ATTACHMENT 2

TECHNICAL SPECIFICATIONS/BASES CHANGES

3.8.15 The spent fuel pool boron concentration shall be within the limit specified in the COLR.

This specification applies when fuel is stored in the spent fuel pool.

3.8.16 a. New or irradiated fuel may be stored in the Spent Fuel Pool shared between Units 1 and 2 in accordance with these limits:

1). Unrestricted storage of fuel meeting the criteria of Table 3.8-1; or

2). Restricted storage in accordance with Figure 3.8-1, of fuel which does not meet the criteria of Table 3.8-1.

b. New or irradiated fuel may be stored in the Spent Fuel Pool for Unit 3 in accordance with these limits:

1). Unrestricted storage of fuel meeting the criteria of Table 3.8-3; or

2) Restricted storage in accordance with Figure 3.8-2, of fuel which does not meet the criteria of Table 3.8-3.

c. This specification applies when fuel is stored in the spent fuel pool.

3.8.17 If the limiting condition for spent fuel pool boron concentration specified in Specification 3.8.15 is not met, immediately suspend movement of fuel assemblies in the spent fuel pool and initiate action to restore the spent fuel pool boron concentration to within its limit.

If the limiting conditions for fuel storage in the spent fuel pool specified in Specification 3.8.16 are not met, immediately initiate action to move the noncomplying fuel assembly to the correct location.

Bases

Detailed written procedures will be available for use by refueling personnel. These procedures, the above specifications, and the design of the fuel handling equipment as described in Section 9.1.4 of the FSAR incorporating built-in interlocks and safety features, provide assurance that no incident could occur during the refueling operations that would result in a hazard to public health and safety. If no change is being made in core geometry, one flux monitor is sufficient.

Continuous monitoring of radiation levels and neutron flux provides immediate indication of an unsafe condition. The low pressure injection pump is used to maintain a uniform boron concentration. (1) The shutdown margin indicated in Specification 3.8.4 will keep the core subcritical, even with all control rods withdrawn from the core. (2) The boron concentration will be maintained above the limit specified in the Core Operating Limits Report. Although this concentration is sufficient to maintain the core $k_{eff} \leq 0.99$ if all the control rods were removed from the core, only a few control rods will be removed at any one time during fuel shuffling and replacement. The k_{eff} with all rods in the core and with refueling boron concentration is approximately 0.90. Specification 3.8.5 allows the control room operator to inform the reactor building personnel of any impending unsafe condition detected from the main control board indicators during fuel movement.

The specification requiring testing of the Reactor Building purge isolation is to verify that these components will function as required should a fuel handling accident occur which resulted in the release of significant fission products.

Specification 3.8.11 is required, as the safety analysis for the fuel handling accident was based on the assumption that the reactor had been shutdown for 72 hours. (3)

The off-site doses for the fuel handling accident are within the guidelines of 10 CFR 100; however, to further reduce the doses resulting from this accident, it is required that the spent fuel pool ventilation system be operable whenever the possibility of a fuel handling accident could exist.

Specification 3.8.13 is required as the safety analysis for a postulated cask handling accident was based on the assumptions that spent fuel stored as indicated has decayed for the amount of time specified for each spent fuel pool.

Specification 3.8.14 is required to prohibit transport of loads greater than a fuel assembly with a control rod and the associated fuel handling tool(s).

The requirements for spent fuel pool boron concentration specified in Specification 3.8.15 ensure that a minimum boron concentration is maintained in the pool. The requirements for spent fuel assembly storage specified in Specification 3.8.16 ensure that the pool remains subcritical. The water in the spent fuel storage pool normally contains soluble boron which results in large subcriticality margins under actual operating conditions. However, the NRC guidelines based upon the accident condition in which all soluble poison is assumed to have been lost, specify that the limiting k_{eff} of 0.95 be evaluated in the absence of soluble boron. Hence, the design of the spent fuel storage racks is based on the use of unborated water, which maintains the spent fuel pool in a subcritical condition during normal operation with the pool fully loaded. The double contingency principle discussed in ANSI N-16.1-1975 and the April 1978 NRC letter (Ref.4) allows credit for soluble boron under abnormal or accident conditions, since only a single accident need be considered at one time. For example, the most severe accident scenario is associated with the accidental misloading of a fuel assembly. This could increase the reactivity of the spent fuel pool. To mitigate this postulated criticality related accident, boron is dissolved in the pool water.

