ATTACHMENT B-1

MARKED UP PAGES FOR
PROPOSED CHANGES TO APPENDIX A,
TECHNICAL SPECIFICATIONS, OF
FACILITY OPERATING LICENSES
NPF-37 and NPF-66

BORON CREDIT IN THE SPENT FUEL POOL

BYRON STATION UNITS 1 & 2
REVISED PAGES:

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SECTION PAGE

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3/4.9.11 WATER LEVEL/BORON CONCENTRATION - STORAGE POOL

LIMITING CONDITION FOR OPERATION

3.9.11 At least 23 feet of water shall be maintained over the top of irradiated fuel assemblies seated in the storage racks. The dissolved boron concentration of the water in the storage pool shall be maintained at greater than or equal to 2000 ppm.

APPLICABILITY: Whenever irradiated fuel assemblies are in the storage pool.

ACTION:

a. With the water level requirements of the above specification not satisfied, suspend all movement of fuel assemblies and crane operations with loads in the fuel storage areas and restore the water level to within its limit within 4 hours.

b. With the boron concentration requirements of the above specification not satisfied, suspend all movement of fuel assemblies and crane operations with loads in the fuel storage areas and immediately take action to restore the dissolved boron concentration to within its limit as soon as possible.

c. The provisions of Specification 3.0.3 are not applicable.

SURVEILLANCE REQUIREMENTS

4.9.11 The water level in the storage pool shall be determined to be at least its minimum required depth at least once per 7 days when irradiated fuel assemblies are in the fuel storage pool.

4.9.11.a Boron concentration in the storage pool shall be determined to be greater than or equal to 2000 ppm at least once per ~~24~~ 48 hours.

~~*These requirements shall be in effect until December 31, 1997.~~

3/4.9.8 RESIDUAL HEAT REMOVAL AND COOLANT CIRCULATION (Continued)

The requirement to have two RHR loops OPERABLE when there is less than 23 feet of water above the reactor vessel flange ensures that a single failure of the operating RHR loop will not result in a complete loss of RHR capability. With the reactor vessel head removed and at least 23 feet of water above the reactor vessel flange, a large heat sink is available for core cooling. Thus, in the event of a failure of the operating RHR loop, adequate time is provided to initiate emergency procedures to cool the core.

3/4.9.9 CONTAINMENT PURGE ISOLATION SYSTEM

The OPERABILITY of this system ensures that the containment purge penetrations will be automatically isolated upon detection of high radiation levels within the containment. The OPERABILITY of this system is required to restrict the release of radioactive material from the containment atmosphere to the environment.

3/4.9.10 ~~and 3/4.9.11~~ WATER LEVEL - REACTOR VESSEL ~~and STORAGE POOL~~

The restrictions on minimum water level ensure that sufficient water depth is available to remove 99% of the assumed 10% iodine gap activity released from the rupture of an irradiated fuel assembly. The minimum water depth is consistent with the assumptions of the safety analysis.

3/4.9.12 FUEL HANDLING BUILDING EXHAUST FILTER PLENUM

The limitations on the Fuel Handling Building Exhaust Filter Plenum ensure that all radioactive material released from an irradiated fuel assembly will be filtered through the HEPA filters and charcoal adsorber prior to discharge to the atmosphere. The OPERABILITY of this system and the resulting iodine removal capacity are consistent with the assumptions of the safety analyses. ANSI N510-1980 will be used as a procedural guide for surveillance testing.

INSERT A

INSERT A

3/4.9.11 WATER LEVEL/BORON CONCENTRATION – STORAGE POOL

The restrictions on minimum water level ensure that sufficient water depth is available to remove 99% of the assumed 10% iodine gap activity released from the rupture of an irradiated fuel assembly. The minimum water depth is consistent with the assumptions of the safety analysis.

The restrictions on soluble boron concentration in the storage pool water ensure the spent fuel rack k_{eff} will be maintained less than or equal to 0.95 with a 95-percent confidence level.

5.6 FUEL STORAGE

CRITICALITY

5.6.1.1 The spent fuel storage racks are designed and shall be maintained with a k_{eff} less than or equal to 0.95 when flooded with unborated water*, which includes a conservative allowance for uncertainties as described in Section 9.1 of the UFSAR. This is ensured by controlling fuel assembly placement in each region as follows:

a. REGION 1

1. A nominal 10.32 inch north-south and 10.42 inch east-west, center-to-center distance is maintained between fuel assemblies placed in the spent fuel storage racks.

2. Fuel assemblies may be stored in this region with

a) a maximum nominal initial U-235 enrichment of less than or equal to 4.2 weight percent, or

b) a maximum nominal initial U-235 enrichment of 5.0 weight percent with sufficient Integral Fuel Burnable Absorbers present in each fuel assembly such that the maximum reference fuel assembly k_∞ is less than or equal to 1.470 at 68°F.

b. REGION 2

1. A nominal 9.03 inch center-to-center distance is maintained between fuel assemblies placed in the spent fuel storage racks.

2. a) Fuel assemblies may be stored in this region with a maximum nominal initial U-235 enrichment of 1.6 weight percent with no burnup and up to 5.0 weight percent U-235 with a minimum discharge burnup as specified in Figure 5.6-1, or

b) Fuel assemblies with a maximum nominal initial U-235 enrichment of greater than 1.6 and less than or equal to 4.2 weight percent that do not meet the minimum burnup specified in Figure 5.6-1, shall be loaded in a checkerboard pattern for storage in this region.

5.6.1.2 The k_{eff} for new fuel for the first core loading stored dry in the spent fuel storage racks shall not exceed 0.98 when aqueous foam moderation is assumed.

DRAINAGE

5.6.2 The spent fuel storage pool is designed and shall be maintained to prevent inadvertent draining of the pool below elevation 423 feet 2 inches.

INSERT B

* Until December 31, 1997, the spent fuel storage racks shall be maintained with a K_{eff} of less than or equal to 0.95 when flooded with water containing a minimum of 2000 ppm soluble boron.

INSERT B

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

a. Fuel assemblies having a maximum initial U-235 enrichment of 5.0 weight percent;

b. A $k_{eff} < 1.0$ if fully flooded with unborated water, which includes an allowance for uncertainties as described in WCAP-14416-NP-A, "Westinghouse Spent Fuel Rack Criticality Analysis with Credit for Soluble Boron," Revision 1, November 1996;

c. A $k_{eff} \leq 0.95$ if fully flooded with water borated to 2000 ppm, which includes an allowance for uncertainties as described in WCAP-14416-NP-A, "Westinghouse Spent Fuel Rack Criticality Analysis with Credit for Soluble Boron," Revision 1, November 1996;

d. A nominal 10.32 inch north-south and 10.42 inch east-west center-to-center distance between fuel assemblies placed in the Region 1 racks;

