



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

INDIANA MICHIGAN POWER COMPANY

DOCKET NO. 50-315

DONALD C. COOK NUCLEAR PLANT, UNIT NO. 1

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 136  
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 December 8, 1989 and supplemented on March 6, 1990, 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.

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2. Accordingly, Facility Operating License No. DPR 58 is hereby amended by changing paragraph 2.C(4) paragraph 2 to read as follows:\*

"Fuel stored in the spent fuel pool shall not have an enrichment greater than 4.95% Uranium-235."

3. 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. 136 , are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications.

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

FOR THE NUCLEAR REGULATORY COMMISSION



Dominic C. DiIanni, Acting Director  
Project Directorate III-1  
Division of Reactor Projects - III,  
IV, V & Special Projects  
Office of Nuclear Reactor Regulation

Attachment:  
Changes to the Technical  
Specifications

Date of Issuance: May 17, 1990

\*Page 4 is attached, for convenience, for the composite license to reflect this change.

Amendment  
No. 31

2.C(4)

The licensee may proceed with and is required to complete the modifications identified in Table 1 of the Fire Protection Safety Evaluation Report for the Donald C. Cook Nuclear Plant dated June 4, 1979. These modifications shall be completed in accordance with the dates contained in Table 1 of that SER or Supplements thereto. Administrative controls for fire protection as described in the licensee's submittals dated January 31, 1977 and October 27, 1977 shall be implemented and maintained.

(5) Spent Fuel Pool Storage

Amendment  
No. 118,136

The licensee is authorized to store D. C. Cook, Unit 1 and Unit 2 fuel assemblies, new or irradiated in any combination up to a total of 2050 fuel assemblies in the shared spent fuel pool at the Donald C. Cook Nuclear Plant subject to the following conditions:

Fuel stored in the spent fuel pool shall not have an enrichment greater than 4.95% Uranium-235.

(6) Deleted by Amendment 80.

\*2.D

Physical Protection

Amendment  
No. 122

The licensee shall fully implement and maintain in effect all provisions of the Commission-approved physical security, guard training and qualification, and safeguards contingency plans including amendments made pursuant to provisions of the Miscellaneous Amendments and Search Requirements revisions to 10 CFR 73.55 (51 FR 27817 and 27822) and to the authority of 10 CFR 50.90 and 10 CFR 50.54(p). The plans, which contain Safeguards Information protected under 10 CFR 73.21, are entitled: "Donald C. Cook Nuclear Plant Security Plan," with revisions submitted through July 21, 1988; "Donald C. Cook Nuclear Plant Training and Qualification Plan," with revisions submitted through December 18, 1986; and "Donald C. Cook Nuclear Plant Safeguards Contingency Plan," with revisions submitted through June 10, 1988. Changes made in accordance with 10 CFR 73.55 shall be implemented in accordance with the schedule set forth therein.

ATTACHMENT TO LICENSE AMENDMENT NO. 136

FACILITY OPERATING LICENSE NO. DPR-58

DOCKET NO. 50-315

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

REMOVE

\*  
B 3/4 9-4  
5-5  
\*  
5-6  
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INSERT

3/4 9-19  
B 3/4 9-4  
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REFUELING OPERATIONS

STORAGE POOL BORON CONCENTRATION\*

LIMITING CONDITION FOR OPERATION

3.9.15 A boron concentration of greater than or equal to 2,400 ppm shall be maintained in the fuel storage pool.

APPLICABILITY: Whenever fuel assemblies with enrichment greater than 3.95 weight percent U-235 and with burnup less than 5,550 MWD/MTU are in the fuel storage pool.

ACTION:

With the requirements of the specification not satisfied, suspend all movement of fuel assemblies in the fuel storage pool and restore the boron concentration to within its limit prior to resuming fuel movement. The provisions of Specification 3.0.3 are not applicable.

SURVEILLANCE REQUIREMENTS

4.9.15 The boron concentration in the fuel storage pool shall be determined to be at least at its minimum required at least once per 7 days when fuel assemblies with enrichment greater than 3.95 weight percent U-235 and with burnup less than 5,550 MWD/MTU are in the fuel storage pool.