Tables 3.8-1 through 3.8.4 allow for specific criticality analyses for fuel which does not meet the requirements for storage defined in these tables. These analyses would require using NRC approved methodology to ensure that $K_{eff} \leq 0.95$ with a 95 percent probability at a 95 percent confidence level as described in Section 9.1 of FSAR. This option is intended to be used for fuel not included in previous criticality analyses. Fuel storage is still limited to the configurations defined in TS 3.8-16. The use of specific analyses for qualification of previously unanalyzed fuel includes, but is not limited to, fuel assembly designs not previously analyzed which may be as a result of new fuel designs or fuel shipments from another facility. Another more likely, and expected use of this specific analysis provision would be to analyze movement and storage of individual fuel pins as a result of reconstitution activities.

In verifying the design criteria of $k_{eff} \leq 0.95$, the criticality analysis assumed the most conservative conditions, i.e. fuel of the maximum permissible reactivity for a given configuration. Since the data presented in Specifications 3.8.16 a and 3.8.16 b represent the maximum reactivity requirements for acceptable storage, substitutions of less reactive components would also meet the $k_{eff} \leq 0.95$ criteria. Hence an empty cell, or a non-fuel component may be substituted for any designated fuel assembly location. These or other substitutions which will decrease the reactivity of a particular storage cell will only decrease the overall reactivity of the spent fuel storage pool.

If both restricted and unrestricted storage is used, an additional criterion has been imposed to ensure that the boundary row between these two configurations would not locally increase the reactivity above the required limit.

The action statement applicable to fuel storage in the spent fuel pool requires that action must be taken to preclude the occurrence of an accident or to mitigate the consequences of an accident in progress. This is most efficiently achieved by immediately suspending the movement of fuel assemblies. Prior to the resumption of fuel movement, the requirements of Specifications 3.8.15 and 3.8.16 must be met. This requires restoring the soluble boron concentration and the correct fuel storage configuration to within the corresponding limits. This does not preclude movement of a fuel assembly to a safe position.

The fuel storage requirements and restrictions discussed here and applied in specification 3.8.16 are based on a maximum allowable fuel enrichment of 5.0 weight% U235. The enrichments listed in Tables 3.8-1 through 3.8-4 are nominal enrichments and include uncertainties to account for the tolerance on the as built enrichment. Hence, the as built enrichments may exceed the enrichments listed in the tables by up to 0.05 weight% U235. Qualifying burnups for enrichments not listed in the tables may be lineraly interpolated between the enrichments provided. This is because the reactivity of an assembly varies linearly for small ranges of enrichment.

