

Docket Nos. 50-315  
and 50-316  
April 27, 1984

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

Dear Mr. Dolan:

The Commission has issued the enclosed Amendment No. 80 to Facility Operating License No. DPR-58 and Amendment No. 63 to Facility Operating License No. DPR-74 for the Donald C. Cook Nuclear Plant, Unit Nos. 1 and 2, respectively. The amendments consist of changes to the Technical Specifications and license conditions in response to your letter dated December 15, 1983, and are being made to simplify or clarify the licenses for the convenience of the NRC.

These amendments and the basis for the changes are presented for each unit as follows:

D.C. Cook Unit No. 1; Facility Operating License No. DPR-58

1. License Condition 2.C(6) on spent fuel pool modification had been imposed by License Amendment No. 32 dated October 16, 1979. The condition provided for modifications to be accomplished with old racks being removed and new racks installed. The old racks are no longer in the pool, the installation with new racks has been completed, and the Technical Specifications and License Condition 2.C(5) cover any remaining requirements for the spent fuel pool. The deletion of License Condition 2.C(6) will in no way change the licensing and operating requirements for the Units 1 and 2 shared spent fuel pool. Therefore, License Condition 2.C(6) on spent fuel pool modifications is deleted.
2. License Condition 2.E on environmental effects and impacts was part of the license issued on March 30, 1976. In License Amendment 54 issued on May 6, 1982, Appendix B to the Technical Specifications was changed to include all the environmental considerations in the new Environmental Protection Plan (EPP). Section 3.1 of the EPP addresses the non-radiological requirements. Also in Amendment 69 issued February 7, 1983, the radiological requirements were moved to Appendix A of the Technical Specifications. Therefore deletion of the License Condition 2.E will not change the licensing or operating requirements. To remove duplicative requirements, License Condition 2.E is deleted; this action was overlooked with the issuance of Amendments 54 and 69.
3. License Condition 2.F on water quality was also part of the current license issuance in 1976. This requirement is also stated in Section 3.1 of the EPP issued by Amendment 54. The deletion of this condition will

not change the licensing or operating requirements and as stated in Item 2 above, its deletion was likewise overlooked with the issuance of Amendment 54.

4. Technical Specification page 3/4 5-3 is changed to delete the footnote which is no longer applicable. Amendment 54 allowed a change in operation for a period of time which has expired.
5. Technical Specification page 3/4 6-35 is amended to correct an oversight in the issuance of Amendment 63 issued on October 4, 1982. The Safety Evaluation Report for both units and the Technical Specification for Unit 2 were correct in changing the 10 + 1 minute delay in 4.6.5.6 to 9 + 1 minute. However, the Unit 1 Technical Specification was incorrectly issued without the change. The basis for the change remains valid as presented in the Amendment 63 Safety Evaluation Report.
6. Technical Specification page 6-3 is corrected to include lines in the margin to indicate the changes approved by Amendment 63.
7. Technical Specification page 3/4 9-10 is changed to correctly distinguish between radiation "channels" and radiation "monitors." Amendment 60 dated September 9, 1982, incorrectly referred to channels in the surveillance requirements. The correct term is monitors. This correction which was discussed in the Federal Register Notice (49 FR 3344) issued January 26, 1984, has been brought to the attention of the licensee and is made by the NRC to clarify the license.
8. In Amendment 63 issued October 4, 1982, the index page to Technical Specification changes indicated a number of pages were included for convenience. These pages were the reverse side of pages that were changed. Since these "convenience" pages did not change, the "Amendment 63" revision reference on each of those pages is removed.

D.C. Cook Unit No. 2; Facility Operating License No. DPR-74

1. License Condition 2.C(1) is amended to change the licensed power from 3391 to 3411 megawatts thermal. In Amendment 48 issued January 14, 1983, the Technical Specifications were changed to the new power level and the Safety Evaluation Report supported the change. The license condition was overlooked in Amendment 48 and the change here will make the license condition and Technical Specifications consistent. This correction which was discussed in the Federal Register Notice (49 FR 3344) issued January 26, 1984 has been brought to the attention of the licensee and is made by the NRC to maintain consistency between the Technical Specifications and License Conditions.
2. License Condition 2.C.(3)(h) on containment sump design was part of the current license issued on December 23, 1977. On July 2, 1982, in a letter from S. Varga to the licensee, we found that the licensee had adequately responded to the requirements of the license condition and that the testing was acceptable. Our Safety Evaluation Report was

transmitted by that letter. Deletion of this license condition is consistent with our findings in that Safety Evaluation Report.

3. License Condition 2.C(3)(1) on residual heat removal low flow alarm was also part of the current license as issued in 1977. Amendment 18 issued on February 29, 1980, included a Safety Evaluation Report which specifically addressed and supported the acceptability of the alarms, however, the amendment overlooked the deletion of the license condition. This amendment corrects that oversight by the deletion of License Condition 2.C(3)(1).
4. License Condition 2.C(3)(t) on spent fuel pool modification is deleted. See the Unit 1 Item 1 above for the basis for acceptability for deleting this condition.
5. License Condition 2.E on condition for the protection of the environment was part of the current license issued on December 23, 1977. Amendment 40 issued on May 6, 1982, approved the EPP which also lists the non-radiological requirements in Section 3.1. Also in License Amendment No. 51 issued February 7, 1983, the radiological requirements were moved to Appendix A of the Technical Specifications. Deletion of this license condition will not change the license or operating requirements. The deletion of the license condition was overlooked in Amendments 40 and 51.
6. Technical Specification page 3/4 6-39 is changed to delete the footnote which is no longer applicable. Amendment 20 allowed a change in operation through July 20, 1980.
7. Technical Specification page 3/4 9-9 is changed to delete the footnote which is no longer applicable. Amendment 47 allowed a change in operation for a period of time which has expired.
8. Technical Specification page B 3/4 6-3 is amended by the deletion of Section 3/4 6.1.7 on containment purge and vent. Amendment 47 issued on December 8, 1982, changed the Technical Specification Bases section on containment purge and vent, however, the section being deleted was overlooked in Amendment 47. This deletion corrects that oversight.
9. Technical Specification page 6-3 is changed by adding lines in the margin to indicate changes approved by Amendment 45.
10. In Amendment 45 issued October 4, 1982, the index page to Technical Specification changes indicated a number of pages were included for convenience. These pages were the reverse side of pages that were changed. Since these "convenience" pages did not change, the "Amendment 45" revision reference on each of those pages is removed.

