Attachment II

Marked up copy of R.E. Ginna Nuclear Power Plant
Technical Specifications

Included pages:

| 3.7-27
| 3.7-28
3.7-29
3.7-30
3.7-31
| 4.0-2
4.0-3
| B 3.7-86*
| B 3.7-87*
| B 3.7-88*
| B 3.7-89*
B 3.7-90*
| B 3.7-91*
| B 3.7-92*
B 3.7-93*
B 3.7-94*
| B 3.7-95*
B 3.7-96*

* These bases pages are under the control of RG&E and are being provided for information only.

C.1.1

3.7 PLANT SYSTEMS

3.7.12 Spent Fuel Pool (SFP) Boron Concentration

2300

LCO 3.7.12 The SFP boron concentration shall be ≥ 300 ppm.

ever any — assembly is

APPLICABILITY: When fuel assemblies are stored in the SFP and a SFP verification has not been performed since the last movement of fuel assemblies in the SFP.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. SFP boron concentration not within limit.	------------NOTE------------ LCO 3.0.3 is not applicable. ----------------------------	
	A.1 Suspend movement of fuel assemblies in the SFP.	Immediately
	AND	
	A.2.1 Initiate action to restore SFP boron concentration to within limit.	Immediately
	OR	
	A.2.2 Initiate action to perform SFP verification.	Immediately

C.1.1

C.1.1

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.7.12.1 Verify the SFP pool boron concentration is within limit.	~~31~~ 7 days

and shall have initial enrichment and burnup within the acceptable area of Figure 3.7.13-1

3.7 PLANT SYSTEMS

3.7.13 Spent Fuel Pool (SFP) Storage

LCO 3.7.13 Fuel assembly storage in the spent fuel pool shall be maintained as follows:

C.1.2

a. Fuel assemblies in Region 1 shall have a K-infinity of ≤ 1.458; and

b. Fuel assemblies in Region 2 shall have initial enrichment and burnup within the acceptable area of the Figure 3.7.13-1.

2.

APPLICABILITY: Whenever any fuel assembly is stored in the spent fuel pool.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Requirements of the LCO not met for either region.	A.1 --------NOTE--------- LCO 3.0.3 is not applicable. --------------------- Initiate action to move the noncomplying fuel assembly from the applicable region.	Immediately

C.2.1

to an acceptable storage location.

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.13.1	------NOTE------ Not required to be performed when transferring a fuel assembly from Region 2 to Region 1. ------ (C.1.3) Verify by administrative means the K-infinity of the fuel assembly is ≤ 1.458 and that the initial enrichment and burnup is in accordance with Figure 3.7.13-1.	Prior to storing the fuel assembly in Region 1
SR 3.7.13.2	(C.1.2) Verify by administrative means the initial enrichment and burnup of the fuel assembly is in accordance with Figure 3.7.13-~~1~~ 2.	Prior to storing the fuel assembly in Region 2

