

ATTACHMENT 1 TO AEP:NRC:1202

10 CFR 50.92 ANALYSIS FOR CHANGES TO THE

DONALD C. COOK NUCLEAR PLANT UNITS 1 AND 2

TECHNICAL SPECIFICATIONS

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### 1.0 SECTION TO BE CHANGED

1. Technical Specification (T/S) 3.9.3
2. T/S Figure 5.6-1, "Normal Storage Pattern (Mixed Three Zone)."
3. T/S Figure 5.6-2, "Interim Storage Pattern (Checkerboard)."

### 2.0 EXTENT OF CHANGES

1. We are proposing to change T/S 3.9.3 to allow start of core offload 100 hours after core subcriticality.
2. Changes to Figure 5.6-1 are intended to correctly identify the number of region 1, 2, and 3 cells in the Normal Storage Pattern (Mixed Three Zone).
3. Changes to Figure 5.6-2 are intended to correctly identify the number of region 1, 2 and 3 cells in the Interim Storage Pattern (Checkerboard).

### 3.0 CHANGES REQUESTED

We are proposing to make the following changes to the Unit 1 and Unit 2 T/Ss (1-3) and commitments in AEP:NRC:1146 (4).

- #1 The amount of time the reactor must be subcritical before movement of irradiated fuel is decreased from 168 hours to 100 hours.
- #2 The number of region 1, 2 and 3 cells in Figure 5.6-1 is correctly changed from 504, 1415, 1694 to 504, 1439, 1670, respectively.
- #3 The number of region 2 and 3 cells in Figure 5.6-2 is correctly changed from 1415 and 1379 to 1439 and 1355, respectively.
- #4 Clarifications are made with respect to our spent nuclear fuel pool storage rack boron poison surveillance program commitments.



#### 4.0 DISCUSSION

##### Technical Specification 3.9.3 Bases

T/S 3.9.3 ensures sufficient resident time for the fuel in the core after subcriticality to allow for decay of short lived fission products. This decay time is a key input in to the spent fuel pool thermal hydraulic calculations as it allows the fuel to cool off prior to placement into the pool. This cool off period ensures that design basis criteria are met for bulk pool temperature and concrete temperatures under worst case scenario.

##### Justification for Proposed Technical Specification Changes

- #1 Attachment 2 to this letter contains an analysis performed by Holtec International on behalf of I&M. This analysis reviews the impact of the proposed T/S change that reduces the time constraint imposed on movement of irradiated fuel. The analysis concludes that the initiation of core offload after just 100 hours of subcriticality with a lake temperature of less than or equal to 90°F, will not cause bulk pool water, fuel rod clad, or concrete temperatures around the pool to be at unacceptably high levels.
- #2 The changes to Figure 5.6-1 are editorial in nature.
- #3 The changes to Figure 5.6-2 are editorial in nature.
- #4 Clarification is given to the spent nuclear fuel pool storage rack boron poison surveillance program.

#### 5.0 NO SIGNIFICANT HAZARDS CONSIDERATION DETERMINATION

We have evaluated the proposed T/S, editorial and clarification changes and have determined that they do not represent a significant hazards consideration based on the criteria established in 10 CFR 50.92(c). Operation of Cook Nuclear Plant in accordance with the proposed amendment will not:

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

Although one of the proposed changes results in initiation of core offload earlier after subcriticality than is currently allowed, it does not increase the probability or consequences of an accident previously evaluated. The bulk pool water temperatures, fuel rod clad temperatures, and pool wall concrete temperatures will be

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within acceptable limits as shown in Attachment 2. In addition, the subject change will not result in an uncontrolled release of radiation to the environment and will not initiate an accident. The remaining changes are editorial in nature and have no affect on probability or consequences of a postulated accident.

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

As previously stated, the earlier fuel movement change will not result in bulk pool water, fuel rod clad, or concrete temperatures which would initiate bulk pool boiling, challenge fuel rod integrity or jeopardize the structural integrity of the pool. This change will also have no impact on the criticality, structural, seismic, or dropped assembly accident analysis previously performed and accepted by the NRC. Consequently, the proposed T/S change does not create the possibility of a new or different kind of accident from any previously analyzed. The remaining changes have no affect on nature or probability of a postulated accident.

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

The proposed change for earlier fuel movement will not result in bulk pool water temperatures, fuel rod clad temperatures or concrete temperatures which would initiate bulk pool boiling, challenge fuel rod integrity or jeopardize the structural integrity of the pool. This proposed change will not affect the results of any other analysis associated with the spent fuel pool. It is, therefore, concluded that this change poses no significant reduction in a margin of safety. The remaining changes have no affect on the nature or probability of a postulated accident.

