPERABLE diesel generator by performing Surveillance Requirement 4.8.1.1.2.a.4 within 8 hours, unless the absence of any potential common mode failure for the remaining diesel generator is demonstrated; restore at least one of the inoperable sources to OPERABLE status within 12 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours. With the diesel generator restore to OPERABLE status, follow ACTION Statement a.* With the offsite circuit restored to OPERABLE status, follow ACTION Statement b.*

d. With two of the above required offsite A.C. circuits inoperable, restore at least one of the inoperable offsite sources to OPERABLE status within 24 hours or be in at least HOT STANDBY within the next 6 hours. With only one offsite source restored, follow ACTION Statement a.*

e. With two of the above required diesel generators inoperable, demonstrate the OPERABILITY of two offsite A.C. circuits by performing Surveillance Requirement 4.8.1.1.1.a within 1 hour and at least once per 8 hours thereafter; restore at least one of the inoperable diesel generators to OPERABLE status within 2 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours. With one diesel generator unit restored, follow ACTION Statement b* or c.*

*The ACTION statement time shall be based upon the time associated with the component inoperability, and is not reset when exiting this ACTION statement.

SURVEILLANCE REQUIREMENTS

4.8.1.1.1 Each of the above required independent circuits between the offsite transmission network and the onsite Class 1E distribution system shall be:

a. Determined OPERABLE at least once per 7 days by verifying correct breaker alignments and indicated power availability, and

b. Demonstrated OPERABLE at least once per 18 months by transferring the unit power source automatically from the normal auxiliary source to the preferred reserve source and by transferring manually to the alternate reserve source.

SURVEILLANCE REQUIREMENTS (Continued)

c) Verifying that all automatic diesel generator trips, except engine overspeed and generator differential, are automatically bypassed upon loss of voltage on the emergency bus and/or Safety Injection actuation signal.

7. Verifying that the diesel generator operates for at least 24 hours. During this test the diesel generator shall be loaded to 3500 kw. Within 5 minutes after completing this 24-hour test, perform Surveillance Requirement 4.8.1.1.2.a.4 (at existing conditions).*

8. Determine that the auto-connected loads to each diesel generator do not exceed 3500 kw.

9. Verifying the diesel generator's capability to:

a) Synchronize with the offsite power source while the generator is loaded with its emergency loads upon a simulated restoration of offsite power.

b) Transfer its loads to the offsite power source, and

c) Be restored to its standby status.

10. Verifying that with the diesel generator operating in a test mode while connected to its test load, a simulated Safety Injection signal overrides the test mode by:

a) Returning the diesel generator to standby operation, and

b) Verifying the emergency loads are serviced by offsite power.

11. Verifying that the automatic sequence timing relays are OPERABLE with each load sequence time within plus or minus 5% of its required value and that each load is sequenced on within the design allowable time limit.

f. At least once per 10 years by:

1) Employing one of the following cleaning methods to clean the fuel oil storage tanks:

a) Drain each fuel oil storage tank, remove the accumulated sediment, and clean the tank, or

* If Surveillance Requirement 4.8.1.1.2.a.4 is not satisfactorily completed, it is not necessary to repeat the preceding 24-hour test. Instead, the diesel generator may be operated at 3500 kw for 2 hours or until operating temperature has stabilized.

3/4.10 SPECIAL TEST EXCEPTIONS

SHUTDOWN MARGIN

LIMITING CONDITION FOR OPERATION

3.10.1 The SHUTDOWN MARGIN requirement of Specification 3.1.1.1 may be suspended for measurement of control rod worth and shutdown margin provided the reactivity equivalent to at least the highest estimated control rod worth is available for trip insertion for OPERABLE control rod(s).

APPLICABILITY: MODE 2.

ACTION:

a. With any full length control rod not fully inserted and with less than the above reactivity equivalent available for trip insertion, immediately initiate and continue boration at ≥ 10 gpm of 20,000 ppm boric acid solution or its equivalent until the SHUTDOWN MARGIN required by Specification 3.1.1.1 is restored.

b. With all full length control rods inserted and the reactor subcritical by less than the above reactivity equivalent, immediately initiate and continue boration at ≥ 10 gpm of 20,000 ppm boric acid solution or its equivalent until the SHUTDOWN MARGIN required by Specification 3.1.1.1 is restored.

