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SUBJECT: Provides response to RAI re adequacy of delayed offsite power circuit for HB Robinson Steam Electric Plant, Unit 2.

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Carolina Power & Light Company

Robinson Nuclear Plant
3581 West Entrance Road
Hartsville SC 29550

Robinson File No.: 13510

Serial: RNP-RA/97-0075

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United States Nuclear Regulatory Commission

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**H. B. ROBINSON STEAM ELECTRIC PLANT, UNIT NO. 2
DOCKET NO. 50-261/LICENSE NO. DPR-23
RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION
REGARDING ADEQUACY OF DELAYED OFFSITE POWER CIRCUIT**

Gentlemen:

NRC letter dated February 14, 1997, transmitted a request for additional information regarding the adequacy of the delayed offsite power circuit for the H. B. Robinson Steam Electric Plant, Unit No. 2. The response to the request is enclosed.

Questions regarding this matter may be referred to me or Mr. H. K. Chernoff of my staff at (803) 857-1437.

Very truly yours,

T. M. Wilkerson
Manager - Regulatory Affairs

Enclosure

- c: Mr. L. A. Reyes, Regional Administrator, USNRC, Region II
Ms. B. L. Mozafari, USNRC Project Manager, HBRSEP
Mr. B. B. Desai, USNRC Senior Resident Inspector, HBRSEP

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H. B. ROBINSON STEAM ELECTRIC PLANT, UNIT NO. 2
RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION REGARDING THE
ADEQUACY OF THE DELAYED OFFSITE POWER CIRCUIT

Request 1

State whether you have performed an analysis to demonstrate that the delayed offsite power circuit can be established in sufficient time to prevent fuel design limits from being exceeded. If such analysis was performed, provide a summary of the analysis and any conclusions (e.g., adequacy of time limits and voltages, etc.).

Response 1

An analysis has not been performed to specifically demonstrate that a delayed offsite power circuit can be established in sufficient time to prevent fuel design limits (e.g., specified acceptable fuel design limits) from being exceeded, since there is no credit taken in the design basis for the backfeed lineup. The requirement for the electric power system to provide sufficient capacity and capability to assure that specified acceptable fuel design limits are not exceeded is contained in 10 CFR 50, Appendix A, "General Design Criteria For Nuclear Power Plants," Criterion 17, "Electric Power Systems." As stated in our letter dated October 5, 1979, "H. B. Robinson Unit No. 2 was constructed prior to the issuance of General Design Criterion 17," and, therefore, the requirements are not applicable to HBRSEP, Unit No. 2.

H. B. Robinson Steam Electric Plant (HBRSEP), Unit No. 2 received a Construction Permit on April 13, 1967, and received an Operating License on July 31, 1970. The original design basis did not require the use of backfeeding through the main and auxiliary transformers to provide a delayed source of off-site power. When HBRSEP was licensed the current General Design Criteria (GDC) contained in 10 CFR 50, Appendix A did not exist. The Final Safety Analysis Report (FSAR) contained a discussion of how HBRSEP, Unit No. 2 would comply with proposed GDC. The proposed GDC did not provide a requirement for two independent off-site power sources, nor did they have an explicit requirement to have a second off-site power circuit available to assure that specified acceptable fuel design limits were not exceeded, as has the current GDC 17.

There is a difference that shows the evolving nature of the GDC between the GDC to which HBRSEP, Unit No. 2 is compared in the FSAR and the GDC that were published in the Federal Register on July 11, 1967. The HBRSEP, Unit No. 2 GDC 39 states: "An emergency power source shall be provided and designed with adequate independency, redundancy, capacity, and testability to permit the functioning of the engineered safety features and the protection systems required to avoid undue risk to the health and safety of the public. The power source shall

provide this capacity assuming a failure of a single active component. (GDC 39)."

