

2.0 SAFETY LIMITS (SLs)

2.1 SLs

2.1.1 Reactor Core SLs

In MODES 1 and 2, the combination of THERMAL POWER, Reactor Coolant System (RCS) highest loop average temperature, and pressurizer pressure shall not exceed the limits specified in the COLR; and the following SLs shall not be exceeded.

- 2.1.1.1 In MODE 1, the Departure from Nucleate Boiling Ratio (DNBR) shall be maintained ≥ 1.24 for the WRB-2 DNB correlation for a thimble cell and ≥ 1.25 for the WRB-2 DNB correlation for a typical cell.
- 2.1.1.2 In MODE 2, the DNBR shall be maintained ≥ 1.17 for the WRB-2 DNB correlation, and ≥ 1.30 for the W-3 DNB correlation.
- 2.1.1.3 In MODES 1 and 2, the peak fuel centerline temperature shall be maintained as follows:
 - a. $< 5080^{\circ}\text{F}$ decreasing by 58°F per 10,000 MWD/MTU burnup for Westinghouse fuel,
 - b. $< 5173^{\circ}\text{F}$ decreasing by 65°F per 10,000 MWD/MTU burnup for AREVA NP fuel (Unit 1 only), and
 - c. $< 5189^{\circ}\text{F}$ decreasing by 65°F per 10,000 MWD/MTU burnup for AREVA NP fuel containing Gadolinia (Unit 1 only).

2.1.2 RCS Pressure SL

In MODES 1, 2, 3, 4, and 5, the RCS pressure shall be maintained ≤ 2735 psig.

2.2 SL Violations

- 2.2.1 If SL 2.1.1 is violated, restore compliance and be in MODE 3 within 1 hour.
 - 2.2.2 If SL 2.1.2 is violated:
 - 2.2.2.1 In MODE 1 or 2, restore compliance and be in MODE 3 within 1 hour.
 - 2.2.2.2 In MODE 3, 4, or 5, restore compliance within 5 minutes.
-

3.7 PLANT SYSTEMS

3.7.15 Spent Fuel Pool Boron Concentration

LCO 3.7.15 The spent fuel pool boron concentration shall be \geq 300 ppm.

APPLICABILITY: Whenever fuel assemblies are stored in the spent fuel pool.

ACTIONS

-----NOTE-----
LCO 3.0.3 is not applicable.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Spent fuel pool boron concentration not within limit.	A.1 Suspend movement of fuel assemblies in the spent fuel pool.	Immediately
	<u>AND</u> A.2 Initiate action to restore spent fuel pool boron concentration to within limit.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.7.15.1 Verify the spent fuel pool boron concentration is within limit.	7 days

3.7 PLANT SYSTEMS

3.7.16 Spent Fuel Assembly Storage

- LCO 3.7.16 Each spent fuel assembly stored in the spent fuel pool shall, as applicable:
- a. Region 1 of Holtec spent fuel pool storage racks
Have an initial nominal enrichment of ≤ 5.0 weight percent U-235 to permit storage in any cell location.
 - b. Region 2 of Holtec spent fuel pool storage racks
Have a combination of initial enrichment and burnup within the Acceptable Burnup Domain of Figure 3.7.16-1.

APPLICABILITY: Whenever fuel assemblies are stored in the spent fuel pool.

ACTIONS

-----NOTE-----

LCO 3.0.3 is not applicable.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Requirements of the LCO not met.	A.1 Initiate action to move the noncomplying fuel assembly into a location which restores compliance.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.7.16.1 Verify by administrative means the initial nominal enrichment of the fuel assembly is ≤ 5.0 weight percent U-235.	Prior to storing the fuel assembly in Region 1
SR 3.7.16.2 Verify by administrative means the combination of initial enrichment, burnup, and decay time, as applicable, of the fuel assembly is within the Acceptable Burnup Domain of Figure 3.7.16-1.	Prior to storing the fuel assembly in Region 2