SURVEILLANCE REQUIREMENTS

4.10.1.1 The position of each full length rod either partially or fully withdrawn shall be determined at least once per 2 hours.

4.10.1.2 Each full length rod not fully inserted shall be demonstrated capable of full insertion when tripped from at least the 50% withdrawn position within 7 days prior to reducing the SHUTDOWN MARGIN to less than the limits of Specification 3.1.1.1.

RADIOACTIVE EFFLUENTS

GAS STORAGE TANKS

LIMITING CONDITION FOR OPERATION

3.11.2.6 The quantity of radioactivity contained in each gas storage tank shall be limited to 43,800 curies noble gas (considered as Xe-133).

APPLICABILITY: At all times.

ACTION:

a. With the quantity of radioactive material in any gas storage tank exceeding the above limit, without delay suspend all additions of radioactive material to the tank and within 48 hours reduce the tank contents to within the limit.

b. The provisions of Specifications 3.0.3 and 3.0.4 are not applicable.

SURVEILLANCE REQUIREMENTS

4.11.2.6 The quantity of radioactive material contained in each gas storage tank shall be determined to be within the above limit at least once per 7 days whenever radioactive materials are added to the tank and at least once per 24 hours during primary coolant system degassing operations, by analysis of the Reactor Coolant System noble gases.

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 183 TO FACILITY OPERATING LICENSE NO. DPR-58

AND AMENDMENT NO. 168 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 February 22, 1994, the Indiana Michigan Power Company (the 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 modify the TS to incorporate the line-item TS improvements that were identified by the staff of the U.S. Nuclear Regulatory Commission (NRC) as reported in NUREG-1366, "Improvements to Technical Specifications Surveillance Requirements," December 1992. The TS improvements were based on an NRC study of surveillance requirements and included information provided by licensee personnel that plan, manage, and perform surveillances. The study included insights from a qualitative risk assessment of surveillance requirements based on the standard technical specifications for Westinghouse plants and the TS for the Edwin I. Hatch Nuclear Plant, Unit 2. The staff examined operational data from licensee event reports, the nuclear plant reliability data system (NPRDS), and other sources to assess the effect of TS surveillance requirements on plant operation. The staff evaluated the effect of longer surveillance intervals to reduce the possibility for plant transients, wear on equipment, personnel radiation exposure, and burden on personnel resources. Finally, the staff considered surveillance activities for which the safety benefits are small and not justified when compared to the effects of these activities on the safety of personnel and the plant. The NRC staff issued guidance on the proposed TS changes to all holders of operating licenses or construction permits for nuclear power reactors in Generic Letter (GL) 93-05, September 27, 1993.

2.0 EVALUATION

The licensee proposed the modifications to the TS surveillance requirements as discussed below.

2.1 Control Rod Movement Test

The licensee has proposed a change to TS 4.1.3.1.2. Specifically, the requirement to move full length rods at least eight steps in any one direction is to be changed from once per 31 days to once per 92 days.

The current TS requires that each control rod, not fully inserted, be demonstrated capable of movement at least eight steps in any one direction at least once every 31 days. This test is performed to determine if the control rods are immovable. The control rods may be immovable either because of an electrical problem in the control rod drive circuitry or because the control rod is mechanically stuck. Following discovery, the licensee must determine whether the control rod is capable of being tripped, since the action requirements differ depending on that determination. As long as a control rod can be tripped, shutdown margin is not as great a concern; however, requirements for rod misalignment and rod insertion limits must still be followed with an immovable control rod.

The concern with this test is that it causes reactor trips or dropped rods. This may seem inconsistent since control rods are designed to be moved and this test does not involve moving the control rods in any way that differs from the way the rods would be moved when controlling power or power distribution. However, rod drive mechanisms and control rod drive control systems are complex and their mechanical movements and timing requirements are exacting. Most pressurized-water reactors (PWRs), except for these tests, operate with both the regulating rods and the shutdown rods withdrawn during normal operation.

