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 DIETZ, C.R. Carolina Power & Light Co.
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SUBJECT: Responds to NRC ltr re violations noted in insp rept
 50-261/93-07.C/As: plans have been established & procedures
 developed to perform testing on refueling interval frequency
 commencing w/upcoming refueling outage for Sept 1993.

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Carolina Power & Light Company

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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
NRC INSPECTION REPORT NO. 50-261/93-07 REPLY TO A NOTICE OF VIOLATION

Gentlemen:

Carolina Power and Light Company hereby provides this reply to the Notice of Violation identified within NRC Inspection Report 50-261/93-07.

Provided within the Enclosure are the reasons for the violation, a description of the corrective actions taken and planned, and the dates when full compliance will be achieved.

Should you have any questions regarding this matter, please contact Mr. J. L. Harrison at (803) 383-1433.

Very truly yours,

Charles R. Dietz
Vice President
Robinson Nuclear Plant

Enclosure

CTB:dwm

cc: Mr. S. D. Ebnetter
Mr. W. T. Orders
INPO

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REPLY TO A NOTICE OF VIOLATION

Severity Level IV Violation (RII-93-07-01)

Technical Specification (TS) 6.5.1.1.1.c requires written procedures be established for surveillance and test activities of safety-related equipment. TS 4.6.1.1 requires monthly that the emergency diesel generators (EDG) assume loads up to the nameplate rating. The nameplate rating was 2500 KW at 0.8 power factor (3125 KVA). Written procedures OST-401 and 409 were established to implement TS 4.6.1.1 test requirements.

Contrary to the above, OST-401 and 409 were not adequately established, in that, the test procedures tested the EDGs at a load less restrictive than the nameplate rating. The monthly tests were performed at 2500 KW with a power factor approaching 1.0.

Reply

1. The Reason for the Violation

Carolina Power and Light Company (CP&L) does not contest the subject violation.

H. B. Robinson Unit No. 2 (HBR2) TS 4.6.1.1 has utilized the term "nameplate rating" since the original issuance of the plant Operating License and TS in 1970. Since that time, the application of this TS to monthly EDG surveillance testing has utilized the continuous EDG load rating of 2500 kW as being equivalent to the EDG "nameplate rating." Over the operating history of the unit, this methodology was deemed to be an acceptable test of the EDG to satisfy its intended functions. In addition, this methodology has been observed by many different representatives of the NRC, including special inspections and the ongoing inspections of site resident inspectors. For example, this test methodology was reviewed under a special inspection of the emergency power system during a Safety System Functional Inspection (SSFI) conducted during March 9 through April 15, 1987. The report of this SSFI, NRC Inspection Report No. 50-261/87-06, dated June 18, 1987, identified no procedural weaknesses based upon monthly EDG surveillance testing to 2500 kW with no specified power factor.

In 1990, the NRC commenced performance of Electrical Distribution System Functional Inspections (EDSFI). As a result of these EDSFIs, on March 4, 1991, NRC Information Notice (IN) No. 91-13, "Inadequate Testing of Emergency Diesel Generators (EDGs)," was issued. Within this IN, a station was cited as having inadequate EDG test procedures since they did not demonstrate the capability of the EDG to carry accident kW and current loadings.

From September 23 through October 25, 1991, the NRC performed an EDSFI at HBR2. As a result, within NRC Inspection Report No. 50-261/91-21, dated January 10, 1992, Finding 91-21-09, "EDGs Not Tested at Name Plate Rating as Required by TS 4.6.1.1," was identified. This Finding was identified as an unresolved item, and a subsequent request was made by NRC Region II to the NRC's Office of Nuclear Reactor Regulation (NRR) for a position regarding the term "nameplate rating" as found within HBR2 TS 4.6.1.1. In March 1993, NRR provided NRC Region II with a written position that the term "nameplate rating" is equivalent to 2500 kW at a power factor of 0.8. Subsequent to the issuance of this NRR position, NRC violation 93-07-01 was issued in May 1993 by NRC Inspection Report No. 50-261/93-07.

In summary, and as described above, this violation can be attributed to a historical interpretation of TS 4.6.1.1 which resulted in a surveillance test acceptance criteria that utilized only the EDG continuous load rating of 2500 kW. This testing methodology had been viewed as satisfying the requirement to test up to the EDG "nameplate rating." This situation was further compounded by the wording of TS 4.6.1.1 and the associated TS Bases which are unclear and ambiguous, and fail to establish any specific or measurable EDG loading parameters which would constitute an acceptable EDG performance test. This ambiguity, combined with an evolving position regarding what constitutes an adequate EDG surveillance test, is the ultimate cause of this violation.

