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3.7 PLANT SYSTEMS

3.7.17 Cask Storage Area Boron Concentration — Cask Loading Operations

LCO 3.7.17 The cask storage area boron concentration shall be ≥ 2000 ppm.

-----NOTE-----

During cask loading operations, the spent fuel transfer canal gate and the cask storage area gate shall both be open except when moving the spent fuel cask into or out of the cask storage area.

APPLICABILITY: Whenever any fuel assembly is stored in the cask storage area.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Cask storage area boron concentration not within limit.	-----NOTE----- LCO 3.0.3 is not applicable. -----	
	A.1 Suspend movement of fuel assemblies in the cask storage area.	Immediately
	<u>AND</u> A.2 Initiate action to restore cask storage area boron concentration to within limit.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.17.1	Verify the cask storage area boron concentration is within limit.	Once within 4 hours prior to entering the Applicability of this LCO. <u>AND</u> Every 48 hours thereafter.

3.7 PLANT SYSTEMS

3.7.18 Spent Fuel Assembly Storage — Cask Loading Operations

LCO 3.7.18 The combination of initial enrichment and burnup of each spent fuel assembly stored in the cask storage area shall be within the Acceptable Burnup Domain of Figure 3.7.18-1.

APPLICABILITY: Whenever any fuel assembly is stored in the cask storage area.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Requirements of the LCO not met.	<p>A.1 -----NOTE----- LCO 3.0.3 is not applicable.</p> <p>Initiate action to move the noncomplying fuel assembly to an acceptable storage location.</p>	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.7.18.1 Verify by administrative means the initial enrichment and burnup of the fuel assembly is in accordance with Figure 3.7.18-1.	Prior to placing fuel assemblies in the spent fuel cask.