6.0 PENDING T/S PROPOSALS IMPACTING THIS SUBMITTAL

There are no other T/S proposals under review that impact this submittal.

ATTACHMENT 2 TO AEP:NRG:1202

SAFETY ANALYSIS PERFORMED BY

HOLTEC INTERNATIONAL

ATTACHMENT 3 TO AEP:NRC:1202  
EXISTING TECHNICAL SPECIFICATIONS FOR  
DONALD C. COOK NUCLEAR PLANT UNITS 1 & 2  
MARKED TO REFLECT PROPOSED CHANGES



## REFUELING OPERATIONS

### DECAY TIME

#### LIMITING CONDITION FOR OPERATION

3.9.3 The reactor shall be subcritical for at least <sup>100</sup>~~168~~ hours.

APPLICABILITY: During movement of irradiated fuel in the reactor pressure vessel.

#### ACTION:

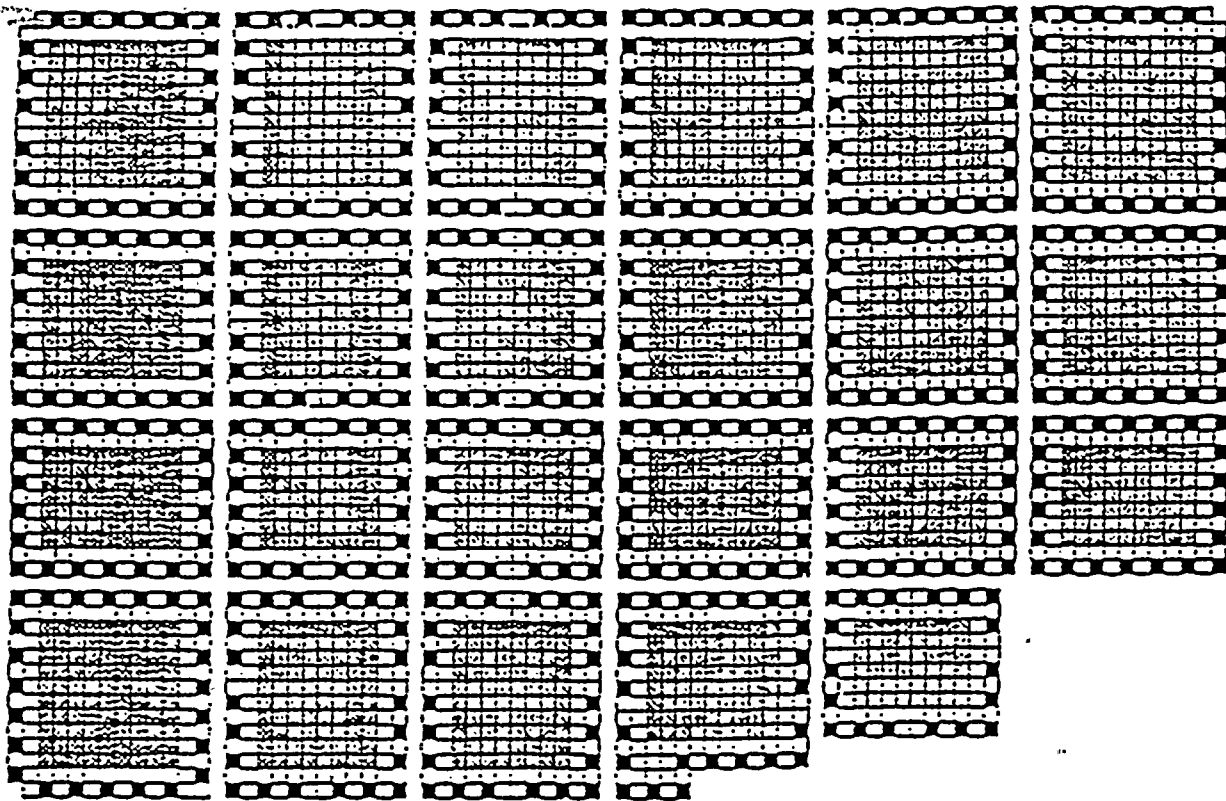
With the reactor subcritical for less than <sup>100</sup>~~168~~ hours, suspend all operations involving movement of irradiated fuel in the reactor pressure vessel. The provisions of Specification 3.0.3 are not applicable.

#### SURVEILLANCE REQUIREMENTS

4.9.3 The reactor shall be determined to have been subcritical for at least <sup>100</sup>~~168~~ hours by verification of the date and time of subcriticality prior to movement of irradiated fuel in the reactor pressure vessel.