\*Shared system with Cook Nuclear Plant - Unit 2

## REFUELING OPERATIONS

### BASES

#### 3/4.9.13 SPENT FUEL CASK MOVEMENT

The limitations of this specification ensure that, during insertion or removal of spent fuel casks from the spent fuel pool, fuel cask movement will be constrained to the path and lift height assumed in the Cask Drop Protection System safety analysis. Restricting the spent fuel cask movement within these requirements provides protection for the spent fuel pool and stored fuel from the effects of a fuel cask drop accident.

#### 3/4.9.14 SPENT FUEL CASK DROP PROTECTION SYSTEM

The limitations on the use of spent fuel casks weighing in excess of 110 tons (nominal) provide assurance that the spent fuel pool would not be damaged by a dropped fuel cask since this weight is consistent with the assumptions used in the safety analysis for the performance of the Cask Drop Protection System.

#### 3/4.9.15 STORAGE POOL BORON CONCENTRATION

The limitation on the fuel storage pool boron concentration of 2,400 ppm provides assurance that the  $K_{eff}$  would be below 0.95 in the unlikely event of fuel misloading.

## DESIGN FEATURES

- a. In accordance with the code requirements specified in Section 4.1.6 of the FSAR, with allowance for normal degradation pursuant to the applicable Surveillance Requirements,
- b. For a pressure of 2485 psig, and
- c. For a temperature of 650°F, except for the pressurizer which is 680°F.

## VOLUME

5.4.2 The total contained volume of the reactor coolant system is 12,612 ± 100 cubic feet at a nominal  $T_{avg}$  of 70°F.

## 5.5 EMERGENCY CORE COOLING SYSTEMS

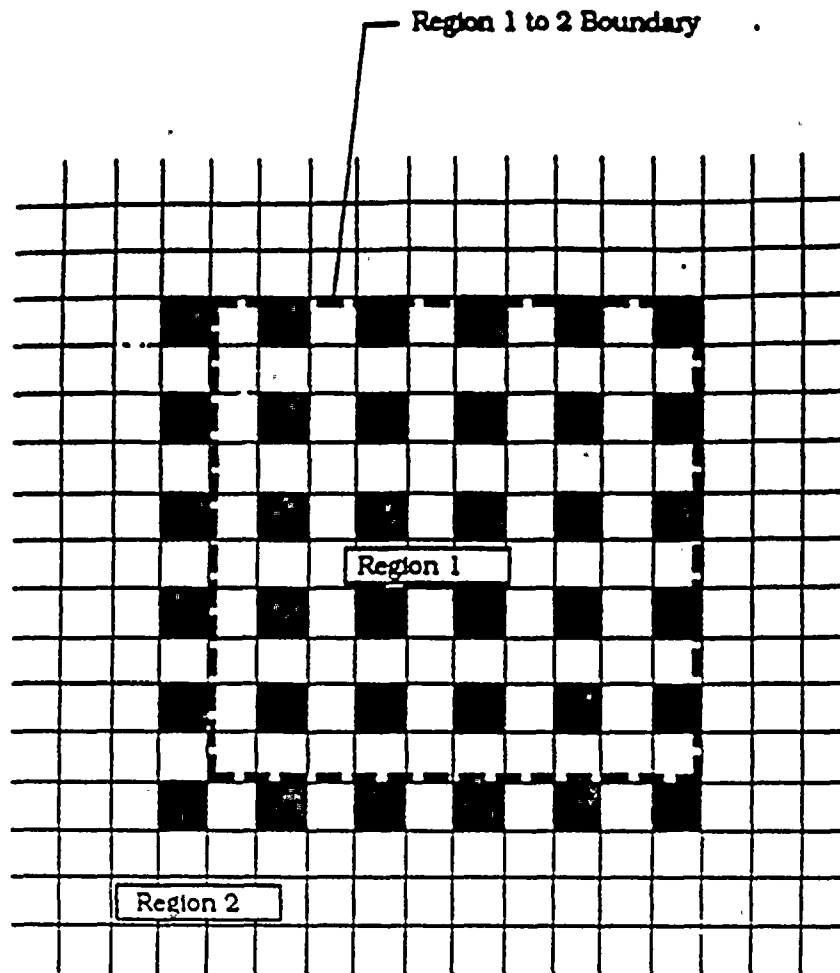
5.5.1 The emergency core cooling systems are designed and shall be maintained in accordance with the original design provisions contained in Section 6.2 of the FSAR with allowance for normal degradation pursuant to the applicable Surveillance Requirements.

