5.6 FUEL STORAGE

CRITICALITY

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} ≤ 0.95 if fully flooded with water borated to 550 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 "Byron and Braidwood Spent Fuel Rack Criticality Analysis Using Soluble Boron Credit," May 1997, CAC-97-162, which 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 "Byron and Braidwood Spent Fuel Rack Criticality Analysis Using Soluble Boron Credit," May 1997, CAC-97-162; and

h. Interface requirements within and between adjacent racks as described in the "Byron and Braidwood Spent Fuel Rack Criticality Analysis Using Soluble Boron Credit," May 1997, CAC-97-162.

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.

410 FEET 0 INCHES

ATTACHMENT B-2

MARKED-UP PAGE FOR PROPOSED CHANGE TO CURRENT TECHNICAL SPECIFICATIONS (CTS)

BRAIDWOOD STATION UNITS 1 & 2

CHANGE TO SPENT FUEL STORAGE POOL INADVERTENT DRAIN ELEVATION

REVISED PAGE:

5-5

REVISED PARAGRAPH:

5.6.2

5.6 FUEL STORAGE

CRITICALITY

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 550 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 "Byron and Braidwood Spent Fuel Rack Criticality Analysis Using Soluble Boron Credit," May 1997, CAC-97-162, which 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, which may be stored in the Region 2 racks in the applicable checkerboard configuration, as described in the "Byron and Braidwood Spent Fuel Rack Criticality Analysis Using Soluble Boron Credit," May 1997, CAC-97-162; and

h. Interface requirements within and between adjacent racks as described in the "Byron and Braidwood Spent Fuel Rack Criticality Analysis Using Soluble Boron Credit," May 1997, CAC-97-162.

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.

410 FEET 0 INCHES

ATTACHMENT B-3

MARKED-UP PAGE FOR PROPOSED CHANGE
TO IMPROVED TECHNICAL SPECIFICATIONS (ITS)

BYRON STATION UNITS 1 & 2

CHANGE TO SPENT FUEL STORAGE POOL INADVERTENT DRAIN ELEVATION

REVISED PAGE:

4.0-2

REVISED PARAGRAPH:

4.3.2

DESIGN FEATURES (continued)

4.3 Fuel Storage

4.3.1 Criticality

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_{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";

c. k_{eff} ≤ 0.95 if fully flooded with water borated to 550 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";

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

e. A nominal 9.03 inch center to center distance between fuel assemblies placed in Region 2 racks.

Rev B

4.3.2 Drainage

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

410 FEET 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 2870 fuel assemblies.

ATTACHMENT B-4

MARKED-UP PAGE FOR PROPOSED CHANGE
TO IMPROVED TECHNICAL SPECIFICATIONS (ITS)

BRAIDWOOD STATION UNITS 1 & 2

CHANGE TO SPENT FUEL STORAGE POOL INADVERTENT DRAIN ELEVATION

REVISED PAGE:

4.0-2

REVISED PARAGRAPH:

4.3.2

DESIGN FEATURES (continued)

4.3 Fuel Storage

4.3.1 Criticality

Rev B

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. $k_{eff} < 1.0$ 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";

c. $k_{eff} \leq 0.95$ if fully flooded with water borated to 550 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";

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

e. A nominal 9.03 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 423 ft. 0 inches.

410 FEET 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 2870 fuel assemblies.

ATTACHMENT C

SIGNIFICANT HAZARDS CONSIDERATION

ComEd has evaluated this proposed amendment and determined that it involves no significant hazards consideration. According to 10 CFR 50.92(c), a proposed amendment to an operating license involves no significant hazards consideration 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.

ComEd proposes to amend Appendix A, Technical Specifications, of Facility Operating Licenses NPF-37, NPF-66, NPF-72 and NPF-77. The proposed change revises Byron and Braidwood (B/B) Technical Specifications (TS) Design Features Section 5.6.2, "Fuel Storage Drainage." The proposed revision reduces the current value for the SFP inadvertent drain level from 423 feet 2 inches for Byron, and 423 feet 0 inches for Braidwood, to 410 feet 0 inches for both stations to account for the effects of potential failure modes of both the SFP cooling and skimmer loops. The proposed revision ensures that the NUREG-0800 Standard Review Plan (SRP) acceptance criteria are met while accounting for the as-built configuration of both the SFP cooling and skimmer loops. Subsequent to NRC approval of this request, the B/B UFSAR description in Section 9.1.3.3, "Safety Evaluation," will be revised to address the potential siphon effects of both the SFP cooling and skimmer loop configurations.

The determination that the criteria set forth in 10 CFR 50.92 are met for this amendment request is indicated below:

1. **Does the change involve a significant increase in the probability or consequences of an accident previously evaluated?**

   This change to the TS does not involve an increase in the probability of an accident previously evaluated. The initial conditions of the limiting dewatering incidents involve initiating circumstances/failures such as accidental gate openings, gate seal failures, or an open transfer tube. Specifying a revised inadvertent drain limit which meets the SRP acceptance criteria is unrelated to the probability of occurrence of the precursors or initiating events. These initiators are not affected by the SFP cooling or skimmer loop piping/component failure scenarios. There is no change being made to the approved design, nor is there any operational change being made which would increase the probability of occurrence.

