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3.12 CASK HANDLING

Applicability: Applies to limitations during cask handling.

Objective: To minimize the possibility of an accident during cask handling operations that would affect the health and safety of the public.

Specifications: During cask handling operations:

(1) The spent fuel cask shall not be moved into the spent fuel pit until all the spent fuel in the pit has decayed for a minimum of 1525 hours.**

(2) Only a single element cask may be moved into the spent fuel pit.

(3) A fuel assembly shall not be removed from the spent fuel pit in a shipping cask until it has decayed for a minimum of 120 days.*

(4) HEAVY LOADS shall be prohibited from travel over irradiated fuel assemblies in the spent fuel pool (refer to T.S. 3.10.10).

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* The Region 10 fuel which was in the Unit 3 reactor during the period of April 19, 1981, through April 24, 1981, may be removed from the Unit 3 spent fuel pit in a shipping cask after a minimum decay period of ninety-five (95) days.

** The spent fuel cask can be moved into the Unit 4 Spent Fuel Pit after a minimum decay of 1000 hours until the new two-region high density spent fuel racks are installed.

3.17 SPENT FUEL STORAGE

Applicability: Applies to limitations on the storage of spent fuel assemblies.

Objective: To minimize the possibility of exceeding the reactivity design limits for storage of spent fuel.

Specifications:

(1) Fuel assemblies containing more than 4.1 weight percent of U-235 shall not be placed in the single region spent fuel storage racks. After installation of the two-region high density spent fuel racks, the maximum enrichment loading for fuel assemblies in the spent fuel racks is 4.5 weight percent of U-235.

(2) The minimum boron concentration while fuel is stored in the Spent Fuel Pit shall be 1950 ppm.

(3)* Storage in Region II of the Spent Fuel Pit shall be further restricted by burnup and enrichment limits specified in Table 3.17-1.

(4)* During the re-racking operation only, fuel that does not meet the burnup requirements for normal storage in Region II may be stored in Region II in a checkerboard arrangement (i.e., no fuel stored in adjacent spaces).

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* This Technical Specification is applicable only after installation of the new two-region high density spent fuel racks.

TABLE 3.17-1

SPENT FUEL BURNUP REQUIREMENTS FOR STORAGE IN REGION II OF THE SPENT FUEL PIT

Initial w/o	Discharge Burnup GWD/MT
1.5	0
1.75	5.0
2.0	9.0
2.2	12.0
2.4	14.8
2.6	17.6
2.8	20.1
3.0	22.6
3.2	25.0
3.4	27.4
3.6	29.6
3.8	31.8
4.0	34.0
4.2	36.1
4.5	39.0

Linear interpolation between two consecutive points will yield conservative results.

TABLE 4.1-2 (Sheet 2 of 3)

MINIMUM FREQUENCIES FOR EQUIPMENT AND SAMPLING TESTS

	Check	Frequency	Max. Time Between Tests (Days)
5. Control Rods (cont'd)	Partial movement of full length rods	Biweekly while critical	20
6. Pressurizer Safety Valves	Set Point	Each refueling shutdown	NA
7. Main Steam Safety Valves	Set Point	Each refueling shutdown	NA
8. Containment Isolation Trip	Functioning	Each refueling shutdown	NA
9. Refueling System Interlocks	Functioning	Prior to each refueling	NA
10. Accumulator	Boron Concentration	At least once per 31 days and within 6 hours after each solution volume increase of ≥1% of tank volume.†	
11. Reactor Coolant System Leakage	Evaluate	Daily	NA
12. Diesel Fuel Supply	Fuel inventory	Weekly	10
13. Spent Fuel Pit	Boron Concentration	Monthly	45
14. Fire Protection Pump and Power Supply	Operable	Monthly	45
15. Turbine Stop and Control Valves, Reheater Stop and Intercept Valves	Closure	Monthly*	45
16. LP Turbine Rotor Inspector (w/o rotor disassembly)	V, MT, PT	Every 5 years	6 years
17. Spent Fuel Cask Crane Interlocks	Functioning	Within 7 days	7 days when crane is being used to maneuver spent fuel cask.

Amendment Nos. ____ and ____

TABLE 4.1-2 (Sheet 3 of 3)

MINIMUM FREQUENCIES FOR EQUIPMENT AND SAMPLING TESTS

	Check	Frequency	Max. Time Between Tests (Days)
18. Coolant Loops	During power operation, verify three (3) reactor coolant loops in operation and circulating reactor coolant.	Once every 12 hrs.	12 hrs.
	At shutdown with average coolant temperature > 350 F, verify		
	a. One (1) reactor coolant loop in operation and circulating reactor coolant.	Once every 12 hrs.	12 hrs.
	b. A second coolant loop operable.	Once every 7 days	7 days
	At shutdown (not refueling) with average coolant temperature < 350 F, verify		
	a. One (1) coolant loop is in operation and circulating reactor coolant.	Once every 12 hrs.	12 hrs.
	b. A second coolant loop operable.	Once every 7 days	7 days
	At refueling shutdown, verify that one (1) residual heat removal coolant loop is in operation and circulating sufficient reactor coolant to maintain core outlet temperature below 160 F.	Once every 4 hrs.	4 hrs.