REFERENCES

1. FSAR, Section 9.1.4

2. FSAR, Section 15.1.11

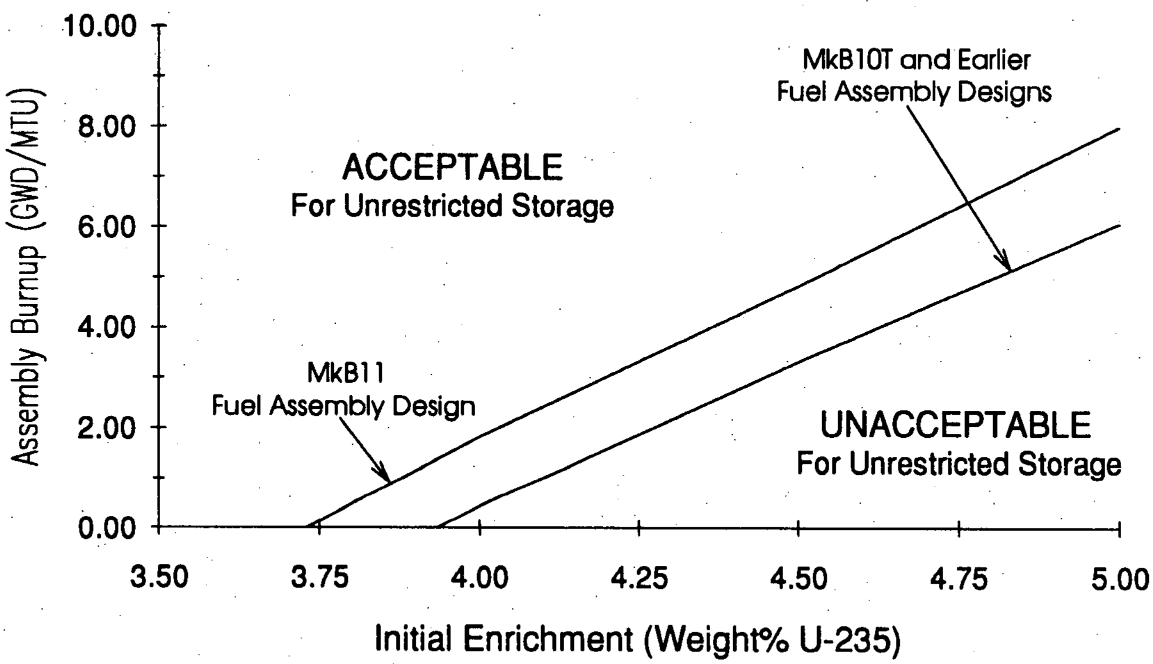
3. FSAR, Section 15.11.2.1

4. Double contingency principle of ANSI N16.1-1975, as specified in the April 14, 1978 NRC letter (Section 1.2) and implied in the proposed revision to Regulatory Guide 1.13 (Section 1.4, Appendix A)

Table 3.8-1

Minimum Qualifying Burnup Versus Initial Enrichment for Unrestricted Storage in the Unit 1 and 2 Spent Fuel Pool

MkB10T and Earlier Fuel Assembly Designs		MkB11 Fuel Assembly Design	
Initial Nominal Enrichment (Weight% U-235)	Assembly Burnup (GWD/MTU)	Initial Nominal Enrichment (Weight% U-235)	Assembly Burnup (GWD/MTU)
3.93 (or less)	0	3.73 (or less)	0
4.00	0.43	4.00	1.83
4.50	3.30	4.50	4.80
5.00	6.03	5.00	7.95



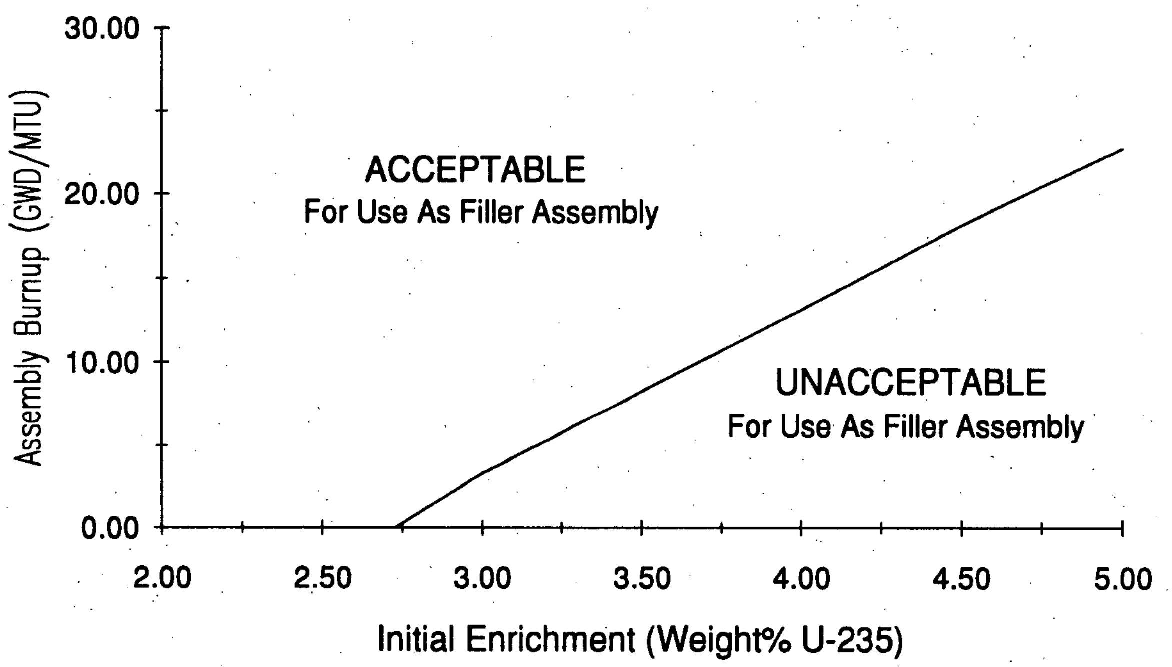
Fuel which does not meet the requirements of Table 3.8-1 may be qualified for Unrestricted storage by means of an analysis using NRC approved methodology to assure that k_{eff} is less than or equal to 0.95.