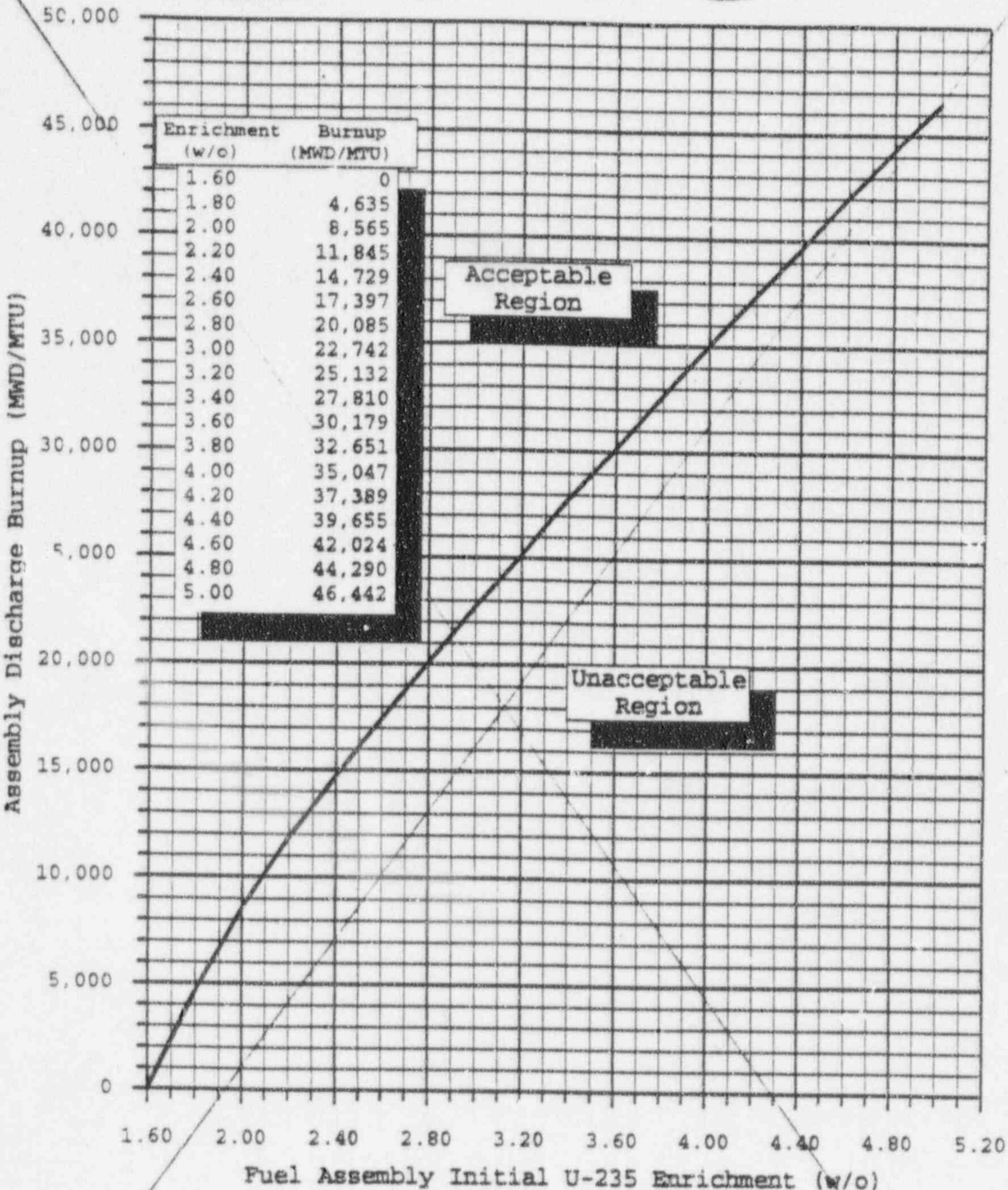
e. New or spent assemblies with sufficient Integral Fuel Burnable Absorbers present in each fuel assembly, as described in the CRITICALITY ANALYSIS OF BYRON AND BRAIDWOOD STATION FUEL STORAGE RACKS, may be allowed unrestricted storage in the Region 1 racks;

f. A nominal 9.03 inch center-to-center distance between fuel assemblies placed in the Region 2 racks;

g. New or spent fuel assemblies with a combination of discharge burnup, initial enrichment, and decay time in the acceptable region of Figures 5.6-1, 5.6-2, or 5.6-3, as applicable, may be stored in the Region 2 racks in the applicable checkerboard configuration, as described in the CRITICALITY ANALYSIS OF BYRON AND BRAIDWOOD STATION FUEL STORAGE RACKS; and

h. Interface requirements within and between adjacent racks as described in the CRITICALITY ANALYSIS OF BYRON AND BRAIDWOOD STATION FUEL STORAGE RACKS.

INSERTS C-1, C-2, and C-3



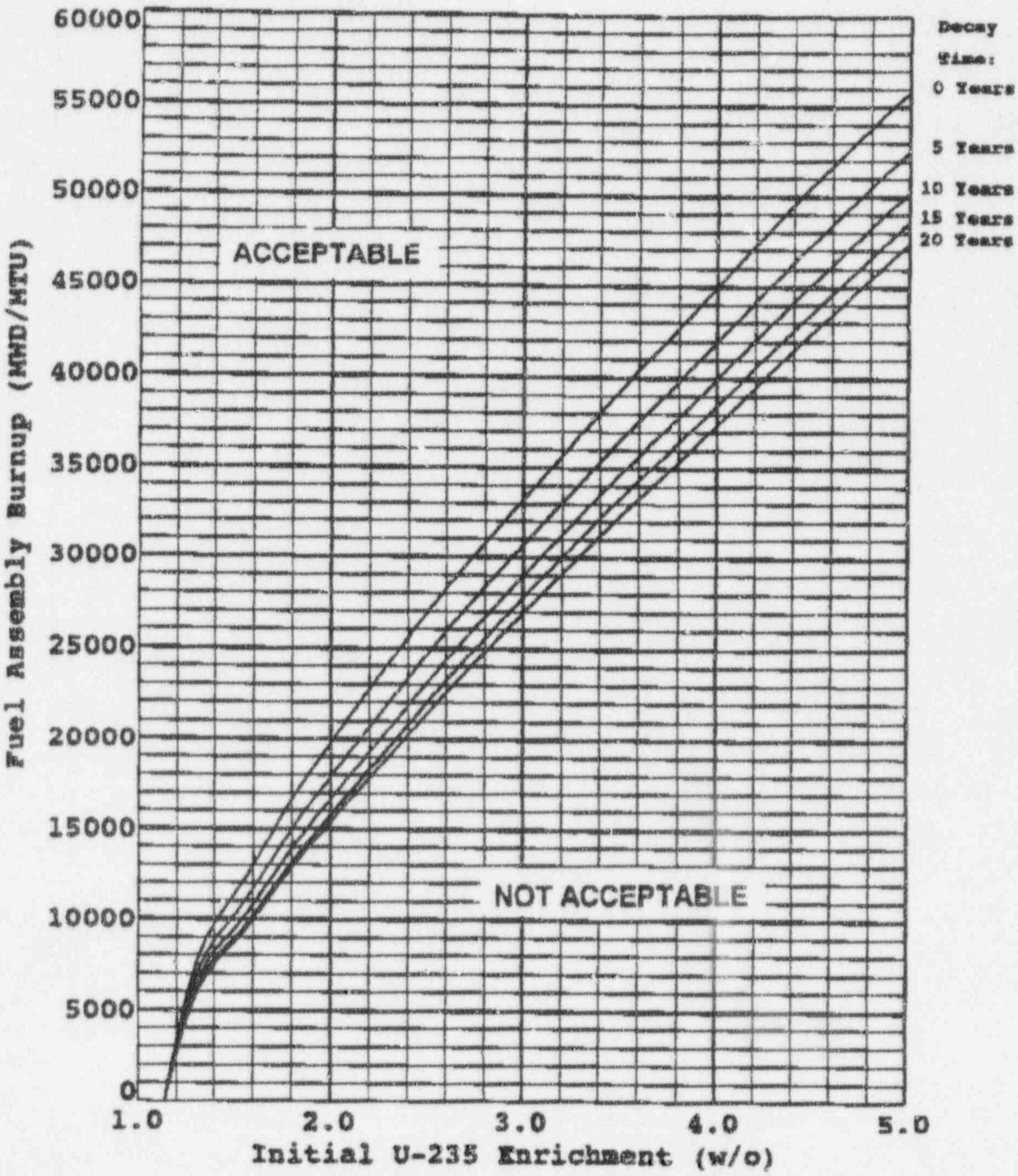
Enrichment (w/o)	Burnup (MWD/MTU)
1.60	0
1.80	4,635
2.00	8,565
2.20	11,845
2.40	14,729
2.60	17,397
2.80	20,085
3.00	22,742
3.20	25,132
3.40	27,810
3.60	30,179
3.80	32,651
4.00	35,047
4.20	37,389
4.40	39,655
4.60	42,024
4.80	44,290
5.00	46,442

Notes: The use of linear interpolation between the minimum burnups reported above is acceptable.