Electrical problems with the control rod drive system, in general, do not prevent insertion of a control rod into the core when the reactor trip breakers are opened.

Mechanical problems, although likely to inhibit rods from fully inserting into the core upon a reactor trip signal, are much less common. A review of cases in which the control rods were mechanically stuck or, at least, behaved as though they were, indicated that not all of these stuck rods were found during the control rod movement surveillance tests. Most were discovered during control rod drop timing tests performed during startup physics testing, or when the rods were withdrawn from the core during plant startup. In addition, accident analyses assume that the single highest worth control rod is stuck and will not insert. In only one event was a second rod involved, and in this case both of the rods were partially inserted.

A review of plant trip data from 1986 through July 1988 found three reactor trips that occurred during control rod motion testing.

In summary, the control rod movement tests during power operation have demonstrated a successful operational record with most stuck rods discovered during plant startup, during initial pulling of the rods or during rod drop testing. In addition, the movement tests have caused reactor trips, dropped rods, and unnecessary challenges to safety systems. Therefore, the staff considers the proposed change in the surveillance interval from 31 days to 92 days to be acceptable.

2.2 Radiation Monitors

The licensee has proposed to change the requirement to perform channel functional testing for radiation monitoring channels from monthly to quarterly.

The TS contain three categories of radiation monitors: those used for gaseous and liquid effluent monitoring, those used for monitoring an area and indicating the radiation level, and those that are part of the reactor protection system and engineered safety features actuation systems. The only radiation monitors with a reactor trip function are the main steamline radiation monitors on boiling-water reactor main steam lines. (D.C. Cook is a pressurized-water reactor.) The engineered safety features actuations are basically isolation functions and air cleanup functions. Many radiation instruments perform a monitoring function; these instruments monitor for reactor coolant leakage, accident conditions in containment, and the release of gaseous and liquid effluents.

As with other instrumentation, radiation monitors are required to undergo three types of surveillances: a channel check, a channel functional test, and a calibration. In addition, a source check is performed.

The capability to source check provides an integral verification of the response of the detector. This is generally required monthly or before using a system that would release potentially radioactive fluid.

The testing of radiation monitors produces a significant number of isolations on the control room, fuel handling building, auxiliary buildings, and various process lines. In addition, the testing requires significant licensee staff. Licensees also stated that the frequent testing tends to degrade the equipment. The instrumentation must be removed from cabinets and reinserted. A majority of the instrumentation is self-checking so that most failures will be found in this way or by channel checks.

In summary, radiation monitor testing appears to require a large amount of resources and most failures of radiation monitors can be found from channel checks, source checks, or alarms. In addition, relief on the frequency of channel functional tests is reasonable since these tests do not involve the sensor (radiation monitor) itself. Therefore, in order to decrease the licensee burden and increase the availability of the radiation monitoring systems, the staff finds the proposed change to the requirement to perform channel functional testing for radiation monitoring channels from monthly to quarterly to be acceptable. Channel checks, source checks, and calibrations would continue to be done at their existing surveillance test intervals.

2.3 Containment Spray System

The licensee proposed to change the TS requirement to perform an air or smoke test through each spray header to verify the spray nozzles are unobstructed from once per 5 years to once per 10 years. The licensee noted that the spray nozzles used at the Cook Nuclear Plant are stainless steel, not carbon steel.

Therefore, the problems experienced at San Onofre Unit 1, discussed in Generic Letter 93-05, are not applicable to the Cook Nuclear Plant.

Currently each containment spray system must be demonstrated operable at least once every 5 years by performing an air or smoke test through each spray header an verifying that each spray nozzle is unobstructed. The qualitative risk analysis indicated that the system is important to risk, especially for those plants in which the containment spray system performs the dual function of removing iodine and cooling the containment, since the heat removal function is redundant.

