

4.0 DESIGN FEATURES

4.1 Site Location

[A COL applicant that references the U.S. EPR design certification will provide site-specific information for Section 4.1, Site Location.]

4.2 Reactor Core

4.2.1 Fuel Assemblies

The reactor shall contain 241 fuel assemblies. Each assembly shall consist of a matrix of fuel rods clad with a zirconium based alloy with an initial composition of natural or slightly enriched uranium dioxide (UO₂) as fuel material. Limited substitutions of zirconium alloy or stainless steel filler rods for fuel rods, in accordance with approved applications of fuel rod configurations, may be used. Fuel assemblies shall be limited to those fuel designs that have been analyzed with applicable NRC approved codes and methods and shown by tests or analyses to comply with all fuel safety design bases. A limited number of lead test assemblies that have not completed representative testing may be placed in nonlimiting core regions.

4.2.2 Control Rod Assemblies

The reactor core shall contain 89 control rod assemblies. The control material shall be silver indium cadmium as approved by the NRC.

-----REVIEWER'S NOTE-----

The design of the spent fuel storage racks is to be provided by the COL applicant. The required boron concentration will be provided as a part of the spent fuel rack design.

4.3 Fuel Storage

4.3.1 Criticality

4.3.1.1 The spent fuel storage racks are designed and shall be maintained with:

- a. Fuel assemblies having a maximum U-235 enrichment of 5.0 weight percent;
 - b. $k_{\text{eff}} \leq 0.95$ if fully flooded with unborated water, which includes an allowance for uncertainties as described in FSAR Section 9.1; and
 - c. A nominal [11.28] inch center to center distance between fuel assemblies placed in the spent fuel storage racks.
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4.0 DESIGN FEATURES

4.3 Fuel Storage (continued)

- 4.3.1.2 The new fuel storage racks are designed and shall be maintained with:
- a. Fuel assemblies having a maximum U-235 enrichment of 5.0 weight percent;
 - b. $k_{\text{eff}} \leq 0.95$ if fully flooded with unborated water, which includes an allowance for uncertainties as described in FSAR Section 9.1;
 - c. $k_{\text{eff}} \leq 0.98$ if moderated by aqueous foam, which includes an allowance for uncertainties as described in FSAR Section 9.1; and
 - d. A nominal [11.28] inch center to center distance between fuel assemblies placed in the storage racks.

-----REVIEWER'S NOTE-----

| Storage rack uncertainties are discussed in the FSAR or COLA Section 9.1

4.3.2 Drainage

The spent fuel storage pool is designed and shall be maintained to prevent inadvertent draining of the pool below elevation 23 ft.

4.3.3 Capacity

The spent fuel storage pool is designed and shall be maintained with a storage capacity limited to no more than [1121] fuel assemblies.