Insert new Figures 3.7.13-1 and 3.7.13-2

C.1.2

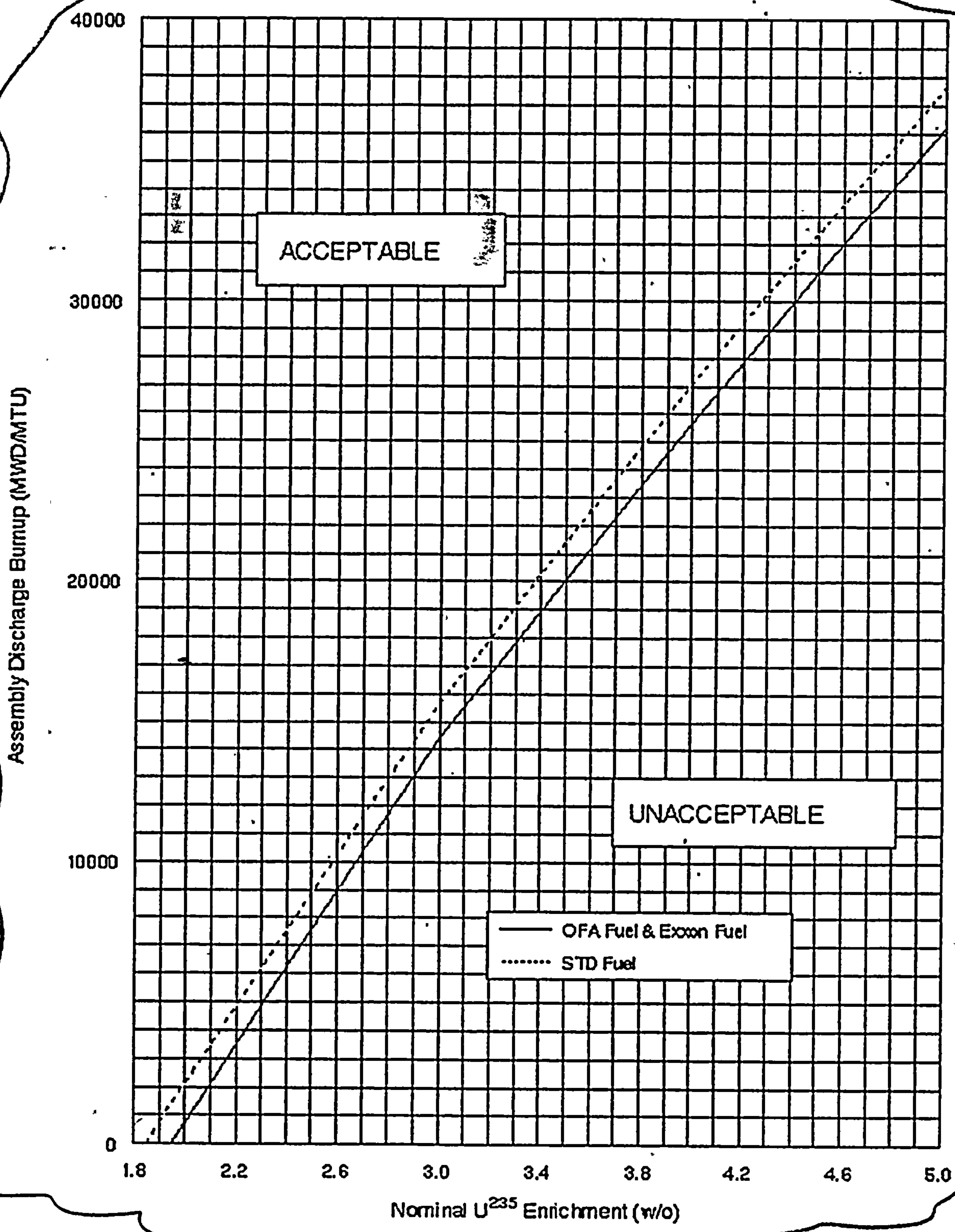


Figure 3.7.13-~~1~~ 2
Fuel Assembly Burnup Limits in Region 2

Insert A

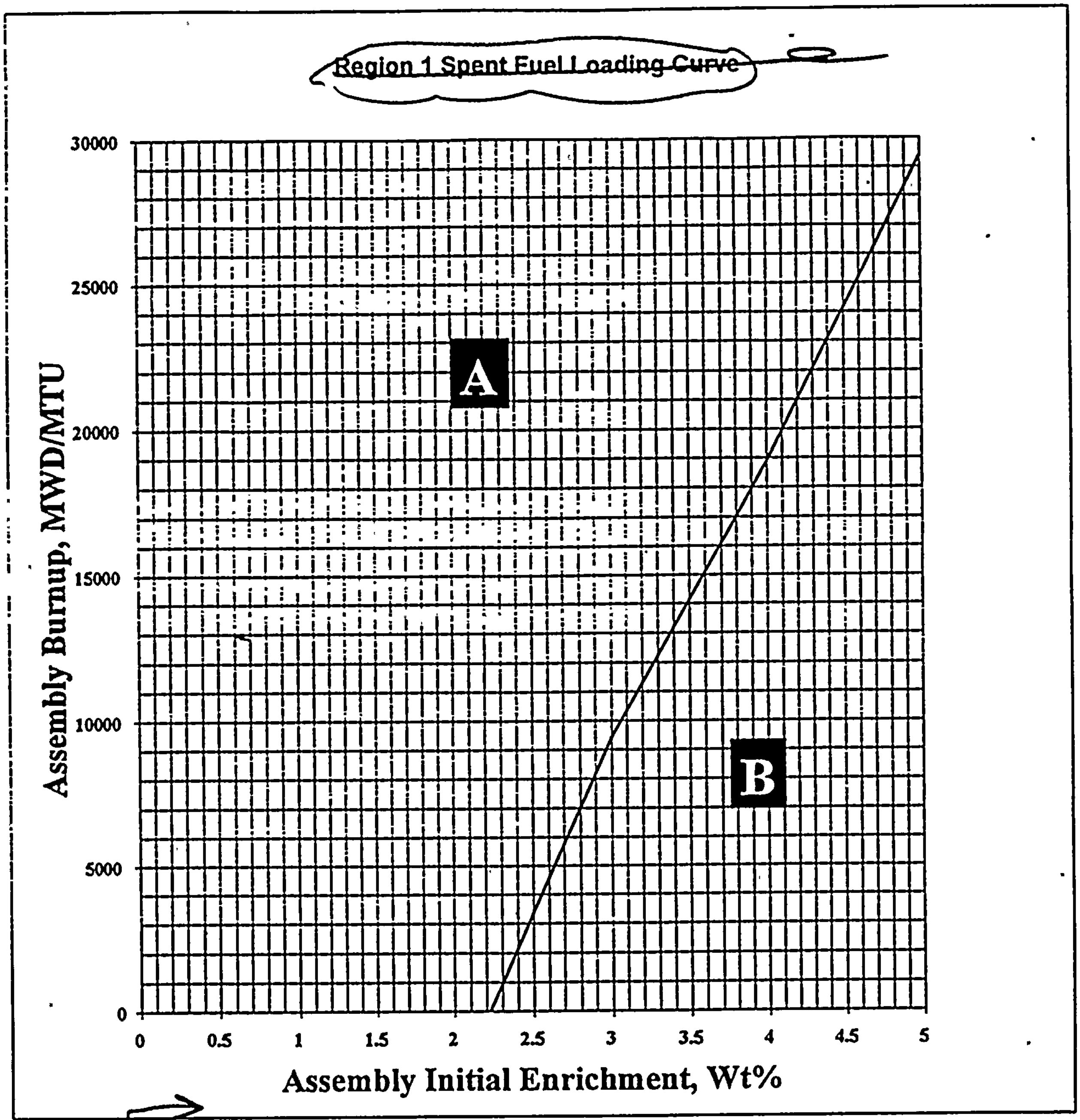


Figure 3.7.13-1
Fuel Assembly Burnup Limits in Region 1

A - Acceptable burnup domain for storage in any location within Region 1.

B - Acceptable burnup domain for storage in cells with lead-in funnels only.

A1 - Acceptable burnup domain for storage in any location within Region 2.
A2 - Acceptable burnup domain for storage face-adjacent to a Type A1 or A2 assembly, or a water cell.
B - Acceptable burnup domain for storage face-adjacent to a Type A1 assembly or a water cell.
C - Acceptable burnup domain for storage face-adjacent to a water cell only.