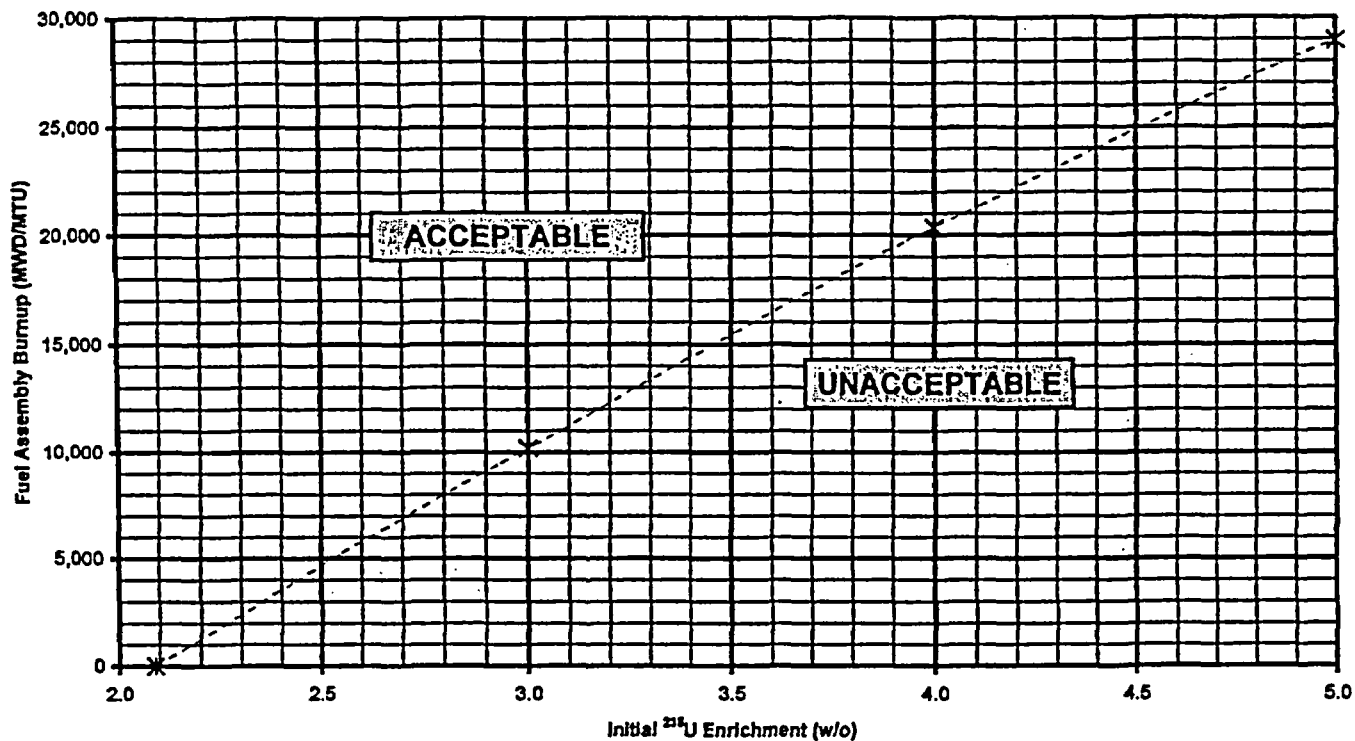


Figure 3.7.18-1 Fuel Assembly Burnup Limit Requirements For Cask Storage

4.0 DESIGN FEATURES

4.3.1.2 (continued)

- b. Fuel assemblies with Optimized Fuel Assembly fuel rod diameters having a maximum nominal U-235 enrichment of 5.0 weight percent. Fuel assemblies with Optimized Fuel Assembly fuel rod diameters having a maximum nominal U-235 enrichment > 3.9 weight percent shall contain sufficient integral burnable absorbers such that a maximum reference fuel assembly $K_{\infty} \leq 1.455$ at 68°F is maintained;
- c. $k_{eff} \leq 0.95$ if fully flooded with unborated water;
- d. $k_{eff} \leq 0.98$ if moderated by aqueous foam; and
- e. A nominal 21 inch center to center distance between fuel assemblies placed in the storage racks.

4.3.1.3 The spent fuel casks are designed and shall be maintained with:

- a. Fuel assemblies having a maximum nominal U-235 enrichment of 5.0 weight percent;
- b. $k_{eff} < 1.0$ if fully flooded with unborated water, which includes an allowance for uncertainties as described in Section 4.3.2.7.2.3 of the FSAR;
- c. $k_{eff} \leq 0.95$ if fully flooded with water borated to 400 ppm, which includes an allowance for uncertainties and biases as described in Section 4.3.2.7.2.3 of the FSAR;
- d. A nominal 9.218 inch center to center distance between fuel assemblies placed in the spent fuel cask; and
- e. Spent fuel assemblies with a combination of discharge burnup and initial enrichment in the "acceptable range" of Figure 3.7.18-1.

4.3.2 Drainage

The spent fuel storage pool is designed and shall be maintained to prevent inadvertent draining of the pool below elevation 149 ft.

4.0 DESIGN FEATURES

4.3.3 Capacity

The spent fuel storage pool is designed and shall be maintained with a storage capacity limited to no more than 1407 fuel assemblies.

