Docket File
T5C3

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

April 2, 1997

Ms. Irene Johnson, Acting Manager
Nuclear Regulatory Services
Commonwealth Edison Company
Executive Towers West III
1400 Opus Place, Suite 500
Downers Grove, IL 60515

SUBJECT: ISSUANCE OF AMENDMENTS AND PARTIAL DENIAL OF AMENDMENTS (TAC NOS. M97235, M97236, M97237 AND M97238)

Dear Ms. Johnson:

The U.S. Nuclear Regulatory Commission (Commission) has issued the enclosed Amendment No. 86 to Facility Operating License No. NPF-37 and Amendment No. 86 to Facility Operating License No. NPF-66 for the Byron Station, Unit Nos. 1 and 2, respectively, and Amendment No. 78 to Facility Operating License No. NPF-72 and Amendment No. 78 to Facility Operating License No. NPF-77 for the Braidwood Station, Unit Nos. 1 and 2, respectively. The amendments are in response to Commonwealth Edison Company's (ComEd) application dated November 5, 1996. Additional information was provided by ComEd in letters dated February 27 and March 30, 1997.

The amendments allow ComEd to take credit, on a temporary basis, for soluble boron in the spent fuel storage pool water in maintaining an acceptable margin of subcriticality. However, the Westinghouse document CAC-96-248, "Byron and Braidwood Spent Fuel Rack Criticality Analysis with Credit for Soluble Boron," included in this amendment request, is not based on the NRC-approved Westinghouse methodology for soluble boron credit, as given in WCAP-14416-NP-A dated November 1996. Therefore, as set forth in the enclosed Safety Evaluation, the NRC's approval is not based on CAC-96-248. ComEd's proposal to reference CAC-96-248 is denied.

070035

DFO1

9704070236 970402
PDR ADOCK 05000454
P PDR

CP-1

A copy of the Notice of Issuance of Amendments and Notice of Partial Denial are also enclosed.

Sincerely,

Original signed by
M. David Lynch for:

George F. Dick, Jr., Senior Project Manager
Project Directorate III-2
Division of Reactor Projects - III/IV
Office of Nuclear Reactor Regulation

Docket Nos. STN 50-454, STN 50-455,
STN 50-456, STN 50-457

Enclosures:
1. Amendment No. 86 to NPF-37
2. Amendment No. 86 to NPF-66
3. Amendment No. 78 to NPF-72
4. Amendment No. 78 to NPF-77
5. Safety Evaluation
6. Notice of Issuance
7. Notice of Partial Denial

cc w/encl: see next page

DISTRIBUTION:

Docket File	PUBLIC
PDIII-2 r/f (2)	JRoe, JWR
EAdensam	RCapra
CMoore (2)	GDick (3)
OGC, O15B18	GHill (8), T5C3
ACRS, T2E26	LKopp, O8E23
CGrimes, O13H15	JLyons, O8D1
RLanksbury, RIII	

DOCUMENT NAME: BB97235\AMD.SUP *see previous concurrence

To receive a copy of this document, indicate in the box: "C" = Copy without enclosures "E" = Copy with enclosures "N" = No copy

OFFICE	PM:PDIII-2	LA:PDIII-2	SRXB	OGC	PDIII-2 C
NAME	for GDick	*CMOORE	*JLYONS	*APH	RCAPRA
DATE	04/02/97	04/2/97	03/05/97	03/12/97	04/2/97

OFFICIAL RECORD COPY

I. Johnson
Commonwealth Edison Company

cc:

Mr. William P. Poirier, Director
Westinghouse Electric Corporation
Energy Systems Business Unit
Post Office Box 355, Bay 236 West
Pittsburgh, Pennsylvania 15230

Joseph Gallo
Gallo & Ross
1250 Eye St., N.W.
Suite 302
Washington, DC 20005

Michael I. Miller, Esquire
Sidley and Austin
One First National Plaza
Chicago, Illinois 60603

Howard A. Learner
Environmental law and Policy
Center of the Midwest
203 North LaSalle Street
Suite 1390
Chicago, Illinois 60601

U.S. Nuclear Regulatory Commission
Byron Resident Inspectors Office
4448 North German Church Road
Byron, Illinois 61010-9750

Regional Administrator, Region III
U.S. Nuclear Regulatory Commission
801 Warrenville Road
Lisle, Illinois 60532-4351