FIGURE 5.6-1: Normal Storage Pattern (Mixed Three Zone)



■ 504 REGION 1 CELLS

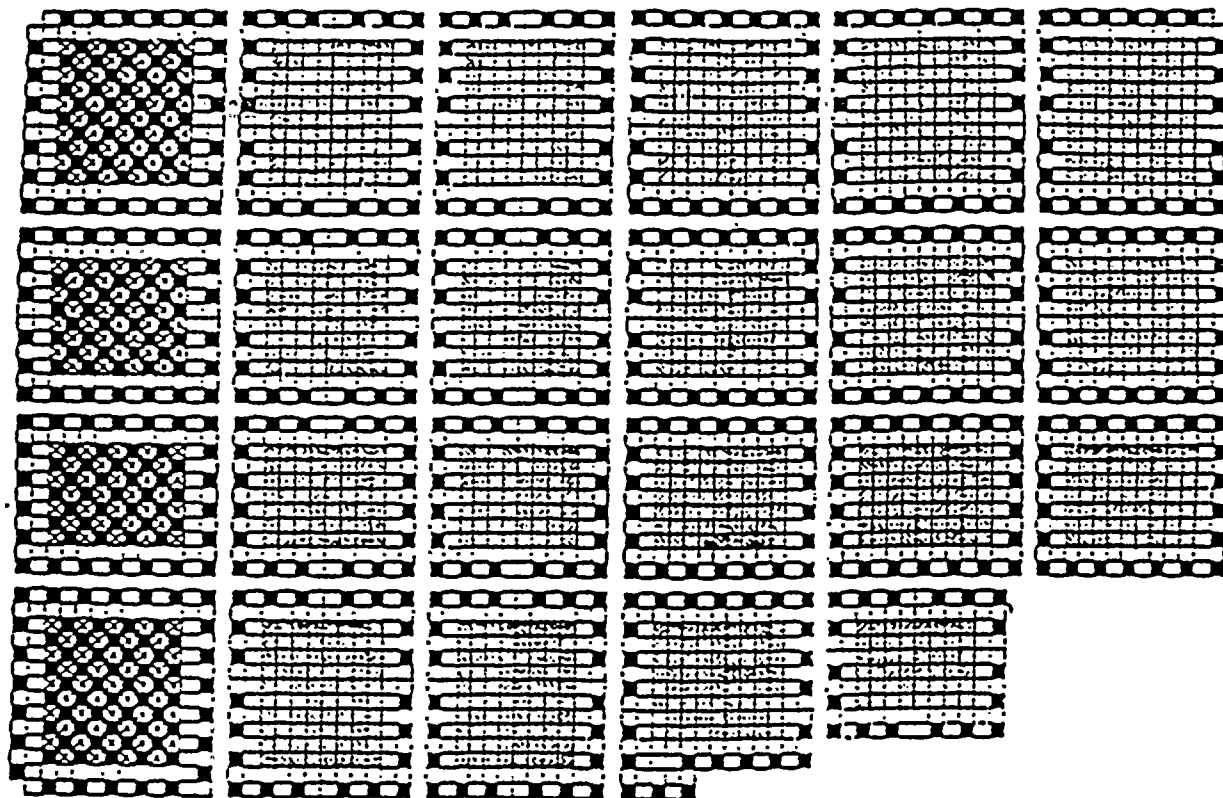
□ 1435 REGION 2 CELLS

■ 1694 REGION 3 CELLS

1439

1670

Figure 5.6-2: Interim Storage Pattern (Checkerboard)



☒ 158 EMPTY LOCATIONS   
 ☒ 1439 REGION 2 CELLS   
 ☐ 1379 REGION 3 CELLS  
 1439                                      1355

## REFUELING OPERATIONS

### DECAY TIME

#### LIMITING CONDITION FOR OPERATION

3.9.3 The reactor shall be subcritical for at least <sup>100</sup>~~168~~ hours.

APPLICABILITY: During movement of irradiated fuel in the reactor pressure vessel.

