

November 25, 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 FOR BYRON STATION, UNITS 1 AND 2 (TAC  
NOS. M98621 AND M98622)

Dear Ms. Johnson:

The U.S. Nuclear Regulatory Commission (Commission) has issued the enclosed Amendment No. 93 to Facility Operating License No. NPF-37 and Amendment No. 93 to Facility Operating License No. NPF-66 for the Byron Station, Unit Nos. 1 and 2, respectively. The amendments are in response to Commonwealth Edison Company's (ComEd) application dated April 7, 1997. Additional information was provided in ComEd's letter of August 7, 1997.

The amendments revise the technical specifications (TS) to permit installation and use of C&D Charter Power Systems, Inc., batteries.

A copy of the Safety Evaluation is also enclosed. The Notice of Issuance will be included in the Commission's biweekly Federal Register notice.

Sincerely,

ORIGINAL SIGNED BY:

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

Docket Nos. STN 50-454 and STN 50-455

Enclosures: 1. Amendment No. 93 to NPF-37  
2. Amendment No. 93 to NPF-66  
3. Safety Evaluation

cc w/encs: see next page

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\*concurrence provided by memo dated 10/1/97; no major changes

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NAME	GDICK		CMOORE		*JCALVO				RCAPRA	
DATE	11/17/97		11/17/97		10/1/97		11/17/97		11/17/97	

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

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Sincerely,

A handwritten signature in cursive script, reading "George F. Dick", is positioned above the typed name.

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

Docket Nos. STN 50-454 and STN 50-455

Enclosures: 1. Amendment No. 93 to NPF-37  
2. Amendment No. 93 to NPF-66  
3. Safety Evaluation

cc w/encls: see next page

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Unit Nos. 1 and 2

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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. 93  
License No. NPF-37

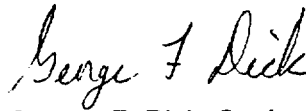
1. The Nuclear Regulatory Commission (the Commission) has found that:
  - A. The application for amendment by Commonwealth Edison Company (the licensee) dated April 7, 1997, as supplemented by letter dated August 7, 1997, complies with the standards and requirements of the Atomic Energy Act of 1954, 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:

(2) Technical Specifications

The Technical Specifications contained in Appendix A as revised through Amendment No. 93 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 30 days.

FOR THE NUCLEAR REGULATORY COMMISSION



George F. Dick, Senior 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: November 25, 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.93  
License No. NPF-66

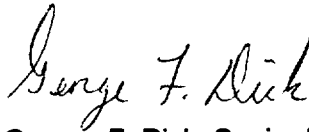
1. The Nuclear Regulatory Commission (the Commission) has found that:
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  - B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;
  - C. There is reasonable assurance (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. 93 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 30 days.

FOR THE NUCLEAR REGULATORY COMMISSION



George F. Dick, Senior 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: November 25, 1997

ATTACHMENT TO LICENSE AMENDMENT NOS. 93 AND 93

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. Pages marked with an asterisk are provided for convenience only.

Remove Pages

3/4 8-10  
3/4 8-11  
3/4 8-11a  
3/4 8-12  
3/4 8-12a  
3/4 8-13  
3/4 8-14\*  
B 3/4 8-2

Insert Pages

3/4 8-10  
3/4 8-11  
3/4 8-11a  
3/4 8-12  
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3/4 8-13  
3/4 8-14\*  
B 3/4 8-2



## ELECTRICAL POWER SYSTEMS

### 3/4.8.2 D.C. SOURCES

#### OPERATING

#### LIMITING CONDITION FOR OPERATION

3.8.2.1 As a minimum the following D.C. electrical sources shall be OPERABLE:

- a. 125-Volt D.C. Bus 111 fed from Battery 111 for Unit 1 (Bus 211 fed from Battery 211 for Unit 2) and its associated full capacity charger, and with one of its associated crosstie breakers in the open position, and
- b. 125-Volt D.C. Bus 112 fed from Battery 112 for Unit 1 (Bus 212 fed from Battery 212 for Unit 2) and its associated full capacity charger, and with one of its associated crosstie breakers in the open position.

APPLICABILITY: MODES 1, 2, 3, and 4.