Ms. Lorraine Creek
Rt. 1, Box 182
Manteno, Illinois 60950

Chairman, Ogle County Board
Post Office Box 357
Oregon, Illinois 61061

Mrs. Phillip B. Johnson
1907 Stratford Lane
Rockford, Illinois 61107

George L. Edgar
Morgan, Lewis and Bochius
1800 M Street, N.W.
Washington, DC 20036

Attorney General
500 South Second Street
Springfield, Illinois 62701

EIS Review Coordinator
U.S. Environmental Protection Agency
77 W. Jackson Blvd.
Chicago, Illinois 60604-3590

Illinois Department of
Nuclear Safety
Office of Nuclear Facility Safety
1035 Outer Park Drive
Springfield, Illinois 62704

Commonwealth Edison Company
Byron Station Manager
4450 North German Church Road
Byron, Illinois 61010

Kenneth Graesser, Site Vice President
Byron Station
Commonwealth Edison Station
4450 N. German Church Road
Byron, Illinois 61010

U.S. Nuclear Regulatory Commission
Braidwood Resident Inspectors Office
Rural Route #1, Box 79
Braceville, Illinois 60407

Mr. Ron Stephens
Illinois Emergency Services
and Disaster Agency
110 East Adams Street
Springfield, Illinois 62706

Chairman
Will County Board of Supervisors
Will County Board Courthouse
Joliet, Illinois 60434

Commonwealth Edison Company
Braidwood Station Manager
Rt. 1, Box 84
Braceville, Illinois 60407

Ms. Bridget Little Rorem
Appleseed Coordinator
117 North Linden Street
Essex, Illinois 60935

Document Control Desk-Licensing
Commonwealth Edison Company
1400 Opus Place, Suite 400
Downers Grove, Illinois 60515

Mr. H. G. Stanley
Site Vice President
Braidwood Station
Commonwealth Edison Company
RR 1, Box 84
Braceville, IL 60407

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

COMMONWEALTH EDISON COMPANY

DOCKET NO. STN 50-454

BYRON STATION, UNIT NO. 1

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 86
License No. NPF-37

1. The Nuclear Regulatory Commission (the Commission) has found that:

   A. The application for amendment by Commonwealth Edison Company (the licensee) dated November 5, 1996, as supplemented February 27 and March 30, 1997, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act) and the Commission's rules and regulations set forth in 10 CFR Chapter I;

   B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;

   C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;

   D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and

   E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.

2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and paragraph 2.C.(2) of Facility Operating License No. NPF-37 is hereby amended to read as follows:

9704070241 970402
PDR ADOCK 05000454
P PDR

(2) Technical Specifications

The Technical Specifications contained in Appendix A as revised through Amendment No. 86 and the Environmental Protection Plan contained in Appendix B, both of which are attached hereto, are hereby incorporated into this license. The licensee shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan.

3. This license amendment is effective as of the date of its issuance and shall be implemented within 45 days.

FOR THE NUCLEAR REGULATORY COMMISSION

for George F. Dick, Jr., Project Manager
Project Directorate III-2
Division of Reactor Projects - III/IV
Office of Nuclear Reactor Regulation

Attachment:
Changes to the Technical
Specifications

Date of Issuance: April 2, 1997

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

COMMONWEALTH EDISON COMPANY

DOCKET NO. STN 50-455

BYRON STATION, UNIT NO. 2

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 86
License No. NPF-66

1. The Nuclear Regulatory Commission (the Commission) has found that:

   A. The application for amendment by Commonwealth Edison Company (the licensee) dated November 5, 1996, as supplemented February 27 and March 30, 1997, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act) and the Commission's rules and regulations set forth in 10 CFR Chapter 1;

   B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;

   C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;

   D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and

   E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.

2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and paragraph 2.C.(2) of Facility Operating License No. NPF-66 is hereby amended to read as follows:

(2) Technical Specifications

The Technical Specifications contained in Appendix A (NUREG-1113), as revised through Amendment No. 86 and revised by Attachment 2 to NPF-66, and the Environmental Protection Plan contained in Appendix B, both of which were attached to License No. NPF-37, dated February 14, 1985, are hereby incorporated into this license. Attachment 2 contains a revision to Appendix A which is hereby incorporated into this license. The licensee shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan.