FIGURE 5.6 - 1

MINIMUM BURNUP VERSUS INITIAL ENRICHMENT
FOR REGION 2 STORAGE

INSERT C-1

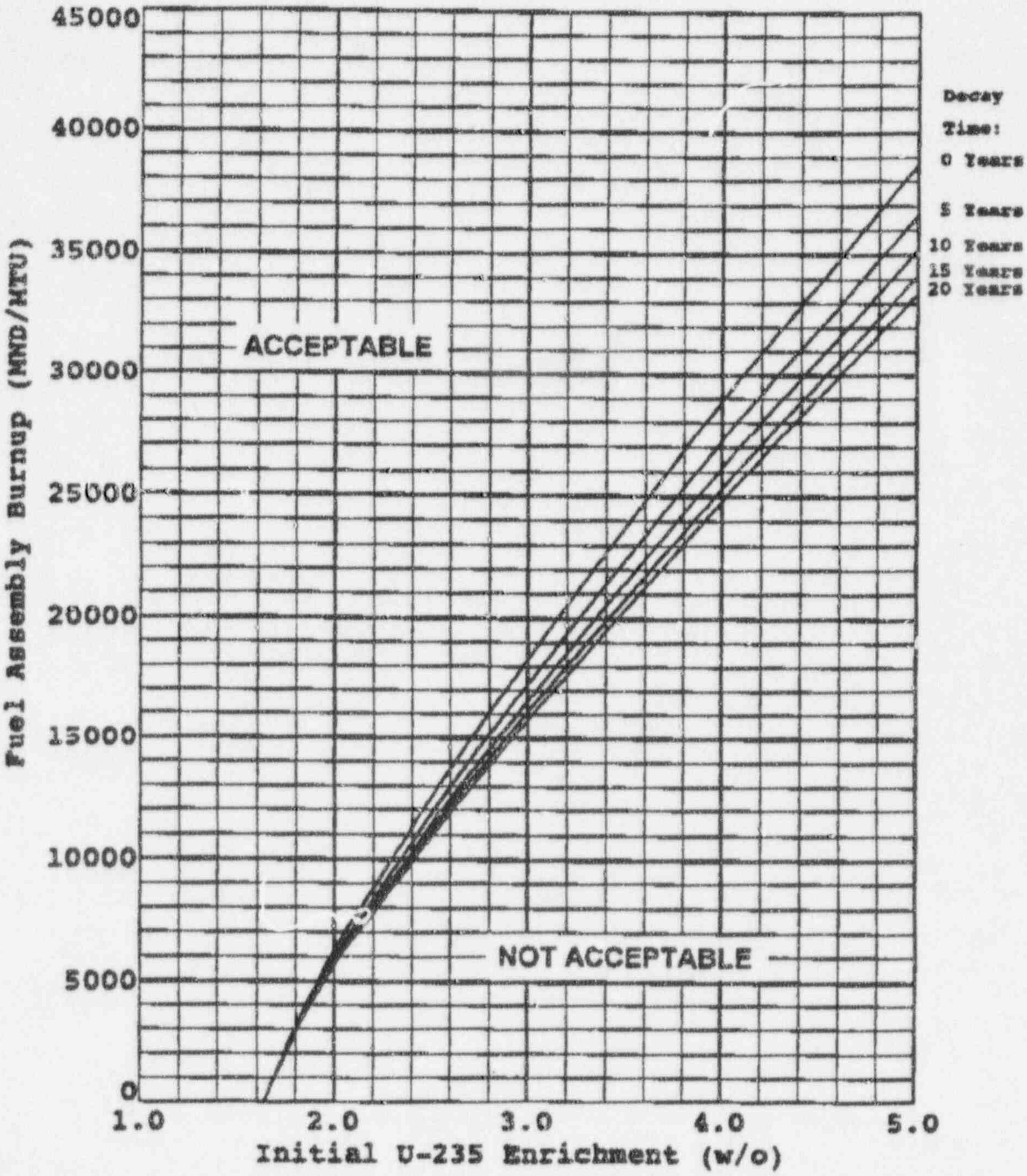


Note: The use of linear interpolation between the minimum burnups is acceptable.

FIGURE 5.6-1

MINIMUM BURNUP VERSUS INITIAL ENRICHMENT FOR REGION 2
ALL CELL CONFIGURATION STORAGE

INSERT C-2

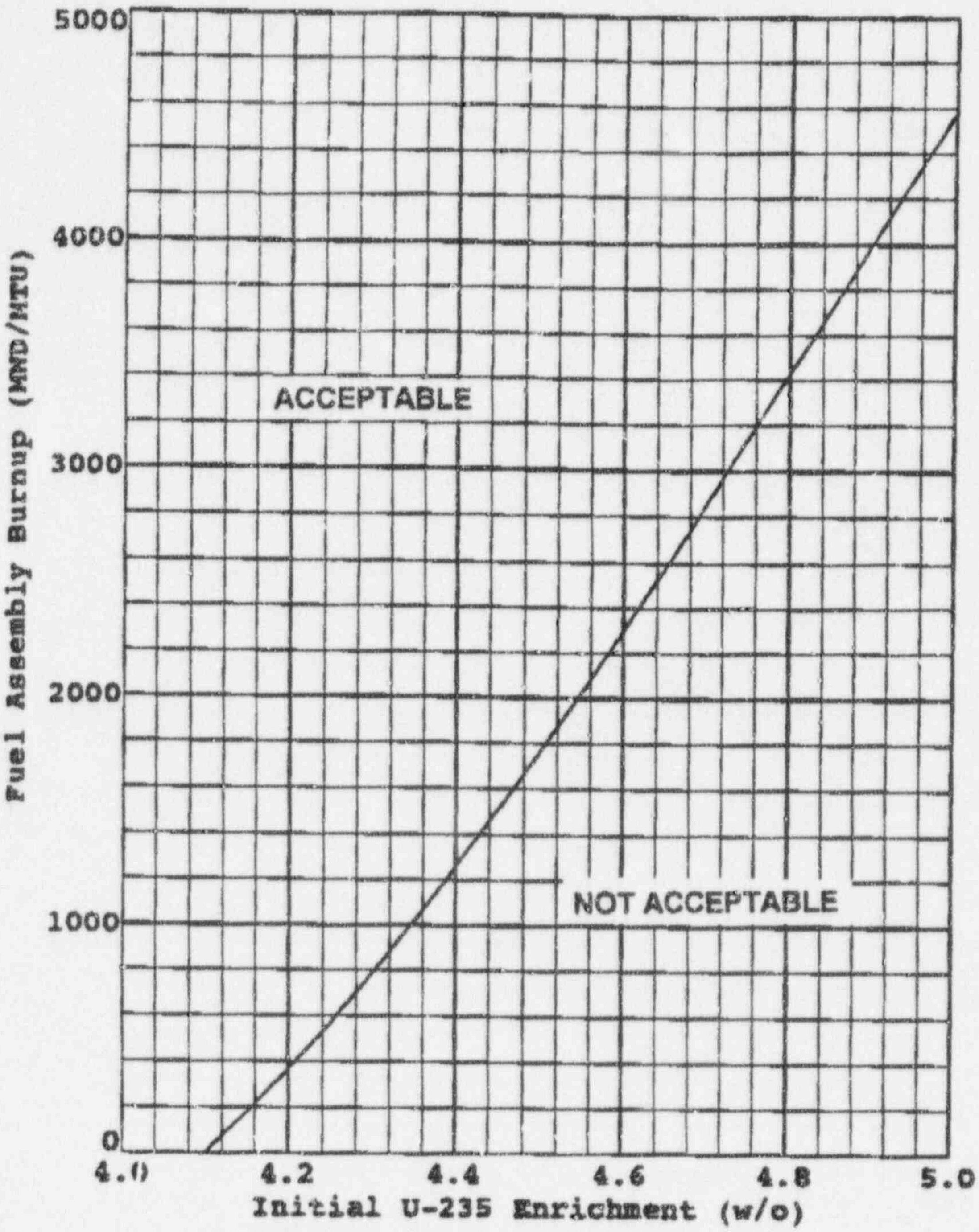


Note: The use of linear interpolation between the minimum burnups is acceptable.