Likewise, previously unanalyzed fuel up to 5.0 weight% U-235 may be qualified for Restricted storage by means of an analysis using NRC approved methodology to assure that k_{eff} is less than or equal to 0.95.

Table 3.8-2

Minimum Qualifying Burnup Versus Initial Enrichment for Filler Assemblies in the Unit 1 and 2 Spent Fuel Pool

All Fuel Assembly Designs	
Initial Nominal Enrichment (Weight% U-235)	Assembly Burnup (GWD/MTU)
2.72 (or less)	0
3.00	3.25
3.50	8.22
4.00	13.13
4.50	18.10
5.00	22.69

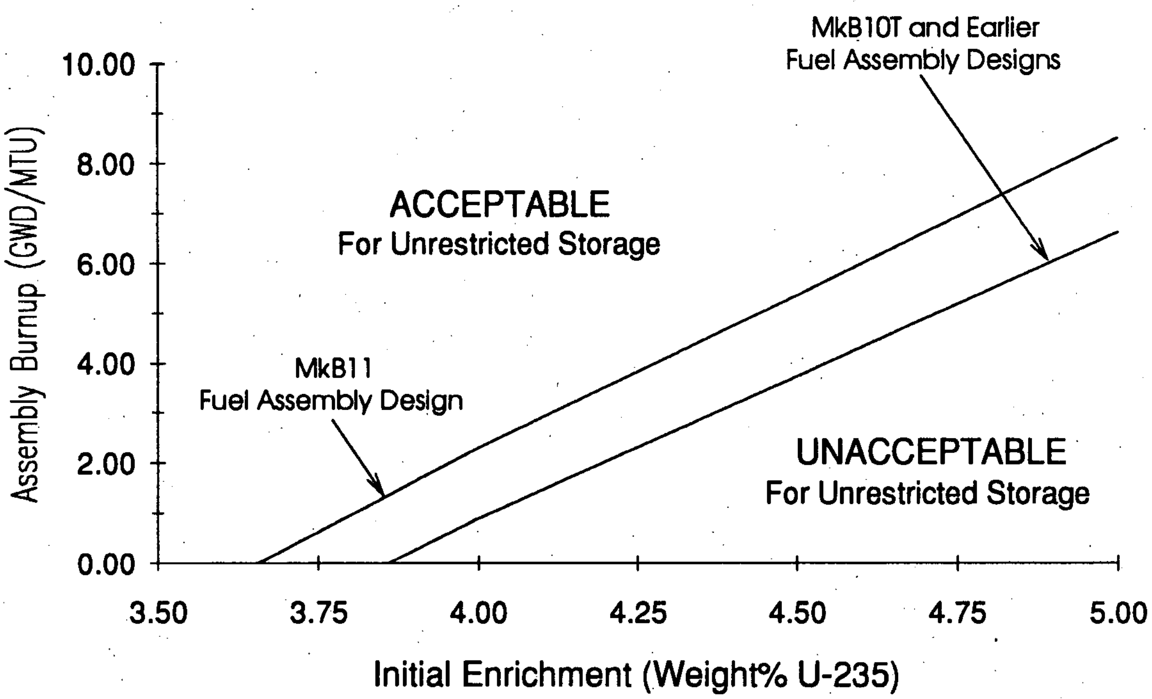


Fuel which does not meet the requirements of Table 3.8-2 may be qualified for use as a Filler Assembly by means of an analysis using NRC approved methodology to assure that k_{eff} is less than or equal to 0.95.