We have determined that the amendments do not authorize a change in effluent types or total amounts nor an increase in power level and will not result in any significant environmental impact. Having made this determination, we have further concluded that the amendments involve an action which is insignificant

Mr. John Dolan, Vice President  
Indiana and Michigan Electric Company

April 27, 1984

4.

from the standpoint of environmental impact and, pursuant to 10 CFR §51.5(d)(4), that an environmental impact statement or negative declaration and environmental impact appraisal need not be prepared in connection with the issuance of these amendments.

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, and (2) such activities will not be endangered by compliance with the Commission's regulations and the issuance of the amendments will not be inimical to the common defense and security or to the health and safety of the public.

A Notice of Issuance will be included in the Commission's next regular monthly Federal Register notice.

Sincerely,

Original signed by  
Steven A. Varga

Steven A. Varga, Chief  
Operating Reactors Branch No. 1  
Division of Licensing

Enclosures:

1. Amendment No. 80 to DPR-58
2. Amendment No. 63 to DPR-74

cc w/enclosures:  
See attached list

ORB #1  
CParrish/jm  
4/12/84

ORB #1  
DWigginton  
4/12/84

ORB #1  
S Varga  
4/12/84

AD-OR  
GLainas  
4/26/84

OELD  
WSPJ  
4/24/84

Indiana and Michigan Electric Company;

Donald C. Cook Nuclear  
Plant, Units 1 and 2

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Region V Office  
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Department of Public Health  
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Lansing, Michigan 48109

The Honorable Tom Corcoran  
United States House of Representatives  
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UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D. C. 20555

INDIANA AND MICHIGAN ELECTRIC COMPANY

DOCKET NO. 50-315

DONALD C. COOK NUCLEAR PLANT UNIT NO. 1

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 80  
License No. DPR-58

1. The Nuclear Regulatory Commission (the Commission) has found that:
  - A. The application for amendment by Indiana and Michigan Electric Company (the licensee) dated December 15, 1983, 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.

ATTACHMENT TO LICENSE AMENDMENT

AMENDMENT NO. 80 TO FACILITY LICENSE NO. DPR-58

DOCKET NO. 50-315

Revise Appendix A as follows:

<u>Remove Pages</u>	<u>Insert Pages</u>
3/4 3-50	3/4 3-50**
3/4 5-3	3/4 5-3
3/4 6-35	3/4 6-35
3/4 6-36	3/4 6-36**
3/4 9-9	3/4 9-9**
3/4 9-10	3/4 9-10
6-3	6-3
B 3/4 2-3	B 3/4 2-3**

\*\* Included for convenience; corrected to show deletion of "Amendment 63" revision.

## INSTRUMENTATION

### SURVEILLANCE REQUIREMENTS (Continued)

- a. If the absolute value of  $\frac{R_{ij} - \bar{R}_j}{\bar{R}_j}$  is greater than  $2\sigma_j$ , another

map shall be completed to verify the new  $\bar{R}_j$ . If the second map shows the first to be in error, the first map shall be disregarded. If the second map confirms the new  $\bar{R}_j$ , four more maps (including rodded configurations allowed by the insertion limits) will be completed so that a new  $\bar{R}_j$  and  $\sigma_j$  can be defined from the six new maps.

#### 4.3.3.6.2 The APDMS shall be demonstrated OPERABLE:

- a. By performance of a CHANNEL FUNCTIONAL TEST within 7 days prior to its use and at least once per 31 days thereafter when used for monitoring  $F_j(Z)$ .
- b. At least once per 18 months, during shutdown or below 5% of RATED THERMAL POWER, by performance of a CHANNEL CALIBRATION.

EMERGENCY CORE COOLING SYSTEMS

ECCS SUBSYSTEMS -  $T_{avg} \geq 350^{\circ}\text{F}$

LIMITING CONDITION FOR OPERATION

3.5.2 Two independent ECCS subsystems shall be OPERABLE with each subsystem comprised of:

- a. One OPERABLE centrifugal charging pump,
- b. One OPERABLE safety injection pump,
- c. One OPERABLE residual heat removal heat exchanger,
- d. One OPERABLE residual heat removal pump, and
- e. An OPERABLE flow path capable of taking suction from the refueling water storage tank on a safety injection signal and transferring suction to the containment sump during the recirculation phase of operation.

APPLICABILITY: MODES 1, 2 and 3.

ACTION:

- a. With one ECCS subsystem inoperable, restore the inoperable subsystem to OPERABLE status within 72 hours or be in HOT SHUTDOWN within the next 12 hours.
- b. In the event the ECCS is actuated and injects water into the Reactor Coolant System, a Special Report shall be prepared and submitted to the Commission pursuant to Specification 6.9.2 within 90 days describing the circumstances of the actuation and the total accumulated actuation cycles to date.

## CONTAINMENT SYSTEMS

### CONTAINMENT AIR RECIRCULATION SYSTEMS

#### LIMITING CONDITION FOR OPERATION

3.6.5.6 Two independent containment air recirculation systems shall be OPERABLE.

APPLICABILITY: MODES 1, 2, 3 and 4.

#### ACTION:

With one containment air recirculation system inoperable, restore the inoperable system 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.

#### SURVEILLANCE REQUIREMENTS

4.6.5.6 Each containment air recirculation system shall be demonstrated OPERABLE at least once per 3 months on a STAGGERED TEST BASIS by:

- a. Verifying that the return air fan starts on an auto-start signal after a  $9 \pm 1$  minute delay and operates for at least 15 minutes,
- b. Verifying that with the return air fan discharge backdraft damper locked closed and the fan motor energized, the static pressure between the fan discharge and the backdraft damper is  $\geq 4.0$  inches, water gauge.
- c. Verifying that with the fan off, the return air fan damper opens when a force of  $\leq 11$  lbs is applied to the counterweight, and
- d. Verifying that the motor operated valve in the suction line to the containment's lower compartment opens after a  $9 \pm 1$  minute delay.

## CONTAINMENT SYSTEMS

### FLOOR DRAINS

#### LIMITING CONDITION FOR OPERATION

---

3.6.5.7 The ice condenser floor drains shall be OPERABLE.

APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION:

With the ice condenser floor drain inoperable, restore the floor drain to OPERABLE status prior to increasing the Reactor Coolant System temperature above 200°F.

#### SURVEILLANCE REQUIREMENTS

---

4.6.5.7 Each ice condenser floor drain shall be demonstrated OPERABLE at least once per 18 months during shutdown by:

- a. Verifying that valve gate opening is not impaired by ice, frost or debris,
- b. Verifying that the valve seat is not damaged,
- c. Verifying that the valve gate opens when a force of  $\leq 100$  lbs is applied, and
- d. Verifying that the 12 inch drain line from the ice condenser floor to the containment lower compartment is unrestricted.