FIGURE 5.6-2

MINIMUM BURNUP VERSUS INITIAL ENRICHMENT FOR REGION 2
3-OUT-OF-4 CHECKERBOARD CONFIGURATION

INSERT C-3



Note: The use of linear interpolation between the minimum burnups is acceptable.

FIGURE 5.6-3

MINIMUM BURNUP VERSUS INITIAL ENRICHMENT FOR REGION 2
2-OUT-OF-4 CHECKERBOARD CONFIGURATION

WCAP-14416-NP-A, "Westinghouse Spent Fuel Rack Criticality Analysis Methodology," Revision 1, November 1996. Credit is taken for radioactive decay time of the spent fuel.

CRITICALITY ANALYSIS OF BYRON AND BRAIDWOOD STATION FUEL STORAGE RACKS

6.9.1.10 Fuel enrichment limits for storage shall be established and documented in the CRITICALITY ANALYSIS OF BYRON AND BRAIDWOOD STATION FUEL STORAGE RACKS. The analytical methods used to determine the maximum fuel enrichments shall be those previously reviewed and approved by the NRC in ~~"CRITICALITY ANALYSIS OF BYRON AND BRAIDWOOD STATION FUEL STORAGE RACKS."~~ The fuel enrichment limits for storage shall be determined so that all applicable limits (e.g., subcriticality) of the safety analysis are met.

The CRITICALITY ANALYSIS OF BYRON AND BRAIDWOOD STATION FUEL STORAGE RACKS report shall be provided upon issuance of any changes, to the NRC Document Control Desk, with copies to the Regional Administrator and the Resident Inspector.

SPECIAL REPORTS

6.9.2 Special reports shall be submitted to the Regional Administrator of the NRC Regional Office within the time period specified for each report.

6.10 RECORD RETENTION

In addition to the applicable record retention requirements of Title 10, Code of Federal Regulations, the following records shall be retained for at least the minimum period indicated.

6.10.1 The following records shall be retained for at least 5 years:

a. Records and logs of unit operation covering time interval at each power level;

b. Records and logs of principal maintenance activities, inspections, repair and replacement of principal items of equipment related to nuclear safety;

c. All REPORTABLE EVENTS;

d. Records of surveillance activities, inspections, and calibrations required by these Technical Specifications;

e. Records of changes made to the procedures required by Specification 6.8;

f. Records of radioactive shipments;

g. Records of sealed source and fission detector leak tests and results; and

h. Records of annual physical inventory of all sealed source material of record.

6.10.2 The following records shall be retained for the duration of the unit Operating License:

a. Records and drawing changes reflecting unit design modifications made to systems and equipment described in the Final Safety Analysis Report;

b. Records of new and irradiated fuel inventory, fuel transfers and assembly burnup histories;

ATTACHMENT B-2

MARKED UP PAGES FOR
PROPOSED CHANGES TO APPENDIX A,
TECHNICAL SPECIFICATIONS, OF
FACILITY OPERATING LICENSES
NPF-72 AND NPF-77

BORON CREDIT IN THE SPENT FUEL POOL

BRAIDWOOD STATION UNITS 1 & 2
REVISED PAGES:

SECTION | PAGE

Boron Concentration

3/4.9.11 WATER LEVEL/BORON CONCENTRATION - STORAGE POOL

LIMITING CONDITION FOR OPERATION

3.9.11 At least 23 feet of water shall be maintained over the top of irradiated fuel assemblies seated in the storage racks. The dissolved boron concentration of the water in the storage pool shall be maintained at greater than or equal to 2000 ppm.

APPLICABILITY: Whenever irradiated fuel assemblies are in the storage pool.

ACTION:

a. With the water level requirements of the above specification not satisfied, suspend all movement of fuel assemblies and crane operations with loads in the fuel storage areas and restore the water level to within its limit within 4 hours.

b. With the boron concentration requirements of the above specification not satisfied, suspend all movement of fuel assemblies and crane operations with loads in the fuel storage areas and immediately take action to restore the dissolved boron concentration to within its limit as soon as possible.

c. The provisions of Specification 3.0.3 are not applicable.

SURVEILLANCE REQUIREMENTS

4.9.11 The water level in the storage pool shall be determined to be at least its minimum required depth at least once per 7 days when irradiated fuel assemblies are in the fuel storage pool.

4.9.11.a Boron concentration in the storage pool shall be determined to be greater than or equal to 2000 ppm at least once per ~~24~~ 48 hours.

~~*These requirements shall be in effect until December 31, 1997.~~

3/4.9.8 RESIDUAL HEAT REMOVAL AND COOLANT CIRCULATION (Continued)

The requirement to have two RHR loops OPERABLE when there is less than 23 feet of water above the reactor vessel flange ensures that a single failure of the operating RHR loop will not result in a complete loss of RHR capability. With the reactor vessel head removed and at least 23 feet of water above the reactor vessel flange, a large heat sink is available for core cooling. Thus, in the event of a failure of the operating RHR loop, adequate time is provided to initiate emergency procedures to cool the core.

3/4.9.9 CONTAINMENT PURGE ISOLATION SYSTEM

The OPERABILITY of this system ensures that the containment purge penetrations will be automatically isolated upon detection of high radiation levels within the containment. The OPERABILITY of this system is required to restrict the release of radioactive material from the containment atmosphere to the environment.

3/4.9.10 ~~and 3/4.9.11~~ WATER LEVEL - REACTOR VESSEL ~~and STORAGE POOL~~

The restrictions on minimum water level ensure that sufficient water depth is available to remove 99% of the assumed 10% iodine gap activity released from the rupture of an irradiated fuel assembly. The minimum water depth is consistent with the assumptions of the safety analysis.

3/4.9.12 FUEL HANDLING BUILDING EXHAUST FILTER PLENUM

The limitations on the Fuel Handling Building Exhaust Filter Plenum ensure that all radioactive material released from an irradiated fuel assembly will be filtered through the HEPA filters and charcoal adsorber prior to discharge to the atmosphere. The OPERABILITY of this system and the resulting iodine removal capacity are consistent with the assumptions of the safety analyses. ANSI N510-1980 will be used as a procedural guide for surveillance testing.

Insert 4

INSERT A

3/4.9.11 WATER LEVEL/BORON CONCENTRATION – STORAGE POOL

The restrictions on minimum water level ensure that sufficient water depth is available to remove 99% of the assumed 10% iodine gap activity released from the rupture of an irradiated fuel assembly. The minimum water depth is consistent with the assumptions of the safety analysis.

The restrictions on soluble boron concentration in the storage pool water ensure the spent fuel rack k_{eff} will be maintained less than or equal to 0.95 with a 95-percent confidence level.

5.6 FUEL STORAGE

CRITICALITY

5.6.1.1 The spent fuel storage racks are designed and shall be maintained with a k_{eff} less than or equal to 0.95 when flooded with unborated water,* which includes a conservative allowance for uncertainties as described in Section 9.1 of the UFSAR. This is ensured by controlling fuel assembly placement in each region as follows:

a. REGION 1

1. A nominal 10.32 inch north-south and 10.42 inch east-west, center-to-center distance is maintained between fuel assemblies placed in the spent fuel storage racks.

2. Fuel assemblies may be stored in this region with

a) a maximum nominal initial U-235 enrichment of less than or equal to 4.2 weight percent, or

b) a maximum nominal initial U-235 enrichment of 5.0 weight percent with sufficient Integral Fuel Burnable Absorbers present in each fuel assembly such that the maximum reference fuel assembly k∞ is less than or equal to 1.470 at 68°F.

b. REGION 2

1. A nominal 9.03 inch center-to-center distance is maintained between fuel assemblies placed in the spent fuel storage racks.

2. a) Fuel assemblies may be stored in this region with a maximum nominal initial U-235 enrichment of 1.6 weight percent with no burnup and up to 5.0 weight percent U-235 with a minimum discharge burnup as specified in Figure 5.6-1, or

b) Fuel assemblies with a maximum nominal initial U-235 enrichment of greater than 1.6 and less than or equal to 4.2 weight percent that do not meet the minimum burnup specified in Figure 5.6-1, shall be loaded in a checkerboard pattern for storage in this region.