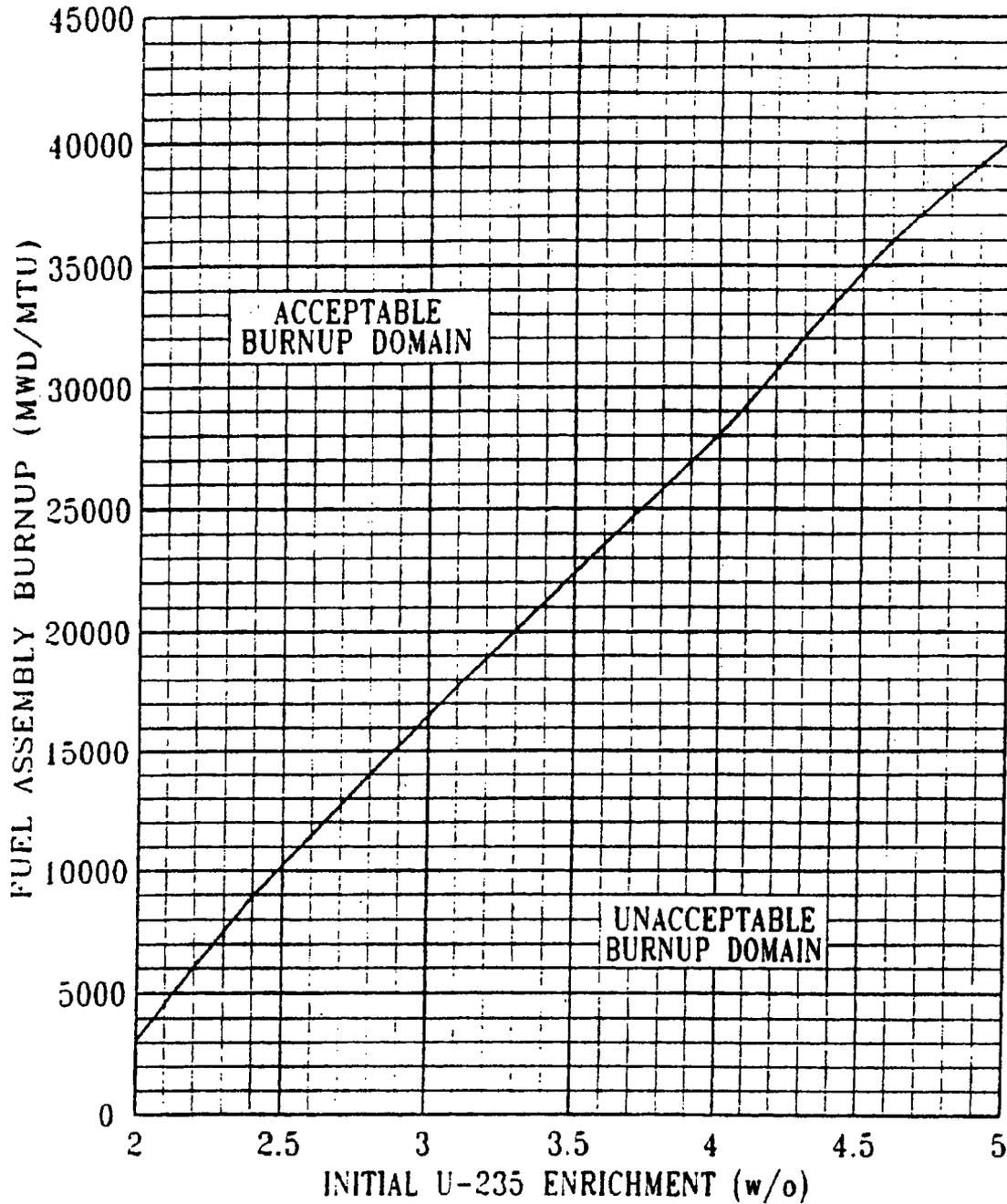


Figure 3.7.16-1 (page 1 of 1)
Region 2 Fuel Assembly Burnup Requirements
(Holtec Spent Fuel Pool Storage Racks)

4.0 DESIGN FEATURES

4.1 Site

4.1.1 Site Location

The site is located in Reed Township, approximately 20 mi (32 km) south-southwest of the city of Joliet in northern Illinois.

4.1.2 Exclusion Area Boundary (EAB)

The EAB shall not be less than 1591 ft (485 meters) from the outer containment wall.

4.1.3 Low Population Zone (LPZ)

The LPZ shall be a 1.125 mi (1811 meter) radius measured from the midpoint between the two reactors.

4.2 Reactor Core

4.2.1 Fuel Assemblies

The reactor shall contain 193 fuel assemblies. Each assembly, with exceptions as noted below, shall consist of a matrix of Zircaloy or ZIRLO clad fuel rods with an initial composition of natural or slightly enriched uranium dioxide (UO_2) as fuel material. Limited substitutions of zirconium alloy or stainless steel filler rods or vacancies 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 staff 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.

Up to 8 AREVA NP Advanced Mark-BW(A) fuel assemblies containing M5 alloy may be placed in nonlimiting Unit 1 core regions for evaluation during Cycles 14, 15, and 16.

4.2.2 Control Rod Assemblies

The reactor core shall contain 53 control rod assemblies. The control material shall be silver indium cadmium, hafnium, or a mixture of both types.

DESIGN FEATURES (continued)

4.3 Fuel Storage

4.3.1 Criticality

The spent fuel storage racks are designed and shall be maintained, as applicable, with:

- a. Fuel assemblies having a maximum U-235 enrichment of 5.0 weight percent;
- b. For Holtec spent fuel pool storage racks, $k_{eff} \leq 0.95$ if fully flooded with unborated water, which includes an allowance for uncertainties as described in Holtec International Report HI-982094, "Criticality Analysis for Byron/Braidwood Rack Installation Project," Project No. 80944, 1998;
- c. For Holtec spent fuel pool storage racks, a nominal 10.888 inch north-south and 10.574 inch east-west center to center distance between fuel assemblies placed in Region 1 racks; and
- d. For Holtec spent fuel pool storage racks, a nominal 8.97 inch center to center distance between fuel assemblies placed in Region 2 racks.

4.3.2 Drainage

The spent fuel pool is designed and shall be maintained to prevent inadvertent draining of the pool below elevation 410 ft, 0 inches.

4.3.3 Capacity

The spent fuel pool is designed and shall be maintained with a storage capacity limited to no more than 2984 fuel assemblies.