3. This license amendment is effective as of the date of its issuance and shall be implemented within 45 days.

FOR THE NUCLEAR REGULATORY COMMISSION

for George F. Dick, Jr., Project Manager
Project Directorate III-2
Division of Reactor Projects - III/IV
Office of Nuclear Reactor Regulation

Attachment:
Changes to the Technical
Specifications

Date of Issuance: April 2, 1997

ATTACHMENT TO LICENSE AMENDMENT NOS. 86 AND 86

FACILITY OPERATING LICENSE NOS. NPF-37 AND NPF-66

DOCKET NOS. STN 50-454 AND STN 50-455

Revise the Appendix A Technical Specifications by removing the pages identified below and inserting the attached pages. The revised pages are identified by the captioned amendment number and contain marginal lines indicating the area of change.

Remove Pages	Insert Pages
3/4 9-13	3/4 9-13
5-5	5-5
--	5-5a

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 hours.*

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

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 $k\infty$ 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.

---

* 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.

5.6 FUEL STORAGE (continued)

CAPACITY

5.6.3 The spent fuel storage pool is designed and shall be maintained with a storage capacity limited to no more than 2870 fuel assemblies.

5.7 COMPONENT CYCLIC OR TRANSIENT LIMIT

5.7.1 The components identified in Table 5.7-1 are designed and shall be maintained within the cyclic or transient limits of Table 5.7-1.

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

COMMONWEALTH EDISON COMPANY

DOCKET NO. STN 50-456

BRAIDWOOD STATION, UNIT NO. 1

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 78
License No. NPF-72

1. The Nuclear Regulatory Commission (the Commission) has found that:

   A. The application for amendment by Commonwealth Edison Company (the licensee) dated November 5, 1996, as supplemented February 27 and March 30, 1997, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act) and the Commission's rules and regulations set forth in 10 CFR Chapter I;

   B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;

   C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;

   D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and

   E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.

2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and paragraph 2.C.(2) of Facility Operating License No. NPF-72 is hereby amended to read as follows:

9704080077 970402
PDR ADOCK 05000454
P PDR

(2) Technical Specifications

The Technical Specifications contained in Appendix A as revised through Amendment No. 78 and the Environmental Protection Plan contained in Appendix B, both of which are attached hereto, are hereby incorporated into this license. The licensee shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan.

3. This license amendment is effective as of the date of its issuance and shall be implemented within 45 days.

FOR THE NUCLEAR REGULATORY COMMISSION

for George F. Dick, Jr., Project Manager
Project Directorate III-2
Division of Reactor Projects - III/IV
Office of Nuclear Reactor Regulation

Attachment:
Changes to the Technical
Specifications

Date of Issuance: April 2, 1997

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

COMMONWEALTH EDISON COMPANY

DOCKET NO. STN 50-457

BRAIDWOOD STATION, UNIT NO. 2

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 78
License No. NPF-77

1. The Nuclear Regulatory Commission (the Commission) has found that:

   A. The application for amendment by Commonwealth Edison Company (the licensee) dated November 5, 1996, as supplemented February 27 and March 30, 1997, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act) and the Commission's rules and regulations set forth in 10 CFR Chapter 1;

   B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;

   C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;

   D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and

   E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.

2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and paragraph 2.C.(2) of Facility Operating License No. NPF-77 is hereby amended to read as follows:

(2) Technical Specifications

The Technical Specifications contained in Appendix A as revised through Amendment No. 78 and the Environmental Protection Plan contained in Appendix B, both of which were attached to License No. NPF-72, dated July 2, 1987, are hereby incorporated into this license. The licensee shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan.

3. This license amendment is effective as of the date if its issuance and shall be implemented within 45 days.

FOR THE NUCLEAR REGULATORY COMMISSION

for George F. Dick, Jr., Project Manager
Project Directorate III-2
Division of Reactor Projects - III/IV
Office of Nuclear Reactor Regulation

Attachment:
Changes to the Technical
Specifications

Date of Issuance: April 2, 1997

ATTACHMENT TO LICENSE AMENDMENT NOS. 78 AND 78

FACILITY OPERATING LICENSE NOS. NPF-72 AND NPF-77

DOCKET NOS. STN 50-456 AND STN 50-457

Replace the following pages of the Appendix "A" Technical Specifications with the attached pages. The revised pages are identified by amendment number and contain vertical lines indicating the area of change.

Remove Pages	Insert Pages
3/4 9-13	3/4 9-13
5-5	5-5
--	5-5a

REFUELING OPERATIONS

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 hours.*

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

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 $k\infty$ 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.