#### ACTION:

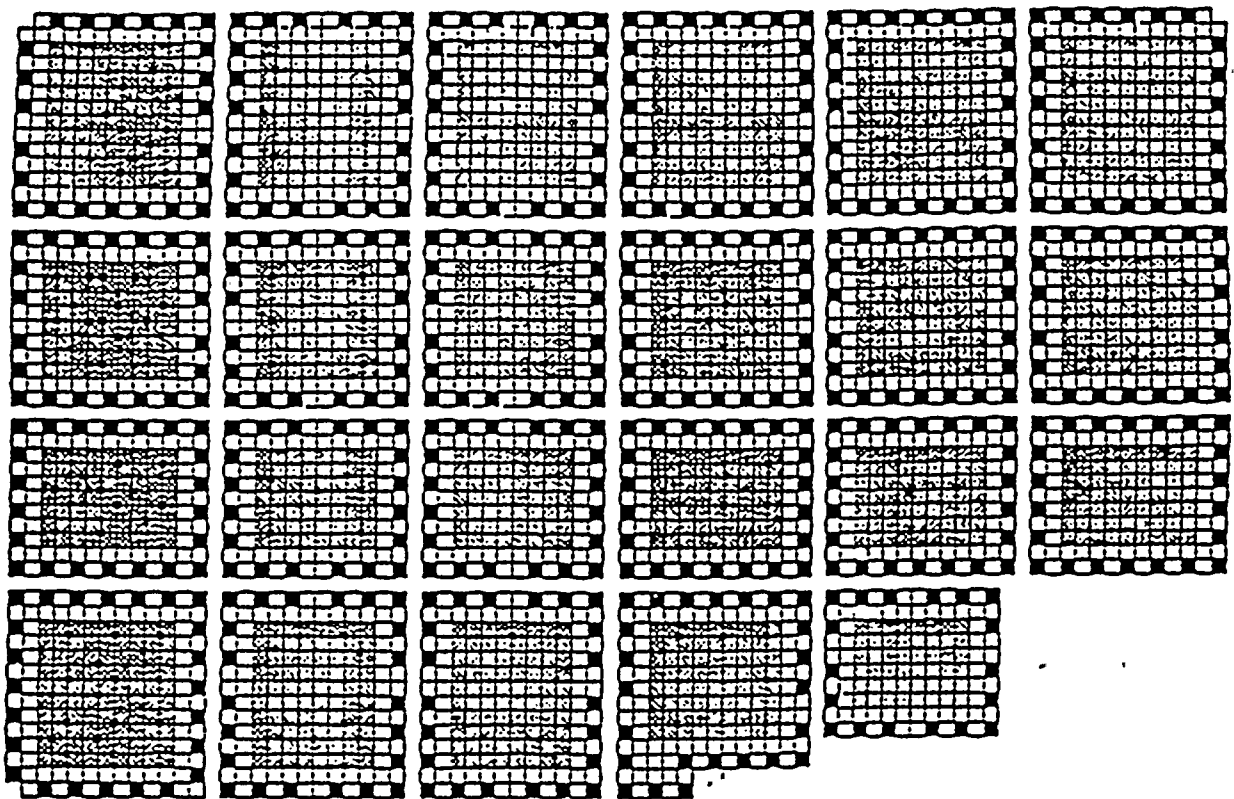
With the reactor subcritical for less than <sup>100</sup>~~168~~ hours, suspend all operations involving movement of irradiated fuel in the reactor pressure vessel. The provisions of Specification 3.0.3 are not applicable.

#### SURVEILLANCE REQUIREMENTS

4.9.3. The reactor shall be determined to have been subcritical for at least <sup>100</sup>~~168~~ hours by verification of the date and time of subcriticality prior to movement of irradiated fuel in the reactor pressure vessel.



FIGURE 5.6-1: Normal Storage Pattern (Mixed Three Zone)