This change to the TS does not involve an increase in the consequences of an accident previously evaluated. As documented in NUREG-0876, Byron SER, Section 9.1.3, page 9-5, the anti-siphon protection design of the SFP cooling and clean-up piping was reviewed and found to be acceptable stating that *"all connections to the spent-fuel pool are either near the normal water level or are provided with antisiphon holes to preclude possible siphon draining of the pool water."* This review is applicable to Braidwood as documented in NUREG-1002, Braidwood SER. The anti-siphon attributes employed in the SFP skimmer loops at Braidwood, (under consideration at Byron), are similar in design as well as their submergence levels previously evaluated for the SFP cooling loops. The proposed change revises the SFP inadvertent drain limit from approximately 423 feet to 410 feet to bound the failure effects of both the SFP cooling and skimmer loops, while considering any maloperation or failure scenario. The revised value meets the SRP acceptance criteria of maintaining at least 10 feet above the active fuel ensuring that adequate radiation shielding is maintained as previously analyzed. There is no physical or operational change being made which would alter the sequence of events, plant response, or conclusions of the affected analysis. There is no change in the type or amount of any effluents released, and no change in either the Onsite or Offsite dose consequences as a result of this change.

Therefore, based on this evaluation, this proposed amendment does not involve a significant increase in the probability or consequences of an accident previously evaluated.

2. **Does the change create the possibility of a new or different kind of accident from any accident previously evaluated?**

This proposed change does not create the possibility of a new or different kind of accident from any accident previously evaluated. This change specifically identifies the SFP level sufficient to ensure that the SRP acceptance criteria for inadvertent draining are met while accounting for the failure effects of both the SFP cooling and skimmer loops. Any inadvertent SFP draining due to potential failures of the SFP skimmer loops is similar in nature to the inadvertent SFP draining effects previously considered due to failures of the SFP cooling loops. No new equipment is being installed, and no installed equipment is being operated in a new or different manner with this change. There is no change in plant operation that affects previously evaluated failure modes. This change does not represent a new failure mode or accident from what has been previously evaluated.

Therefore, the proposed change does not create the possibility of a new or different kind of accident from any accident previously evaluated.

3. **Does the change involve a significant reduction in a margin of safety?**

The current TS value does not address inadvertent SFP draining due to potential failures of the SFP skimmer loops or cooling suction lines as was done for the SFP cooling discharge lines. This change specifically identifies the SFP level sufficient to ensure that the SRP acceptance criteria for inadvertent draining are met while accounting for the

failure effects of both the SFP cooling and skimmer loops in determining the proposed TS value. The most limiting postulated SFP dewatering incidents involve SFP drainage to either a dry transfer canal, a dry transfer canal and cask fill area, or a dry transfer canal and cask fill area which additionally communicates through an open transfer tube to an empty refuel cavity. The initial conditions of the dewatering incident analysis and resultant water levels over the spent fuel are not affected by this SFP skimmer/cooling loop issue because these incident initiators are not effected by the SFP cooling or skimmer loop failures, thus preserving the previously analyzed and approved margin for these dewatering incidents.

For the less-limiting SFP skimmer/cooling loop failure issue, the proposed TS change inadvertent drain limit meets the SRP minimum requirement of at least 10 feet above the top of the active fuel ensuring that adequate radiation shielding is maintained. This change would allow for the conservative acceptance criteria for the current UFSAR design analysis to continue to be met.

Therefore, this change does not involve a significant reduction in the margin of safety.

Therefore, based upon the above evaluation, ComEd has concluded that the proposed change involves no significant hazards consideration.

ATTACHMENT D

ENVIRONMENTAL ASSESSMENT

ComEd has evaluated this proposed operating license amendment request against the criteria for identification of licensing and regulatory actions requiring environmental assessment in accordance with 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) and as such, has determined that no irreversible consequences exist in accordance with 10 CFR 50.92(b). This determination is based on the fact that this change is being proposed as an amendment to a license issued 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, and the amendment meets the following specific criteria:

(i) **The amendment involves no significant hazards consideration.**

As demonstrated in Attachment C, this proposed amendment does not involve any significant hazards consideration.

(ii) **There is no significant change in the types or significant increase in the amounts of any effluents that may be released offsite.**

As documented in Attachment C, there will be no change in the types or significant increase in the amounts of any effluents released offsite.

(iii) **There is no significant increase in individual or cumulative occupational radiation exposure.**

The proposed change will not result in changes in the operation or configuration of the facility. There will be no change in the level of controls or methodology used for processing of radioactive effluents or handling of solid radioactive waste, nor will the proposal result in any change in the normal radiation levels within the plant. Therefore, there will be no increase in individual or cumulative occupational radiation exposure resulting from this change.

Therefore, based upon the above evaluation, ComEd has concluded that no irreversible consequences exist with the proposed change.