5.6.1.2 The k_{eff} for new fuel for the first core loading stored dry in the spent fuel storage racks shall not exceed 0.98 when aqueous foam moderation is assumed.

DRAINAGE

5.6.2 The spent fuel storage pool is designed and shall be maintained to prevent inadvertent draining of the pool below elevation 423 feet 0 inches.

Insert B

*Until December 31, 1997, the spent fuel storage racks shall be maintained with a K_{eff} of less than or equal to 0.95 when flooded with water containing a minimum of 2000 ppm soluble boron.

INSERT B

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

a. Fuel assemblies having a maximum initial U-235 enrichment of 5.0 weight percent;

b. A $k_{eff} < 1.0$ if fully flooded with unborated water, which includes an allowance for uncertainties as described in WCAP-14416-NP-A, "Westinghouse Spent Fuel Rack Criticality Analysis with Credit for Soluble Boron," Revision 1, November 1996;

c. A keff < 0.95 if fully flooded with water borated to 2000 ppm, which includes an allowance for uncertainties as described in WCAP-14416-NP-A, "Westinghouse Spent Fuel Rack Criticality Analysis with Credit for Soluble Boron," Revision 1, November 1996;

d. A nominal 10.32 inch north-south and 10.42 inch east-west center-to-center distance between fuel assemblies placed in the Region 1 racks;

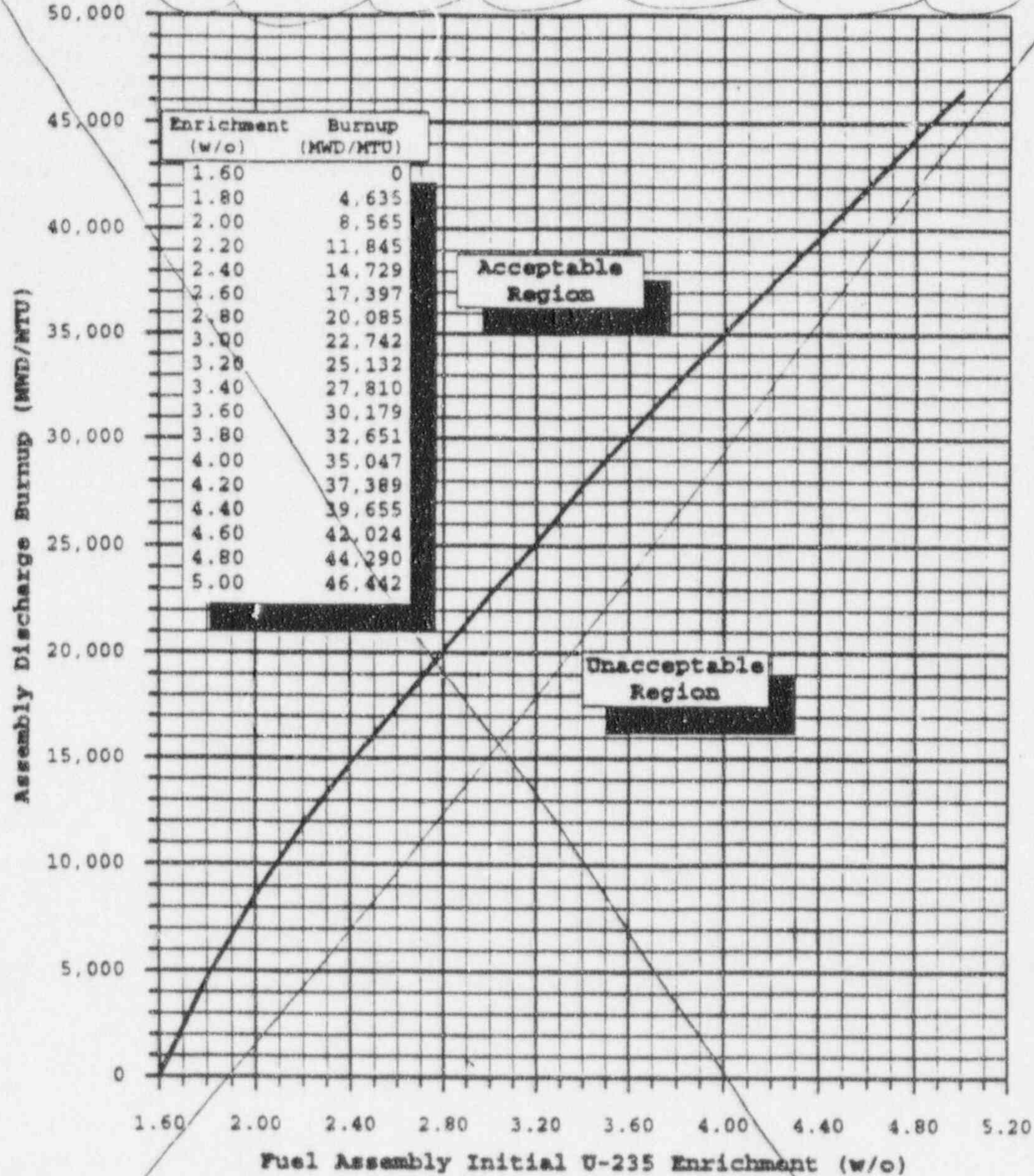
e. New or spent assemblies with sufficient Integral Fuel Burnable Absorbers present in each fuel assembly, as described in the CRITICALITY ANALYSIS OF BYRON AND BRAIDWOOD STATION FUEL STORAGE RACKS, may be allowed unrestricted storage in the Region 1 racks;

f. A nominal 9.03 inch center-to-center distance between fuel assemblies placed in the Region 2 racks;

g. New or spent fuel assemblies with a combination of discharge burnup, initial enrichment, and decay time in the acceptable region of Figures 5.6-1, 5.6-2, or 5.6-3, as applicable, may be stored in the Region 2 racks in the applicable checkerboard configuration, as described in the CRITICALITY ANALYSIS OF BYRON AND BRAIDWOOD STATION FUEL STORAGE RACKS; and

h. Interface requirements within and between adjacent racks as described in the CRITICALITY ANALYSIS OF BYRON AND BRAIDWOOD STATION FUEL STORAGE RACKS.