## REFUELING OPERATIONS

### COOLANT CIRCULATION

#### LIMITING CONDITION FOR OPERATION

---

3.9.8 At least one residual heat removal loop shall be in operation.

APPLICABILITY: MODE 6.

ACTION:

- a. With less than one residual heat removal loop in operation, except as provided in b. below, suspend all operations involving an increase in the reactor decay heat load or a reduction in boron concentration of the Reactor Coolant System. Close all containment penetrations providing direct access from the containment atmosphere to the outside atmosphere within 4 hours.
- b. The residual heat removal loop may be removed from operation for up to 1 hour per 8 hour period during the performance of CORE ALTERATIONS in the vicinity of the reactor pressure vessel hot legs.
- c. The provisions of Specification 3.0.3 are not applicable.

#### SURVEILLANCE REQUIREMENTS

---

4.9.8 A residual heat removal loop shall be determined to be in operation and circulating reactor coolant at a flow rate of  $\geq 3000$  gpm at least once per 24 hours.

## REFUELING OPERATIONS

### CONTAINMENT PURGE AND EXHAUST ISOLATION SYSTEM

#### LIMITING CONDITION FOR OPERATION

---

3.9.9 The Containment Purge and Exhaust isolation system shall be OPERABLE.

APPLICABILITY: During Core Alterations or movement of irradiated fuel within the containment.

ACTION:

With the Containment Purge and Exhaust isolation system inoperable, close each of the Purge and Exhaust penetrations providing direct access from the containment atmosphere to the outside atmosphere. The provision of Specification 3.0.3 are not applicable.

#### SURVEILLANCE REQUIREMENTS

---

4.9.9 The Containment Purge and Exhaust isolation system shall be demonstrated OPERABLE within 100 hours prior to the start of and at least once per 7 days during CORE ALTERATIONS by verifying that containment Purge and Exhaust isolation occurs on manual initiation and on a high radiation signal from each of the containment radiation instrumentation monitors.

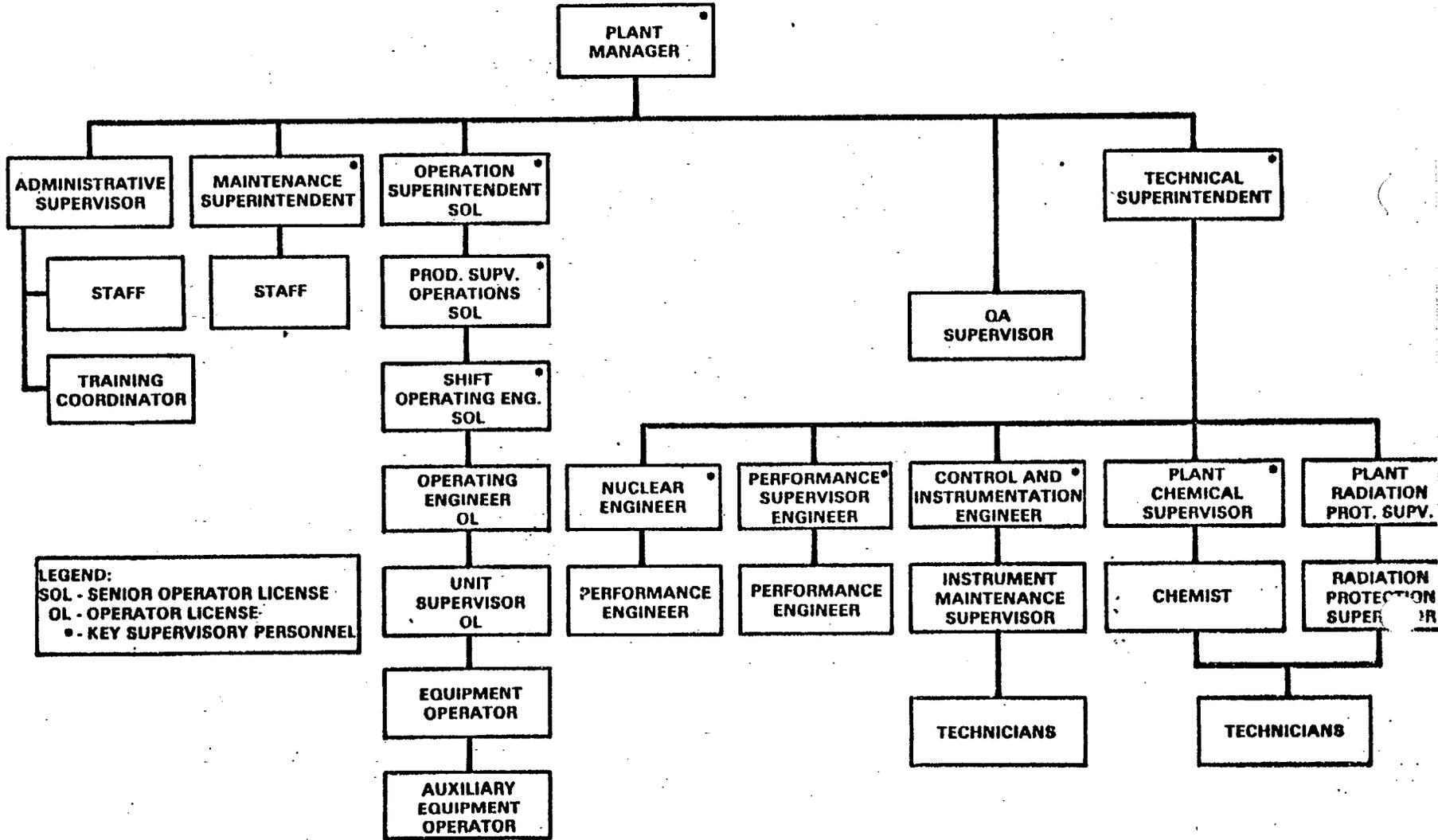
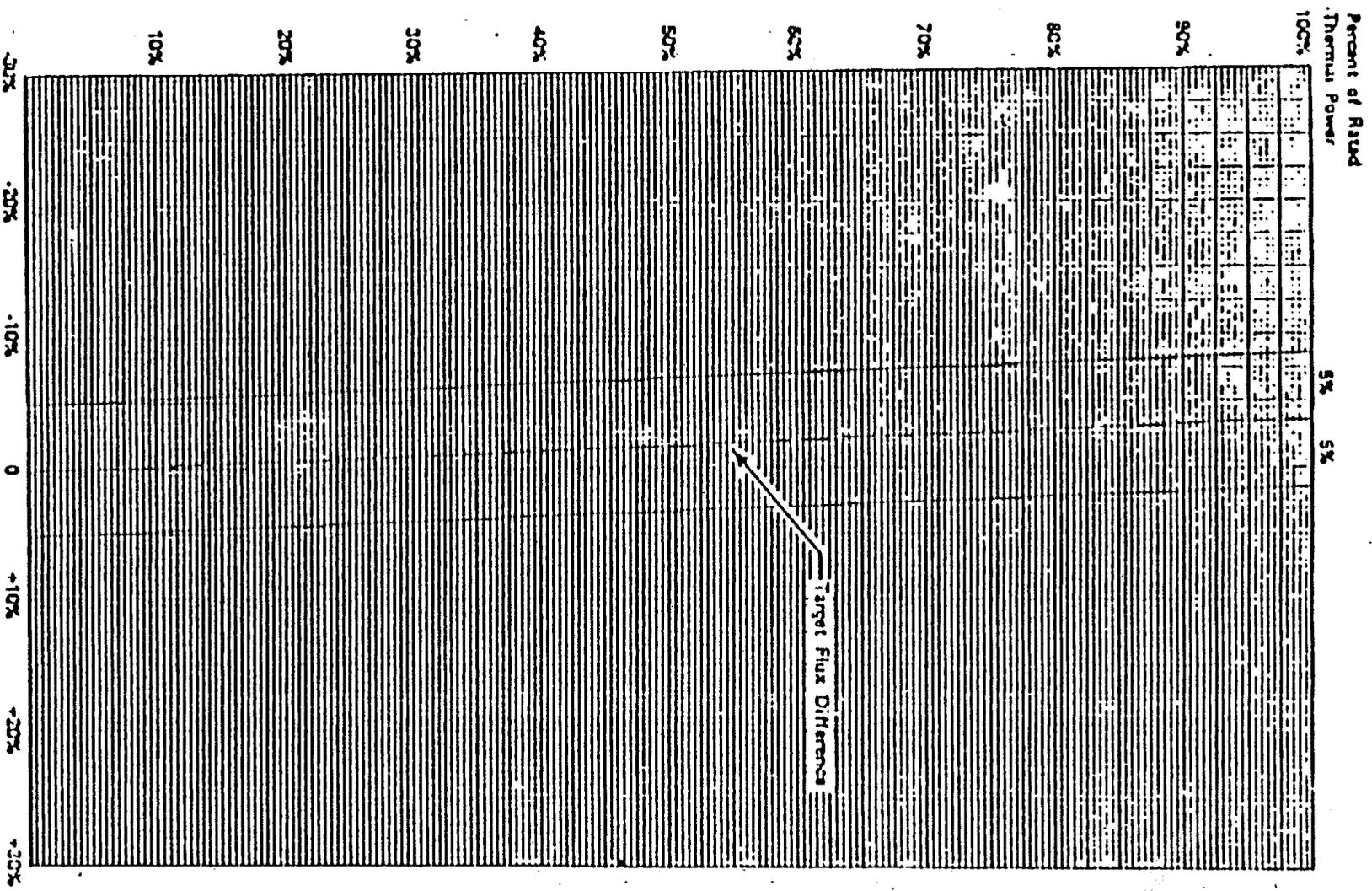