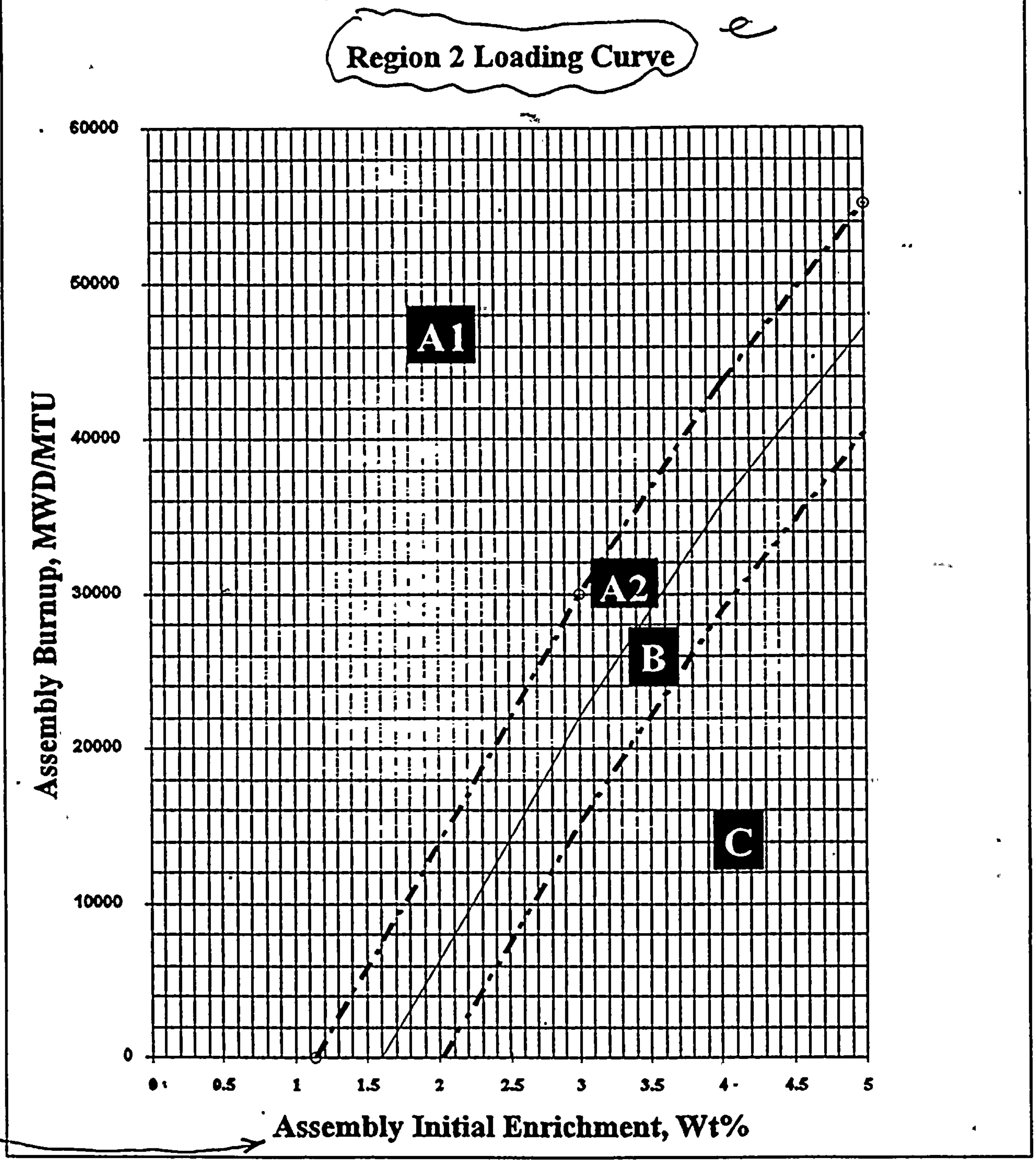


Figure 3.7.13-2
Fuel Assembly Burnup Limits in Region 2

4.0 DESIGN FEATURES

4.2 Reactor Core (continued)

4.2.2 Control Rod Assemblies

The reactor core shall contain 29 control rod assemblies. The control material shall be silver indium cadmium.

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 5.05 weight percent;

C.1.1

b. $k_{eff} \leq 0.95$ if fully flooded with unborated water,(*) which includes an allowance for uncertainties as described in Section 9.1 of the UFSAR;

C.2.2

c. Consolidated rod storage canisters may be stored in the spent fuel storage racks provided that the fuel assemblies from which the rods were removed meet all the requirements of LCO 3.7.13 for the region in which the canister is to be stored. However, the consolidated rod storage canister located in Region RGAF2 may exceed these requirements. The average decay heat of the fuel assembly from which the rods were removed for all consolidated fuel assemblies must also be ≤ 2150 BTU/hr.

4.3.1.2 The new fuel storage dry racks are designed and shall be maintained with:

a. Fuel assemblies having a maximum U-235 enrichment of 5.05 weight percent;

b. $k_{eff} \leq 0.95$ if fully flooded with unborated water, which includes an allowance for uncertainties as described in Section 9.1 of the UFSAR; and

c. $k_{eff} \leq 0.98$ if moderated by aqueous foam, which includes an allowance for uncertainties as described in Section 9.1 of the UFSAR.

C.1.1

* Until December 31, 1999, the spent fuel storage racks shall be maintained with a Keff ≤ 0.95 when flooded with water containing ≥ 2300 ppm soluble boron.

(continued)

4.0 DESIGN FEATURES (continued)

4.3 Fuel Storage (continued)

4.3.2 <u>Drainage</u>

The spent fuel pool is designed and shall be maintained to prevent inadvertent draining of the pool below elevation 257′0" (mean sea level).

4.3.3 <u>Capacity</u>

The spent fuel pool is designed and shall be maintained with a storage capacity limited to no more than ~~1016~~ 1,879 fuel assemblies and 1,369 storage locations.

B 3.7 PLANT SYSTEMS

B 3.7.12 Spent Fuel Pool (SFP) Boron Concentration

BASES

BACKGROUND

The water in the spent fuel pool (SFP) 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 a limiting k_{eff} of 0.95 be maintained in the absence of soluble boron. Hence, the design of both SFP regions is based on the use of unborated water such that configuration control (i.e., controlling the movement of the fuel assembly and checking the location of each assembly after movement) maintains each region in a subcritical condition during normal operation with the regions fully loaded.

the SFP design and

Region 2 The SFP design uses boraflex material that is secured to the rack structure. Testing has demonstrated that boraflex degradation is occurring such that boron must be credited to maintain k_{eff} ≤ 0.95 at all times until a long-term solution is reached (Reference 5)

The double contingency principle discussed in ANSI N-16.1-1975 (Ref. 1) and Reference 2 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 scenarios are associated with the movement of fuel from Region 1 to Region 2, and accidental misloading of a fuel assembly in Region 2. Either scenario could potentially increase the reactivity of Region 2. To mitigate these postulated criticality related accidents, boron is dissolved in the pool water. Safe operation of the storage racks with no movement of assemblies may therefore be achieved by controlling the location of each assembly in accordance with LCO 3.7.13, "Spent Fuel Pool (SFP) Storage." and by maintaining the minimum boron concentration required to address boron degradation Within 7 days prior to movement of an assembly into a SFP region, it is necessary to perform SR 3.7.12.1. Prior to moving an assembly into a SFP region, it is also necessary to perform SR 3.7.13.1 or 3.7.13.2 as applicable.

(continued)

BASES (continued)

and the high boron concentration in the SFP

APPLICABLE SAFETY ANALYSES

The postulated accidents in the SFP can be divided into two basic categories (Ref. 3 and 4). The first category are events which cause a loss of cooling in the SFP. Changes in the SFP temperature could result in an increase in positive reactivity. However, the positive reactivity is ultimately limited by voiding (which would result in the addition of negative reactivity) and the SFP geometry which is designed assuming use of unborated water even though soluble boron is available (see Specification 4.3.1.1). The second category is related to the movement of fuel assemblies in the SFP (i.e., a fuel handling accident) and is the most limiting accident scenario with respect to reactivity. The types of accidents within this category include an incorrectly transferred fuel assembly (e.g., transfer from Region 1 to Region 2 of an unirradiated or an insufficiently depleted fuel assembly) and a dropped fuel assembly. However, for both of these accidents, the negative reactivity effect of the soluble boron compensates for the increased reactivity. By closely controlling the movement of each assembly and by checking the location of each assembly after movement, the time period for potential accidents which credit use of the soluble boron may be limited to a small fraction of the total operating time.

combination

The concentration of dissolved boron in the SFP satisfies Criterion 2 of the NRC Policy Statement.

LCO

The SFP boron concentration is required to be ≥ 300 ppm. The specified concentration of dissolved boron in the SFP preserves the assumptions used in the analyses of the potential critical accident scenarios as described in References 3 and 4 (i.e., a fuel handling accident). This concentration of dissolved boron is the minimum required concentration for fuel assembly storage and movement within the SFP until the fuel assemblies have been verified to be stored correctly.

2300

and the boraflex degradation issue described in Reference 5

with the assumed boraflex available per the original design of the SFP storage racks, this value is 450 ppm

(continued)

BASES (continued)

to compensate for boraflex degradation to ensure the SFP keff remains ≤ 0.95 at all times. This is expected to be corrected by December 31, 1999 per Specification 4.3.1.1.5.

APPLICABILITY

This LCO applies whenever fuel assemblies are stored in the SFP, ~~until a SFP verification has been performed following~~ the last movement of fuel assemblies in the SFP. The SFP verification is accomplished by performing SR 3.7.13.1 or SR 3.7.13.2 after movement of fuel assemblies depending on which SFP region was affected by the fuel movement. If fuel was moved into both regions, then both SR 3.7.13.1 and SR 3.7.13.2 must be performed after the completion of fuel movement before exiting the Applicability of this LCO. This LCO does not apply following the verification, since the verification would confirm that there are no misloaded fuel assemblies. With no further fuel assembly movements in progress, there is no potential for a misloaded fuel assembly or a dropped fuel assembly.

This LCO does not apply to fuel movement within a SFP region since the accident analyses assume each region is completely filled in an infinite array.