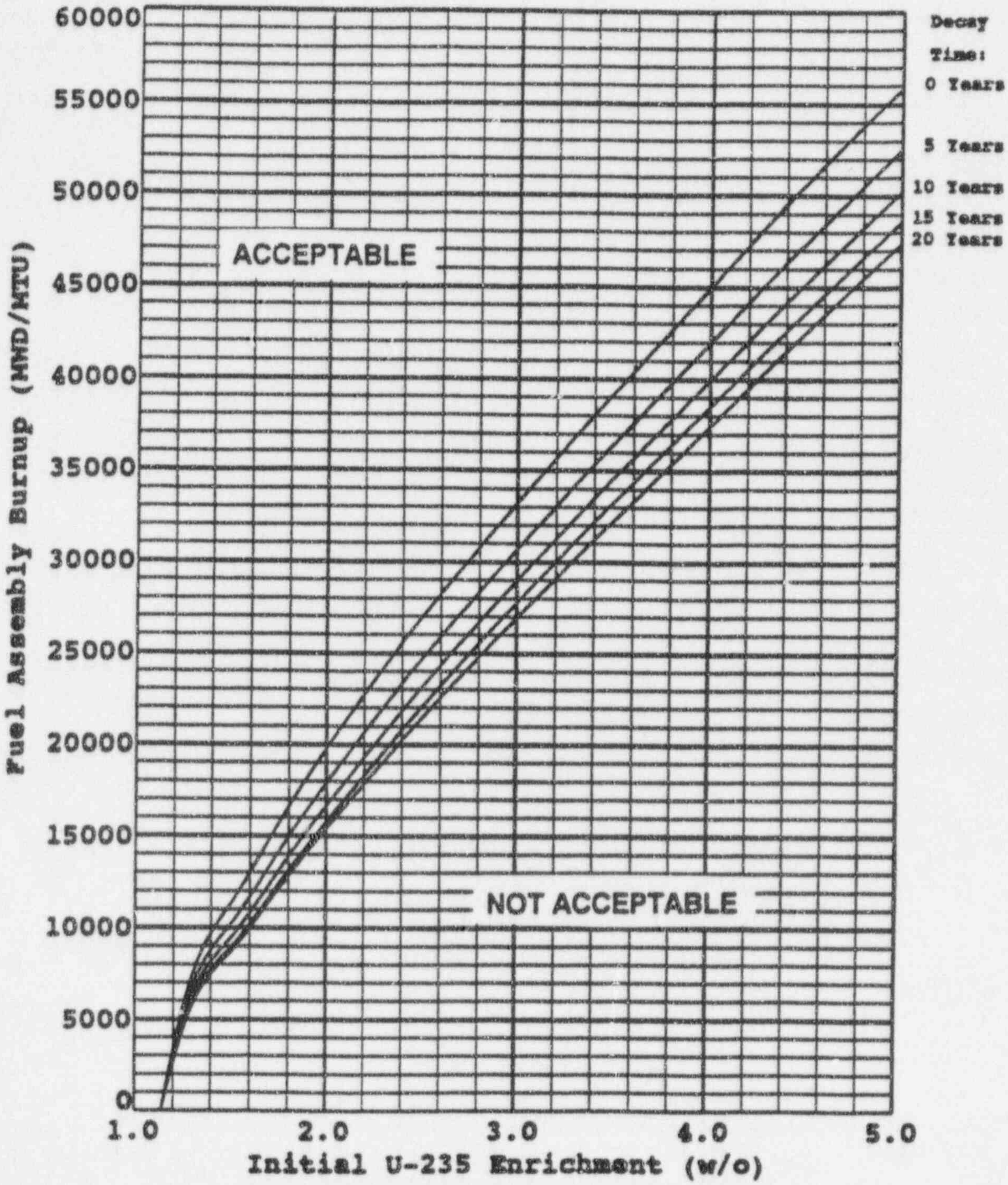
inserts C-1, C-2, and C-3



Notes: The use of linear interpolation between the minimum burnups reported above is acceptable.

FIGURE 5.6 - 1

MINIMUM BURNUP VERSUS INITIAL ENRICHMENT
FOR REGION 2 STORAGE

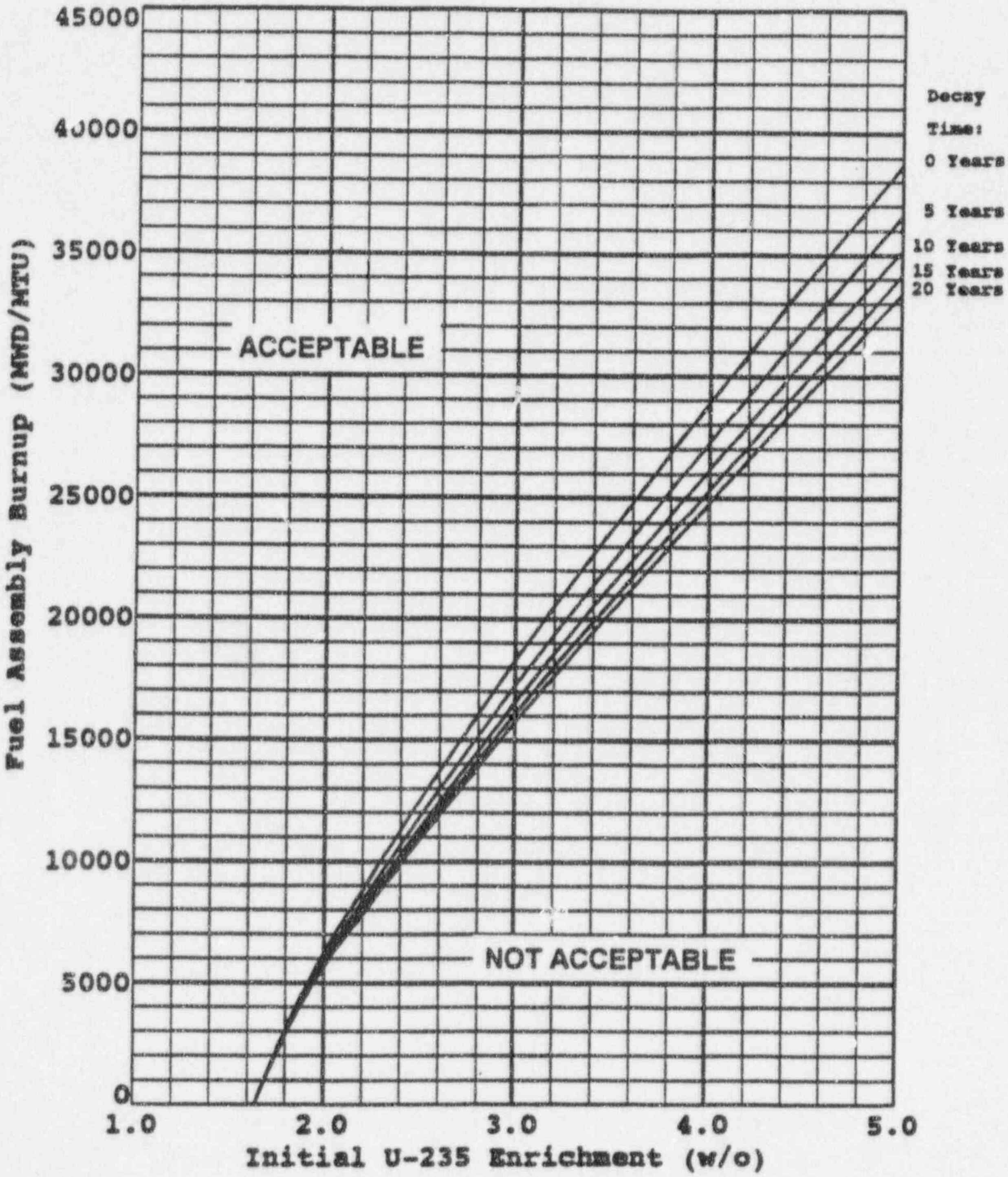


Note: The use of linear interpolation between the minimum burnups is acceptable.