The NRC staff searched for problems involving the containment spray system that had been uncovered by means of this testing. Only three cases were found and in all three cases the problem involved a construction error. In addition, this testing gives no quantitative data on flowrates exiting the nozzles. It only verifies that there is flow, which, from the operating data, does not appear to be a problem.

Therefore, since the test is qualitative and does not measure the flow rate, and the only reported problems with the test have been construction related, the proposed change in the surveillance interval from once every 5 years to once every 10 years is acceptable.

2.4 Hydrogen Recombiners

The licensee requested that the TS requirement to perform a hydrogen recombiner system functional test be changed from once per 6 months to once per 18 months.

The hydrogen recombiner system removes the hydrogen and oxygen gases that accumulate in the containment atmosphere following a design-basis loss-of-coolant accident (LOCA). It is not capable of removing the highest hydrogen concentration that could be present after a severe accident. The present TS require testing the hydrogen recombiners at least once every 6 months by performing a functional test.

A search of licensee event reports was performed to assess the reliability of hydrogen recombiners. Twelve failures of hydrogen recombiners were found over the time period from 1980 to June 1988. In most cases, only one train of the hydrogen recombiner system was inoperable. In one case in which both trains were inoperable, a backup hydrogen purge system was available. In two cases, the failure was fixed within 2 hours. Since the hydrogen recombiner is manually started many hours after a LOCA occurs, the system would have been operable when called upon.

Based on the low number of system failures of hydrogen recombiners and the availability of either a redundant hydrogen recombiner or a diverse system such as the hydrogen purge, the proposed change to the surveillance interval for the functional test is acceptable.

2.5 Emergency Diesel Generator Surveillance Requirements

The licensee requested several changes to the emergency diesel generator (EDG) surveillance requirements. First, the action statements are modified to eliminate requirements to perform diesel generator testing due to inoperability of offsite circuits. Second, the action statements are rewritten to explicitly state that testing of the redundant diesel generator is not required if the other diesel generator became inoperable due to an inoperable support system or a component that can be independently tested. Also, testing of the redundant diesel generator is not required if the absence of any potential common mode failure is demonstrated. For the action statement requiring the test of the redundant diesel generator, the time to demonstrate operability of the remaining diesel generator is conservatively changed from 24 hours to 8 hours. Finally, following the required 24-hour diesel run, the requirement to perform the simulated loss of offsite power start and load test is replaced with the simple start test. A note is added to the 24-hour run surveillance stating that the diesel generator start performed within 5 minutes of the 24-hour run is conducted at the existing conditions rather than the normally required ambient (cold) conditions. Also, a note is added indicating that if the start performed within 5 minutes of the 24-hour run is not performed satisfactorily, the diesel generator may be operated at continuous rating for (only) 2 hours or until operating temperature has stabilized prior to retest.

Corresponding to their importance to safety, EDGs have the most detailed TS surveillance requirements of any piece of mechanical or electrical equipment in a nuclear power plant. The safety function of the EDG is to supply ac electrical power to plant safety systems whenever the preferred ac power supply is unavailable. Through surveillance requirements, the ability of the EDGs to meet their load and timing requirements is tested, and the quality of the fuel and the availability of the fuel supply are monitored.

Some TS require that, with an inoperable EDG or other ac power source, the remaining operable diesel generator must be tested at a higher frequency than normally required, whether or not the failure potentially affects the remaining EDG. The appropriateness of this "alternative testing" and it's potential for introducing unnecessary wear to the EDGs has been questioned. D.C. Cook has requested that the requirement for alternate testing upon loss of an offsite circuit or an independent failure of an EDG be deleted.

In support of a proposal to revise this surveillance/alternate testing requirement, the licensee for Vermont Yankee submitted an analysis that quantified the unavailabilities of safety systems when required to perform their intended function upon demand, both with and without alternate testing. Two systems were chosen for detailed analysis: the core spray and the diesel generators. Issues considered included the decreased potential for an undetected failure due to the alternate testing, and the increased unavailability due to the alternate testing and repair of demand-related and test-related failures. Disadvantages to alternate testing which were not quantified in the study were reduced reliability due to equipment degradation from excessive testing, potential for unnecessary shutdowns that result in plant transients and challenges to safety systems, potential for plant

transients initiated during surveillance tests, diversion of operating personnel time and attention, and increased radiation exposure to operating personnel. The analysis showed that, for the core spray system, alternate testing produced unavailabilities at least a factor of 4 greater than monthly testing. For the diesel generators, this factor was about 3.