ACTIONS

A.1 and A.2.1, and A.2.2

When the concentration of boron in the SFP is less than required, immediate 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. The initiation of actions to restore the concentration of boron is restored simultaneously with suspending movement of fuel assemblies. This is necessary to compensate for any boraflex degradation within the SFP racks. ~~An acceptable alternative is to immediately initiate action to perform a SFP verification (SR 3.7.13.1 and SR 3.7.13.2). The performance of this verification removes the plant from the Applicability of this LCO. This does not preclude movement of a fuel assembly to a safe position (e.g., movement to an available rack position).~~

The Required Actions are modified by a Note indicating that LCO 3.0.3 does not apply since if the LCO is not met while moving irradiated fuel assemblies in MODE 5 or 6, LCO 3.0.3 would not be applicable. If moving irradiated fuel assemblies while in MODE 1, 2, 3, or 4, the fuel movement is independent of reactor operation. Therefore, inability to suspend movement of fuel assemblies is not sufficient reason to require a reactor shutdown.

(continued)

BASES (continued)

SURVEILLANCE REQUIREMENTS

SR 3.7.12.1

This SR verifies that the concentration of boron in the SFP is within the limit. As long as this SR is met, the analyzed accidents are fully addressed. The 31 day Frequency is appropriate because the volume and boron concentration in the pool is normally stable and all water level changes and boron concentration changes are controlled by plant procedures.

7

Since the boron is credited with maintaining the SFP subcritical due to boraflex degradation. Also,

This SR is required to be performed prior to fuel assembly movement into Region 1 or Region 2 and must continue to be performed until the necessary SFP verification is accomplished (i.e., SR 3.7.13.1 and 3.7.13.2).

REFERENCES

1. ANSI N16.1-1975, "American National Standard for Nuclear Criticality Safety in Operations with Fissionable Materials Outside Reactors."

2. Letter from B.K. Grimes, NRC, to All Power Reactor Licensees, Subject: "OT Position for Review and Acceptance of Spent Fuel Storage and Handling Applications," dated April 14, 1978.

3. Westinghouse, "Criticality Analysis of the R.E. Ginna Nuclear Power Plant Fresh and Spent Fuel Racks, and Consolidated Rod Storage Canisters," dated June 1994.

4. UFSAR, Section 15.7.3.

5. Letter from R.C. Mecredy, RG&E, to G.S. Vissing, NRC, Subject: Boraflex Degradation, dated March 30, 1998

3. **Framatome Technologies, Inc., "R. E. Ginna Nuclear Power Plant, Spent Fuel Pool Re-racking Licensing Report," Section 4, February 1997.**

All fuel assemblies stored in Region 1 must have a K-infinity that is ≤ 1.458.

B 3.7 PLANT SYSTEMS

B 3.7.13 Spent Fuel Pool (SFP) Storage

BASES

BACKGROUND

The spent fuel pool (SFP) is divided into two separate and distinct regions (see Figure B 3.7.13-1) which, for the purpose of criticality considerations, are considered as separate pools (Ref. 1). Region 1, with ~~176~~ 294 storage positions, is designed to accommodate new or spent fuel utilizing a ~~two of four~~ checkerboard arrangement. A fuel assembly with an enrichment of ≤ 4.05 wt% can be stored at any available location in Region 1 since the accident analyses were performed assuming that Region 1 was filled with fuel assemblies of this enrichment. A fuel assembly with an enrichment > 4.05 wt% U-235 can also be stored in Region 1 provided that integral burnable poisons are present in the assemblies such that k-infinity is ≤ 1.458. The existing design uses Integral Fuel Burnable Absorbers (IFBAs) as the poison for fuel assemblies with enrichments > 4.05 wt% [to help achieve this K-infinity limit]. IFBAs consist of neutron absorbing material which provides equivalencing reactivity holddown (i.e., neutron poison) that allows storage of higher enrichment fuel. The neutron absorbing material is a non-removable or integral part of the fuel assembly once it is applied. The infinite multiplication factor, K-infinity, is a reference criticality point of each fuel assembly that if maintained ≤ 1.458, will result in a k_{eff} ≤ 0.95 for Region 1. The K-infinity limit is derived for constant conditions of normal reactor core configuration (i.e., typical geometry of fuel assemblies in vertical position arranged in an infinite array) at cold conditions (i.e., 68°F and 14.7 psia).

Region 2, with ~~840~~ 1,075 storage positions, is designed to accommodate fuel of various initial enrichments which have accumulated minimum burnups within the acceptable domain[s] according to Figure 3.7.13-~~1~~2, in the accompanying LCO. [INSERT A] The storage of fuel assemblies which are within the acceptable range[s] of Figure 3.7.13-~~1~~2 in Region 2 ensures a K_{eff} ≤ 0.95 in this region.

Fuel assemblies with minimum burnups above the curve in Figure 3.7.13-1 (area A) may be stored at any location within Region 1. Fuel assemblies with minimum burnups below the curve in Figure 3.7.13-1 (area B) may be stored in cells with lead-in funnels only.

(continued)

INSERT (A)

Fuel assemblies with initial enrichments and burnups within domain A1 of Figure 3.7.13-2 may be stored in any location in Region 2. Fuel assemblies with initial enrichments and burnups within domain A2 of Figure 3.7.13-2 shall be stored face-adjacent to a Type A1 or A2 assembly, or a water cell (empty cell). Fuel assemblies with initial enrichments and burnups within domain B of Figure 3.7.13-2 shall be stored face-adjacent to a Type A1 assembly or a water cell (empty cell). Fuel assemblies with initial enrichments and burnups within domain C of Figure 3.7.13-2 shall be stored face-adjacent to a water cell (empty cell) only. The word "face-adjacent" on Figure 3.7.13-2 is defined to mean that the flat surface of a fuel assembly in one cell faces the flat surface of the assembly in the next cell.

BASES

and Figure 3.7.13-2

are

(Ref. 2)

BACKGROUND (continued)

Consolidated rod storage canisters can also be stored in either region in the SFP provided that the minimum burnup of Figure 3.7.13-1 is met. In addition, all canisters placed into service after 1994 must have ≤ 144 rods or ≥ 256 rods (Ref. 2). The canisters are stainless steel containers which contain the fuel rods of a maximum of two fuel assemblies (i.e., 358 rods). All bowed, broken, or otherwise failed fuel rods are first stored in a stainless steel tube of 0.75 inch outer diameter before being placed in a canister. Each canister will accommodate 110 failed fuel rod tubes.

The water in the SFP 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 a limiting k_{eff} of 0.95 be maintained in the absence of soluble boron. Hence, the design of both regions is based on the use of unborated water such that configuration control (i.e., controlling the movement of the fuel assembly and checking the location of each assembly after movement) maintains each region in a subcritical condition during normal operation with the regions fully loaded.

the SFP design and

The SFP design uses boraflex material that is secured to the rack structure. Testing has demonstrated that boraflex degradation is occurring such that boron must be temporarily credited to maintain $K_{eff} \leq 0.95$ at all times until a long-term solution is reached (Reference 6).