The GDC 39 published in the Federal Register on July 11, 1967 states as follows: "Alternate power systems shall be provided and designed with adequate independent, redundancy, capacity, and testability to permit the functioning of required engineered safety features. As a minimum, the onsite power system and the offsite power system shall each, independently, provide this capacity assuming a failure of a single active component in each power system."

Note that the GDC 39 to which HBRSEP, Unit No. 2 is committed does not require a single failure in the onsite power system and the offsite power system.

The capability for backfeeding was recognized in the Safety Evaluation Report (SER) issued by the NRC dated May 18, 1970, in support of the issuance of the HBRSEP, Unit No. 2 Operating License. The SER states in Section 3.8.1: "Our review indicated that the only portion of the offsite system vulnerable to the random failure of a single component (as opposed to a cascading blackout), is the single startup transformer. A failure of this transformer during normal reactor operation would not cause an accident. However, should a loss-of-coolant accident occur following a transformer failure, the engineered safety features would be dependent on the redundant diesel generators for power until disconnect links could be removed from the station generator to permit the backfeeding of offsite power to the auxiliary electrical system through the station main transformer. This would require about 8 hours to accomplish."

Note that the backfeeding capability is available, but not required, to mitigate an accident. This is recognized by the current Technical Specifications Section 3.7.3 which states: "Backfeeding the E1 and E2 safety related busses through the main and unit auxiliary transformers will occur only during cold shutdown, unless nuclear safety considerations require it to be done during hot shutdown." Backfeeding has been performed during refueling outages to allow maintenance of the startup transformer; however, it is not credited in the mitigation of any analyzed accident.

The HBRSEP, Unit No. 2 electric power distribution system has been the subject of much study from the late 1970s until the early 1990s. In letters dated May 7, 1984, January 31, 1991, and June 3, 1992, acknowledged that HBRSEP, Unit No. 2 does not meet GDC 17; however, our power distribution system has been found acceptable. In particular, NRC letter dated January 31, 1991, regarding single failure criterion related to electrical systems, discusses that the HBRSEP, Unit No. 2 design does not meet GDC 17.

In conclusion, an analysis to demonstrate that the delayed offsite power circuit can be established in sufficient time to prevent fuel design limits from being exceeded has not been performed. HBRSEP, Unit No.2 has the capability for backfeeding through the main and unit auxiliary transformer and uses this capability for maintenance of the startup transformer. No credit is taken for the backfeeding in the mitigation of any analyzed accident.

Request 2

Describe any procedures in place for implementing the delayed offsite power circuit when needed, and state whether CP&L has tested its capability to backfeed power with an allowable time limit. If so, state how often operators are trained on using the procedures and how long it takes to establish the backfeed.

Response 2

The procedure that contains instructions for implementing a backfeed through the unit auxiliary transformer is Operating Procedure (OP) - 603, "Electrical Distribution." Training is provided in the initial operator training program for reactor operators, and for outside auxiliary operators. Performance of this procedure is considered to be a Case 2 evolution in accordance with Plant Program Procedure (PLP) - 037, "Conduct of Infrequently Performed Tests or Evolutions." Case 2 evolutions normally require a pre-job briefing, and may require increased management attention in the form of a Management Designated Monitor. In a letter dated March 23, 1983, CP&L provided 16 hours as a revised estimate of the time to accomplish backfeeding; however, backfeeding through the main and auxiliary transformers is implemented during outages to allow performance of switchyard maintenance. During Refueling Outage 17 in 1996, as a planned evolution, establishment of backfeeding was scheduled for nine hours.

Request 3

The staff noted that HBR's Technical Specifications do not contain surveillance requirements regarding the delayed offsite power circuit. Explain how HBR periodically verifies its ability to establish offsite power within a specified time limit using the main and unit auxiliary transformers.

Response 3

Except as described above, HBRSEP, Unit No. 2 does not periodically verify the ability to establish offsite power within a specified time limit using the main and unit auxiliary transformers, and there is no credit taken in the mitigation of any analyzed accident for the backfeed lineup.