#### ACTION:

- a. With one of the required 125-Volt D.C. buses inoperable due to its normal associated full capacity charger being inoperable, operations may continue provided that within 2 hours the inoperable bus and its associated battery are energized by the opposite unit's 125-Volt D.C. bus and its OPERABLE charger via the crosstie breakers and that within 24 hours the inoperable bus and its charger are restored to OPERABLE status. Otherwise be in at least HOT STANDBY within the next 6 hours and COLD SHUTDOWN within the following 30 hours.
- b. With both of the crosstie breakers closed for a 125-Volt D.C. bus that is required to be OPERABLE and with both units operating (Modes 1, 2, 3, or 4), the 125-Volt D.C. bus may energize the opposite unit's inoperable 125-Volt D.C. bus having an inoperable charger without a load restriction.
- c. With both of the crosstie breakers closed for a 125-Volt D.C. bus that is required to be OPERABLE and with the opposite unit shutdown (Modes 5, 6, or defueled), the crosstie breakers may remain closed for up to 7 days provided items 1 and 2 below are satisfied. Otherwise open one of the crosstie breakers.
  - (1) The shutdown unit's bus load is restricted to:

<u>Shutdown Unit</u>	<u>Operating Unit</u>	<u>Load</u>
<u>Battery Status</u>	<u>Battery Type</u>	<u>Restriction</u>
Inoperable	C&D	200 Amps
Inoperable	Gould	63 Amps
OPERABLE	Either	None
  - (2) If a load restriction applies, then once per 12 hours verify that the shutdown unit's bus loading will not exceed the load restriction.
- d. With one of the required 125-Volt D.C. buses inoperable, except for the allowances of ACTIONS (a), (b), or (c) above, restore the inoperable bus to OPERABLE status within 2 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

#### SURVEILLANCE REQUIREMENTS

4.8.2.1.1 Each D.C. bus shall be determined OPERABLE and energized from its battery at least once per 7 days by verifying correct breaker alignment.

SURVEILLANCE REQUIREMENTS (Continued)

4.8.2.1.2 Each 125-volt battery bank and its associated charger shall be demonstrated OPERABLE:

- a. At least once per 7 days by verifying that:
  - 1) The parameters in Table 4.8-2 meet the Category A limits, and
  - 2) The total battery terminal voltage is greater than or equal to 127.6 volts (C&D) 126 volts (Gould) on float charge.
- b. At least once per 92 days and within 7 days after a battery discharge with battery terminal voltage below 110 volts, or battery overcharge with battery terminal voltage above 145 volts, by verifying that:
  - 1) The parameters in Table 4.8-2 meet the Category B limits,
  - 2) There is no visible corrosion at either terminals or connectors, or the connection resistance of these items is less than  $150 \times 10^{-6}$  ohm\*, and
  - 3) The average electrolyte temperature of all connected cells is above 60°F.
- c. At least once per 18 months by verifying that:
  - 1) The cells, cell plates, and battery racks show no visual indication of physical damage or abnormal deterioration,
  - 2) The cell-to-cell and terminal connections are clean, tight, and coated with anticorrosion material,
  - 3) The resistance of each cell-to-cell and terminal connection is less than or equal to  $150 \times 10^{-6}$  ohm\*, and
  - 4) The battery charger will supply a load equal to the manufacturer's rating for at least 8 hours.
- d. At least once per 18 months, during shutdown, by verifying that the battery capacity is adequate to supply and maintain in OPERABLE status all of the actual or simulated emergency loads for the design duty cycle when the battery is subject to a battery service test;

\*Obtained by subtracting the normal resistance of: 1) the cross room rack connector ( $400 \times 10^{-6}$  ohm, typical) and 2) the bi-level rack connector ( $50 \times 10^{-6}$  ohm, typical); from the measured cell-to-cell connection resistance.

SURVEILLANCE REQUIREMENTS (Continued)

- e. At least once per 60 months, during shutdown, by verifying that the battery capacity is at least 80% of the manufacturer's rating when subjected to a performance discharge test or a modified performance discharge test. The modified performance discharge test (C&D) and the performance discharge test (Gould) may be performed in lieu of the battery service test required by Specification 4.8.2.1.2d.;
- f. At least once per 12\* months during shutdown, by giving performance discharge tests or modified performance discharge tests of battery capacity to any battery that shows signs of degradation or has reached 85% of the service life expected for the application. Degradation is indicated when the battery capacity drops more than 10% of rated capacity from its capacity on the previous performance test or modified performance test, or is below 90% of the manufacturer's rating.

This requirement is applicable to Batteries 112, 211, and 212. This requirement is applicable to Battery 111 upon entering MODE 4 for Unit 1, Cycle 9.