The double contingency principle discussed in ANSI N16.1-1975 (Ref. 3) and Reference 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 scenarios are associated with the movement of fuel from Region 1 to Region 2, and accidental misloading of a fuel assembly in Region 2. Either scenario could potentially increase the reactivity of Region 2. To mitigate these postulated criticality related accidents, boron is dissolved in the pool water. Safe operation of the storage racks with no movement of assemblies may therefore be achieved by controlling the location of each assembly in accordance with this LCO. Within 7 days prior to movement of an assembly into a SFP region, it is necessary to perform SR 3.7.12.1. Prior to moving an assembly into a SFP region, it is also necessary to perform SR 3.7.13.1 or 3.7.13.2 as applicable.

and by maintaining the minimum boron concentration required to address boraflex degradation per LCO 3.7.12

(continued)

and the high boron concentration in the SFP

BASES (continued)

APPLICABLE SAFETY ANALYSES

The postulated accidents in the SFP can be divided into two basic categories (Refs. 2 and 5). The first category are events which cause a loss of cooling in the SFP. Changes in the SFP temperature could result in an increase in positive reactivity. However, the positive reactivity is ultimately limited by voiding (which would result in the addition of negative reactivity) and the SFP geometry which is designed assuming use of unborated water even though soluble boron is available (see Specification 4.3.1.1). The second category is related to the movement of fuel assemblies in the SFP (i.e., a fuel handling accident) and is the most limiting accident scenario with respect to reactivity. The types of accidents within this category include an incorrectly transferred fuel assembly (e.g., transfer from Region 1 to Region 2 of an unirradiated or an insufficiently depleted fuel assembly) and a dropped fuel assembly. However, for both of these accidents, the negative reactivity effect of the soluble boron compensates for the increased reactivity. By closely controlling the movement of each assembly and by checking the location of each assembly after movement, the time period for potential accidents which credit use of the soluble boron may be limited to a small fraction of the total operating time.

a combination of

The configuration of fuel assemblies in the spent fuel pool satisfies Criterion 2 of the NRC Policy Statement.

LCO

The restrictions on the placement of fuel assemblies within the SFP ensure the k_{eff} of the SFP will always remain < 0.95, assuming the pool to be flooded with unborated water (Specification 4.3.1.1). For fuel assemblies stored in Region 1, each assembly must have a K-infinity of ≤ 1.458.

For fuel assemblies stored in Region 2, initial enrichment and burnup shall be within the acceptable area of the Figure 3.7.13-1. The x-axis of ~~Figure 3.7.13-1~~ is the nominal U-235 enrichment wt% which does not include the ± 0.05 wt% tolerance that is allowed for fuel manufacturing and listed in Specification 4.3.1.1.

both Figures

with initial enrichment and burnup within the acceptable area of Figure 3.7.13-1.

face-

The word "adjacent" on Figure 3.7.13-2 is defined to mean that the flat surface of a fuel assembly in one cell faces the flat surface of the assembly in the next cell.

(continued)

BASES (continued)

APPLICABILITY

This LCO applies whenever any fuel assembly is stored in the SFP.

ACTIONS

A.1

When the configuration of fuel assemblies stored in either Region 1 or Region 2 of the SFP is not within the LCO limits, the immediate action is to initiate action to make the necessary fuel assembly movement(s) to bring the configuration into compliance with Specification 4.3.1.1. This compliance can be made by relocating the fuel assembly to a different region. an acceptable or to a new location within the same region

Required Action A.1 is modified by a Note indicating that LCO 3.0.3 does not apply since if the LCO is not met while moving irradiated fuel assemblies in MODE 5 or 6, LCO 3.0.3 would not be applicable. If moving irradiated fuel assemblies while in MODE 1, 2, 3, or 4, the action is independent of reactor operation. Therefore, inability to move fuel assemblies is not sufficient reason to require a reactor shutdown.

SURVEILLANCE REQUIREMENTS

SR 3.7.13.1

This SR verifies by administrative means that the K-infinity of each fuel assembly is ≤ 1.458 prior to storage in Region 1. and that the initial enrichment and burnup is in accordance with Figure 3.7.13-1 If the initial enrichment of a fuel assembly is ≤ 4.05 wt%, a K-infinity of ≤ 1.458 is always maintained. For fuel assemblies with enrichment > 4.05 wt%, a minimum number of IFBAs must be present in each fuel assembly such that k-infinity ≤ 1.458 prior to storage in Region 1. This verification is only required once for each fuel assembly since the burnable poisons, if required, are an integral part of the fuel assembly and will not be removed. The initial enrichment of each assembly will also not change (i.e., increase) while partially burned assemblies are less reactive than when they were new (i.e., fresh). Performance of this SR ensures compliance with Specification 4.3.1.1.

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.7.13.1 (continued)

Though not required for this LCO, this SR must also be performed after completion of fuel movement ~~into~~ within Region 1 to exit the Applicability of LCO 3.7.12, "SFP Boron Concentration."

This SR is modified by a Note which states that this verification is not required when transferring a fuel assembly from Region 2 to Region 1. The verification is not required since Region 2 is the limiting SFP region, and as such, the fuel has already been verified to be acceptable for storage in Region 1.

SR 3.7.13.2

This SR verifies by administrative means that the initial enrichment and burnup of the fuel assembly is in accordance with Figure 3.7.13-~~1~~ 2 in the accompanying LCO prior to storage in Region 2. Once a fuel assembly has been verified to be within the acceptable range of Figure 3.7.13-~~1~~ 2, further verifications are no longer required since the initial enrichment or burnup will not adversely change. For fuel assemblies in the unacceptable range of Figure 3.7.13-1, performance of this SR will ensure compliance with Specification 4.3.1.1.

Though not required for this LCO, this SR must also be performed after completion of fuel movement ~~into~~ within Region 2 to exit the Applicability of LCO 3.7.12.

REFERENCES

1. UFSAR, Section 9.1.2.

2. Westinghouse, "Criticality Analysis of the R.E. Ginna Nuclear Power Plant Fresh and Spent Fuel Racks, and Consolidated Rod Storage Canisters," dated June 1994.

3. ANSI N16.1-1975, "American National Standard for Nuclear Criticality Safety in Operations with Fissionable Materials Outside Reactors."

2. **Framatome Technologies, Inc., "R. E. Ginna Nuclear Power Plant, Spent Fuel Pool Re-racking Licensing Report," Section 4, February 1997.**

(continued)

BASES

REFERENCES (continued)

4. Letter from B.K. Grimes, NRC, to All Power Reactor Licensees, Subject: "OT Position for Review and Acceptance of Spent Fuel Storage and Handling Applications," dated April 14, 1978.