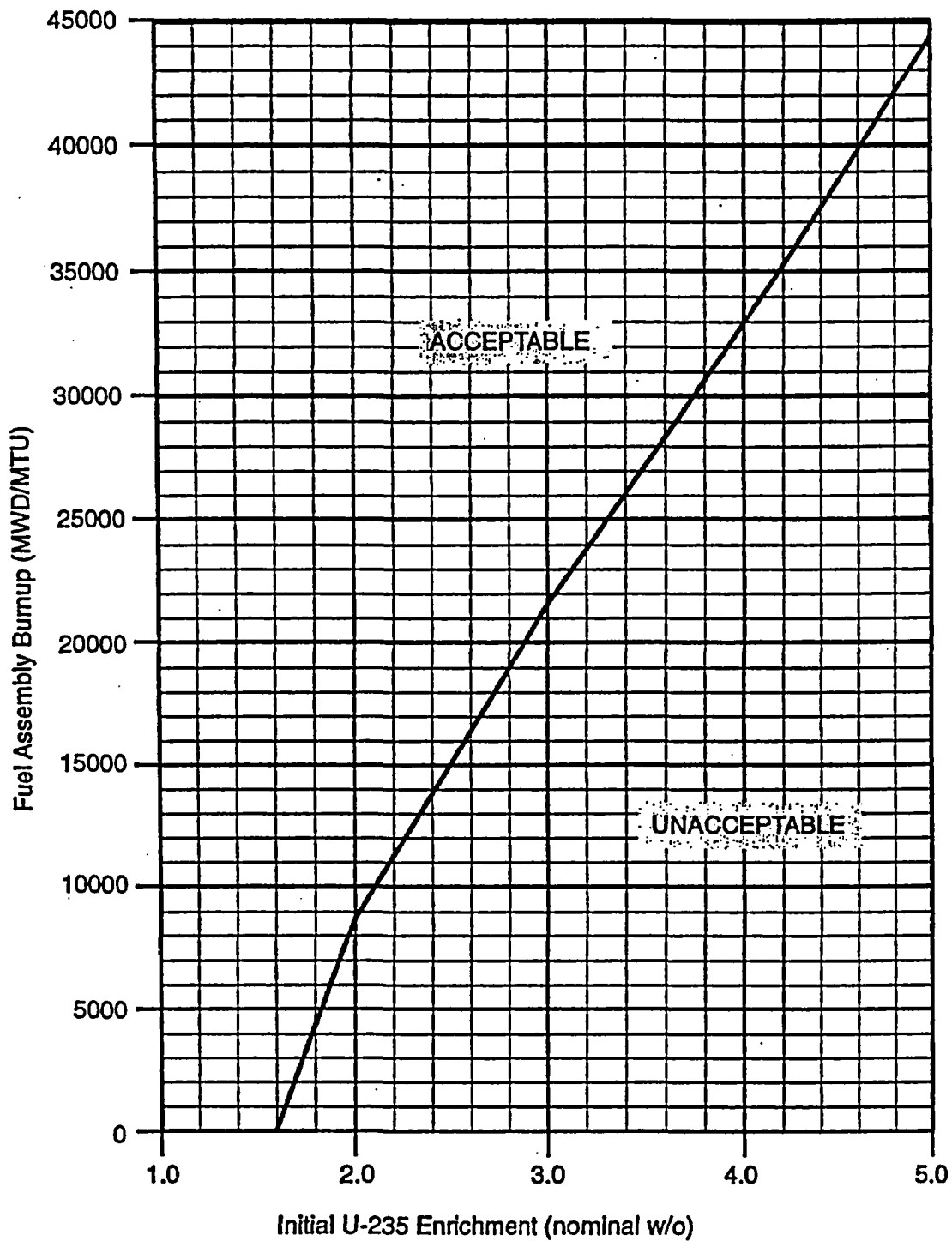
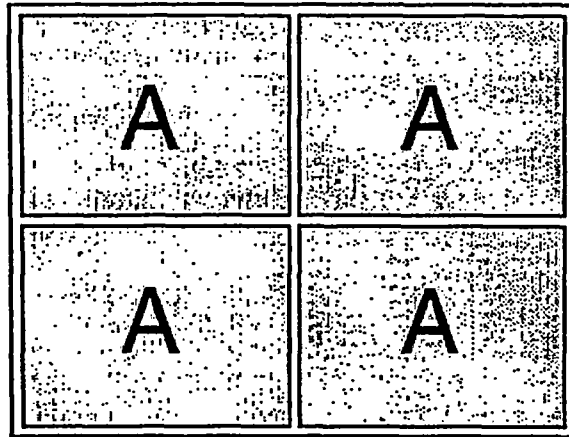
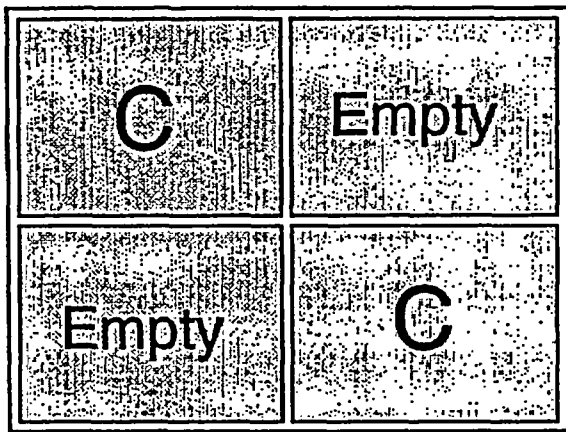


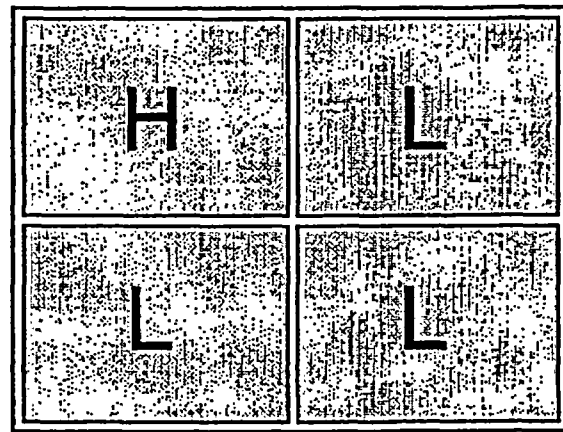
Figure 4.3-1
Fuel Assembly Burnup Limit Requirements for Low Enrichment (L)
Assembly of the Burned/Fresh Checkerboard Storage (see Figure 4.3-2)