Table 3.8-3

Minimum Qualifying Burnup Versus Initial Enrichment for Unrestricted Storage in the Unit 3 Spent Fuel Pool

MkB10T and Earlier Fuel Assembly Designs		MkB11 Fuel Assembly Design	
Initial Nominal Enrichment (Weight% U-235)	Assembly Burnup (GWD/MTU)	Initial Nominal Enrichment (Weight% U-235)	Assembly Burnup (GWD/MTU)
3.86 (or less)	0	3.66 (or less)	0
4.00	0.91	4.00	2.31
4.50	3.73	4.50	5.34
5.00	6.60	5.00	8.49



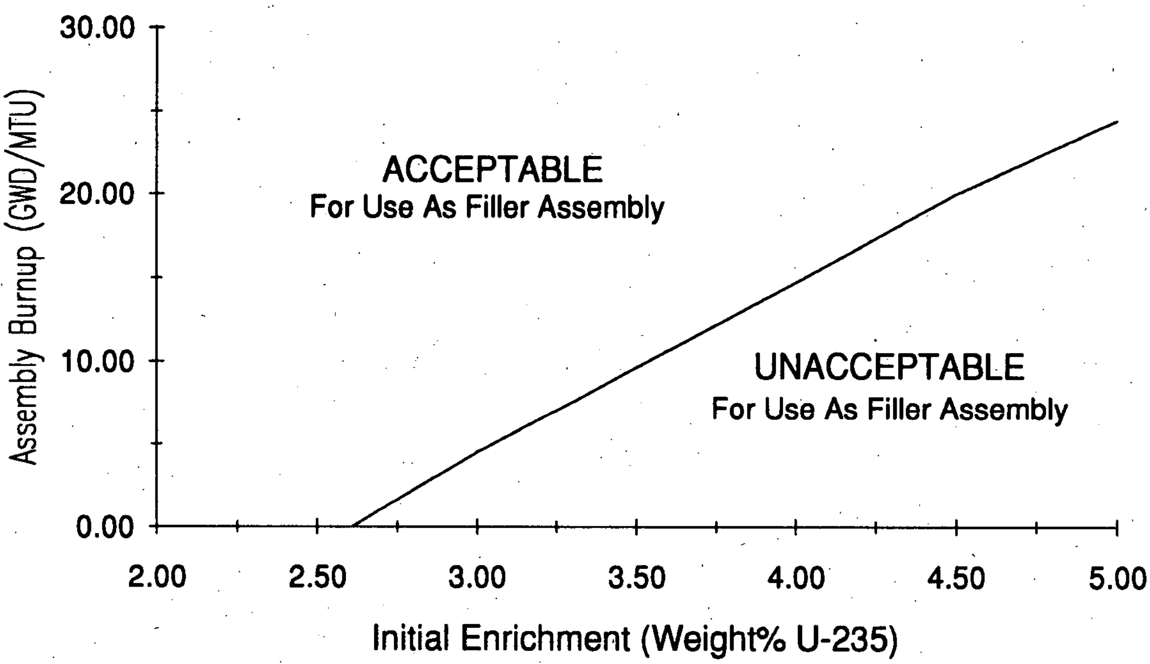
Fuel which does not meet the requirements of Table 3.8-3 may be qualified for Unrestricted storage by means of an analysis using NRC approved methodology to assure that k_{eff} is less than or equal to 0.95.

Likewise, previously unanalyzed fuel up to 5.0 weight% U-235 may be qualified for Restricted storage by means of an analysis using NRC approved methodology to assure that k_{eff} is less than or equal to 0.95.

Table 3.8-4

Minimum Qualifying Burnup Versus Initial Enrichment for Filler Assemblies in the Unit 3 Spent Fuel Pool

All Fuel Assembly Designs	
Initial Nominal Enrichment (Weight% U-235)	Assembly Burnup (GWD/MTU)
2.61 (or less)	0
3.00	4.49
3.50	9.62
4.00	14.68
4.50	19.96
5.00	24.37



Fuel which does not meet the requirements of Table 3.8-4 may be qualified for use as a Filler Assembly by means of an analysis using NRC approved methodology to assure that k_{eff} is less than or equal to 0.95.