- g. At least once per 18 months during shutdown, by giving performance discharge tests or modified performance discharge tests of battery capacity to any battery that shows signs of degradation or has reached 85% of the service life expected for the application. Degradation is indicated when the battery capacity drops more than 10% of rated capacity from its capacity on the previous performance test or modified performance test, or is below 90% of the manufacturer's rating. This requirement is applicable to Battery 111 until entering MODE 4 for Unit 1, Cycle 9.

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\*If the battery has reached 85% of service life, delivers a capacity of 100% or greater of the manufacturer's rated capacity, and has shown no signs of degradation, performance testing at two-year intervals is acceptable until the battery shows signs of degradation.

TABLE 4.8-2  
BATTERY SURVEILLANCE REQUIREMENTS

PARAMETER	CATEGORY A <sup>(1)</sup>	CATEGORY B <sup>(2)</sup>	
	LIMITS FOR EACH DESIGNATED PILOT CELL	LIMITS FOR EACH CONNECTED CELL	ALLOWABLE <sup>(3)</sup> VALUE FOR EACH CONNECTED CELL
Electrolyte Level	>Minimum level indication mark, and $\leq \frac{1}{4}$ " above maximum level indication mark	>Minimum level indication mark, and $\leq \frac{1}{4}$ " above maximum level indication mark	Above top of plates, and not overflowing
Float Voltage	$\geq 2.13$ volts	$\geq 2.13$ volts <sup>(6)</sup>	$> 2.07$ volts
Specific Gravity <sup>(4)</sup>	$\geq 1.200$ <sup>(5)</sup>	$\geq 1.195$	Not more than 0.020 below the average of all connected cells
		Average of all connected cells	Average of all connected cells
		$> 1.205$	$\geq 1.195$ <sup>(5)</sup>

TABLE NOTATIONS

- (1) For any Category A parameter(s) outside the limit(s) shown, the battery may be considered OPERABLE provided that within 24 hours all the Category B measurements are taken and found to be within their allowable values, and provided all Category A and B parameter(s) are restored to within limits within the next 6 days.
- (2) For any Category B parameter(s) outside the limit(s) shown, the battery may be considered OPERABLE provided that the Category B parameters are within their allowable values and provided the Category B parameter(s) are restored to within limits within 7 days.
- (3) Any Category B parameter not within its allowable value indicates an inoperable battery.
- (4) Corrected for electrolyte temperature and level for Gould. Corrected for electrolyte temperature for C&D.
- (5) Or battery charging current is less than 2 amps (Gould) 3 amps (C&D) when on charge.
- (6) Corrected for average electrolyte temperature.

# ELECTRICAL POWER SYSTEMS

## D.C. SOURCES

### SHUTDOWN

#### LIMITING CONDITION FOR OPERATION

3.8.2.2 As a minimum, one 125-volt D.C. bus fed from its battery and its associated full-capacity charger and with one of its associated crosstie breakers in the open position shall be OPERABLE.

APPLICABILITY: MODES 5 and 6.

#### ACTION:

- a. With both of the crosstie breakers closed for the 125-Volt D.C. bus that is required to be OPERABLE and with the opposite unit operating (Modes 1, 2, 3, or 4), the shutdown unit's operable 125-Volt D.C. bus may energize the operating unit's inoperable 125-Volt D.C. bus having an inoperable charger without a load restriction.
- b. With both of the crosstie breakers closed for the 125-Volt D.C. bus that is required to be OPERABLE and with both units shutdown (Modes 5, 6, or defueled), the 125-Volt D.C. bus may energize the opposite unit's 125-Volt D.C. bus for up to 7 days provided items 1 and 2 below are satisfied. Otherwise open one of the crosstie breakers.

(1) The opposite unit's bus load is restricted to:

<u>Opposite Unit Battery Status</u>	<u>Operable Bus Battery Type</u>	<u>Load Restriction</u>
Inoperable	C&D	200 Amps
Inoperable	Gould	63 Amps
OPERABLE	Either	None

(2) If a load restriction applies, then once per 12 hours verify that the opposite shutdown unit's bus loading will not exceed the load restriction.

- c. With the required 125-Volt D.C. bus inoperable, except for the allowances of ACTIONS (a) or (b) above, immediately suspend all operations involving CORE ALTERATIONS, positive reactivity additions, or movement of irradiated fuel; initiate corrective action to restore the required bus to OPERABLE status as soon as possible; and within 8 hours, depressurize and vent the Reactor Coolant System through at least a 2 square inch vent.