■ 504 REGION 1 CELLS

□ 1415 REGION 2 CELLS

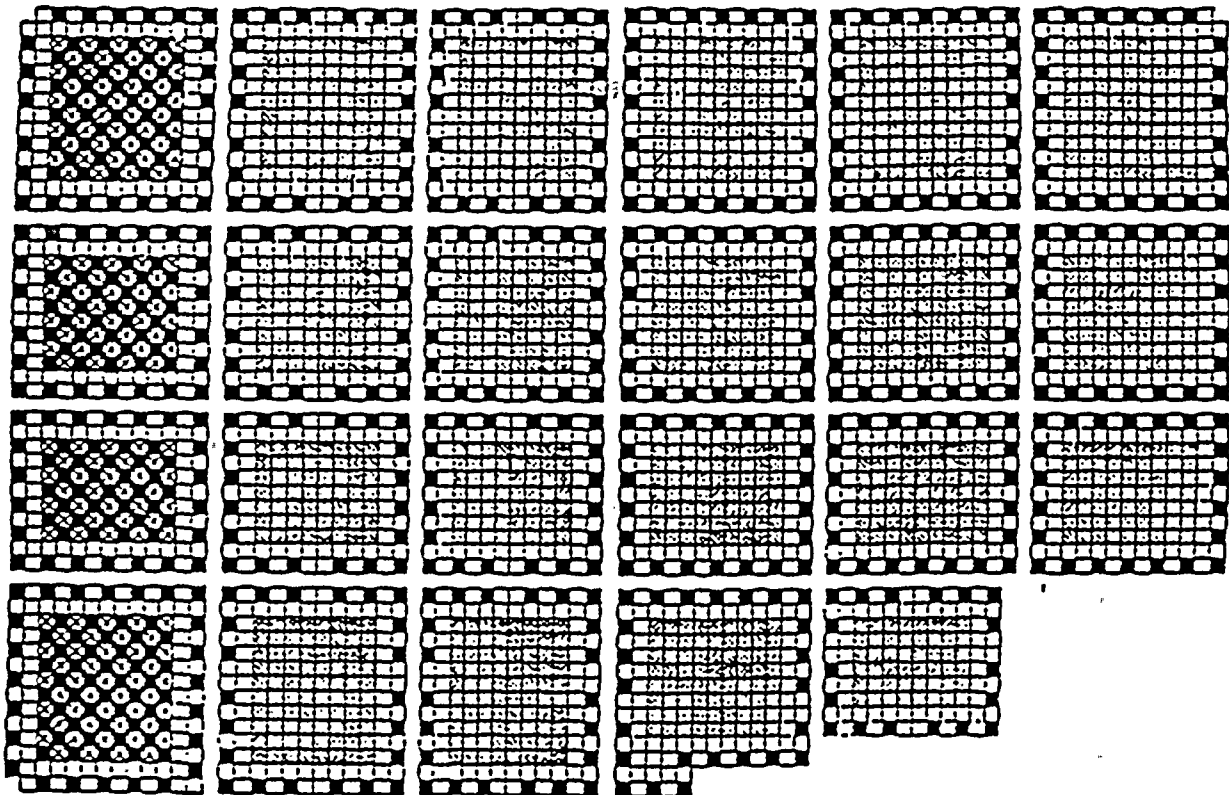
▨ 1694 REGION 3 CELLS

1439

1670



Figure 5.6-2: Interim Storage Pattern (Checkerboard)



☒ 158 EMPTY LOCATIONS   
 ☒ 1439 REGION 1 CELLS   
 ☐ 1415 REGION 2 CELLS   
 ☒ 1379 REGION 3 CELLS

1439                      1355

ATTACHMENT 4 TO AEP:NRC:1202

PROPOSED TECHNICAL SPECIFICATIONS FOR

DONALD C. COOK NUCLEAR PLANT UNITS 1 & 2

- 2 -

## REFUELING OPERATIONS

### DECAY TIME

### LIMITING CONDITION FOR OPERATION

3.9.3 The reactor shall be subcritical for at least 100 hours.

APPLICABILITY: During movement of irradiated fuel in the reactor pressure vessel.

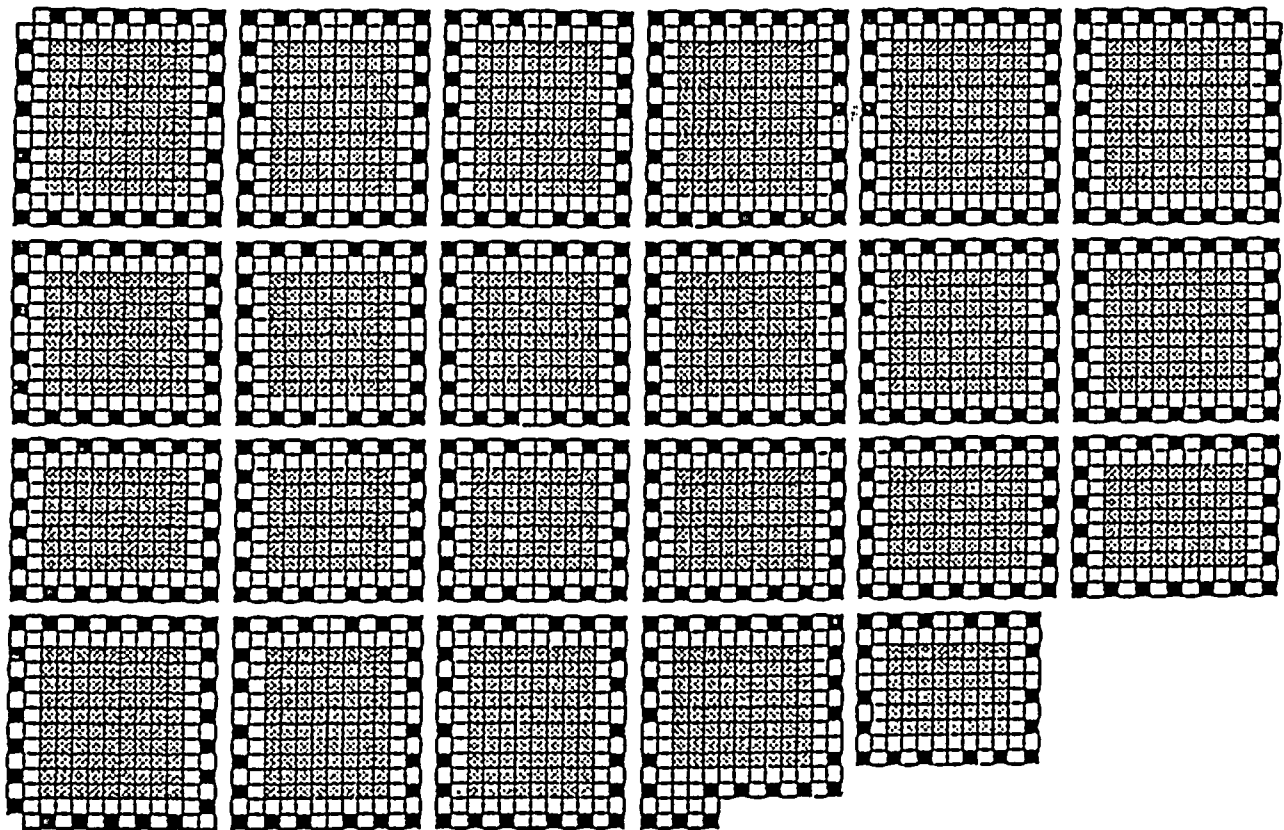
### ACTION:

With the reactor subcritical for less than 100 hours, suspend all operations involving movement of irradiated fuel in the reactor pressure vessel. The provisions of Specification 3.0.3 are not applicable.

### SURVEILLANCE REQUIREMENTS

4.9.3 The reactor shall be determined to have been subcritical for at least 100 hours by verification of the date and time of subcriticality prior to movement of irradiated fuel in the reactor pressure vessel.

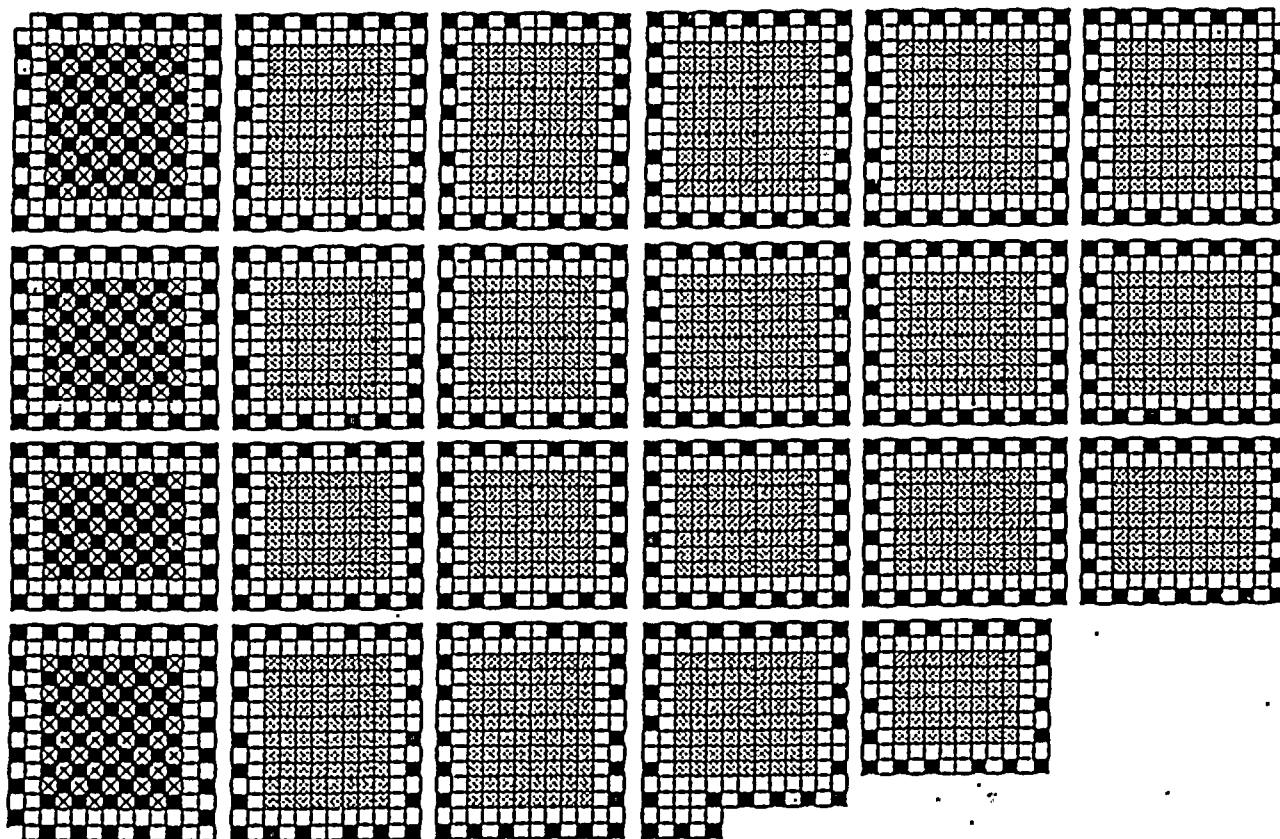
FIGURE 5.6-1: Normal Storage Pattern (Mixed Three Zone)