FIGURE 5.6-1

MINIMUM BURNUP VERSUS INITIAL ENRICHMENT FOR REGION 2
ALL CELL CONFIGURATION STORAGE

INSERT C-2

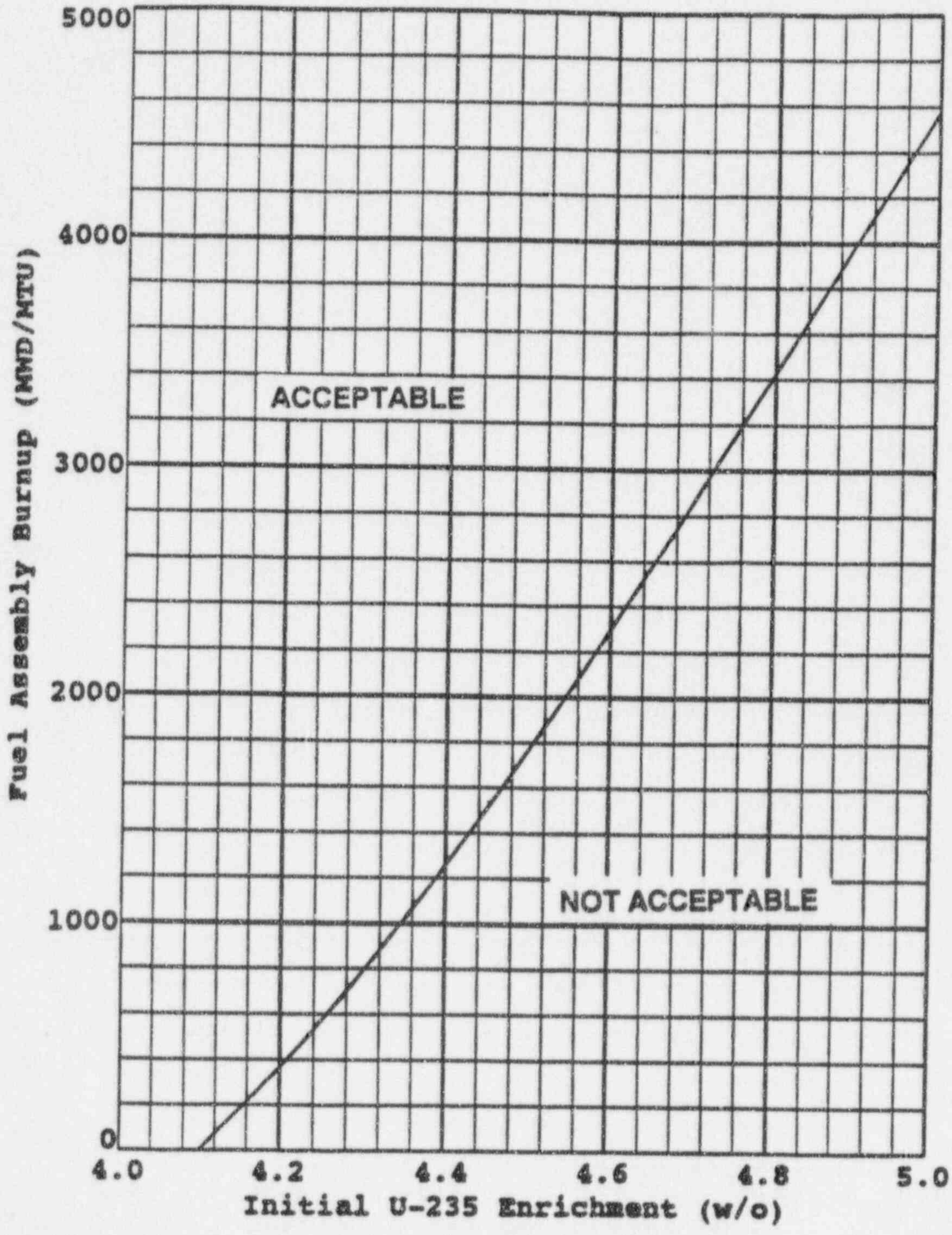


Note: The use of linear interpolation between the minimum burnups is acceptable.

FIGURE 5.6-2

MINIMUM BURNUP VERSUS INITIAL ENRICHMENT FOR REGION 2
3-OUT-OF-4 CHECKERBOARD CONFIGURATION

INSERT C-3



Note: The use of linear interpolation between the minimum burnups is acceptable.

FIGURE 5.6-3

MINIMUM BURNUP VERSUS INITIAL ENRICHMENT FOR REGION 2
2-OUT-OF-4 CHECKERBOARD CONFIGURATION

WCAP-14416-NP-A, "Westinghouse Spent Fuel Rack Criticality Analysis Methodology," Revision 1, November 1996. Credit is taken for radioactive decay time of the spent fuel.

CRITICALITY ANALYSIS OF BYRON AND BRAIDWOOD STATION FUEL STORAGE RACKS

6.9.1.10 Fuel enrichment limits for storage shall be established and documented in the CRITICALITY ANALYSIS OF BYRON AND BRAIDWOOD STATION FUEL STORAGE RACKS. The analytical methods used to determine the maximum fuel enrichments shall be those previously reviewed and approved by the NRC in ~~"CRITICALITY ANALYSIS OF BYRON AND BRAIDWOOD STATION FUEL STORAGE RACKS."~~ The fuel enrichment limits for storage shall be determined so that all applicable limits (e.g., subcriticality) of the safety analysis are met.

The CRITICALITY ANALYSIS OF BYRON AND BRAIDWOOD STATION FUEL STORAGE RACKS report shall be provided upon issuance of any changes, to the NRC Document Control Desk, with copies to the Regional Administrator and the Resident Inspector.

SPECIAL REPORTS

6.9.2 Special reports shall be submitted to the Regional Administrator of the NRC Regional Office within the time period specified for each report.

6.10 RECORD RETENTION

In addition to the applicable record retention requirements of Title 10, Code of Federal Regulations, the following records shall be retained for at least the minimum period indicated.

6.10.1 The following records shall be retained for at least 5 years:

a. Records and logs of unit operation covering time interval at each power level;

b. Records and logs of principal maintenance activities, inspections, repair and replacement of principal items of equipment related to nuclear safety;

c. All REPORTABLE EVENTS;

d. Records of surveillance activities, inspections, and calibrations required by these Technical Specifications;

e. Records of changes made to the procedures required by Specification 6.8;

f. Records of radioactive shipments;

g. Records of sealed source and fission detector leak tests and results; and

h. Records of annual physical inventory of all sealed source material of record.

6.10.2 The following records shall be retained for the duration of the unit Operating License:

a. Records and drawing changes reflecting unit design modifications made to systems and equipment described in the Final Safety Analysis Report;

b. Records of new and irradiated fuel inventory, fuel transfers and assembly burnup histories;

ATTACHMENT C

EVALUATION OF SIGNIFICANT HAZARDS CONSIDERATIONS FOR
PROPOSED CHANGES TO APPENDIX A,
TECHNICAL SPECIFICATIONS, OF
FACILITY OPERATING LICENSES
NPF-37, NPF-66, NPF-72, AND NPF-77

Commonwealth Edison has evaluated this proposed amendment and determined that it involves no significant hazards considerations. According to Title 10 Code of Federal Regulations, Section 50, Subsection 92, Paragraph c (10 CFR 50.92 (c)), a proposed amendment to an operating license involves no significant hazards considerations if operation of the facility in accordance with the proposed amendment would not:

1. Involve a significant increase in the probability or consequences of an accident previously evaluated; or

2. Create the possibility of a new or different kind of accident from any accident previously evaluated; or

3. Involve a significant reduction in a margin of safety.

A. INTRODUCTION

Commonwealth Edison (ComEd) proposes to revise Byron and Braidwood Technical Specifications (TS) Limiting Condition for Operation (LCO) 3.9.11, "WATER LEVEL/BORON CONCENTRATION-STORAGE POOL," Specification 5.6.1.1, "CRITICALITY," and Specification 6.9.1.10, "CRITICALITY ANALYSIS OF BYRON AND BRAIDWOOD STATION FUEL STORAGE RACKS." These revisions will allow ComEd to take credit for soluble boron in the Spent Fuel Pool (SFP) water in maintaining an acceptable margin of subcriticality in the SFP, and will provide appropriate controls to ensure the soluble boron concentration in the SFP water is adequately maintained. These changes are required to compensate for the degradation of the Boraflex panels in the spent fuel storage cells.

B. NO SIGNIFICANT HAZARDS ANALYSIS

1. The proposed change does not involve a significant increase in the probability or consequences of an accident previously evaluated.

The following accidents have been specifically evaluated relative to the SFP: fuel assembly drop, accidental misloading of spent fuel assemblies into the SFP racks, and loss of normal cooling.

There is no increase in the probability of a fuel assembly drop accident in the SFP when considering the presence of soluble boron in the SFP water for criticality control. The handling of the fuel assemblies in the SFP has previously been performed in borated water. The criticality analysis shows the consequences of a fuel assembly drop accident in the SFP are not affected when considering the presence of soluble boron.

There is no increase in the probability of the accidental misloading of spent fuel assemblies into the SFP racks when considering the presence of soluble boron in the pool water for criticality control. Fuel assembly placement will continue to be controlled in accordance with approved fuel handling procedures and the spent fuel rack storage configuration limitations. Periodic surveillances of the SFP inventory (physical inventory and piece counts) are performed in accordance with station procedures. These surveillances ensure physical SFP inventory verification is performed at least once per year and in a timely manner upon completion of fuel movement in the SFP. The addition of credit for decay time in the spent fuel pool in determining allowable storage requirements is an extension of the reactivity equivalencing methodologies used for burnup credit in WCAP-14416-NP-A, "Westinghouse Spent Fuel Rack Criticality Analysis Methodology," Revision 1, November 1996.

There is no increase in the consequences of the accidental misloading of spent fuel assemblies into the SFP racks because criticality analyses demonstrate that the pool will remain subcritical following an accidental misloading if the pool contains an adequate boron concentration. The proposed TS limitations and surveillance frequency will ensure that an adequate SFP boron concentration is maintained.

