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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 59 TO FACILITY OPERATING LICENSE NO. NPF-37,

AMENDMENT NO. 59 TO FACILITY OPERATING LICENSE NO. NPF-66,

AMENDMENT NO. 47 TO FACILITY OPERATING LICENSE NO. NPF-72,

AND AMENDMENT NO. 47 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 letters dated September 2, 1993 and January 7, 1994, Commonwealth Edison (the licensee) proposed replacement of the existing 125 VDC Gould batteries with new 125 VDC AT&T batteries. This replacement was proposed because the existing Gould batteries are approaching the 85% service life limit. In accordance with this change, the licensee requested an amendment to revise Technical Specification (TS) 3/4.8.2 - DC Sources, and the associated Bases, to reflect the AT&T battery parameters which are different from those of the Gould battery. In addition, changes to other portions of TS 3/4.8.2 were requested. These changes consist of restatement of the design duty cycle, restatement of the crosstie breaker limitation, and revision of the crosstie loading limitation.

A meeting between the NRC staff and the licensee was held on February 1, 1994, to resolve NRC staff concerns raised during telephone conversations of January 18, 1994 and January 24, 1994. The licensee formally resolved these concerns in a supplemental submittal dated February 10, 1994. Information in this submittal had no impact on the original no significant hazards consideration.

2.0 EVALUATION

Following is the staff's evaluation of the proposed TS changes:

1. Battery Replacement Changes

   The licensee has proposed to replace the existing 125 VDC Gould batteries with the AT&T batteries. The replacement batteries are being purchased to meet the design, functional, and qualification requirements

of the current batteries and, therefore, the performance of plant safety functions will not be degraded by the new batteries. As a result of replacing the batteries, the licensee has proposed to modify Table 4.8.2 of the TS by splitting it into two separate tables; one table for the existing Gould batteries and another for the replacement AT&T batteries. These tables reflect some of the parameters (e.g., specific gravity, float voltage per cell) of the AT&T batteries which are different from those of the Gould batteries. The separate tables will be maintained to allow for the transition period needed to install the AT&T batteries. The licensee also added the AT&T battery operational float voltage limits per cell in the Bases Section. These changes are acceptable.

The staff was concerned as to whether the electrical equipment and the cables would be able to handle the higher rating of the AT&T batteries. In the telephone conversation on January 18, 1994, the licensee confirmed that all the electrical equipment is rated to carry higher current. The cable sizes are 350 MCM and the breakers are rated at 600 amp with an interrupting capacity of 22,000 amps. The staff finds this acceptable.

The licensee has also proposed a change to Specification 4.8.2.1.2.a.2 to add a total battery terminal float charger voltage limit of greater than or equal to 130.5 volts for the AT&T battery while still retaining the voltage limit of greater than or equal to 126 volts for the Gould battery. The higher battery terminal float charger voltage limit for the AT&T battery is due to the higher volts per cell of 2.25 to 2.27 volts for the AT&T batteries. The staff finds this acceptable.

In addition, the licensee has proposed a change to the "*" notation for Specifications 4.8.2.1.2.b.2 and 4.8.2.1.2.c.3 reflecting the configuration differences of rack arrangement between the Gould battery and the AT&T battery. Both batteries have bi-level rack of cells, but only the Gould battery has cross-room racks. This change is acceptable.

In their September 2, 1993, submittal, the licensee proposed a design margin of 15% for the AT&T batteries, which was in accordance with IEEE-485 for sizing large lead-acid batteries. During re-evaluation, the licensee found that there was only a 5% design margin. Since an aging factor of 1.25 is used for the AT&T batteries, instead of 1.0, the staff finds this change acceptable.

The licensee had not proposed any changes to the Surveillance Requirements for AT&T batteries in 4.8.2.1.2.e and 4.8.2.1.2.f. The existing Surveillance Requirements in 4.8.2.1.2.e and 4.8.2.1.2.f were written for lead-calcium and lead-antimony rectangular cell batteries which show a capacity loss over time. Since the IEEE Standards were not written for the AT&T round cell batteries, for which the capacity increases with time, the staff determined that 80% replacement criteria for the AT&T batteries was not meaningful. Therefore, a technical meeting was held on February 1, 1994 between the NRC staff and the

licensee to resolve the staff's concerns regarding the changes to TS sections 4.8.2.1.2.e and 4.8.2.1.2.f.