Figure 6.2-2 Facility Organization - Donald C. Cook - Unit No. 1



INDICATED AXIAL FLUX DIFFERENCE  
 Figure B 3/4 2-1 TYPICAL INDICATED AXIAL FLUX DIFFERENCE VERSUS  
 THERMAL POWER AT BCL

D. C. COOK-UNIT 1

B 3/4 2-3



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

INDIANA AND MICHIGAN ELECTRIC COMPANY

DOCKET NO. 50-316

DONALD C. COOK NUCLEAR PLANT UNIT NO. 2

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No.63  
License No. DPR-74

1. The Nuclear Regulatory Commission (the Commission) has found that:
  - A. The application for amendment by Indiana and Michigan Electric Company (the licensee) dated December 15, 1983, 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:

(2) Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 63, are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications.

3. The license is also amended by the deletion of License Conditions 2.C.(3)(h) on "Containment Sump Design Verification, 2.C.(3)(i) on "Residual Heat Removal System Low Flow Alarm," 2.C.(3)(t) on "Spent Fuel Pool Modifications," and 2.E. on condition to protect the environment.
4. The license is further amended by changes to License Condition 2.C.(1) by changing the maximum power level of 3391 to 3411 megawatts thermal.
5. The change in Technical Specifications is to become effective within 30 days of receipt of the amendment. In the period between receipt of the amendment and the effective date of the new Technical Specifications, the licensee shall adhere to the Technical Specifications for the systems, components, or operation existing at the time. The period of time during changeover of systems, components or operation shall be minimized or compensated for by suitable temporary alternatives.
6. This license amendment is effective as of the date of its issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

  
Steven A. Varga, Chief  
Operating Reactors Branch No. 1  
Division of Licensing

Attachment:  
Changes to the Technical  
Specifications

Date of Issuance: April 27, 1984

ATTACHMENT TO LICENSE AMENDMENT

AMENDMENT NO. 63 TO FACILITY LICENSE NO. DPR-74

DOCKET NO. 50-316

Revise Appendix A as follows:

<u>Remove Pages</u>	<u>Insert Pages</u>
iii	iii**
3/4 1-1	3/4 1-1**
3/4 2-15	3/4 2-15**
3/4 3-4	3/4 3-4**
3/4 3-42	3/4 3-42**
3/4 4-26	3/4 4-26**
3/4 5-5	3/4 5-5**
3/4 6-11	3/4 6-11**
3/4 6-39	3/4 6-39
3/4 6-40	3/4 6-40*
3/4 6-43	3/4 6-43**
B 3/4 2-3	B 3/4 2-3**
B 3/4 6-3	B 3/4 6-3
B 3/4 6-4	B 3/4 6-4*
6-3	6-3**
6-4	6-4*

\* Included for convenience

\*\* Included for convenience; corrected to show deletion of "Amendment 63" revision.

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### 3/4.1 REACTIVITY CONTROL SYSTEMS

#### 3/4.1.1 BORATION CONTROL

SHUTDOWN MARGIN -  $T_{avg} > 200^{\circ}\text{F}$

#### LIMITING CONDITION FOR OPERATION

3.1.1.1 The SHUTDOWN MARGIN shall be  $\geq 1.6\% \Delta k/k$ .

APPLICABILITY: MODES 1, 2,\* 3, and 4.

ACTION:

With the SHUTDOWN MARGIN  $< 1.6\% \Delta k/k$ , immediately initiate and continue boration at  $\geq 10$  gpm of 20,000 ppm boric acid solution or equivalent until the required SHUTDOWN MARGIN is restored.