5. UFSAR, Section 15.7.3.

6. Letter from R.C. Mecredy, RG&E, to G.S. Vissing, NRC, Subject: "Boraflex Degradation," dated March 30, 1998.

(continued)

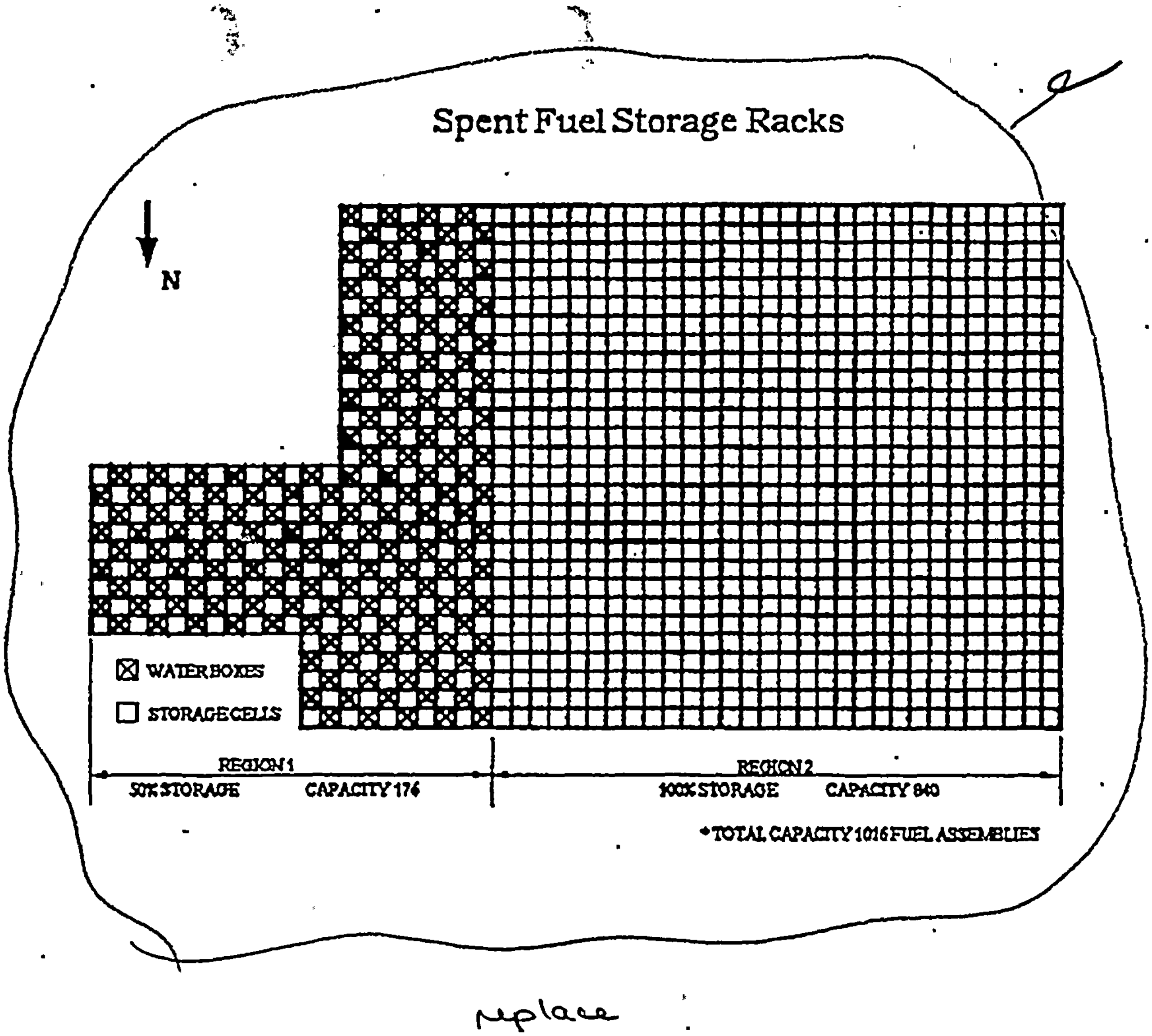


Figure B 3.7.13-1
Spent Fuel Pool

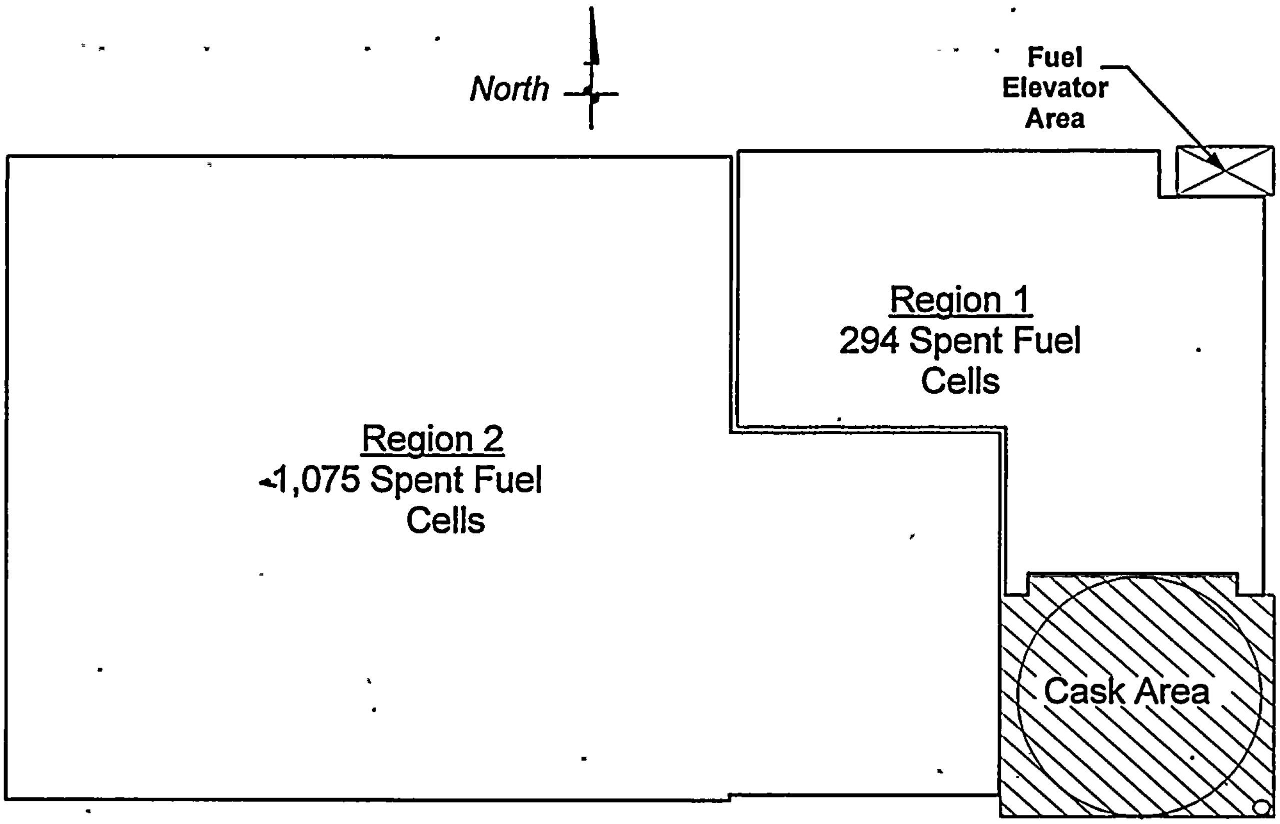


Figure B 3.7.13-1
Spent Fuel Pool

Attachment III

Proposed Technical Specifications

Included Pages:

- 3.7-27
- 3.7-28
- 3.7-29
- 3.7-30
- 3.7-31
- 3.7-31a
- 4.0-2
- 4.0-3

3.7 PLANT SYSTEMS

3.7.12 Spent Fuel Pool (SFP) Boron Concentration

LCO 3.7.12 The SFP boron concentration shall be ≥ 2300 ppm.