Subsequently, by letter dated February 10, 1994, the licensee agreed to modify TS 4.8.2.1.2.e to show that battery capacity for the AT&T batteries is at least 95% of the manufacturer's rating when subjected to a performance discharge test every 60 months. In addition, the licensee modified TS 4.8.2.1.2.f to show that the batteries have degraded when battery capacity drops more than 5% of capacity based on the previous performance test, or is below 100% of the manufacturer's rating in 4.8.2.1.2.f.

Additionally, the licensee has proposed a modified performance discharge test to replace the performance discharge test in 4.8.2.1.2.e. A modified discharge test is a test of the battery capacity and its ability to provide a high rate, short duration load (usually the highest rate of the duty cycle) and will confirm the battery's ability to meet the critical period of the load duty cycle.

The staff finds these changes acceptable.

2. Design Duty Cycle

The licensee has proposed to change the phrase "240 minutes" in Specification 4.8.2.1.2.d to "the design duty cycle." Also, the Bases would be changed to add a discussion of the design duty cycle and include a reference to UFSAR Subsection 8.3.2.1.1. The parameters of the design duty cycle, including overall duration, are controlled through the UFSAR update process, as described in 10 CFR 50.71(e), and by 10 CFR 50.59. These changes are in accordance with the Standard Technical Specifications for Westinghouse plants (NUREG-0452 and NUREG-1431).

3. Crosstie Breaker Limitations

The licensee has proposed to change the Limiting Condition for Operation (LCO) statement for Specification 3.8.2.1 to add the phrase "and with one of its associated crosstie breakers in the open position." This clarifying change provides a more direct relationship between the LCO and the Action statements. The staff finds this acceptable.

In addition, the licensee has proposed to reword and reformat the Action statements of Specification 3.8.2.1 to incorporate the crosstie loading limitation previously addressed in Specification 4.8.2.1.3. With both units operating, one of the two redundant 125 VDC buses may energize the opposite unit's corresponding 125 VDC bus when its charger is inoperable without a load restriction. Also, with one unit operating, the 125 VDC bus that is required to be operable may energize the shutdown unit's corresponding 125 VDC bus with its battery inoperable, provided the shutdown unit's bus load is restricted as required by the Action

statement. Since these are equivalent to the previous requirements, the staff finds this change acceptable.

The licensee has proposed changes to the Limiting Condition for Operation (LCO) statement for Specification 3.8.2.2 to add the phrase "and with one of its associated crosstie breakers in the open position." This clarifying change provides a more direct relationship between the LCO and the Action statements and is, therefore, acceptable.

The licensee proposed rewording and reformatting the Action statement in Specification 3.8.2.2 by incorporating the "*" provision of the LCO and the crosstie loading limitation previously addressed in Specification 4.8.2.1.3. This change will allow cross-tying the 125 VDC buses of two shutdown units under the conditions specified in the Action statements in addition to crosstie conditions previously allowed. Since the DC bus load requirements for a shutdown unit are substantially less than that for an operating unit, loading conditions involving two shutdown units are less severe than crosstie conditions involving an operating unit. The staff finds this acceptable.

4. Crosstie Loading Limitations

Because of the larger capacity of the AT&T battery, the licensee proposed a change to 3.8.2.1 Action statement to increase the crosstie loading limit to 100 amps for the AT&T battery, while retaining the 63 amp crosstie loading limit for the Gould battery. The crosstie loading requirement for the Gould battery is retained to allow for the transition period needed to install the AT&T batteries. The licensee added a discussion of the purpose for the crosstie loading limitations in the Bases section. These changes are acceptable.

5. Additional Changes

The licensee proposed a change to the battery allowable cell voltage from 2.05 to 2.07 volts for the Gould battery in the Bases Section. This change is consistent with the Standard Technical Specification for Westinghouse plants (NUREG-0452 and NUREG-1431) and is therefore acceptable.

The licensee proposed changes to TS section 3/4.8.2 as a result of replacing the existing 125 VDC Gould batteries with the new AT&T batteries. The staff has reviewed the licensee's submittal and has concluded that Byron and Braidwood plants can be operated safely with the new AT&T batteries and there is reasonable assurance that adequate DC power will be available to mitigate any credible event that can occur during and after the replacement of batteries. In addition, the licensee has resolved NRC staff concerns regarding the adequacy of the electrical equipment and cables, the design margin of the AT&T batteries, and the proposed modified performance discharge test in TS section 4.8.2.1.2.e. Therefore, the staff finds the proposed changes acceptable.

3.0 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.

4.0 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. 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 (59 FR 4936). 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.

5.0 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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Date: March 4, 1994