Considering this analysis and similar conclusions in NUREG-1024, "Technical Specifications - Enhancing the Safety Impact," November 1983, the staff agrees that the requirements to test the remaining diesel generator(s) when one diesel generator in inoperable due to any cause other than preplanned, preventive maintenance or testing, be limited to those situations where the cause for inoperability has not been conclusively demonstrated to preclude the potential for a common mode failure. Based on the above, the licensee's requested changes related to testing of the alternate EDG are acceptable. In addition, the conservative change, to perform the alternate testing within 8 hours when it is required, is also acceptable.

Currently, the licensee's TS contain a requirement to operate each EDG for a 24-hour test run on a periodic basis. The TS also require that within 5 minutes after completing this 24-hour test, the emergency buses must be deenergized and loads shed with a subsequent fast start and full load acceptance. The hot-restart test is performed to verify that the diesel generator does not have, in any way, impaired performance following operation at full load or equilibrium temperature.

Problems that have been noted in performance of this test include having to shut down the EDG faster than recommended by the diesel generator shutdown procedure in order to perform the hot restart test within 5 minutes of the 24-hour test run. In addition, performing these tests in quick succession has caused critical path complications and delays during an outage.

Failure to restart when hot, or extended delay in restarting, is typically only experienced with small forced-air-cooled diesel engines which, upon being tripped, undergo a temperature rise transient. The large diesel generators are typically water-cooled and do not experience any significant temperature rise transients during operation or after shutdown. In addition, diesel generators are normally maintained at hot standby conditions (heated cooling water and lubricating oil). Since the purpose of the hot restart test is to identify problems associated with a restart when hot, there is no inherent necessity for associating this with the 24-hour run. The only concern is that EDG operating temperatures have stabilized. Therefore, based on the above, the licensee's proposal to allow performance of the hot restart test after running the EDG until operating temperatures have stabilized, as opposed to only after a 24-hour run, is acceptable.

2.6 Special Test Exceptions - Shutdown Margin

The licensee has proposed a change to the surveillance requirement associated with the special test exceptions for shutdown margin. This specification allows the required shutdown margin to be suspended for measurement of control rod worth and shutdown margin, under certain conditions. The specific change requested would allow the required measure rod drop time measurements be done

7 days prior to reducing the shutdown margin, rather than the current requirement of 24 hours.

The special test exception on shutdown margin provides that a minimum amount of control element assembly (CEA) worth is immediately available for reactivity control when CEA worth measurement tests are performed. The CEA worth measurement tests are part of the low power physics testing program that is followed after a refueling outage. The licensee must trip (fully insert) each CEA that is not fully inserted from at least the 50% withdrawn position prior to reducing the shutdown margin. This assures the licensee that all CEA's which are not fully inserted can trip while the shutdown margin is suspended. The present specification requires the trip test be performed within 24 hours prior to reducing the shutdown margin.

Another technical specification, TS 4.1.3.3, "Rod Drop Time," also requires tripping the CEA's, but for a different reason. The tripping of the CEA's in this case deals with CEA drop time. The CEA drop times must be calculated before initial reactor criticality following each refueling outage. The drop time tests before initial criticality are usually performed more than 1 day before the CEA worth measurements are made. Thus, in practice, the CEA's are tripped at least twice following a refueling outage, once for the drop time measurements and once previous to the period of time that the shutdown margin limit is suspended.

Previous staff review of these tests determined that there would be only a slight increase in the probability of a stuck CEA occurring between the time when the CEA's are tripped for the drop time test, and the time that the CEA's are tripped before suspending the shutdown margin limit. Therefore, there is only a small increase in the probability that a stuck CEA may occur by changing the required trip time prior to reducing the shutdown margin from 24 hours to 7 days.