There is no increase in the probability of the loss of normal cooling to the SFP water when considering the presence of soluble boron in the pool water for subcriticality control since a high concentration of soluble boron has previously been maintained in the SFP water. A loss of normal cooling to the SFP water causes an increase in the temperature of the water passing through the stored fuel assemblies. This causes a decrease in water density which would result in a decrease in reactivity when Boraflex neutron absorber panels are present in the racks. However, since the proposed change does not consider Boraflex to be present in the racks, and the SFP water has a high concentration of boron, a density decrease causes a positive reactivity addition. This consequences of this accident are bounded by the misloaded assembly analysis. Because adequate soluble boron will be maintained in the SFP water, the consequences of a loss of normal cooling to the SFP will not be increased.

The proposed 48 hour surveillance frequency will be used to verify the boron concentration is within the initial assumptions of the criticality analysis. The current frequency of 24 hours was based on the sampling frequency for reactor coolant system (RCS) shutdown margin in Mode 5. A dilution of the SFP to a k_{eff} greater than 0.95

would take a much longer time than an RCS dilution resulting in loss of shutdown margin. This is due to the larger SFP volume compared to the RCS volume, and the turnover rate of water in the SFP is much less due to the lack of large dilution sources for the SFP. The 48 hour sampling frequency is sufficient based on operating experience, and based on the fact that significant changes in the boron concentration in the spent SFP are difficult to produce without detection, due to the large inventory of water. Soluble boron concentration reduction requires the inflow and outflow of large volumes of water which are readily detected by SFP and fuel handling building sump high level alarms , flooding in the fuel handling building or by normal operator rounds through the SFP area (once every eight hours), allowing adequate time for operator intervention prior to exceeding a k_{eff} of 0.95. Therefore, consequences of an accident previously evaluated are not increased by the change in surveillance frequency.

The format revisions to Specification 5.6.1.1 and reference to the report containing the specific NRC-approved criticality methodology in Specification 6.9.1.10 are administrative in nature and will not result in an increase in the probability or consequences of an accident previously evaluated.

Therefore, based on the above analysis, the proposed changes will not involve a significant increase in the probability or consequences of an accident previously evaluated.

2. **The proposed change does not create the possibility of a new or different kind of accident from any accident previously evaluated.**

The results of criticality accident analyses in the SFP are discussed in the UFSAR and in Criticality Analysis Reports associated with previous licensing activities. Specific accidents considered include fuel assembly drop, accidental misloading of spent fuel assemblies into the SFP racks, and loss of normal cooling.

LCO 3.9.1, "BORON CONCENTRATION," contains limitations on the boron concentration in the filled portions of the reactor coolant system and the refueling canal during Mode 6. ComEd has maintained soluble boron in the SFP at all times and has imposed administrative limits on the SFP boron concentration, due in part to this requirement. LCO 3.9.11 establishes specific boron concentration requirements for the SFP water consistent with the results of the new criticality analysis based on the NRC-approved methodology of WCAP-14416-NP-A, "Westinghouse Spent Fuel Rack Criticality Analysis Methodology," Revision 1, November 1996. Credit is also taken for radioactive decay time of the spent fuel.

Since soluble boron has always been maintained in the SFP water and is currently controlled administratively, the implementation of this requirement will have little effect on normal pool operations and maintenance. The implementation of the proposed limitations on the SFP boron concentration will only result in a requirement to verify boron concentration of the SFP water every 48 hours rather than every 24 hours. Sampling

every 48 hours is sufficient to verify the SFP boron concentration meets the assumptions of the criticality analysis.

Because soluble boron has always been present in the SFP and has been administratively controlled, a dilution of the SFP soluble boron has always been a possibility. As shown in the SFP dilution evaluation performed for Byron and Braidwood, a dilution of the SFP which could increase the rack k_{eff} to greater than 0.95 (i.e., which could reduce the required margin to criticality) is not a credible event.

Therefore, the implementation of the proposed limitations on the SFP boron concentration and surveillance frequency will not result in the possibility of a new kind of accident.

The proposed change to Specification 5.6.1.1 identifies the requirements for the spent fuel rack storage configurations. The proposed changes relate to the criteria for determining the storage configuration. Since the proposed SFP storage configuration limitations will be similar to those currently in the Byron and Braidwood TS, these limitations will not have any significant effect on normal SFP operations and maintenance and will not create any possibility of a new or different kind of accident. Verifications will continue to be performed to ensure that the SFP loading configuration meets specified requirements.

The format revisions to Specification 5.6.1.1 and reference to the report containing the specific NRC-approved criticality methodology in Specification 6.9.1.10 are administrative in nature and will not create the possibility of a new of different kind of accident.

As discussed above, there is no significant change in plant configuration or equipment and the proposed changes will not create the possibility of a new or different kind of accident.

3. **The proposed change does not involve a significant reduction in a margin of safety.**

The proposed TS changes and the resulting spent fuel storage operating limits will provide adequate safety margin to ensure that the stored fuel assembly array will always remain subcritical. These limits are based on a plant specific criticality analysis performed in accordance with the NRC-approved Westinghouse spent fuel rack criticality analysis methodology (WCAP-14416-NP-A). Credit is also taken for radioactive decay time of the spent fuel.

Soluble boron credit provides significant negative reactivity in the SFP such that the k_{eff} is maintained less than or equal to 0.95. The proposed surveillance frequency will be used to verify the boron concentration is within the initial assumptions of the criticality analysis. A storage configuration has also been defined, with a 95-percent probability at a 95-percent confidence level, that ensures the spent fuel rack k_{eff} will be less than 1.0 with no credit for soluble boron or Boraflex panels in the racks. In addition to soluble boron credit, credit is taken for fuel assembly burnup, decay time, and IFBAs when determining assembly storage requirements.

The loss of substantial amounts of soluble boron from the SFP which could lead to exceeding a k_{eff} of 0.95 has been evaluated and shown not to be credible. These evaluations show that the dilution of the SFP boron concentration from 2000 ppm to 550 ppm is not credible and that the spent fuel rack k_{eff} will remain less than 1.0 when flooded with unborated water.

The format revisions to Specification 5.6.1.1 and reference to the report containing the specific NRC-approved criticality methodology in Specification 6.9.1.10 are administrative in nature and will not result in a significant reduction in the plant's margin of safety.

Therefore, the proposed changes in this license amendment will not result in a significant reduction in the plant's margin of safety.

Therefore, based on the above evaluation, ComEd has concluded that these changes involve no significant hazards considerations.

ATTACHMENT B

ENVIRONMENTAL ASSESSMENT FOR
PROPOSED CHANGES TO APPENDIX A,
TECHNICAL SPECIFICATIONS, OF
FACILITY OPERATING LICENSES
NPF-37, NPF-66, NPF-72, AND NPF-77

Commonwealth Edison Company (ComEd) has evaluated this proposed license amendment request against the criteria for identification of licensing and regulatory actions requiring environmental assessment in accordance with Title 10, Code of Federal Regulations, Part 51, Section 21 (10 CFR 51.21). ComEd has determined that this proposed license amendment request meets the criteria for a categorical exclusion set forth in 10 CFR 51.22(c)(9). This determination is based upon the following:

1. The proposed licensing action involves the issuance of an amendment to a license for a reactor pursuant to 10 CFR 50 which changes a requirement with respect to installation or use of a facility component located within the restricted area, as defined in 10 CFR 20, or which changes an inspection or a surveillance requirement;

2. This proposed license amendment request involves no significant hazards considerations;

3. There is no significant change in the types or significant increase in the amounts of any effluent that may be released offsite; and

4. There is no significant increase in individual or cumulative occupational radiation exposure.

Therefore, pursuant to 10 CFR 51.22(b), neither an environmental impact statement nor an environmental assessment is necessary for this proposed license amendment request.

ATTACHMENT E

CRITICALITY ANALYSIS OF BYRON AND BRAIDWOOD STATION
FUEL STORAGE RACKS

(CAC-97-162: Byron and Braidwood Spent Fuel Rack
Criticality Analysis Using Soluble Boron Credit)

MAY 1997