Commonwealth Edison
One First National Plaza, Chicago, Illinois
Address Reply to: Post Office Box 767
Chicago, Illinois 60690

August 21, 1984

Mr. Harold R. Denton, Director
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Washington, DC 20555

Subject: Byron Generating Station Units 1 and 2
Braidwood Generating Station Units 1 and 2
Diesel Generator 2A Availability
NRC Docket Nos. 50-454/455 and 50-456/457

Reference: September 6, 1982 letter from F. G. Lentine to H. R. Denton.

Dear Mr. Denton:

This letter provides additional information regarding the basis for proposed technical specification requirements on availability of the 2A diesel generator during the period of time when Unit 2 is still under construction. NRC review of this information is necessary in finalizing the Unit 1 technical specifications.

The auxiliary feedwater system reliability study which was conducted in response to FSAR question 10.53 demonstrated a conditional unavailability per demand of 9.8×10^{-5}. Since Byron and Braidwood are two unit stations, this analysis took credit for the availability of the A emergency diesel generator on the other of the two units. In one certain scenario, use of the other unit's A diesel generator significantly improves the overall auxiliary feedwater system reliability because it can be manually connected as a backup power source. During the short period when Unit 1 is operating and Unit 2 is still under construction, the 2A diesel generator will be available to cope with this scenario. It will not, however, be considered fully operable in the sense of normal technical specification requirements because all the Unit 2 support systems will not have been fully tested. Special technical specifications have, therefore, been proposed which would assure the availability of this diesel prior to the issuance of the Unit 2 operating license and the imposition of the full technical specification operability requirements.

The proposed technical specifications are based upon the need to manually start the 2A emergency diesel generator and run the 1A auxiliary feedwater pump for 1/2 hour. This action would be taken only during a shutdown when offsite power is lost, the 1A diesel generator fails to start and power the 1A motor driven auxiliary feedwater pump, and the 1B engine driven auxiliary feedwater pump also fails to start. The likelihood is very low that this scenario would be encountered during the short period between the completion of Unit 1 and Unit 2. To cover that eventuality, however, special surveillance requirements assure that the 2A diesel is available to run for at least 1/2 hour. This period of time is considered appropriate because:

B001
1/0

1) The failure of the 1A diesel to start would most likely be corrected within a few minutes. When diesels such as these fail to start, the problem is usually a relatively simple control system failure. Shift Operating personnel could be expected to troubleshoot and quickly restart the 1A diesel in such a situation.

2) The Westinghouse recirculating steam generators respond relatively slowly to a loss of auxiliary feedwater. The auxiliary feedwater reliability study assumed they would not boil dry for 20 minutes. Later analysis shows that steam generator dryout would take about 45 minutes. During this period the reactor would be protected by decay heat removal through natural circulation and steam release through the safety valves.

3) The diesel generator failure rate which was presumed in the Byron/Braidwood auxiliary feedwater reliability study is very conservative. The data base upon which it was established included many failures due to automatic trips that are bypassed in a true emergency start. More information is provided in Sections 1.5.1.1.6 of the Zion Probabilistic Safety Study.

4) There is a low probability that offsite power would be lost for any significant length of time. The Commonwealth Edison power transmission grid was shown to have superior reliability in the Zion Probabilistic Safety Study (see the referenced letter response to Question 11 of enclosure 3). The frequency of occurrence of the loss of offsite power event was 0.058 events per year in both the Zion PRA and the Byron Risk Study. This results in a system unavailability contribution of 5.7×10^{-6} per year. In the unlikely event of a complete transmission grid failure, offsite power could be restored quickly through one of the several transmission lines connected to the Byron ring bus from one of the several interties with neighboring grids or from one of our many jet and diesel fast start peaking units. In such a situation, system load dispatchers are instructed to give top priority to restoration of power to a nuclear plant without emergency power. This would normally be done in a matter of minutes through remote switching under the direction of the power supply office. In the Zion PRA it was shown that there was a 99.5% confidence level that either offsite power or the 1A diesel would be restored within 1/2 hour (see Section 1.3.2 and the response to BNL peer review Section 2.2).

Please address any further questions you may have regarding this matter to this office.

Very truly yours,

K. N. Kaseman for

T. R. Tramm
Nuclear Licensing Administrator

lm

9104N