APPLICABILITY: Whenever any fuel assembly is stored in the SFP.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. SFP boron concentration not within limit.	------------NOTE------------ LCO 3.0.3 is not applicable. ----------------------------	
	A.1 Suspend movement of fuel assemblies in the SFP.	Immediately
	AND	
	A.2 Initiate action to restore SFP boron concentration to within limit.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.12.1	Verify the SFP pool boron concentration is within limit.	7 days

3.7 PLANT SYSTEMS

3.7.13 Spent Fuel Pool (SFP) Storage

LCO 3.7.13 Fuel assembly storage in the spent fuel pool shall be maintained as follows:

a. Fuel assemblies in Region 1 shall have a K-infinity of ≤ 1.458 and shall have initial enrichment and burnup within the acceptable area of Figure 3.7.13-1; and

b. Fuel assemblies in Region 2 shall have initial enrichment and burnup within the acceptable area of the Figure 3.7.13-2.

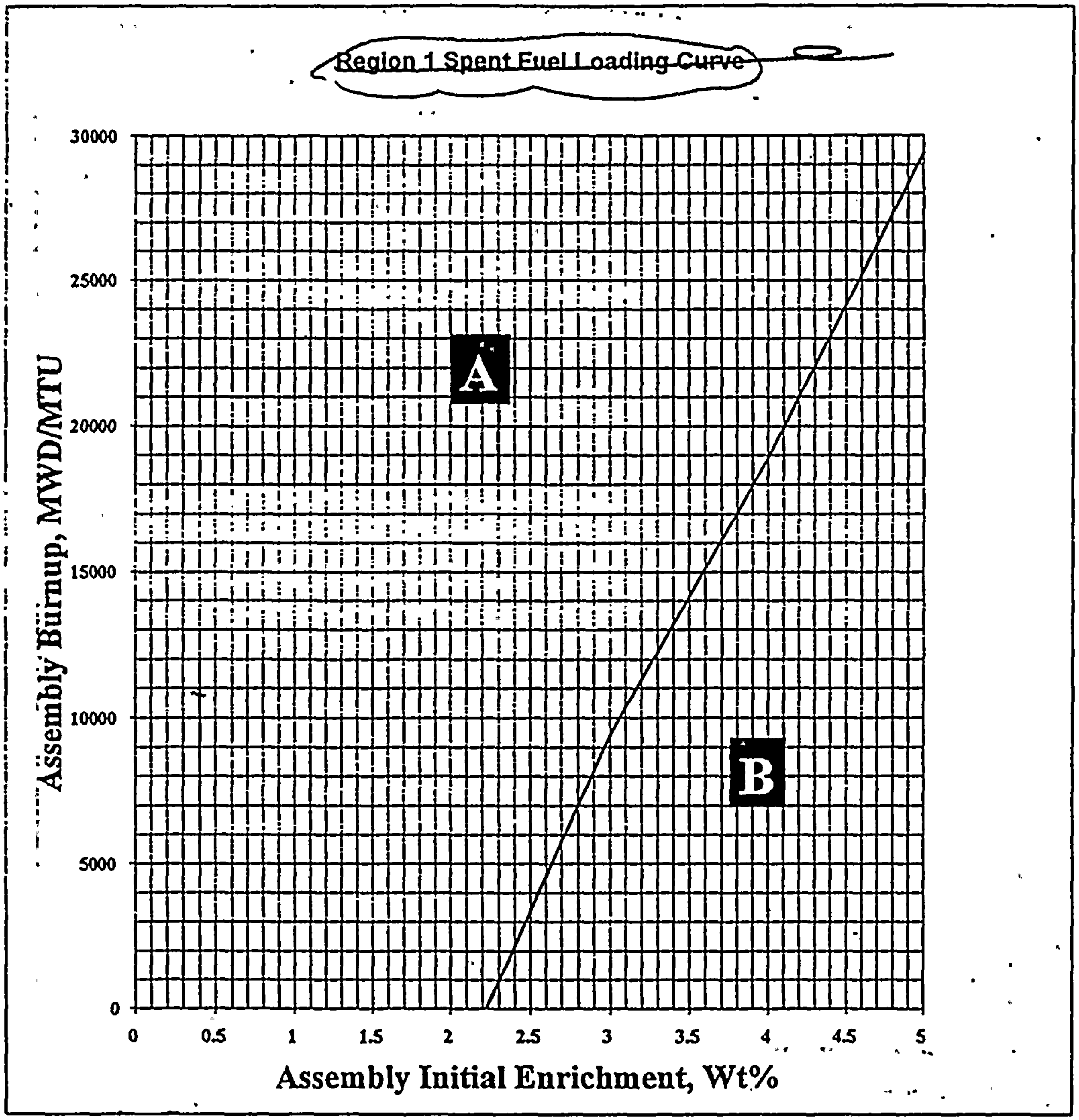
APPLICABILITY: Whenever any fuel assembly is stored in the spent fuel pool.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Requirements of the LCO not met for either region.	A.1 ---------NOTE--------- LCO 3.0.3 is not applicable. --------------------- Initiate action to move the noncomplying fuel assembly to an acceptable storage location.	Immediately