#### SURVEILLANCE REQUIREMENTS

4.1.1.1.1 The SHUTDOWN MARGIN shall be determined to be  $\geq 1.6\% \Delta k/k$ :

- a. Within one hour after detection of an inoperable control rod(s) and at least once per 12 hours thereafter while the rod(s) is inoperable. If the inoperable control rod is immovable or untrippable, the above required SHUTDOWN MARGIN shall be increased by an amount at least equal to the withdrawn worth of the immovable or untrippable control rod(s).
- b. When in MODES 1 or 2<sup>#</sup>, at least once per 12 hours by verifying that control bank withdrawal is within the limits of Specification 3.1.3.5.
- c. When in MODE 2<sup>##</sup>, within 4 hours prior to achieving reactor criticality by verifying that the predicted critical control rod position is within the limits of Specification 3.1.3.5.

\* See Special Test Exception 3.10.1

<sup>#</sup>With  $K_{eff} \geq 1.0$

<sup>##</sup>With  $K_{eff} < 1.0$

## POWER DISTRIBUTION LIMITS

### DNB PARAMETERS

#### LIMITING CONDITION FOR OPERATION

3.2.5 The following DNB related parameters shall be maintained within the limits shown on Table 3.2-1:

- a. Reactor Coolant System  $T_{avg}$ .
- b. Pressurizer Pressure.

APPLICABILITY: MODE 1

#### ACTION:

With any of the above parameters exceeding its limit, restore the parameter to within its limit within 2 hours or reduce THERMAL POWER to less than 5% of RATED THERMAL POWER within the next 4 hours.

#### SURVEILLANCE REQUIREMENTS

4.2.5 Each of the parameters of Table 3.2-1 shall be verified to be within their limits at least once per 12 hours.

TABLE 3.3-1 (Continued)

REACTOR TRIP SYSTEM INSTRUMENTATION

<u>FUNCTIONAL UNIT</u>	<u>TOTAL NO. OF CHANNELS</u>	<u>CHANNELS TO TRIP</u>	<u>MINIMUM CHANNELS OPERABLE</u>	<u>APPLICABLE MODES</u>	<u>ACTION</u>
16. Undervoltage-Reactor Coolant Pumps	4-1/bus	2	3	1	6 <sup>#</sup>
17. Underfrequency-Reactor Coolant Pumps	4-1/bus	2	3	1	6 <sup>#</sup>
18. Turbine Trip					
A. Low Fluid Oil Pressure	3	2	2	1	7 <sup>#</sup>
B. Turbine Stbp Valve Closure	4	4	3	1	6 <sup>#</sup>
19. Safety Injection Input from ESF	2	1	2	1, 2	1
20. Reactor Coolant Pump Breaker Position Trip					
A. Above P-8	1/breaker	1	1/breaker	1	10
B. Above P-7	1/breaker	2	1/breaker per operating loop	1	11
21. Reactor Trip Breakers	2	1	2	1, 2 and *	1
22. Automatic Trip Logic	2	1	2	1, 2 and *	1

D. C. COOK - UNIT 2

3/4 3-4

## INSTRUMENTATION

### REMOTE SHUTDOWN INSTRUMENTATION

#### LIMITING CONDITION FOR OPERATION

---

3.3.3.5 The remote shutdown monitoring instrumentation channels shown in Table 3.3-9 shall be OPERABLE with readouts displayed external to the control room.

APPLICABILITY: MODES 1, 2 and 3.

ACTION:

- a. With the number of OPERABLE remote shutdown monitoring channels less than required by Table 3.3-9, either restore the inoperable channel to OPERABLE status within 30 days, or be in HOT SHUTDOWN within the next 12 hours.
- b. The provisions of Specification 3.0.4 are not applicable.

#### SURVEILLANCE REQUIREMENTS

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4.3.3.5 Each remote shutdown monitoring instrumentation channel shall be demonstrated OPERABLE by performance of the CHANNEL CHECK and CHANNEL CALIBRATION operations at the frequencies shown in Table 4.3-6.