All Cell Storage



2-out-of-4 Storage



Burned/Fresh Storage

Note:

A = All Cell Enrichment (Figure 3.7.15-1)

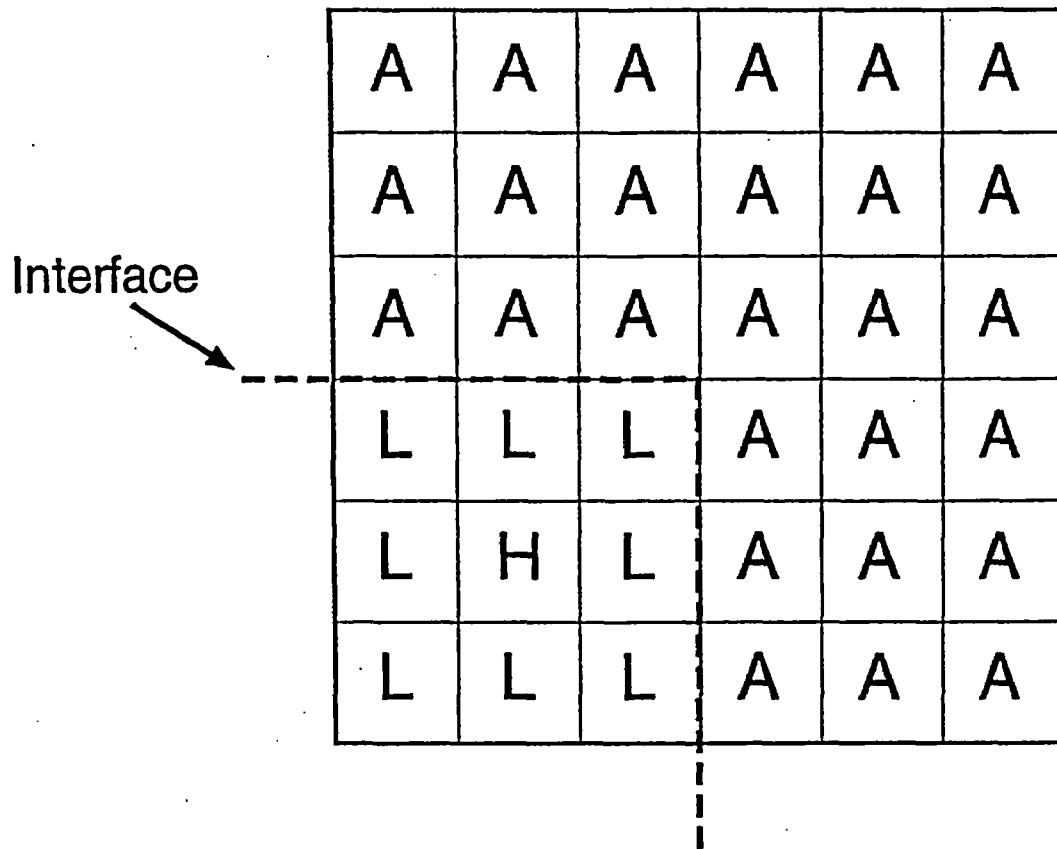
C = 2-out-of-4 Enrichment (No restriction on enrichment or burnup)

L = Low Enrichment of Burned/Fresh (Figure 4.3-1)

H = High Enrichment of Burned/Fresh (See section 4.3.1.1.f for IFBA requirement)

Empty = Empty Cell

Figure 4.3-2
Spent Fuel Storage Configurations



Note:

A = All Cell Enrichment

L = Low Enrichment of Burned/Fresh

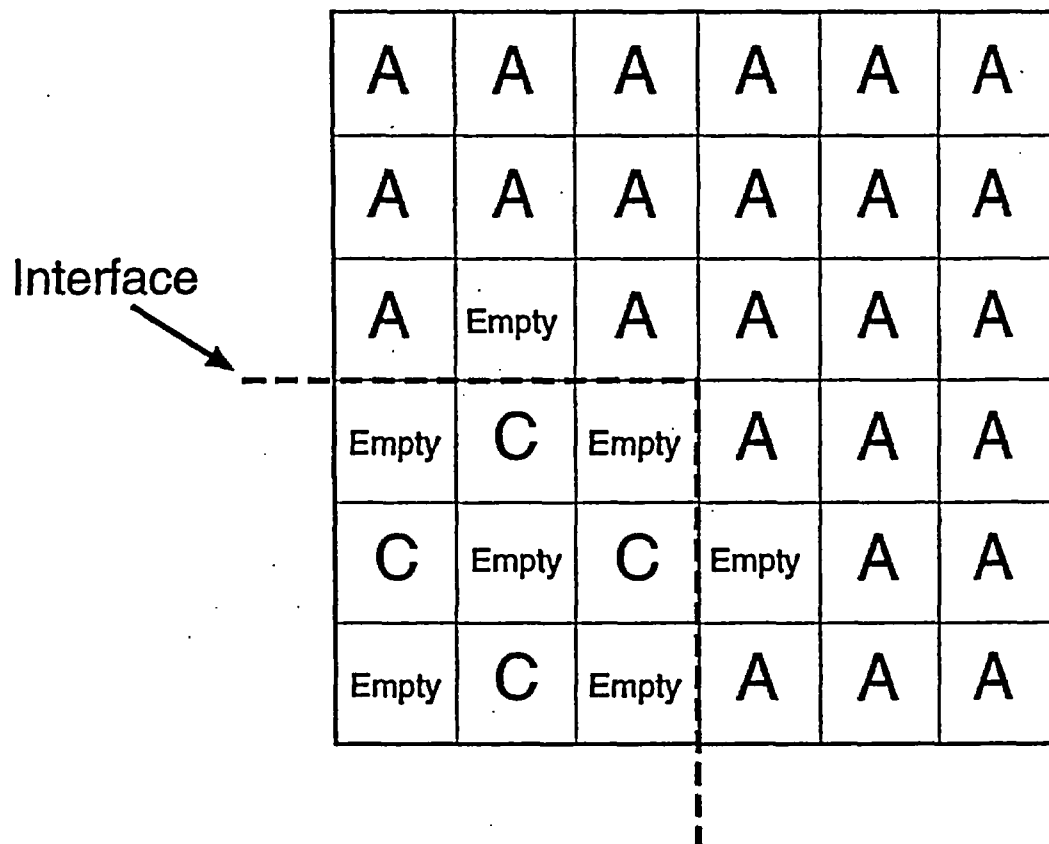
H = High Enrichment of Burned/Fresh

Boundary Between All Cell Storage and Burned/Fresh Storage

Note:

1. A row of empty cells can be used at the interface to separate the configurations.
2. It is acceptable to replace an assembly with an empty cell.