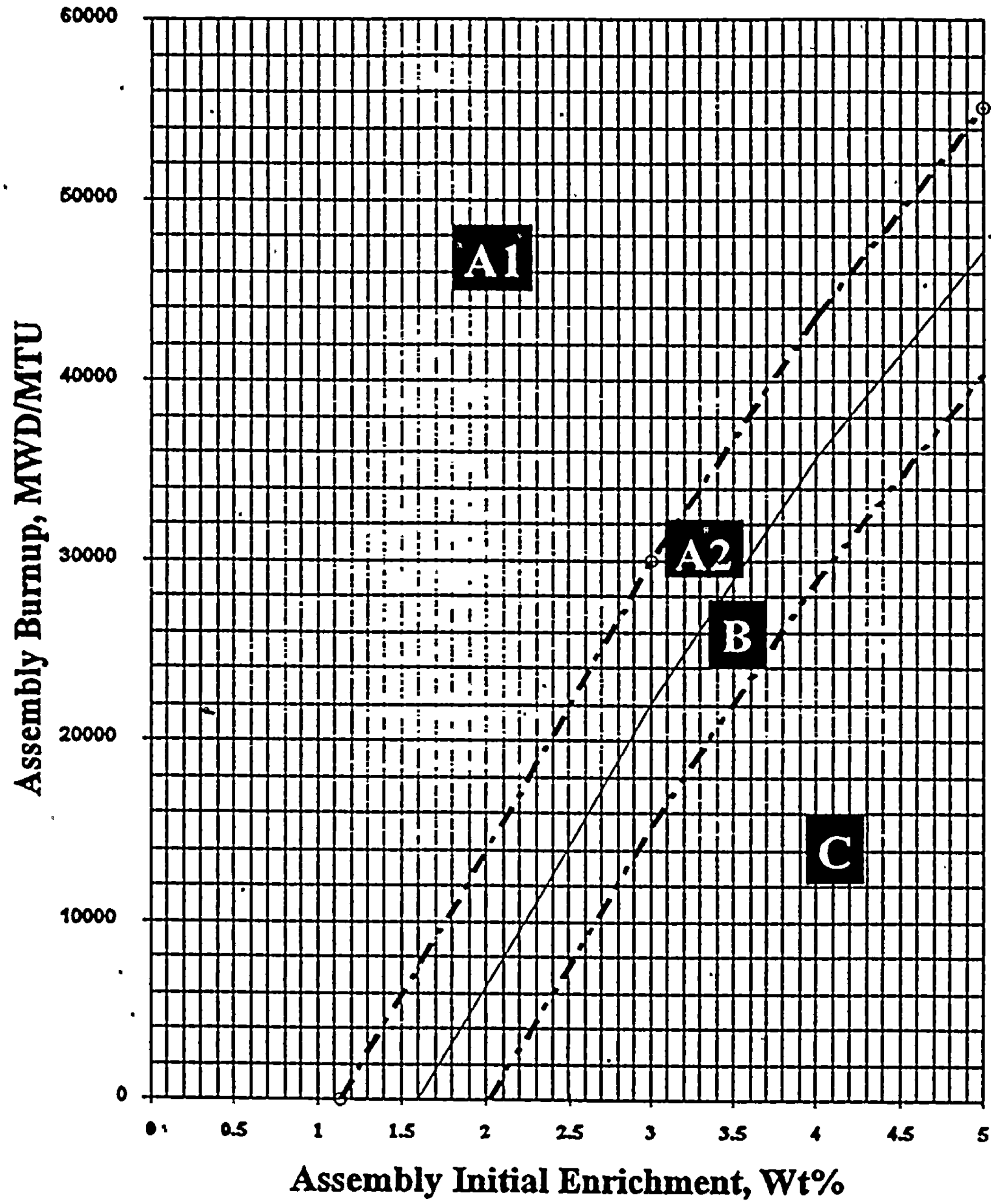
SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.13.1	Verify by administrative means the K-infinity of the fuel assembly is ≤ 1.458 and that the initial enrichment and burnup is in accordance with Figure 3.7.13-1.	Prior to storing the fuel assembly in Region 1
SR 3.7.13.2	Verify by administrative means the initial enrichment and burnup of the fuel assembly is in accordance with Figure 3.7.13-2.	Prior to storing the fuel assembly in Region 2



A - Acceptable burnup domain for storage in any location within Region 1.
B - Acceptable burnup domain for storage in cells with lead-in funnels only.

Figure 3.7.13-1
Fuel Assembly Burnup Limits in Region 1



A1 - Acceptable burnup domain for storage in any location within Region 2.
A2 - Acceptable burnup domain for storage face-adjacent to a Type A1 or A2 assembly, or a water cell.
B - Assembly burnup domain for storage face-adjacent to a Type A1 assembly or a water cell.
C - Acceptable burnup domain for storage face-adjacent to a water cell only.

Figure 3.7.13-2
Fuel Assembly Burnup Limits in Region 2

4.0 DESIGN FEATURES

4.2 Reactor Core (continued)

4.2.2 Control Rod Assemblies

The reactor core shall contain 29 control rod assemblies. The control material shall be silver indium cadmium.

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 5.05 weight percent;

b. $k_{eff} \leq 0.95$ if fully flooded with unborated water*, which includes an allowance for uncertainties as described in Section 9.1 of the UFSAR;

c. Consolidated rod storage canisters may be stored in the spent fuel storage racks provided that the fuel assemblies from which the rods were removed meet all the requirements of LCO 3.7.13 for the region in which the canister is to be stored. The average decay heat of the fuel assembly from which the rods were removed for all consolidated fuel assemblies must also be ≤ 2150 BTU/hr.

4.3.1.2 The new fuel storage dry racks are designed and shall be maintained with:

a. Fuel assemblies having a maximum U-235 enrichment of 5.05 weight percent;

b. $k_{eff} \leq 0.95$ if fully flooded with unborated water, which includes an allowance for uncertainties as described in Section 9.1 of the UFSAR; and

c. $k_{eff} \leq 0.98$ if moderated by aqueous foam, which includes an allowance for uncertainties as described in Section 9.1 of the UFSAR.

* Until December 31, 1999, the spent fuel storage racks shall be maintained with a $k_{eff} \leq 0.95$ when flooded with water containing ≥ 2300 ppm soluble boron

(continued)

4.0 DESIGN FEATURES (continued)

4.3 Fuel Storage (continued)

4.3.2 <u>Drainage</u>

The spent fuel pool is designed and shall be maintained to prevent inadvertent draining of the pool below elevation 257'0" (mean sea level).

4.3.3 <u>Capacity</u>

The spent fuel pool is designed and shall be maintained with a storage capacity limited to no more than 1879 fuel assemblies and 1369 storage locations.

Attachment IV

R.E. Ginna Nuclear Power Plant
Spent Fuel Pool Re-racking Licensing Report
February 1997

See Letter from R.C. Mecredy, RG&E, to G.S. Vissing, NRC,
Subject: *Application for Amendment to Facility Operating License, Revised Spent Fuel Pool Storage Requirements*, dated March 31, 1997.

Attachment V

Letter from Brian McKenzie, Westinghouse, to Peter Bamford, RG&E, 98RG-G-0003
Subject: Boron Concentration for Region 2 Spent Fuel Pool, dated February 25, 1998

98RG-G-0003

Westinghouse Electric Company
Energy Systems

Box 355
Pittsburgh Pennsylvania 15230-0355

February 25, 1998

Mr. Peter Bamford
R. E. Ginna Nuclear Power Plant
1503 Lake Road
Ontario, NY 14519

Dear Mr. Bamford:

ROCHESTER GAS AND ELECTRIC CORPORATION
R. E. GINNA
Boron Concentration for Region 2 Spent Fuel Pool

On February 10 and 11, 1998, we had a number of conference calls to discuss a condition in the Ginna spent fuel pool in which there could be a significant loss of boron from some of the Region 2 boraflex panels. One of the scenarios discussed was the moving of spent fuel to areas in Region 2 where there was not a significant boron loss in the boraflex panels. This scenario of moving some spent fuel would create some empty cell locations in Region 2 of the spent fuel pool.

It was agreed to on February 11th that an evaluation should be performed to determine a revised boron concentration to address a fuel assembly misload accident, i.e., a fuel assembly is placed into an empty cell location whose boundaries do not have boron in the boraflex panels. This revised boron concentration was calculated to be 1450 ppm. The attached evaluation, "Ginna Misload Boron Concentration for Region 2 Criticality Analysis with the Loss of Boraflex in Some Cells" documents this result and supplements the criticality analysis for Region 2 of the Ginna spent fuel pool performed in 1994.

not attached "proprietary"

This evaluation was performed in accordance with our agreement on February 11th for the fixed price of $7500.

If you should have any questions on the attached evaluation, please give us a call.

Sincerely,

Brian McKenzie
Project Engineer
CNFD Fuel Marketing & Projects

cc: J. Ortiz
R. W. Eliasz
G. Wrobel

5054dp.doc:dlp 022598