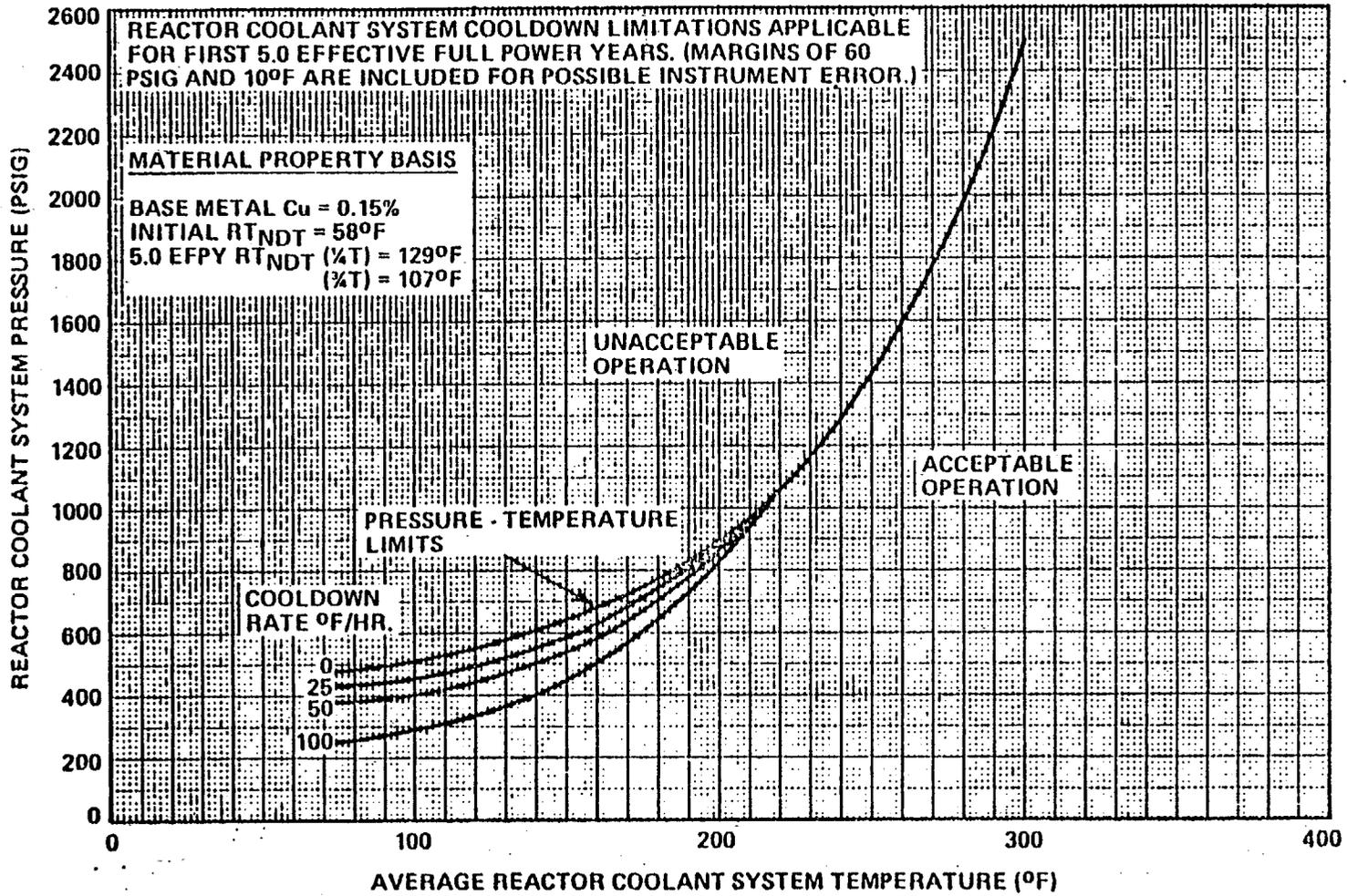


FIGURE 3.4.3

REACTOR COOLANT SYSTEM PRESSURE - TEMPERATURE LIMITS VERSUS COOLDOWN RATES

EMERGENCY CORE COOLING SYSTEMS

SURVEILLANCE REQUIREMENTS (Continued)

- d. At least once per 18 months by:
1. Verifying automatic isolation and interlock action of the RHR system from the Reactor Coolant System when the Reactor Coolant System pressure is above 600 psig.
  2. A visual inspection of the containment sump and verifying that the subsystem suction inlets are not restricted by debris and that the sump components (trash racks, screens, etc.) show no evidence of structural distress or corrosion.
- e. 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 Safety Injection test signal.
  2. Verifying that each of the following pumps start automatically upon receipt of a safety injection test signal:
    - a) Centrifugal charging pump
    - b) Safety injection pump
    - c) Residual heat removal pump
- f. By verifying that each of the following pumps develops the indicated discharge pressure on recirculation flow when tested pursuant to Specification 4.0.5:
1. Centrifugal charging pump  $\geq$  2405 psig
  2. Safety Injection pump  $\geq$  1445 psig
  3. Residual heat removal pump  $\geq$  195 psig
- g. By verifying the correct position of each mechanical stop for the the following Emergency Core Cooling System throttle valves:
1. Within 4 hours following completion of each valve stroking operation or maintenance on the valve when the ECCS sub-systems are required to be OPERABLE.

CONTAINMENT SYSTEMS

SPRAY ADDITIVE SYSTEM

LIMITING CONDITION FOR OPERATION

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3.6.2.2 The spray additive system shall be OPERABLE with:

- a. A spray additive tank containing a volume of between 4000 and 4600 gallons of between 30 and 34 percent by weight NaOH solution, and
- b. Two spray additive eductors each capable of adding NaOH solution from the chemical additive tank to a containment spray system pump flow.

APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION:

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

SURVEILLANCE REQUIREMENTS

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4.6.2.2 The spray additive 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. At least once per 6 months by:
  1. Verifying the contained solution volume in the tank, and
  2. Verifying the concentration of the NaOH solution by chemical analysis.

LIMITING CONDITION FOR OPERATION

3.6.5.3 The ice condenser inlet doors, intermediate deck doors, and top deck doors shall be closed and OPERABLE.

APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION:

With one or more ice condenser doors open or otherwise inoperable, POWER OPERATION may continue for up to 14 days provided the ice bed temperature is monitored at least once per 4 hours and the maximum ice bed temperature is maintained  $< 27^{\circ}\text{F}$ ; otherwise, restore the doors to their closed positions or OPERABLE status (as applicable) within 48 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

SURVEILLANCE REQUIREMENTS

4.6.5.3.1 Inlet Doors - Ice condenser inlet doors shall be:

- a. Continuously monitored and determined closed by the inlet door position monitoring system, and
- b. Demonstrated OPERABLE during shutdown at least once per 3 months during the first year after the ice bed is fully loaded and at least once per 6 months thereafter by:
  1. Verifying that the torque required to initially open each door is  $\leq 675$  inch pounds.
  2. Verifying that opening of each door is not impaired by ice, frost or debris.
  3. Testing a sample of at least 25% of the doors and verifying that the torque required to open each door is less than 195 inch-pounds when the door is 40 degrees open. This torque is defined as the "door opening torque" and is equal to the nominal door torque plus a frictional torque component. The doors selected for determination of the "door opening torque" shall be selected to ensure that all doors are tested at least once during four test intervals.

## CONTAINMENT SYSTEMS

### SURVEILLANCE REQUIREMENTS (Continued)

4. Testing a sample of at least 25% of the doors and verifying that the torque required to keep each door from closing is greater than 78 inch-pounds when the door is 40 degrees open. This torque is defined as the "door closing torque" and is equal to the nominal door torque minus a frictional torque component. The doors selected for determination of the "door closing torque" shall be selected to ensure that all doors are tested at least once during four test intervals.
5. Calculation of the frictional torque of each door tested in accordance with 3 and 4, above. The calculated frictional torque shall be  $\leq$  40 inch-pounds.

4.6.5.3.2 Intermediate Deck Doors - Each ice condenser intermediate deck door shall be:

- a. Verified closed and free of frost accumulation by a visual inspection at least once per 7 days, and
- b. Demonstrated OPERABLE at least once per 3 months during the first year after the ice bed is fully loaded and at least once per 18 months thereafter by visually verifying no structural deterioration, by verifying free movement of the vent assemblies, and by ascertaining free movement when lifted with the applicable force shown below:

<u>Door</u>	<u>Lifting Force</u>
1. Adjacent to Crane Wall	$\leq$ 37.4 lbs.
2. Paired with Door Adjacent to Crane Wall	$\leq$ 33.8 lbs.
3. Adjacent to Containment Wall	$\leq$ 31.8 lbs.
4. Paired with Door Adjacent to Containment Wall	$\leq$ 31.0 lbs.

4.6.5.3.3 Top Deck Doors - Each ice condenser top deck door shall be determined closed and OPERABLE at least once per 92 days by visually verifying:

## CONTAINMENT SYSTEMS

### DIVIDER BARRIER PERSONNEL ACCESS DOORS AND EQUIPMENT HATCHES

#### LIMITING CONDITION FOR OPERATION

3.6.5.5 The personnel access doors and equipment hatches between the containment's upper and lower compartments shall be OPERABLE and closed.

APPLICABILITY: MODES 1, 2, 3 and 4.