---

* 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.

5.6 FUEL STORAGE (continued)

CAPACITY

5.6.3 The spent fuel storage pool is designed and shall be maintained with a storage capacity limited to no more than 2870 fuel assemblies.

5.7 COMPONENT CYCLIC OR TRANSIENT LIMIT

5.7.1 The components identified in Table 5.7-1 are designed and shall be maintained within the cyclic or transient limits of Table 5.7-1.

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 86 TO FACILITY OPERATING LICENSE NO. NPF-37,

AMENDMENT NO. 86 TO FACILITY OPERATING LICENSE NO. NPF-66,

AMENDMENT NO. 78 TO FACILITY OPERATING LICENSE NO. NPF-72,

AND AMENDMENT NO. 78 TO FACILITY OPERATING LICENSE NO. NPF-77

COMMONWEALTH EDISON COMPANY

BYRON STATION, UNIT NOS. 1 AND 2

BRAIDWOOD STATION, UNIT NOS. 1 AND 2

DOCKET NOS. STN 50-454, STN 50-455, STN 50-456 AND STN 50-457

1.0 INTRODUCTION

By letter dated November 5, 1996, Commonwealth Edison Company (ComEd, the licensee) requested changes to the Byron Station, Units 1 and 2, and Braidwood Station, Units 1 and 2, Technical Specifications (TS) to allow credit to be taken for soluble boron in the spent fuel storage pool water in maintaining an acceptable margin of subcriticality. Specifically, TS 3.9.11, "Water Level - Storage Pool," TS 5.6.1.1, "Criticality," and TS 6.9.1.10, "Criticality Analysis of Byron and Braidwood Station Fuel Storage Racks" would be modified. The proposed changes are temporary in nature and are requested to compensate for the degradation of the Boraflex panels in the spent fuel storage cells until long-term corrective actions for this problem are implemented. The proposed changes would be in effect until no later than December 31, 1997. Additional information was provided in the licensee's submittal of February 27, 1997.

Subsequently, ComEd submitted two additional letters related to the issue of an acceptable margin of subcriticality in the spent fuel storage pools. The first of these dated March 25, 1997, addressed the long-term resolution of this issue in response to Generic Letter (GL) 96-04, "Boraflex Degradation in Spent Fuel Pool Racks," dated June 26, 1996. ComEd stated in this letter that it would submit in June 1997, license amendment requests for both the Byron and Braidwood Stations which would include a new criticality analysis using a methodology approved by the NRC. These forthcoming license amendment requests do not bear on the pending license amendments.

The second ComEd letter dated March 30, 1997, discusses a modeling deficiency related to the configuration of Boral plates in those portions of the spent fuel racks used to store new fuel elements (i.e., Region 1). This modeling

9704070249 970402
PDR ADOCK 05000454
P PDR

error did not account for the fact that the Boral plates which were added to the interior portions of the new fuel storage racks, were not present on the periphery of the Region 1 fuel racks. Accordingly, certain peripheral cells, identified as Y cells, actually contain Boral plates on only three sides; and the four corner cells in each Region 1 rack actually contain only two interior Boral plates as opposed to the Boral plates assumed on all four sides of the fuel cells in the original modeling of the Region 1 fuel racks. This incorrect modeling was contained in the criticality analysis submitted in ComEd's letter dated November 5, 1996, cited above. The staff's evaluation of this supplemental information is presented below.

2.0 EVALUATION

2.1 Technical Evaluation

The spent fuel storage pools (SFP) at Byron and Braidwood have fuel storage racks installed that use sheets of Boraflex for reactivity suppression. Boraflex is constructed of an organic polymer with a silica filler and neutron absorbing boron carbide interspersed within the silica filler. Boral plates have also been added to the Region 1 racks for additional reactivity suppression.

The results of recent neutron attenuation tests (blackness tests) performed at Braidwood and Byron during August and September 1996, respectively, indicate that at least some of the Boraflex sheets have degraded to an extent whereby it can not be stated with certainty that the TS 5.6.1.1 requirement for maintaining the effective neutron multiplication factor (k_{eff}) less than or equal to 0.95 when flooded with unborated water will be met in some limiting rack locations.