† N.A. during cold or refueling shutdowns. The specified tests, however, shall be performed prior to heatup above 200 F.

* N.A. during cold or refueling shutdowns, or at hot shutdown when all main steam isolation valves are shut. The specified tests, however, shall be performed within one surveillance period prior to starting the turbine.

5.4 FUEL STORAGE

1. The New and Spent Fuel Pit structures are designed to withstand the anticipated earthquake loadings as Class 1 structures. Each Spent Fuel Pit has a stainless steel liner to ensure against leakage.

2. The spent fuel storage racks provide safe subcritical storage of fuel assemblies by providing sufficient center-to-center spacing or a combination of spacing and poison to assure K_{eff}, is equal to or less than 0.95 for normal operations and postulated accidents. Fuel assemblies containing more than 4.1 weight percent of U-235 shall not be placed in the single region spent fuel storage racks. After installation of the two-region high density spent fuel racks, the maximum enrichment loading for fuel assemblies in the spent fuel racks is 4.5 weight percent of U-235.

   The racks for new fuel storage are designed to store fuel in a safe subcritical array. The fuel is stored vertically in an array with sufficient center-to-center spacing to assure K_{eff} equal to or less than 0.98 for optimum moderation conditions and equal to or less than 0.95 for fully flooded conditions. Fuel containing more than 4.5 weight percent of U-235 shall not be placed in the New Fuel Storage Area.

3. Credit for burnup is taken in determining placement locations for spent fuel in the two-region spent fuel racks.* Strict administrative controls are employed to evaluate the burnup of each spent fuel assembly stored in areas where credit for burnup is taken. The burnup of spent fuel is ascertained by careful analysis of burnup history, prior to placement into the storage locations. Procedures shall require an independent check of the analysis of suitability for storage. A complete record of such analysis is kept for the time period that the spent fuel assembly remains in storage onsite.

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* During rack installation, it will be necessary to temporarily store Region I fuel in the Region II spent fuel racks. Strict administrative controls will be utilized to maintain a checkerboard storage configuration, i.e., alternate cell occupation, in the Region II racks.

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

B3.12 BASES FOR LIMITING CONDITIONS FOR OPERATION, CASK HANDLING

Requiring spent fuel decay time to be a minimum of 1525 hours prior to moving a spent fuel cask into the spent fuel pit will keep potential offsite doses well within 10 CFR Part 100 limits should a dropped cask strike the stored fuel assemblies.

The restriction to allow only a single element cask to be moved into the spent fuel pit will ensure the maintenance of water inventory in the unlikely event of an uncontrolled cask descent. Use of a single element cask which nominally weighs about twenty-five tons will also increase crane safety margins by about a factor of four.

Requiring the spent fuel decay time be at least 120 days prior to moving a fuel assembly outside the fuel storage pit in a shipping cask will ensure that potential offsite doses are a fraction of 10 CFR 100 limits should a dropped cask and ruptured fuel assembly release activity directly to the atmosphere.

The restriction on movement of HEAVY LOADS over irradiated fuel assemblies in the spent fuel pool ensures that in the event this load is dropped (1) the activity release will be limited to that contained in a single fuel assembly, and (2) any possible distortion of fuel in the storage racks will not result in a critical array. This assumption is consistent with the activity release assumed in the FSAR. For the purpose of this specification, HEAVY LOADS are defined as loads greater than 2000 pounds.[1] (Refer to T.S. 1.36 and T.S. B3.10)

References:
(1) FSAR Table 3.2.3-1

B3.17 BASES FOR LIMITING CONDITIONS FOR OPERATION, SPENT FUEL STORAGE

1. The spent fuel storage racks provide safe subcritical storage of fuel assemblies by providing sufficient center-to-center spacing or a combination of spacing and poison to assure k_{eff} is equal to or less than 0.95 for normal operations and postulated accidents.

2.* The spent fuel racks are divided into two regions. Region I racks have a 10.6 inch center-to-center spacing and the Region II racks have a 9.0 inch center-to-center spacing. Because of the larger center-to-center spacing and poison (B^{10}) concentration of Region I cells, the only restriction for placement of fuel is that the initial fuel assembly enrichment is equal to or less than 4.5 weight percent of U-235. The limiting value of U-235 enrichment is based upon the assumptions in the spent fuel safety analyses and assures that the limiting criteria for criticality is not exceeded. Prior to placement in Region II cell locations, strict controls are employed to evaluate burnup of the spent fuel assembly. Upon determination that the fuel assembly meets the burnup requirements of Table 3.17-1, placement in a Region II cell is authorized. These positive controls assure the fuel enrichment limits assumed in the safety analyses will not be exceeded.

* This Technical Specification is applicable upon installation of the new two-region high density spent fuel racks.