## 5.6 FUEL STORAGE CRITICALITY - SPENT FUEL

5.6.1.1: The spent fuel storage racks are designed and shall be maintained with:

- a. A  $k_{eff}$  equivalent to less than 0.95 when flooded with unborated water,
- b. A nominal 10.5 inch center-to-center distance between fuel assemblies placed in the storage racks.
- c. 1. A separate region within the spent fuel storage racks (defined as Region 1) shall be established for storage of Westinghouse fuel with nominal enrichment above 3.95 weight percent U-235 and with burnup less than 5,550 MWD/MTU. In Region 1, fuel shall be stored in a three-out-of-four cell configuration with one symmetric cell location of each 2 x 2 cell array vacant.  
2. The boundary between the Region 1 mentioned above and the rest of the spent fuel storage racks (defined as Region 2) shall be such that the three-out-of-four storage requirement shall be carried into Region 2 by, at least, one row as shown in Figure 5.6-1.





Empty Cell  
 Fuel Cell

Figure 5.6-1: Donald C. Cook Nuclear Plant Schematic for Fuel Storage Racks Interface Boundary Between Regions 1 and 2



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## DESIGN FEATURES

5.6.1.2: Fuel stored in the spent fuel storage racks shall have a maximum nominal fuel assembly enrichment as follows:

<u>Description</u>	<u>Maximum Nominal Fuel Assembly Enrichment Wt. % 235<sub>u</sub></u>
1) Westinghouse 15 x 15 STD 15 x 15 OFA	4.95
2) Exxon/ANF 15 x 15	3.50
3) Westinghouse 17 x 17 STD 17 x 17 OFA 17 x 17 V5	4.95
4) Exxon/ANF 17 x 17	4.23

## CRITICALITY-NEW FUEL

5.6.2.1 The new fuel pit storage racks are designed and shall be maintained with a nominal 21 inch center-to-center distance between new fuel assemblies such that  $k_{eff}$  will not exceed 0.98 when fuel assemblies are placed in the pit and aqueous foam moderation is assumed.

5.6.2.2 Fuel stored in the new fuel storage racks shall have a maximum nominal fuel assembly enrichment as follows;

<u>Description</u>	<u>Maximum Nominal Fuel Assembly Enrichment Wt. % 235<sub>u</sub></u>
1) Westinghouse 15 x 15 STD 15 x 15 OFA	4.55
2) Exxon/ANF 15 x 15	3.50
3) Westinghouse 17 x 17 STD 17 x 17 OFA 17 x 17 V5	4.55
4) Exxon/ANF 17 x 17	4.23

## DRAINAGE

5.6.3 The spent fuel storage pool is designed and shall be maintained to prevent inadvertent draining of the pool below elevation 629'4".

## DESIGN FEATURES

### CAPACITY

5.6.4 The fuel storage pool is designed and shall be maintained with a storage capacity limited to no more than 2050 fuel assemblies.

### 5.7 SEISMIC CLASSIFICATION

5.7.1 Those structures, systems and components identified as Category I Items in the FSAR shall be designed and maintained to the original design provisions contained in the FSAR with allowance for normal degradation pursuant to the applicant Surveillance Requirements.

### 5.8 METEOROLOGICAL TOWER LOCATION

5.8.1 The meteorological tower shall be located as shown in Figure 5.1-1.

### 5.9 COMPONENT CYCLIC OR TRANSIENT LIMIT

5.9.1 The components identified in Table 5.9-1 are designed and shall be maintained within the cyclic or transient limits of Table 5.9-1.



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

INDIANA MICHIGAN POWER COMPANY

DOCKET NO. 50-316

DONALD C. COOK NUCLEAR PLANT, UNIT NO. 2

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 121  
License No. DPR-74

1. The Nuclear Regulatory Commission (the Commission) has found that:
  - A. The application for amendment by Indiana Michigan Power Company (the licensee) dated December 8, 1989 and supplemented on March 6, 1990, 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, Facility Operating License No. DPR-74 is hereby amended by deleting 2.C.(3)(p) and change 2.C.(3)(s) paragraph 2 to read as follows:\*

"Fuel stored in the spent fuel pool shall not have an enrichment greater than 4.95% Uranium-235."