ComEd is considering several long-term corrective actions to return the SFP to compliance with TS 5.6.1.1. These actions include restricted storage (checkerboard) patterns, neutron absorber rods or inserts, reracking with non-Boraflex racks, dry cask storage, or partial credit for soluble boron. However, these corrective actions may require some time to implement. As discussed above, ComEd will submit its proposed long-term corrective actions in June 1997 using the methodology of WCAP-14416-NP-A, "Westinghouse Spent Fuel Rack Criticality Analysis Methodology," Revision 1, November 1996.

In addition to the proposed TS revisions which would allow credit to be taken for soluble boron in the spent fuel storage pool water to maintain an acceptable margin of subcriticality, ComEd has implemented compensatory measures. (1) Experimental data indicates that once silica reaches an equilibrium value, the rate of Boraflex dissolution is greatly reduced. However, when water purification systems are used to remove silica from the pool water, the solubility equilibrium becomes unbalanced and dissolution resumes. Therefore, ComEd has imposed a restriction on the use of the reverse osmosis unit for silica removal to slow the rate of Boraflex dissolution. (2) Local indications at the SFP as well as alarms in the main control room are in place to indicate both high and low SFP water level. Therefore, any

level change that could be indicative of a dilution event would be quickly noticed to allow for prompt corrective actions. (3) In order to preclude the possibility of a SFP boron dilution event during the 24 hour surveillance time interval, SFP level loss procedures will be revised to clearly state that the unborated water emergency makeup sources must be used only as a last resort. Confirmation of the procedure revisions was provided in the licensee's letter of February 27, 1997. The compensatory measures and the proposed TS changes are temporary and would be in effect until December 31, 1997, at which time, long-term corrective actions for the Boraflex degradation problem are expected to be implemented. An additional compensatory measure in the form of administrative controls was added to the procedures of both stations as stated in ComEd's letter dated March 30, 1997, to correct for the modeling errors discussed above. This administrative control on the placement of new fuel assemblies states in part that:

> "No assembly may be placed in a Region 1 rack location face adjacent to another assembly across a Region 1 rack to Region 1 rack interface."

The net effect of this control on the placement of fuel assemblies is to limit the number of new fuel assemblies along each Region 1 to Region 1 interface to no more than eight fuel assemblies, four in each interfacing rack, as opposed to the 16 available positions. Each of these fuel assemblies along the subject interfaces would also be limited to a diagonal (i.e., checkerboard) placement as required in Figure 2 of ComEd's letter dated March 30, 1997.

TS 3.9.11, as revised, would address SFP boron concentration as well as water level. The limiting condition for operation (LCO) would require the dissolved boron concentration of the water in the SFP to be maintained at greater than or equal to 2000 ppm. With the boron concentration requirement not met, all movement of fuel assemblies and crane operations with loads in the fuel storage areas would be suspended and action immediately taken to restore the boron concentration to within its limit. A surveillance requirement would also be added to require the SFP boron concentration to be verified at least once per 24 hours. These proposed changes would include a footnote indicating that the requirements will be in effect until December 31, 1997.

A proposed footnote to TS 5.6.1.1 also included a statement that 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.

ComEd performed additional criticality analyses and submitted the results in its March 30, 1997, letter. The licensee stated in this letter that these supplemental analyses verify that k_{eff} remains less than 0.95 with 2000 ppm soluble boron and no Boral and no Boraflex present in the spent fuel pool.

Based on previous calculations reviewed by the staff for similar spent fuel pools, the reactivity equivalent of 2000 ppm of boron is at least 30 percent Δk. This amount of negative reactivity is more than sufficient to maintain at least a 5 percent margin of subcriticality, even assuming all the Boraflex and

Boral is ineffective from a reactivity mitigation standpoint. This staff conclusion, therefore, remains valid even in light of the error in the modeling of the placement of Boral plates in the Region 1 periphery and corner cells. Since, in reality, an appreciable amount of Boraflex (and Boral) still remains, the requirement to maintain at least 2000 ppm of boron is conservative. The staff, therefore, concurs that the proposed temporary changes to TS 3.9.11 will compensate for the degradation of the Boraflex and maintain k_{eff} less than or equal to 0.95, even for those cells whose Boral plate configurations were previously modeled incorrectly. In addition, the procedures and alarms in place allow for prompt corrective actions to preclude a SFP dilution event. Further, the restriction on the use of the reverse osmosis unit for silica removal will slow the rate of future Boraflex degradation. Finally, the additional administrative controls on the placement of new fuel assemblies adjacent to Region 1 to Region 1 interfaces as discussed above, which were recently incorporated into the Byron and Braidwood Station procedures, provide additional assurance that the reactivity of the Region 1 fuel racks will satisfy all NRC acceptance criteria. Therefore, the staff finds the proposed changes to 3.9.11 and 5.6.1.1 related to maintaining 2000 ppm of boron in the SFP are acceptable until long-term corrective actions are implemented.