#### SURVEILLANCE REQUIREMENTS

4.8.2.2 The above required 125-volt D.C. bus fed from its battery and its associated charger shall be demonstrated OPERABLE per Specifications 4.8.2.1.1 and 4.8.2.1.2.

## ELECTRICAL POWER SYSTEMS

### 3/4.8.3 ONSITE POWER DISTRIBUTION

#### OPERATING

#### LIMITING CONDITION FOR OPERATION

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3.8.3.1 The following electrical busses shall be energized in the specified manner for the applicable unit:

- a. A.C. ESF Busses consisting of:

##### UNIT 1

###### Division 11

- 1) 4160-Volt Bus 141,
- 2) 480-Volt Bus 131X, and
- 3) 480-Volt Bus 131Z.

##### UNIT 2

###### Division 21

- 1) 4160-Volt Bus 241
- 2) 480-Volt Bus 231X, and
- 3) 480-Volt Bus 231Z.

- b. A.C. ESF Busses consisting of:

##### UNIT 1

###### Division 12

- 1) 4160-Volt Bus 142
- 2) 480-Volt Bus 132X, and
- 3) 480-Volt Bus 132Z.

##### UNIT 2

###### Division 22

- 1) 4160-Volt Bus 242
- 2) 480-Volt Bus 232X, and
- 3) 480-Volt Bus 232Z.

- c. 120-Volt A.C. Instrument Bus 111 for Unit 1 (Bus 211 for Unit 2) energized from its associated inverter connected to D.C. Bus 111 for Unit 1 (Bus 211 for Unit 2),
- d. 120-Volt A.C. Instrument Bus 113 for Unit 1 (Bus 213 for Unit 2) energized from its associated inverter connected to D.C. Bus 111 for Unit 1 (Bus 211 for Unit 2),
- e. 120-Volt A.C. Instrument Bus 112 for Unit 1 (Bus 212 for Unit 2) energized from its associated inverter connected to D.C. Bus 112 for Unit 1 (Bus 212 for Unit 2), and
- f. 120-Volt A.C. Instrument Bus 114 for Unit 1 (Bus 214 for Unit 2) energized from its associated inverter connected to D.C. Bus 112 for Unit 1 (Bus 212 for Unit 2).

APPLICABILITY: MODES 1, 2, 3, and 4.

#### ACTION:

- a. With one of the required divisions of A.C. ESF busses not fully energized, reenergize the division within 8 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.
- b. With one A.C. instrument bus either not energized from its associated inverter, or with the inverter not connected to its associated D.C. bus: 1) reenergize the A.C. instrument bus within 2 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours, and 2) reenergize the A.C. instrument bus from its associated inverter connected to its associated D.C. bus within 24 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

BASESA.C. SOURCES, D.C. SOURCES, AND ONSITE POWER DISTRIBUTION (Continued)

The Surveillance Requirement for demonstrating the OPERABILITY of the station batteries is based on the recommendations of Regulatory Guide 1.129, "Maintenance Testing and Replacement of Large Lead Storage Batteries for Nuclear Power Plants," February 1978, and IEEE Std 450-1980, "IEEE Recommended Practice for Maintenance, Testing, and Replacement of Large Lead Storage Batteries for Generating Stations and Substations."

The modified performance discharge test is described in IEEE Std 450-1995, "IEEE Recommended Practice for Maintenance, Testing, and Replacement of Vented Lead-Acid Batteries for Stationary Applications." It is permissible to perform a modified performance discharge test on the C&D battery in lieu of a service test and a performance discharge test as required by Regulatory Guide 1.129, Regulatory Position C.1, because the test discharge rate envelopes the load cycle of the service test.

Verification of the crosstie loading limits in Specifications 3.8.2.1 and 3.8.2.2 ensures that the OPERABLE battery will have sufficient capacity to energize the design basis loads of its DC bus while maintaining the limited DC loads of the inoperable DC bus on a shutdown unit.

Verifying average electrolyte temperature above the minimum for which the battery was sized, total battery terminal voltage on float charge, and the performance of battery service and discharge tests ensures the effectiveness of the charging system, the ability to handle high discharge rates and compares the battery capacity at that time with the rated capacity.

The battery service test is a special test of battery capability, as-found, to satisfy the design requirements (battery duty cycle) of the D.C. electrical power system. The discharge rate and length of the battery service test corresponds to the design duty cycle requirements as specified in UFSAR Subsection 8.3.2.1.1.