3. 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. 121, are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications.

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

FOR THE NUCLEAR REGULATORY COMMISSION



Dominic C. DiIanni, Acting Director  
Project Directorate III-1  
Division of Reactor Projects - III,  
IV, V & Special Projects  
Office of Nuclear Reactor Regulation

Attachment:  
Changes to the Technical  
Specifications

Date of Issuance: May 17, 1990

\*Pages 5 and 6 are attached, for convenience, for the composite license to reflect this change.



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(l) Deleted by Amendment 63.

(m) Deleted by Amendment 19.

(n) Deleted by Amendment 28.

(o) Fire Protection

Amendment  
No. 12

The licensee may proceed with and is required to complete the modifications identified in Table 1 of the Fire Protection Safety Evaluation Report for the Donald C. Cook Nuclear Plant dated June 4, 1979. These modifications shall be completed in accordance with the dates contained in Table 1 of that SER or Supplements thereto. Administrative controls for fire protection as described in the licensee's submittals dated January 31, 1977 and October 27, 1977 shall be implemented and maintained.

Amendment  
No. 64, 121

(p) Deleted by Amendment

- (q) Deleted by Amendment 2.
- (r) Deleted by Amendment 68.
- (s) Spent Fuel Pool Storage

Amendment  
No. 104,121

The licensee is authorized to store D. C. Cook, Unit 1 and Unit 2 fuel assemblies, new or irradiated in any combination, up to a total of 2050 fuel assemblies in the shared spent fuel pool at the Donald C. Cook Nuclear Plant subject to the following conditions:

Fuel stored in the spent fuel pool shall not have an enrichment greater than 4.95% Uranium-235.

\*Amendment 3 deleted Paragraph (s), Amendment 13 added a new Paragraph (s).

- (t) Deleted by Amendment 63.

2.C.(7) Secondary Water Chemistry Monitoring Program

The licensee shall implement a secondary water chemistry monitoring program to inhibit steam generator tube degradation. This program shall be described in the station chemistry manual and shall include:

1. Identification of a sampling schedule for the critical parameters and control points for these parameters;
2. Identification of the procedures used to measure the values of the critical parameters;
3. Identification of process sampling points;
4. Procedure for the recording and management of data;
5. Procedures defining corrective actions for off control point chemistry conditions; and
6. A procedure identifying (a) the authority responsible for the interpretation of the data, and (b) the sequence and timing of administrative events required to initiate corrective actions.

Amendment  
No. 18

ATTACHMENT TO LICENSE AMENDMENT NO. 121

FACILITY OPERATING LICENSE NO. DPR-74

DOCKET NO. 50-316

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

REMOVE

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B 3/4 9-4  
5-4  
5-5  
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5-6

INSERT

3/4 9-18  
B 3/4 9-4  
5-4  
5-5  
5-5a  
5-6

REFUELING OPERATIONS

STORAGE POOL BORON CONCENTRATION\*

LIMITING CONDITION FOR OPERATION

3.9.15 A boron concentration of greater than or equal to to 2,400 ppm shall be maintained in the fuel storage pool.

APPLICABILITY: Whenever fuel assemblies with enrichment greater than 3.95 weight percent U-235 and with burnup less than 5,550 MWD/MTU are in the fuel storage pool.

ACTION:

With the requirements of the specification not satisfied, suspend all movement of fuel assemblies in the fuel storage pool and resotre the boron . concentration to within its limit prior to resuming fuel movement. The provisions of Specification 3.0.3 are not applicable.

SURVEILLANCE REQUIREMENTS

4.9.15 The boron concentration in the fuel storage pool shall be determined to be at least at its minimum required at least once per 7 days when fuel assemblies with enrichment greater than 3.95 weight percent U-235 and with burnup less than 5,550 MWD/MTU are in the fuel storage pool.

\*Shared system with Cook Nuclear Plant - Unit 1



## REFUELING OPERATIONS

### BASES

Should the doors become blocked or stuck open while under administrative control, Technical Specification requirements will not be considered to be violated provided the Action Statement requirements of Specification 3.9.12 are expeditiously followed, i.e., movement of fuel within the storage pool or crane operation with loads over the pool is expeditiously suspended.