#### ACTION:

With a personnel access door or equipment hatch inoperable or open except for personnel transit entry and  $T_{avg} > 200^{\circ}\text{F}$ , restore the door or hatch to OPERABLE status or to its closed position (as applicable) within 1 hour or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

#### SURVEILLANCE REQUIREMENTS

4.6.5.5.1 The personnel access doors and equipment hatches between the containment's upper and lower compartments shall be determined closed by a visual inspection prior to increasing the Reactor Coolant System  $T_{avg}$  above  $200^{\circ}\text{F}$  and after each personnel transit entry when the Reactor Coolant System  $T_{avg}$  is above  $200^{\circ}\text{F}$ .

4.6.5.5.2 The personnel access doors and equipment hatches between the containment's upper and lower compartments shall be determined OPERABLE by visually inspecting the seals and sealing surfaces of these penetrations and verifying no detrimental misalignments, cracks or defects in the sealing surfaces, or apparent deterioration of the seal material:

- a. Prior to final closure of the penetration each time it has been opened, and
- b. At least once per 10 years for penetrations containing seals fabricated from resilient materials.

Percent of Rated  
Thermal Power

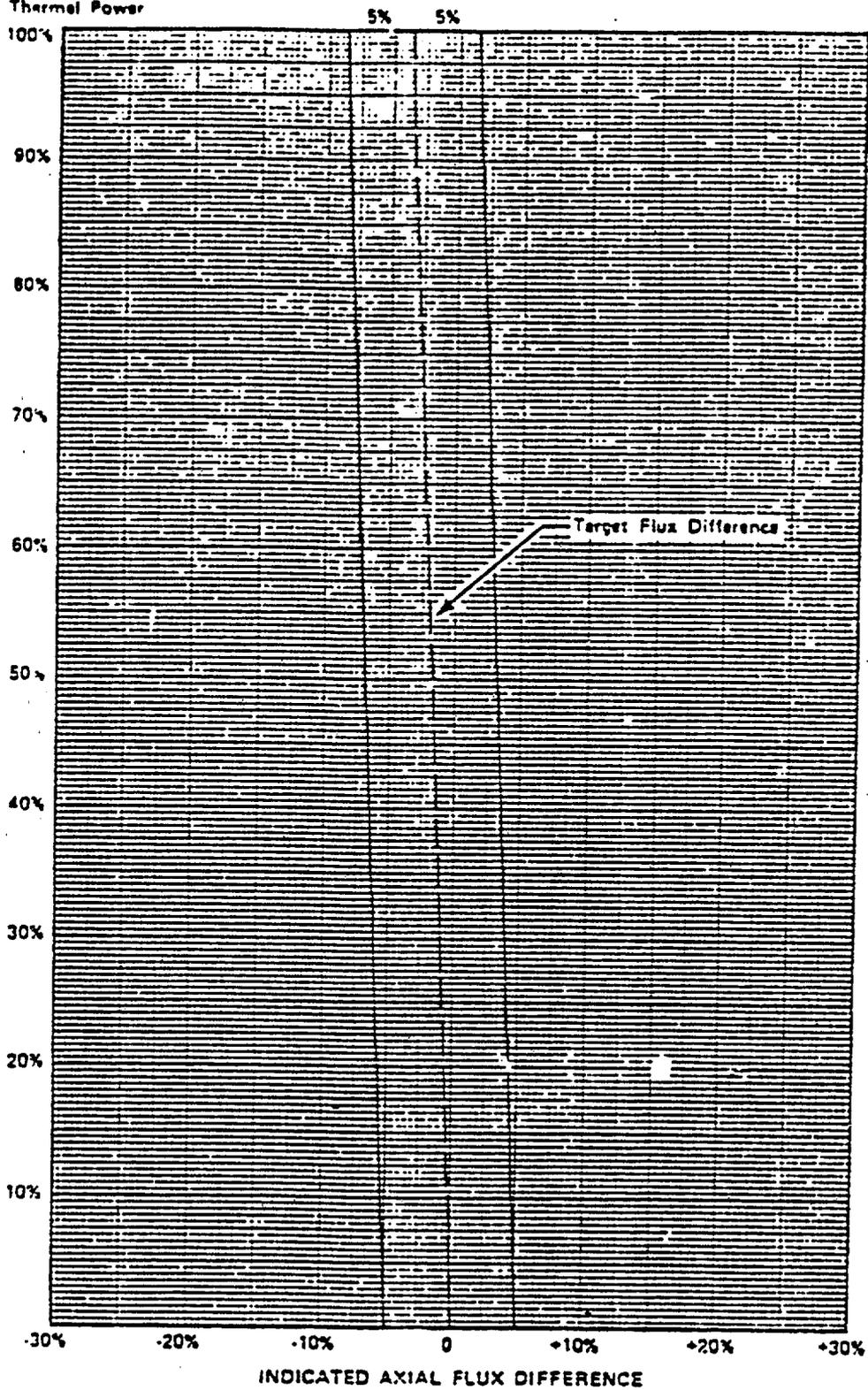


Figure B 3/4 2-1 TYPICAL INDICATED AXIAL FLUX DIFFERENCE VERSUS  
THERMAL POWER

## CONTAINMENT SYSTEMS

### BASES

#### 3/4.6.2 DEPRESSURIZATION AND COOLING SYSTEMS

##### 3/4.6.2.1 CONTAINMENT SPRAY SYSTEM

The OPERABILITY of the containment spray system ensures that containment depressurization and cooling capability will be available in the event of a LOCA. The pressure reduction and resultant lower containment leakage rate are consistent with the assumptions used in the accident analyses.

##### 3/4.6.2.2 SPRAY ADDITIVE SYSTEM

The OPERABILITY of the spray additive system ensures that sufficient NaOH is added to the containment spray in the event of a LOCA. The limits on NaOH volume and concentration ensure a pH value of between 8.5 and 11.0 for the solution recirculated within containment after a LOCA. This pH band minimizes the evolution of iodine and minimizes the effect of chloride and caustic stress corrosion on mechanical systems and components. These assumptions are consistent with the iodine removal efficiency assumed in the accident analyses.

The contained water volume limit includes an allowance for water not usable because of tank discharge location or other physical characteristics.

##### 3/4.6.3 CONTAINMENT ISOLATION VALVES

The OPERABILITY of the containment isolation valves ensures that the containment atmosphere will be isolated from the outside environment in the event of a release of radioactive material to the containment atmosphere or pressurization of the containment. Containment isolation within the time limits specified ensures that the release of radioactive material to the environment will be consistent with the assumptions used in the analyses for a LOCA.