A second part of the footnote to TS 5.6.1.1 and a proposed footnote to TS 6.9.1.10 referenced the Westinghouse document CAC-96-248, "Byron and Braidwood Spent Fuel Rack Criticality Analysis with Credit for Soluble Boron" which was submitted with this amendment request. However, this document is not based on the NRC-approved Westinghouse methodology for soluble boron credit, as given in WCAP-14416-NP-A dated November 1996, and, therefore, may not be relied on as a basis for the proposed change.

2.2 Significant Hazards Consideration

In the Federal Register notice issued on February 10, 1997 (62 FR 6016), the staff made no initial determination regarding a significant hazards consideration. Accordingly, there is no need to reissue the initial notice.

3.0 SUMMARY

Based on the safety evaluation above, the staff finds the proposed changes to TS 5.6.1.1 and TS 6.9.1.10 related to maintaining 2000 ppm in the SFPs for Byron and Braidwood in order to maintain subcriticality to be acceptable. The use of an unapproved methodology, CAC-96-248, is not acceptable.

4.0 STATE CONSULTATION

In accordance with the Commission's regulations, the Illinois State official was notified of the proposed issuance of the amendments. The State official had no comments.

5.0 ENVIRONMENTAL CONSIDERATION

Pursuant to 10 CFR 51.21, 51.32 and 51.35, an environmental assessment and finding of no significant impact has been prepared and published in the Federal Register on March 20, 1997 (62 FR 13403). In that this environmental assessment and finding of no significant impact is unaffected by the supplemental information submitted by the licensee on March 30, 1997, there is no need to reissue this environmental assessment.

Accordingly, based upon the environmental assessment, the Commission has determined that the issuance of this amendment will not have a significant effect on the quality of the human environment.

6.0 CONCLUSION

The Commission has concluded, based on the considerations discussed above, that: (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendments will not be inimical to the common defense and security or to the health and safety of the public.

Principal Contributor: Laurence Kopp
M. David Lynch

Date: April 2, 1997

UNITED STATES NUCLEAR REGULATORY COMMISSION

COMMONWEALTH EDISON COMPANY

DOCKET NOS. STN 50-454, STN 50-455, STN 50-456 AND STN 50-457

NOTICE OF ISSUANCE OF AMENDMENTS TO

FACILITY OPERATING LICENSES

The U.S. Nuclear Regulatory Commission (Commission) has issued Amendment No. 86 to Facility Operating License No. NPF-37, Amendment No. 86 to Facility Operating License No. NPF-66, Amendment No. 78 to Facility Operating License No. NPF-72 and Amendment No. 78 to Facility Operating License No. NPF-77, issued to Commonwealth Edison Company (ComEd, the licensee), which revised the Technical Specifications (TS) for operation of the Byron Station, Unit Nos. 1 and 2, located in Ogle County, Illinois and Braidwood Station, Unit Nos. 1 and 2, located in Will County, Illinois. The amendments are effective as of the date of issuance and shall be implemented within 45 days.

The amendments modified the TSs to allow the licensee to take credit, on a temporary basis, for soluble boron in the spent fuel storage pool water in maintaining an acceptable margin of subcriticality.

The application for the amendments complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations. The Commission has made appropriate findings as required by the Act and the Commission's rules and regulations in 10 CFR Chapter I, which are set forth in the license amendments.

Notice of Consideration of Issuance of Amendments to Facility Operating Licenses and Opportunity for a Hearing in connection with this action was published in the FEDERAL REGISTER on February 10, 1997 (62 FR 6016). No

9704070256 970402
PDR ADOCK 05000454
P PDR

request for a hearing or petition for leave to intervene was filed following this notice.

The Commission has prepared an Environmental Assessment related to the action and has determined not to prepare an environmental impact statement. Based upon the environmental assessment, the Commission has concluded that the issuance of the amendments will not have a significant effect on the quality of the human environment (62 FR 13403).