■ 504 REGION 1 CELLS □ 1439 REGION 2 CELLS ▨ 1670 REGION 3 CELLS



FIGURE 5.6-2: Interim Storage Pattern (Checkerboard)




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X
 158 EMPTY-  
LOCATION
  661 REGION 1  
CELLS
  1439 REGION 2  
CELLS
  1355 REGION 3  
CELLS

## REFUELING OPERATIONS

### DECAY TIME

### LIMITING CONDITION FOR OPERATION

3.9.3 The reactor shall be subcritical for at least 100 hours.

APPLICABILITY: During movement of irradiated fuel in the reactor pressure vessel.

### ACTION:

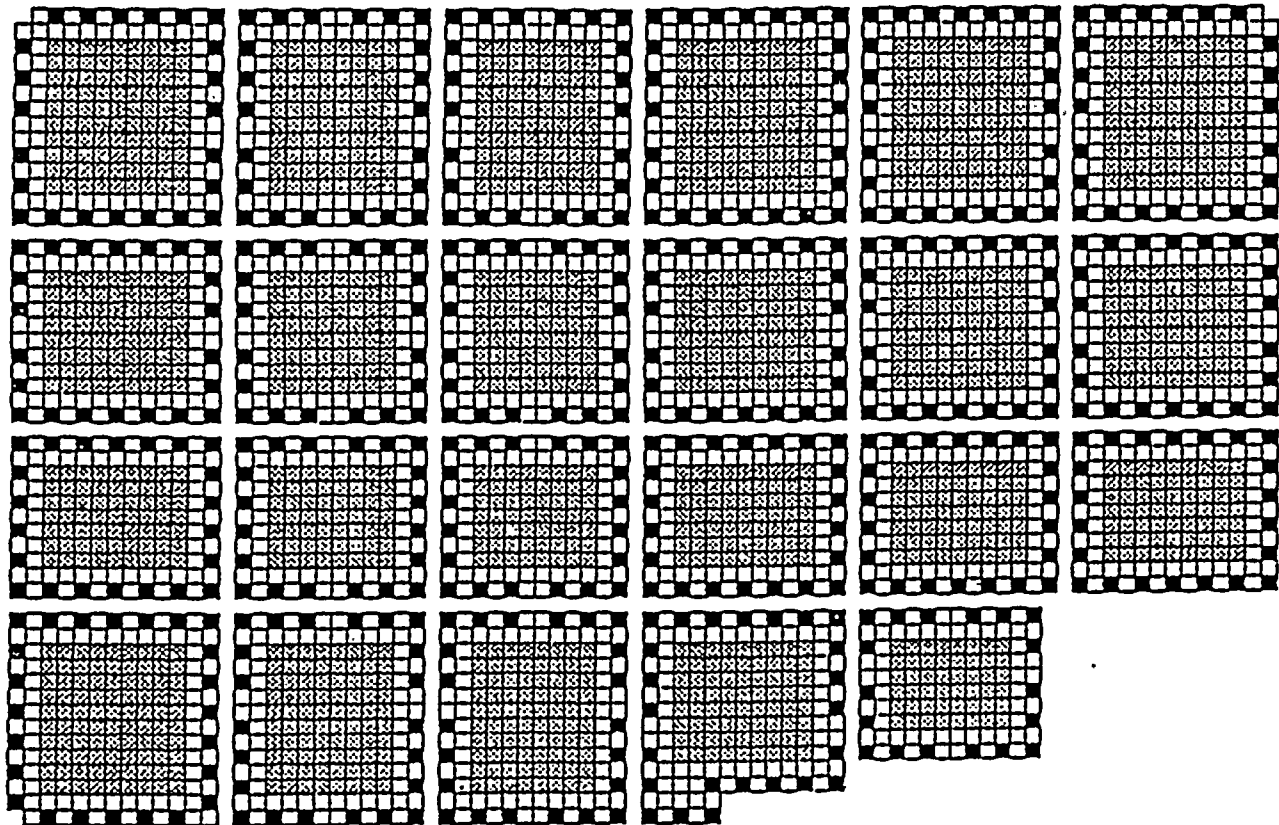
With the reactor subcritical for less than 100 hours, suspend all operations involving movement of irradiated fuel in the reactor pressure vessel. The provisions of Specification 3.0.3 are not applicable.