## CONTAINMENT SYSTEMS

### BASES

#### 3/4.6.4 COMBUSTIBLE GAS CONTROL

The OPERABILITY of the equipment and systems required for the detection and control of hydrogen gas ensures that this equipment will be available to maintain the hydrogen concentration within containment below its flammable limit during post-LOCA conditions. Either recombiner unit is capable of controlling the expected hydrogen generation associated with 1) zirconium-water reactions, 2) radiolytic decomposition of water and 3) corrosion of metals within containment. These hydrogen control systems are consistent with the recommendations of Regulatory Guide 1.7, "Control of Combustible Gas Concentrations in Containment Following a LOCA", March 1971.

#### 3/4.6.5 ICE CONDENSER

The requirements associated with each of the components of the ice condenser ensure that the overall system will be available to provide sufficient pressure suppression capability to limit the containment peak pressure transient to less than 12 psig during LOCA conditions.

##### 3/4.6.5.1 ICE BED

The OPERABILITY of the ice bed ensures that the required ice inventory will 1) be distributed evenly through the containment bays, 2) contain sufficient boron to preclude dilution of the containment sump following the LOCA and 3) contain sufficient heat removal capability to condense the reactor system volume released during a LOCA. These conditions are consistent with the assumptions used in the accident analyses.

The minimum weight figure of 1220 pounds of ice per basket contains a 10% conservative allowance for ice loss through sublimation which is a factor of 10 higher than assumed for the ice condenser design. In the event that observed sublimation rates are equal to or lower than design predictions after three years of operation, the minimum ice baskets weight may be adjusted downward. In addition, the number of ice baskets required to be weighted each 9 months may be reduced after 3 years of operation if such a reduction is supported by observed sublimation data.

##### 3/4.6.5.2 ICE BED TEMPERATURE MONITORING SYSTEM

The OPERABILITY of the ice bed temperature monitoring system ensures that the capability is available for monitoring the ice temperature. In the event the monitoring system is inoperable, the ACTION requirements provide assurance that the ice bed heat removal capacity will be retained within the specified time limits.

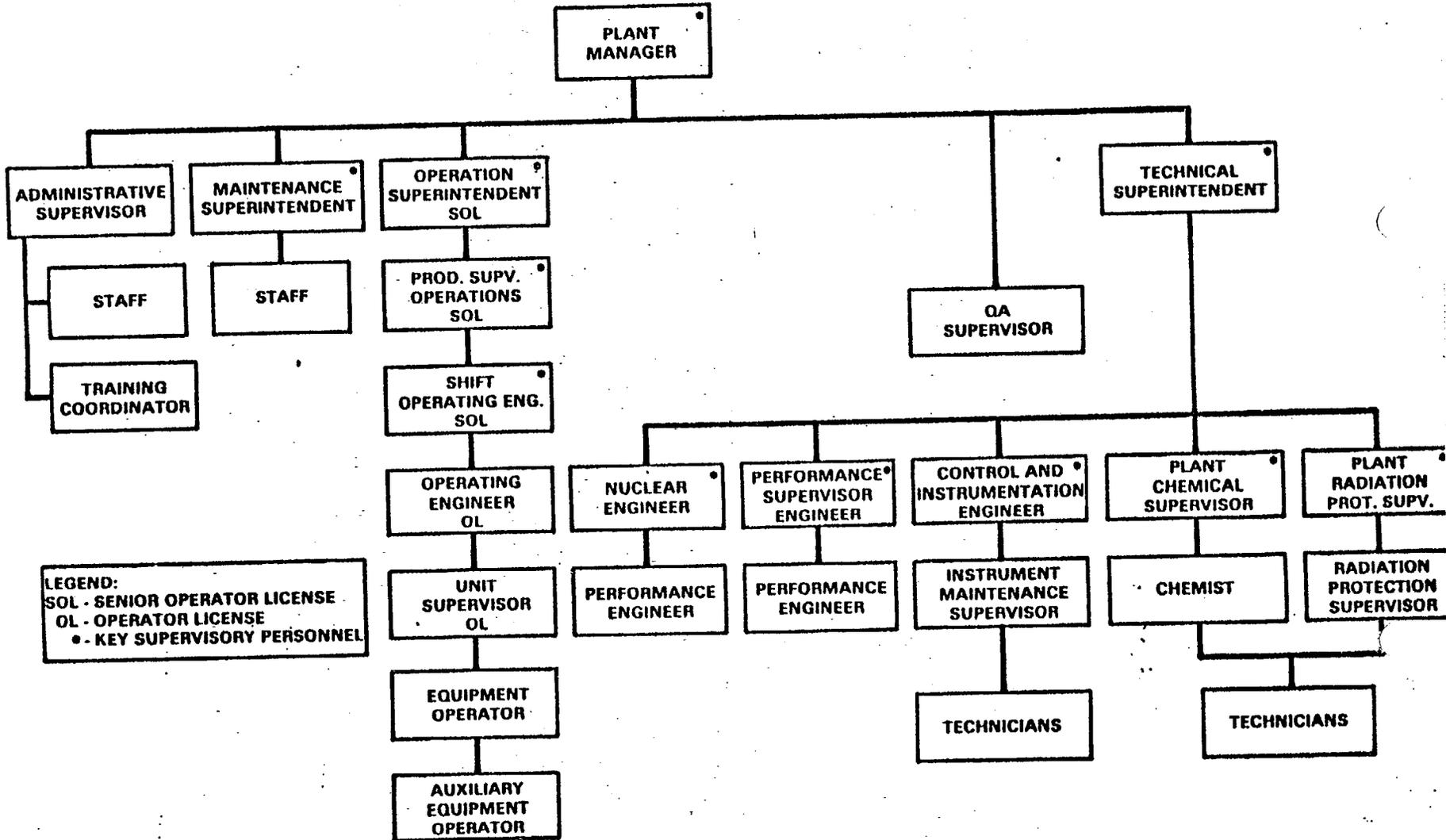


Figure 6.2-2 Facility Organization - Donald C. Cook - Unit No. 2

TABLE 6.2-1

MINIMUM SHIFT CREW COMPOSITION#

LICENSE CATEGORY	APPLICABLE MODES	
	1, 2, 3 & 4	5 & 6
SDL	1**	1*
OL	2	1
Non-Licensed	2	1
Shift Technical Advisor	1**	None required

\*Does not include the licensed Senior Reactor Operator or Senior Reactor Operator Limited to Fuel Handling, supervising CORE ALTERATIONS.

#Shift crew composition may be less than the minimum requirements for a period of time not to exceed 2 hours in order to accommodate unexpected absence of on duty shift crew members provided immediate action is taken to restore the shift crew composition to within the minimum requirements of Table 6.2-1.

\*\*Shared with D. C. Cook Unit 1.