#### 3/4.9.13 SPENT FUEL CASK MOVEMENT

The limitations of this specification ensure that, during insertion or removal of spent fuel casks from the spent fuel pool, fuel cask movement will be constrained to the path and lift height assumed in the Cask Drop Protection System safety analysis. Restricting the spent fuel cask movement within these requirements provides protection for the spent fuel pool and stored fuel from the effects of a fuel cask drop accident.

#### 3/4.9.14 SPENT FUEL CASK DROP PROTECTION SYSTEM

The limitations on the use of spent fuel casks weighing in excess of 110 tons (nominal) provide assurance that the spent fuel pool would not be damaged by a dropped fuel cask since this weight is consistent with the assumptions used in the safety analysis for the performance of the Cask Drop Protection System.

#### 3/4.9.15 STORAGE POOL BORON CONCENTRATION

The limitation on the fuel storage pool boron concentration of 2,400 ppm provides assurance that the  $K_{eff}$  would be below 0.95 in the unlikely event of fuel misloading.

## DESIGN FEATURES

### 5.3 REACTOR CORE

#### FUEL ASSEMBLIES

5.3.1 The reactor core shall contain 193 fuel assemblies with each fuel assembly containing 264 fuel rods clad with Zircaloy-4. Each fuel rod shall have a nominal active fuel length of 144 inches. The initial core loading shall have a maximum enrichment of 3.3 weight percent U-235. Reload fuel shall be similar in physical design to the initial core loading and may be enriched up to 4.95 weight percent U-235.

#### CONTROL ROD ASSEMBLIES

5.3.2 The reactor core shall contain 53 full length and no part length control rod assemblies. The full length control rod assemblies shall contain a nominal 142 inches of absorber material. The nominal values of absorber material shall be 80 percent silver, 15 percent indium and 5 percent cadmium. All control rods shall be clad with stainless steel tubing.

### 5.4 REACTOR COOLANT SYSTEM

#### DESIGN PRESSURE AND TEMPERATURE

5.4.1 The reactor coolant system is designed and shall be maintained:

- a. In accordance with the code requirements specified in Section 4.1.6 of the FSAR, with allowance for normal degradation pursuant to the applicable Surveillance Requirements.
- b. For a pressure of 2485 psig, and
- c. For a temperature of 650°F, except for the pressurizer which is 680°F.

VOLUME

5.4.2 The total water and steam volume of the reactor coolant system is 12,612 ± 100 cubic feet as a nominal  $T_{avg}$  of 70°F.

5.5 METEOROLOGICAL TOWER LOCATION

5.5.1 The meteorological tower shall be located as shown on Figure 5.1-1.

5.6 FUEL STORAGE

CRITICALITY - SPENT FUEL

5.6.1.1 The spent fuel storage racks are designed and shall be maintained with:

- a. A  $K_{eff}$  equivalent to less than 0.95 when flooded with unborated water,
- b. A nominal 10.5-inch center-to-center distance between fuel assemblies, placed in the storage racks.
- c. 1. A separate region within the spent fuel storage racks (defined as Region 1) shall be established for storage of Westinghouse fuel with nominal enrichment above 3.95 weight percent U-235 and with burnup less than 5,550 MWD/MTU. In Region 1, fuel shall be stored in a three-out-of-four cell configuration with one symmetric cell location of each 2 x 2 cell array vacant.  
2. The boundary between the Region 1 mentioned above and the rest of the spent fuel storage racks (defined as Region 2) shall be such that the three-out-of-four storage requirement shall be carried into Region 2 by, at least, one row as shown in Figure 5.6-1.

5.6.1.2 Fuel stored in the spent fuel storage racks shall have a maximum nominal fuel assembly enrichment as follows:

<u>Description</u>	<u>Maximum Nominal Fuel Assembly Enrichment Wt. % <math>^{235}U</math></u>
1) Westinghouse 15 x 15 STD 15 x 15 OFA	4.95
2) Exxon/ANF 15 x 15	3.50
3) Westinghouse 17 x 17 STD 17 x 17 OFA 17 x 17 V5	4.95
4) Exxon/ANF 17 x 17	4.23





