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ComEd

May 16, 1996

United States Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, D.C. 20555-0001

Subject: Braidwood Nuclear Station, Unit 1
Facility Operating License NPF-72
DC Battery Action Plan Update
NRC Docket Number 50-456

References: 1) Karl L. Kaup letter to USNRC dated November 16, 1995

2) Karl L. Kaup letter to USNRC dated April 5, 1996

The Referenced letters provide the NRC with Braidwood Station's assessment and proposed actions related to the Unit 1 Safety Related Battery 112 concerns. Reference 2 outlined several actions that Braidwood Station would be pursuing to resolve the AT&T Round Cell battery issues identified. In May of this year ComEd, along with other nuclear utilities possessing AT&T batteries in Safety Related applications, met with the NRC in Washington to discuss the issue. As a result of this meeting the "AT&T Round Cell Users Council" is issuing a description of the council's activities in addressing the concerns with the AT&T batteries in the nuclear industry.

Braidwood Nuclear Station is providing this to the NRC to provide updated information as to the Station's progress toward resolution of the long and short term items described in Referenced letter 2. Attachments to this letter will provide updates to the items described on the attachments in Referenced letter 2.

Per a May 9th telephone conversation with Ramin Assa of the NRC, additional information is being supplied in the supplemental section of this response. This information is in lieu of a May meeting with the NRC.

To the best of my knowledge and belief, the statements contained in this document and its attachments are true and correct. In some respects these statements are not based

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on my personal knowledge, but on information furnished by other ComEd employees, contractor employees, and/or consultants. Such information has been reviewed in accordance with company practices, and I believe it to be reliable.

Please address any comments or questions regarding this matter to this office or to T. W. Simpkin, Regulatory Assurance Supervisor, Braidwood Station at (815) 458-2801, extension 2980.

Karl L. Kaup
Site Vice President
Braidwood Station

KLK/TWS/tts

Attachments

cc: H.J. Miller, Regional Administrator - RIII
R.R. Assa, Braidwood Project Manager - NRR
C. J. Phillips, Senior Resident Inspector - Braidwood
Office of Nuclear Facility Safety -IDNS

Attachment

1. Short term actions to enhance the viability of all safety related batteries at Braidwood Station.

   A. Minimizing discharges on the safety related batteries

      1) Train station operators on the potentially adverse impact that protracted battery discharges can have on subsequent battery capacity and on actions to minimize such discharges (training is currently in progress as part of this cycles LORT).
      2) Braidwood Station has reviewed an option to shed loads on the non-ESF sections of the instrument busses. It is a viable option, but Braidwood is not pursuing.
      3) Braidwood Station will be implementing a design change to install a more reliable temporary charger connection scheme. The scheme will reduce the potential for battery charger problems related to temporary charger connections.

   B. Responding to discharges of the safety related batteries (evaluation/recharge)

      Braidwood Station has placed an administrative threshold discharge level of 300 ampere hours on the safety related batteries. Discharges above this level will require assessing the possible impact of the discharges on the affected battery. Determination of actions required (if any) will be conducted by a minimum of one Site Engineer, one System Engineer and one Senior Reactor Operator. The specific actions will be dependent on the circumstances of the situation. The Braidwood Annunciator Alarm procedures for the Safety Related battery chargers identifies this Administrative Action Requirement when a charger trouble alarm is received in the control room.

   C. Revising charging methodology following discharges such as those experienced during Technical Specification modified performance tests and service test.

      Based on input from Lucent Technologies (AT&T) and review of testing data from Palo Verde Nuclear Generating Station (Arizona Public Service), Braidwood Station has concluded that constant current recharging after service and performance tests is the preferred method. Braidwood Station will be using constant current recharging as the preferred method of charging the batteries after a deep discharge following service or performance tests.

2. Longer term actions

Longer term actions to evaluate of the L1SH round cell battery in its current safety applications at Braidwood Station have been broken down into five key areas:

A. Destructive Testing
B. Integrated battery testing program
C. Technical Specification revision evaluation
D. Battery trending program development
E. Existing battery crosstie change to eliminate temporary charger

A. Braidwood Nuclear Station is preparing a specification for destructive examination to be conducted by Electrochemist and Metallurgical personnel from Argonne National Laboratory. The destructive exam will be on several of the AT&T high gravity round cells. The batteries to be examined will be from the Braidwood 112 battery bank that was removed from service in March 1996. Destructive examination will begin once formal specifications for this testing are developed with Argonne National Laboratory. This examination is anticipated to be July, 1996. Braidwood Nuclear Station is working toward a completion of the examination in the fall of 1996.

B. ComEd and other member utilities of the AT&T Round Cell Users Counsel are formulating testing programs that will provide additional information as to the charging and discharging performance characteristics of the AT&T high specific gravity battery. Braidwood Station is planning on performing discharge and recharge testing on the removed 112 batteries. Testing is tentatively planned to begin this summer. A draft ComEd test plan has been developed and is being reviewed. Past testing performed by AT&T and Palo Verde Nuclear Station, has demonstrated that full capacity of the battery can be restored by using a constant current recharge. ComEd plans to make use of the users council and its resources to expedite gaining knowledge of this battery and its characteristics.

C. ComEd has reviewed Technical Specifications for Units 1 and 2 Technical Specification changes may be requested in the future after testing and data analysis has been performed. No Technical Specification changes are being requested at this time.

D. The initial trending program will include parameters currently being monitored (including ICVs, S.G.s, cell impedance, and capacity) along with battery discharge history. These parameters will be maintained and evaluated periodically by the station DC System Engineer. The initial trending program will be complete by 8 July 1996. Other cell parameters including half cell voltage and cell resistance will be evaluated during battery testing to determine usefulness. This evaluation will be completed by 1 January 1997.

E. Braidwood Station has reviewed an option to increase cross-tie limits to 120 amperes. The Safety Related batteries have sufficient margin to allow for an 120 ampere cross tie. This option will be further assessed for potential implementation at a later date.

Supplemental Information

1. Replacement 112 battery cells received from Byron

   The replacement battery cells installed in the 112 Safety Related battery bank at Braidwood Station were originally intended for Byron Nuclear Station. The cells were recharged at the factory after the acceptance testing and prior to shipment to Byron. Once Byron received the cells the batteries were charged per the supplied AT&T instructions. After the Byron recharge, the batteries were shipped to Braidwood Station where 58 of the cells were installed as replacements for the 112 battery bank. The remaining cells were sold to Arizona Public Service for use at Palo Verde Nuclear Station.

   The batteries received from Byron had been acceptance tested with capacities in excess of 100%. Once the battery cells were installed in the 112 battery a successful Service Test was performed. The batteries were recharged via constant current and placed in service approximately 24 hours later.

2. Testing on the removed 112 battery cells

   Braidwood Station plans to perform destructive examination on several of the removed 112 battery cells plus a spare cell. Braidwood also intends to perform various charging and discharging tests on the removed batteries to identify/confirm the failure mechanism(s) and to develop data supporting on-line discharge recovery and assessment. Braidwood Station is also actively working with the "AT&T Round Cell Nuclear Utility User's Council" in generating testing data and performing analysis in developing a better understanding of the high gravity round cell and its operating characteristics. Our test plan is being coordinated with other users and will be finalized shortly.