

of fissile material from those cells. DFI storage locations are limited to the same locations allowed for DFCs in the MPC-68M. The limiting design characteristics for damaged fuel assemblies and restrictions on the number and location of damaged fuel containers authorized for loading in each MPC model are provided in Section 2.1.9. Dresden Unit 1 fuel assemblies contained in Transnuclear-designed damaged fuel canisters and one Dresden Unit 1 thoria rod canister have been approved for storage directly in the HI-STORM 100 System without re-packaging (see Figures 2.1.2 and 2.1.2A).

MPC contents classified as fuel debris are required to be stored in DFCs. The basket designs for the standard and “F” model MPCs are identical. The lid and shell designs of the “F” models are unique in that the upper shell portion of the canister is thickened for additional strength needed to qualify as a secondary containment, which used to be required under hypothetical accident conditions of transportation under 10 CFR 71. Figure 2.1.9 shows the details of the differences between the standard and “F” model MPC shells. These details are common for both the PWR and BWR series MPC models.

2.1.3.1 Damaged Fuel Isolator

For the MPC-68M, if the damaged fuel assembly can be handled by normal means and its structural integrity is such that geometric rearrangement of fuel is not expected, then the device known as the Damaged Fuel Isolator (DFI) can be used in place of the DFC. Like the DFC, the DFI prevents the migration of fissile material in bulk or coarse particulate form from the nuclear fuel stored in its cellular storage cavity. The DFI can be used only if the fuel can be handled by normal means but is classified as damaged because of physical defect, viz., a breach in the fuel cladding or a structural failure in the grid strap assembly, etc., as explained in ISG-1. Damaged fuel stored utilizing the DFI may contain missing or partial fuel rods and/or fuel rods with known or suspected cladding defects greater than hairline cracks or pinhole leaks as long as the fuel assembly can be handled by normal means.

The DFI is made up of two end caps that, along with the four basket cell walls, comprise the fuel isolation space. The essential attributes of the DFI are:

1. The bottom cap is an open prismatic box with a flat baseplate which fits inside the storage cell space with a small clearance (for ease of installation).

[Withheld in Accordance with 10 CFR 2.390]

The sidewalls of the bottom cap have perforations or wire mesh to permit transmigration of gases but not fuel fragments or gross particulates and is equipped with a permeable barrier against the storage cell walls for sequestration of coarse particulate matter. Figure 2.1.10 illustrates the features of the DFI end cap.

2. The top cap is anatomically similar to the bottom cap as illustrated in Figure 2.1.10.

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3. Both caps have engineered features to enable them to be remotely installed in any storage cell in which a fuel assembly needs to be isolated. Both caps are geometrically constrained to prevent their ejection from the storage cavity during a postulated accident event.
4. The design configuration of the DFI is common for all Light Water Reactor fuel.

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2.1.4 Deleted

2.1.5 Structural Parameters for Design Basis SNF

The main physical parameters of an SNF assembly applicable to the structural evaluation are the fuel assembly length, envelope (cross sectional dimensions), and weight. These parameters, which define the mechanical and structural design, are specified in Section 2.1.9. The centers of gravity reported in

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**FIGURE 2.1.10: DAMAGED FUEL ISOLATOR TOP/BOTTOM CAP ASSEMBLY
(TYPICAL)**

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**FIGURE 2.1.10 (CONTINUED): DAMAGED FUEL ISOLATOR IN BASKET CELL
(TYPICAL)**

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