Figure 4.3-3
Interface Requirements

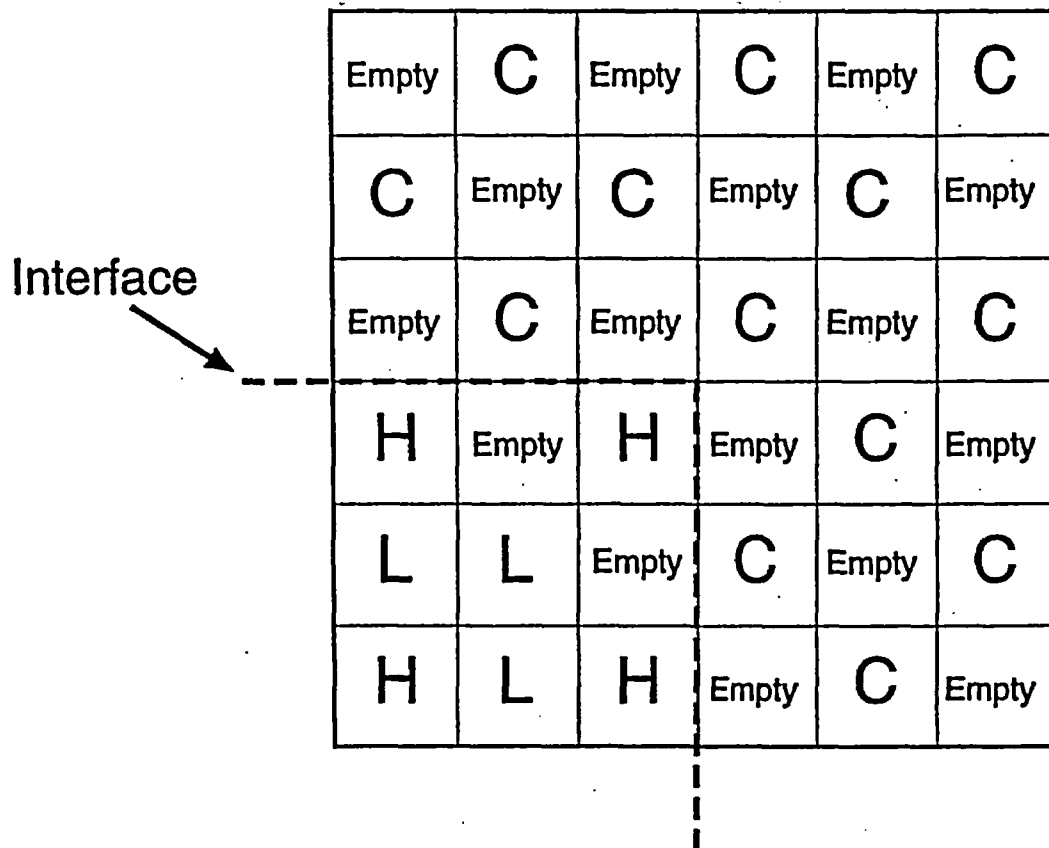


Note:
A = All Cell Enrichment
C = 2-out-of-4 Enrichment
Empty = Empty Cell

Boundary Between All Cell Storage and 2-out-of-4 Storage

Note:
1. A row of empty cells can be used at the interface to separate the configurations.
2. It is acceptable to replace an assembly with an empty cell.

Figure 4.3-4
Interface Requirements

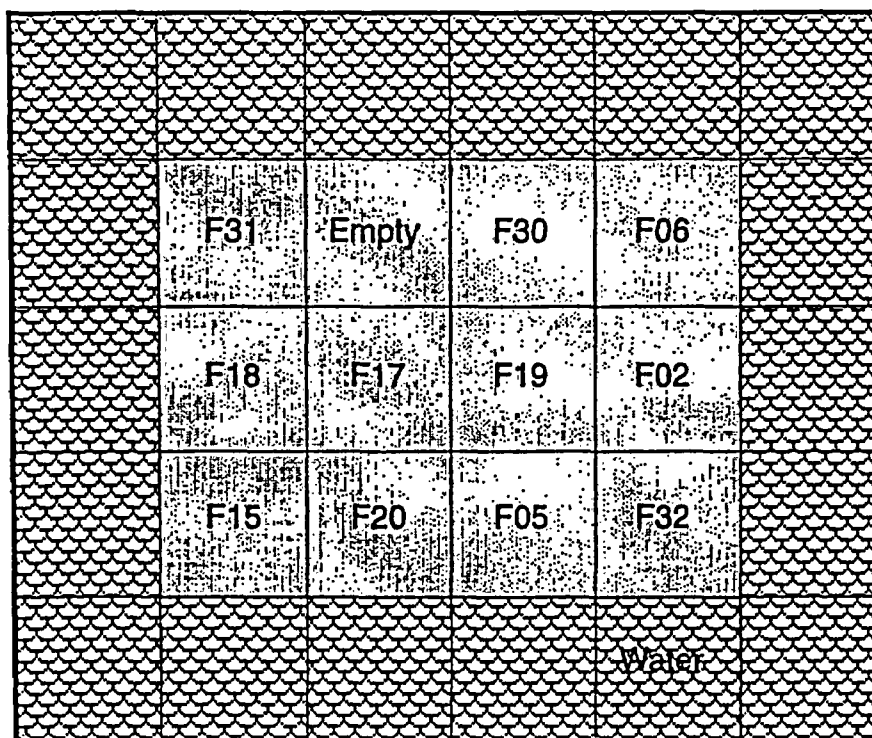


Note:
 C = 2-out-of-4 Enrichment
 L = Low Enrichment of Burned/Fresh
 H = High Enrichment of Burned/Fresh
 Empty = Empty Cell

Boundary Between 2-out-of-4 Storage and Burned/Fresh Storage

- Note:
1. A row of empty cells can be used at the interface to separate the configurations.
 2. It is acceptable to replace an assembly with an empty cell.

Figure 4.3-5
Interface Requirements



Note: All Assemblies are 3.0 w/o ²³⁵U nominal enrichment

Figure 4.3-6
Damaged Fuel Assembly Configuration
(Unit 1 Only)