



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
RELATED TO AMENDMENT NO. 99 TO FACILITY OPERATING LICENSE NO. NPF-72
AND AMENDMENT NO. 99 TO FACILITY OPERATING LICENSE NO. NPF-77

COMMONWEALTH EDISON COMPANY

BRAIDWOOD STATION, UNIT NOS. 1 AND 2

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

1.0 INTRODUCTION

By letter dated November 25, 1998, Commonwealth Edison Company (ComEd, or the licensee) proposed to amend Appendix A, Technical Specifications (TSs) of Facility Operating Licenses NPF-72 and NPF-77 for Braidwood Station, Units 1 and 2, respectively. ComEd requested one-time changes to TS 3.8.4, "DC Sources-Operating," and TS 3.8.9, "Distribution Systems-Operating." The proposed changes are necessary to support on-line replacement of the existing Braidwood, Unit 2, 125V dc AT&T batteries with new 125V dc Charter Power Systems Inc. (C&D) batteries while Unit 2 is in Modes 1, 2, 3 or 4.

2.0 BACKGROUND

The installed batteries at Braidwood, Unit 2, are AT&T round cells, high specific gravity type, that exhibited a loss of capacity when discharged and recharged. ComEd is planning to replace the AT&T batteries with new 125V dc C&D batteries while Braidwood, Unit 2, is in Mode 1, 2, 3 or 4. According to the licensee, replacing the batteries on-line provides several advantages over conducting the activity during an outage. The requested TS changes, which are to be used one time (per train) during the battery replacement, affect TS Sections 3.8.4 and 3.8.9 and their associated bases.

During the proposed on-line replacement, the normal safety-related battery will be out-of-service for approximately 10 days. One bank of AT&T batteries, that was recently removed from Braidwood, Unit 1, will be used as a temporary battery to supply the emergency dc backup power. The existing Engineered Safety Feature (ESF) battery charger will be connected to the bus in parallel with the temporary battery and will be the normal source of power. The temporary battery will be subjected to all station battery surveillances, including a service test, to meet the TS requirements before putting it into service. This temporary battery is qualified as safety related, but it will not be seismically mounted and it will be located in the non-safety related (NSR) turbine building. ComEd requested a 10 day completion time for the battery replacement.

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The temporary battery will be connected to the dc bus after the existing AT&T battery has been physically disconnected. During this evolution, the crosstie breaker to Unit 1 will be closed to prevent the dc bus from being de-energized. The crosstie breaker will be opened after the temporary battery and the existing charger are connected to the bus. ComEd requested a completion time of 8 hours to safely disconnect the existing AT&T battery and connect the temporary battery. The same 8 hours are needed at the end of the 10 day battery replacement to disconnect the temporary battery and connect the new C&D battery.

Each of the two dc divisions of Braidwood, Unit 2, will be subjected to the same procedures when replacing the AT&T battery with the C&D battery.

The licensee stated that, before starting the replacement of the batteries, it is required that the plant be in a stable condition with no other Required Actions requiring a plant shutdown in effect, and that no tornado weather is expected during the replacement period. The NRC staff finds that reasonable controls for the implementation and for subsequent evaluation of proposed changes pertaining to the above regulatory commitments are best provided by the licensee's administrative processes, including its commitment management program. The above regulatory commitments do not warrant the creation of regulatory requirements (items requiring prior NRC approval of subsequent changes).

3.0 EVALUATION

The staff reviewed and evaluated the proposed changes to TS Section 3.8.4, "DC Sources-Operating," and Section 3.8.9, "Distribution Systems-Operating."