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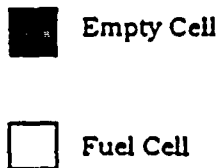
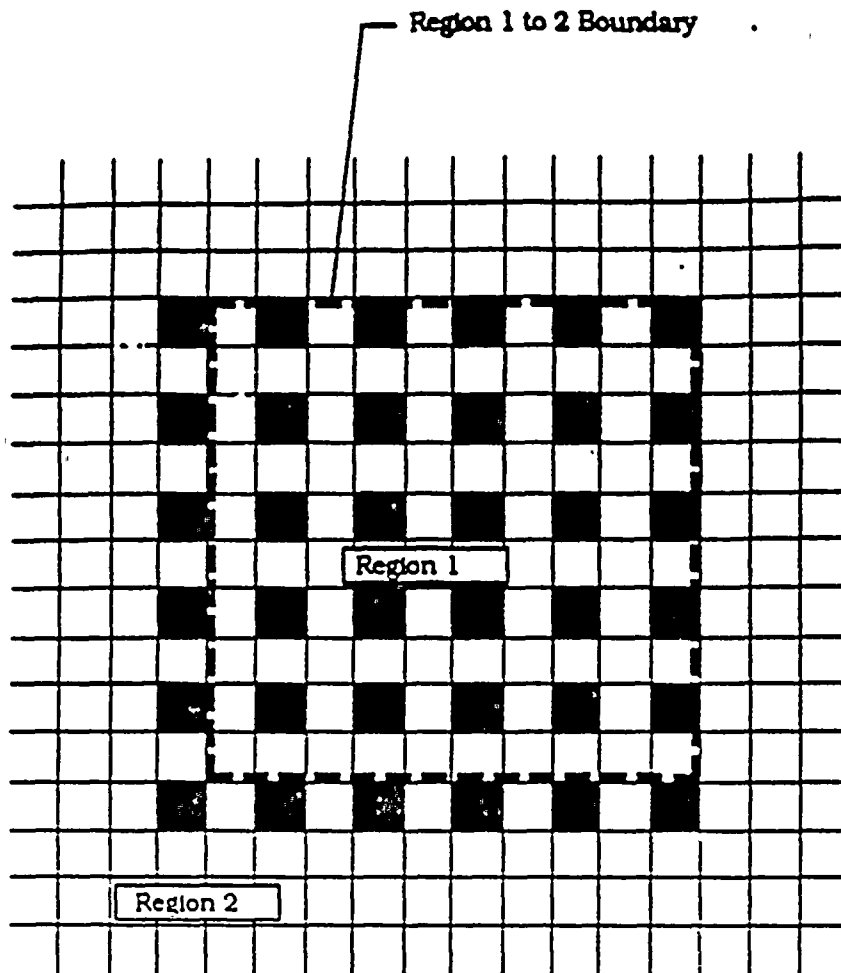


Figure 5.6-1: Donald C. Cook Nuclear Plant Schematic for Fuel Storage Racks Interface Boundary Between Regions 1 and 2



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## DESIGN FEATURES

### CRITICALITY-NEW FUEL

5.6.2.1 The new fuel pit storage racks are designed and shall be maintained with a nominal 21 inch center-to-center distance between new fuel assemblies such that  $K_{eff}$  will not exceed 0.98 when fuel assemblies are placed in the pit and aqueous foam moderation is assumed.

5.6.2.2 Fuel stored in the new fuel storage racks shall have a maximum nominal fuel assembly enrichment as follows;

<u>Description</u>	<u>Maximum Nominal Fuel Assembly Enrichment Wt. % 235<sub>g</sub></u>
1) Westinghouse 15 x 15 STD 15 x 15 OFA	4.55
2) Exxon/ANF 15 x 15	3.50
3) Westinghouse 17 x 17 STD 17 x 17 OFA 17 x 17 V5	4.55
4) Exxon/ANF 17 x 17	4.23

### DRAINAGE

5.6.3 The spent fuel storage pool is designed and shall be maintained to prevent inadvertent draining of the pool below elevation 629'4".

### CAPACITY

5.6.4 The spent fuel storage pool is designed and shall be maintained with a storage capacity limited to no more than 2050 fuel assemblies.

### 5.7 COMPONENT CYCLIC OR TRANSIENT LIMIT

5.7.1 The components identified in Table 5.7-1 are designed and shall be maintained within the cyclic or transient limits of Table 5.7-1.