Table 4.8-2 specifies the normal limits for each designated pilot cell and each connected cell for electrolyte level, float voltage and specific gravity. The limits for the designated pilot cells float voltage and specific gravity, greater than 2.13 volts and 0.015 below the manufacturer's full charge specific gravity or a battery charger current that had stabilized at a low value, is characteristic of a charged cell with adequate capacity. The normal limits for each connected cell for float voltage and specific gravity, greater than 2.13 volts and not more than 0.020 below the manufacturer's full charge specific gravity with an average specific gravity of all the connected cells not more than 0.010 below the manufacturer's full charge specific gravity, ensures the OPERABILITY and capability of the battery.

Operation with a battery cell's parameter outside the normal limit but within the allowable value specified in Table 4.8-2 is permitted for up to 7 days. During this 7-day period: (1) the allowable values for electrolyte level ensures no physical damage to the plates with an adequate electron transfer capability; (2) the allowable value for the average specific gravity of all the cells, not more than 0.020 below the manufacturer's recommended full charge specific gravity, ensures that the decrease in rating will be less than the safety margin provided in sizing; (3) the allowable value for an individual cell's specific gravity, ensures that an individual cell's specific gravity will not be more than 0.040 below the manufacturer's full charge specific gravity and that the overall capability of the battery will be maintained within an acceptable limit; and (4) the allowable value for an individual cell's float voltage, greater than 2.07 volts, ensures the battery's capability to perform its design function.



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION  
RELATED TO AMENDMENT NO. 93 TO FACILITY OPERATING LICENSE NO. NPF-37  
AND AMENDMENT NO. 93 TO FACILITY OPERATING LICENSE NO. NPF-66  
COMMONWEALTH EDISON COMPANY  
BYRON STATION, UNIT NOS. 1 AND 2  
DOCKET NOS. STN 50-454 AND STN 50-455

**1.0 INTRODUCTION**

By letter dated April 7, 1997, as supplemented on August 7, 1997, Commonwealth Edison Company (ComEd, the licensee), proposed to amend Appendix A, Technical Specifications (TS) of Facility Operating Licenses NPF-37 and NPF-66 for Byron Nuclear Power Station, Units 1 and 2.

ComEd proposed to revise Section 3/4.8.2, D.C. Sources and its Bases Section of the TS to allow the replacement of the existing installed 125 volt dc Gould Batteries, which are nearing 85 percent of qualified life, with new 125 volt dc C&D Charter Power Systems, Inc. (C&D) batteries. In addition, the licensee proposed to revise the crosstie limitation to reflect the increased capacity of the C&D replacement batteries.

**2.0 BACKGROUND**

The existing Gould batteries at Byron were installed in 1979. ComEd plans to replace these batteries with new 125 volt dc C&D cells during upcoming refueling outages because the Gould cells are near 85 percent of their 20 years qualified life. In Amendment No. 59, the NRC approved changes to allow the installation of Lucent Technologies (AT&T) round cell batteries to replace the Gould batteries. However, the round cells were not installed at Byron due to the problems of loss of capacity of the high specific gravity (1,300) round cells at Braidwood, Palo Verde and McGuire nuclear power plants. As a result, ComEd decided to use C&D batteries instead of AT&T batteries and proposed changes to the Byron TS to reflect the installation of the C&D batteries. Corresponding changes are also being proposed by the licensee for the Improved Technical Specifications, which are currently in the review process by the NRC staff.

**3.0 EVALUATION**

During the review of ComEd's request, the staff identified the need for further information and issued a Request for Additional Information (RAI) dated June 20, 1997.

The RAI covered subjects related to specific gravity, charging current, performance and service tests, aging and design margin factors used in sizing the C&D batteries and the results of the last performance test of the Gould batteries to assess the battery degradation. By letter dated August 7, 1997, ComEd provided the answers to the questions raised in the RAI and revised their proposed TS changes. The proposed changes are:



- (1) All references to AT&T batteries are deleted since these will not be installed. These include load restrictions provisions of TS 3.8.2.1, Action c.1 and 3.8.2.2 Action b.1, along with Table 4.8.2 (AT&T Battery Surveillance Requirements). AT&T references are also removed from Surveillance Requirements (SRs) 4.8.2.1.2.a.2, 4.8.2.1.2.e, 4.8.2.1.2.f, footnote to 4.8.2.1.2.b.2, 4.8.2.1.2.c.3 and the TS Bases.
- (2) Surveillance Requirement 4.8.2.1.2.a.2 adds the total battery terminal float voltage to be  $\geq 127.6$  volts for the C&D battery. This is the minimum recommended value for the total battery float charge voltage range of 2.20 to 2.25 volts per cell. C&D has stated that for the optimum battery life, the float voltage should be at a value that results in positive plate polarizations between 50 and 100 millivolts above open circuit. In C&D lead calcium alloy batteries of LCUN-33 design, this occurs at a float charge between 2.20 and 2.25 volts per cell. The terminal voltage of  $\geq 127.6$  volts ensures the effectiveness of the battery charger to float charge the battery and to maintain the battery in a fully charged state.
- (3) In order to comply with IEEE-450, "Recommended Practice for Maintenance, Testing, and Replacement of Vented Lead-Acid Batteries for Stationary Applications," and the proposed Improved Technical Specifications as they apply to the new batteries, ComEd revised SR 4.8.2.1.2.f and SR 3.8.4.4 to perform a performance test or modified performance test at least once per 12 months during shutdown, instead of 18 months for any battery that shows signs of degradation or has reached 85 percent of its qualified service life. Additionally, the Note in SR 3.8.4.3, SR 3.8.4.4 and the Bases for the same are being revised to allow the modified performance test to be performed in lieu of either the normal performance test or the service test for the C&D batteries. Surveillance Requirement 4.8.2.1.2.g has been added in order to retain the current 18 month testing requirements for the Gould battery 111 until entering MODE 4 for Unit 1, Cycle 9. This battery's capacity essentially did not change in 5 years and the results of performance tests of this Gould battery shows that the battery capacity is near the manufacturer's rated capacity. Additionally, the Gould batteries are being replaced during the next refueling outage. The above changes comply with IEEE-450.
- (4) Table 4.8.2 (Battery Surveillance Requirements) is being revised so that it applies to both the Gould and C&D batteries. First, a table notation will be revised to state that the manufacturer recommended charging current for the battery is less than 3 amps for the C&D battery. Second, the Table will be revised because C&D recommends correcting for electrolyte temperature for C&D batteries, not for level. Both IEEE-450 and C&D's operating instructions do not recommend correcting electrolyte specific gravity values for level, but for temperature only. However, Gould operating instructions recommend temperature and level correction. Since Gould batteries are to be replaced in the next refueling outage, ComEd is not requesting changes to Gould battery level corrections. Table 4.8.2 will be modified to reflect the different operating instructions for C&D and Gould batteries.
- (5) The crosstie provisions, T.S. 3.8.2.1, Action c.1 and 3.8.2.2, Action b.1 provide a load restriction while the battery is crosstied to opposite unit. The limit ensures that the operable battery has the capacity to energize the design basis load of its DC bus while maintaining the limited DC loads of the inoperable DC bus on the shutdown unit. The proposed crosstie loading limit of 200 ampere reflect the larger capacity of the C&D batteries.

- (6) The editorial change in 3.8.2.2, Action b (1), "Opposite Bus" is changed to "Opposite Unit" and is consistent with Specification 3.8.2.1, Action c (1).
- (7) ComEd confirmed in their letter of August 7, 1997, that the C&D batteries were sized using an aging factor of 1.25 and a design margin of 10 percent. ComEd, in their letter of April 7, 1997, states that the C&D batteries meet or exceed the design, functional and qualification requirements of the installed Gould batteries. Using the C&D batteries will not impact the function of the DC system.

#### 4.0 SUMMARY

The C&D batteries are similar in design to the existing installed Gould batteries, are qualified for 20 years, and have a significant larger capacity which can provide additional margin. Additionally, the short circuit current provided by the C&D batteries are within the interrupting capabilities of the existing DC system circuit breakers. After a review of the changes proposed by the licensee, the staff concludes that the changes are consistent with manufacturer recommendations and current industry standards (i.e., IEEE-450).

#### 5.0 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.

#### 6.0 ENVIRONMENTAL CONSIDERATION

The amendments change a requirement with respect to the installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20 and change surveillance requirements. The NRC staff has determined that the amendments involve no significant increase in the amounts, and no significant change in the types, of any effluents that may be released offsite, and that there is no significant increase in individual or cumulative occupational radiation exposure. The Commission has previously issued a proposed finding that the amendments involve no significant hazards consideration, and there has been no public comment on such finding (62 FR 54868). Accordingly, the amendments meet the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the issuance of the amendments.

#### 7.0 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.

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