### SURVEILLANCE REQUIREMENTS

4.9.3 The reactor shall be determined to have been subcritical for at least 100 hours by verification of the date and time of subcriticality prior to movement of irradiated fuel in the reactor pressure vessel.

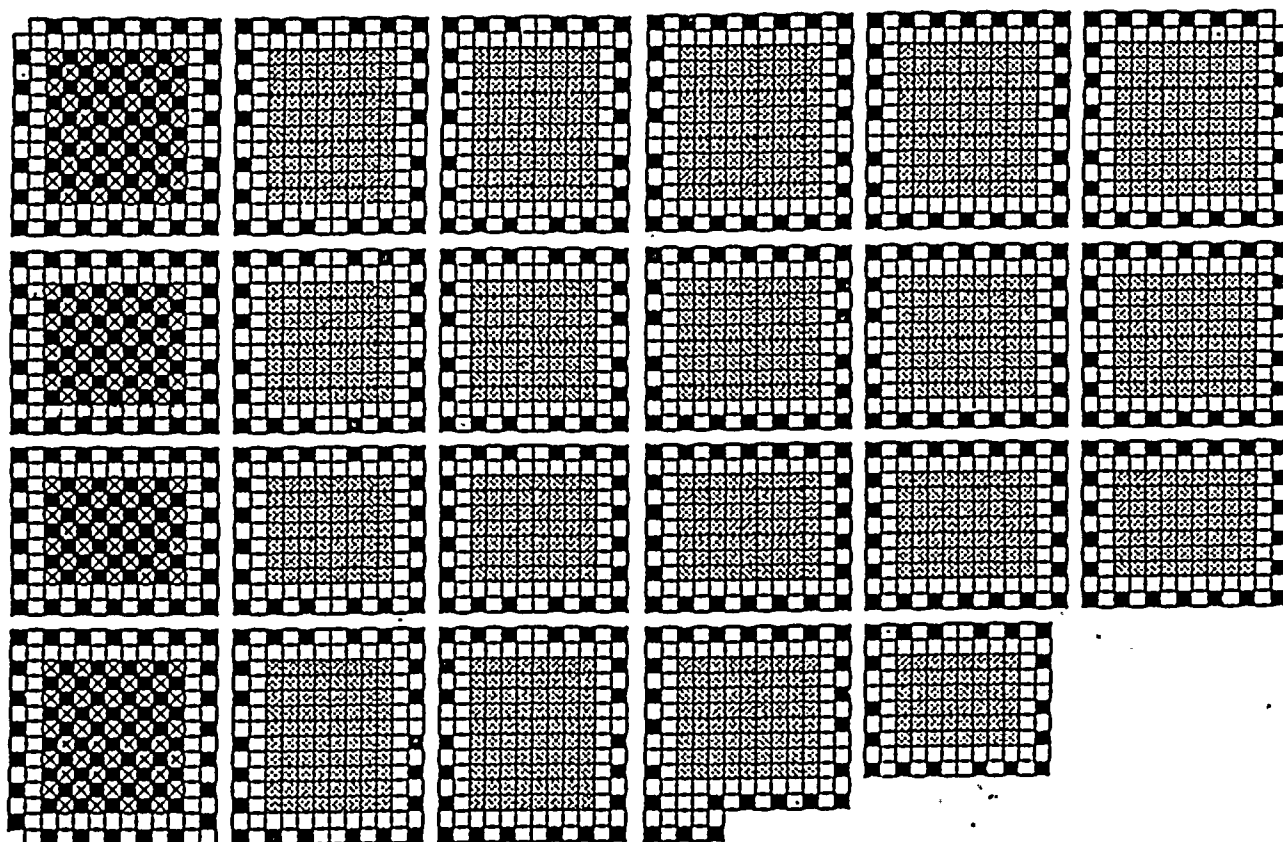


FIGURE 5.6-1: Normal Storage Pattern (Mixed Three Zone)



■ 504 REGION 1 CELLS □ 1439 REGION 2 CELLS ▨ 1670 REGION 3 CELLS

FIGURE 5.6-2: Interim Storage Pattern (Checkerboard)



☒ 158 EMPTY LOCATION   
 ■ 661 REGION 1 CELLS   
 □ 1439 REGION 2 CELLS   
 ▨ 1355 REGION 3 CELLS