For further details with respect to the action see (1) the application for amendments dated November 5, 1996, as supplemented February 27 and March 30, 1997, (2) Amendment No. 86 to Facility Operating License No. NPF-37, Amendment No. 86 to Facility Operating License No. NPF-66, Amendment No. 78 to Facility Operating License No. NPF-72 and Amendment No. 78 to Facility Operating License No. NPF-77, (3) the Commission's related Safety Evaluation, and (4) the Commission's related Environmental Assessment. All of these items are available for public inspection at the Commission's Public Document Room, the Gelman Building, 2120 L Street NW., Washington, DC, and at the local public document rooms located at: for Byron, the Byron Public Library District, 109 N. Franklin, P.O. Box 434, Byron, Illinois 61010; for Braidwood, the Wilmington Public Library, 201 S. Kankakee Street, Wilmington, Illinois 60481

Dated at Rockville, Maryland, this 2nd day of April 1997.

FOR THE NUCLEAR REGULATORY COMMISSION

Ramin R. Assa, Project Manager
Project Directorate III-2
Division of Reactor Projects - III/IV
Office of Nuclear Reactor Regulation

UNITED STATES NUCLEAR REGULATORY COMMISSION

COMMONWEALTH EDISON COMPANY

DOCKET NOS. STN 50-454, STN 50-455, STN 50-456 AND STN 50-457

NOTICE OF PARTIAL DENIAL OF AMENDMENTS TO FACILITY OPERATING LICENSES AND OPPORTUNITY FOR HEARING

The U.S. Nuclear Regulatory Commission (the Commission) has partially denied a request by Commonwealth Edison Company (ComEd, the licensee) for amendments to Facility Operating License Nos. NPF-37, NPF-66, NPF-72 and NPF-77, issued to the licensee for operation of the Byron Station, Unit Nos. 1 and 2, located in Ogle County, Illinois and Braidwood Station, Unit Nos. 1 and 2, located in Will County, Illinois. Notice of Consideration of Issuance of the amendments was published in the FEDERAL REGISTER on February 10, 1997 (62 FR 6016).

The purpose of the licensee's amendment request was to revise the Technical Specifications (TS) to allow the licensee to take credit, on a temporary basis, for soluble boron in the spent fuel storage pool water in maintaining an acceptable margin of subcriticality. However, reference to the Westinghouse document CAC-96-248, "Byron and Braidwood Spent Fuel Rack Criticality Analysis with Credit for Soluble Boron" was included in the request. This document is not based on the NRC-approved Westinghouse methodology for soluble boron credit, as given in WCAP-14416-NP-A dated November 1996. The proposal to reference the use of an unapproved methodology is not acceptable and is, therefore, denied.

The NRC staff has concluded that part of the licensee's request can not be granted. The licensee was notified of the Commission's partial denial of the proposed change by a letter dated April 2, 1997.

9704070261 970402
PDR ADOCK 05000454
P PDR

By May 9, 1997 , the licensee may demand a hearing with respect to the partial denial described above. Any person whose interest may be affected by this proceeding may file a written petition for leave to intervene. A request for hearing or petition for leave to intervene must be filed with the Secretary of the Commission, U.S. Nuclear Regulatory Commission, Washington, DC 20555, Attention: Docketing and Services Branch, or may be delivered to the Commission's Public Document Room, the Gelman Building, 2120 L Street, NW., Washington, DC, by the above date.

A copy of any petition should also be sent to the Office of the General Counsel, U.S. Nuclear Regulatory Commission, Washington, DC 20555, and to Michael I. Miller, Esquire; Sidley and Austin, One First National Plaza, Chicago, Illinois 60603, attorney for the licensee.

For further details with respect to this action, see (1) the application for amendment dated November 5, 1996, as supplemented February 27 and March 30, 1997, and (2) the Commission's letter to the licensee dated April 2, 1997.

These documents are available for public inspection at the Commission's Public Document Room, the Gelman Building, 2120 L Street, NW., Washington, DC, and at the local public document room located at: For Byron, the Byron Public Library District, 109 N. Franklin, P.O. Box 434, Byron, Illinois 61010; for Braidwood, the Wilmington Public Library, 201 S. Kankakee Street, Wilmington, Illinois 60481.

Dated at Rockville, Maryland, this 2nd day of April 1997.

FOR THE NUCLEAR REGULATORY COMMISSION

Ramin R. Assa, Project Manager
Project Directorate III-2
Division of Reactor Projects - III/IV
Office of Nuclear Reactor Regulation