The staff has also reviewed analyses for several postulated events that could occur during this period of time. The events are uncontrolled CEA withdrawal, inadvertent boron dilution, CEA ejection, and cooldown events. The cooldown events are main steam line break, main feedwater line break, main steam safety valve spuriously opening, and inadvertent opening of an atmosphere dump valve. The staff noted that these events can be postulated to occur not only during the time period between the CEA drop time measurements and the time that the shutdown margin limit requirement is suspended, but also during the period of time the shutdown margin limit is suspended. The staff determined that the results and consequences of any particular event are not significantly altered as a result of the licensee's proposed change.

The staff also evaluated whether there could be any core geometry changes between the time that the CEA's are tripped for drop time measurement and the time the shutdown margin limit requirement would be suspended. The period of time considered is up to 7 days. Our evaluation concludes that there are no significant core geometry changes during this period of time. The reactor vessel head is bolted to the reactor pressure vessel during this period of time. Thus, all components within the reactor pressure vessel are fixed in place. The reactor protection system is operable and any scram signal would

trip the withdrawn CEAs. If any problem occurs with an individual CEA, such as a CEA drive mechanism, the current TS requires the drop time to be measured again for that particular CEA to ensure that the CEA will trip and insert within the required drop time. Thus, the staff concludes that this is adequate assurance that the CEA's would be trippable during the 7-day period prior to suspension of the shutdown margin limit.

Based on the above, the staff finds the proposed change to allow the required measure rod drop time measurements be done 7 days prior to reducing the shutdown margin, rather than the current requirement of 24 hours, to be acceptable.

2.7 Radioactive Effluents - Waste Gas Storage Tanks

The licensee has proposed that the requirement to verify the quantity of radioactive material contained in each gas storage tank be changed from once per 4 days to once per 7 days whenever radioactive materials are added to the tank, and to once per 24 hours during primary coolant system degassing operations.

Waste gas storage tanks collect the radioactive noble gases and airborne halogens to reduce the anticipated annual releases and personnel exposure in restricted and unrestricted areas in order to meet "as low as reasonably achievable" (ALARA) guidelines. The TS contain a limit on the curies (Ci) of noble gases that are allowed to be stored in the gas storage tanks and require that the quantity of material in the tanks be determined to be less than this limit at least once every 4 days. The TS place a limit on the number of Ci permitted in the waste gas tank to ensure that the resulting total body exposure to an individual at the nearest exclusion area boundary will not exceed 0.5 rem, which is consistent with the Standard Review Plan (NUREG-0800) guidance for calculating the consequences of the failure of a waste gas tank.

During previous analyses on this issue, the staff recognized that the TS limit placed on the allowed Ci in the waste gas tank is above the value that would occur, even if the reactor were operating at the TS specific coolant activity limit. Thus, iodine concentration in the coolant will rarely reach the TS limit, if at all, at operating reactors. However, the Xe-133 activity can accumulate and approach TS limits during degas operation prior to shutdown for refueling. In addition, the staff notes that measuring the contents of this tank exposes the chemists to high radioactivity.

Therefore, based on the above, the proposed change to reduce the periodic surveillance from once every 4 days to once every 7 days whenever radioactive materials are added to the tank, and to increase the surveillance to once every 24 hours during primary coolant system degassing operations, is acceptable.

2.8 Summary

The proposed TS modifications are consistent with the guidance provided in GL 93-05. This guidance is based on the NRC staff findings and recommendations stated in NUREG-1366. In addition, licensee states that the

proposed TS changes are compatible with plant operating experience. The staff concludes that the proposed TS changes do not adversely affect plant safety and will result in a net benefit to the safe operation of the facility, and, therefore, are acceptable.

3.0 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.

4.0 ENVIRONMENTAL CONSIDERATION

The amendments change 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. 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 has previously issued a proposed finding that the amendments involve no significant hazards consideration and there has been no public comment on such finding (59 FR 14890). Accordingly, the 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 the amendments.

5.0 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.

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