The requested one-time change will add the following Conditions and/or Required Actions to support the battery changeout:

- (a) New TS 3.8.4 Condition D is applicable when one dc electrical power division is crosstied to opposite unit dc bus when replacing the Unit 2 AT&T batteries while the opposite unit is in Mode 1, 2, 3, or 4. New Required Action D.1 states, "Open at least one crosstie breaker between the crosstied divisions," with a Completion Time of 8 hours.
- (b) New TS 3.8.4 Required Action E.2 is applicable during replacement of the Unit 2 AT&T batteries and states, "Restore DC electrical power subsystem to OPERABLE status," with a Completion Time of 10 days.
- (c) Similarly, new TS 3.8.9 Required Action C.2 is applicable during replacement of the Unit 2 AT&T batteries and states, "Restore DC electrical power distribution subsystem to OPERABLE status," with a Completion Time of 10 days.

The present TS 3.8.4 Required Action D.1 requires restoration of the dc electrical power subsystem (battery) to OPERABLE status within 2 hours. The proposed D.1 will extend the allowed outage time to 8 hours if the bus is crosstied during the disconnection of the AT&T battery and connection of the charger and the temporary battery. This 8 hour time will also be entered during removal of the temporary battery and connection of the new C&D battery. The

2 hour Completion Time for a battery that is inoperable for other reasons will be maintained in TS 3.8.4, but is administratively renamed as Condition E and Required Action E.1.

During the 8 hour allowed outage time for disconnecting and connecting the batteries, Braidwood, Unit 2, dc buses will be powered via the crosstie from Braidwood, Unit 1. This is acceptable for the following reasons:

- When the dc busses are crosstied, procedural and administrative controls will be used to limit the connected load to 100 amps under normal conditions. Additional compensatory measures will ensure that the Braidwood, Unit 1, battery will be isolated from Braidwood 2 to prevent a loading scenario beyond the battery design. This prevents an accident on Unit 2 from having an adverse effect on Unit 1.
- The normal load on each dc bus is approximately 50 to 75 amperes. The battery charger can supply 440 amperes, thus, the Unit 1 charger would be able to supply both units' loads while maintaining the Unit 1 battery in a fully charged condition.

The temporary battery will be located in the NSR turbine building and will not be seismically mounted. A seismic failure of the batteries is possible. The potential of battery failure to initiate an accident is not credible, and failure of this battery can not create a different response to any previously postulated accident.

The 10-day Completion Time allows sufficient time to safely perform the removal of the AT&T round cells and installation and testing the new C&D battery. During this 10 days, the ability of the dc division to mitigate an event or accident is basically unchanged except for its ability to cope with a seismic event or other event in the NSR turbine building. The probability of such an event occurring within the 10-day Completion Time is considered small. In addition, if a seismic or other event did occur and the temporary installation was compromised, adequate dc power is available from the other Unit 2 dc division to mitigate the event.

The temporary battery is located and oriented in the turbine building in a location such that in a turbine blade failure event the missile would not hit the battery unless it penetrates the turbine casing and ricochets in the direction of the battery, which is an unlikely scenario. Likewise, an outside-containment steam line break of either unit would be interrupted by the closure of the Main Steam Isolation Valves and, thus, would not affect the battery and dc bus.

The temporary battery is a safety-related battery that was qualified and used in Unit 1, and will perform the same function as the battery being removed. It has the same capacity, margin and capability to fulfill the requirements of the Unit 2 dc bus as the existing battery. The proposed activities will not prevent the plant from responding to either a seismic event or a design-basis accident. Due to the limited duration of the replacement activity and the planned contingency actions, there is little impact on the safety of the plant. Therefore, the proposed changes to TS 3.8.4 and 3.8.9 are acceptable.

The licensee also requested to amend Surveillance Requirement (SR) 3.8.4.7 and SR 3.8.4.8 to read as follows:

"This surveillance shall not be performed in MODE 1, 2, 3, or 4 except during replacement of the AT&T batteries."

These surveillances are related to the service and performance/modified performance tests on the batteries. The provisions to allow testing in Modes 1, 2, 3 or 4 will allow the new batteries to be tested before they are connected to the bus. This replacement and testing will therefore not introduce any challenge to the electrical distribution system. In addition, the battery will be fully recharged before it is put into service. Therefore, the proposed change is 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

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 (64 FR 9185). 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.

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.

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