2. The Corrective Steps That Have Been Taken and the Results Achieved

In May 1991, following review of NRC IN No. 91-13, the HBR2 Technical Support Unit documented a concern regarding the ambiguity of the term "nameplate rating." Also, following review of this issue by the EDSFI Team, Adverse Condition Report (ACR) No. 91-375 was issued on October 25, 1991. Since this ACR noted that the EDGs had not previously been tested to their full "nameplate rating," the operability of the EDGs was called into question, resulting in the initiation of Operability Determination No. 91-023 on October 25, 1991. The operability of the EDGs was subsequently verified and documented, and Operability Determination No. 91-023 was resolved later on October 25.

In January 1992, the evaluation and root cause analysis of ACR No. 91-375 was completed. As a result of this evaluation, three corrective actions were identified:

- (1) Determine a safe and technically feasible methodology for testing the EDGs to their "nameplate rating." (As described below, activities were already in progress to support this item.)
- (2) Write new, or revise existing, plant surveillance testing procedures to incorporate "nameplate rating" testing of the EDGs.
- (3) Finalize a definition of the term "nameplate rating," as utilized in TS 4.6.1.1.

To address the primary concern associated with the development of a revised EDG testing methodology, in December 1991, Operations Surveillance Tests OST-401 and OST-409 were revised to load the EDGs to a power factor of less than 0.8. On December 12, 1991, the revised OST-401 was used to test EDG "A." During performance of this test, an attempt was made to assume the required kVA load by raising the Emergency Bus E1 voltage from its nominal value of 480 volts. However, in the process of achieving the required kVA loading and power factor, E1 Bus voltage increased to approximately 520 volts which exceeded the continuous operating voltage design limit of 506 volts for safety-related loads tied to the Emergency Bus. After subsequent evaluations of this testing and the excessive voltage experienced on the E1 Bus, it was decided that the redundant EDG "B" would not be tested in this manner, since the Emergency Bus E2 voltage during normal plant operation is approximately 20 volts higher than Bus E1.

The fact that the EDGs could not be loaded to less than a 0.8 power factor under routine testing conditions without exceeding the design voltage limits for Emergency Bus safety-related loads was considered significant. Although there was recognition that testing to "nameplate rating" was an important test for the EDG and its support systems, it was apparent that continued pursuit of this testing methodology without significant evaluation and changes could result in the degradation or damage of safety-related plant equipment. Also, based upon the potential to adversely affect safe plant operation and safety-related equipment, it was apparent that performance of such a test on a monthly interval basis was not within the intent of TS 4.6.1.1. Therefore, OST-401 and OST-409 were subsequently returned to their original testing methodology of loading the EDGs to 2500 kW independent of power factor. It should also be noted that, although the EDG monthly surveillance tests did not retain the methodology to test up to the EDG "nameplate rating," and even now do not contain this testing methodology, it is believed that the EDGs are capable of carrying the accident kW and current loadings. This belief is based upon the results of prior EDG special testing and an EDG loading analysis performed by the manufacturer.

In addition, the CP&L Nuclear Engineering Department (NED) has used the Auxiliary Systems Design Optimization Program (ASDOP) to run several computer simulations directed at determining the impact on the overall HBR2 electrical distribution system of loading the EDGs to 2500 kW at a power factor of 0.8. These simulations have determined that, even with the main generator at minimum voltage, and with the maximum allowable Emergency Bus loading, the resulting Emergency Bus voltage would be equal to or greater than 518 volts. Further, based upon actual field testing and ASDOP computer simulations, loading the EDG to 2500 kW at a power factor of 0.8 while the EDG is synchronized to its Emergency Bus will result in subjecting the safety-related Emergency Bus loads to voltages in excess of their maximum continuous operating voltage design limit of 506 volts.

It should also be noted that within CP&L's reply to the EDSFI Inspection Report, dated March 9, 1992, many of the above considerations were mentioned, and a commitment was made to "determine the optimum electrical distribution system configuration and loading methodology for performing this test on a refueling interval frequency." It is believed that the actions described above demonstrate a continuing effort to satisfy this commitment, and to perform EDG surveillance testing that will assure the reliability and availability of the EDG without jeopardizing or damaging other safety-related components or systems.

3. The Corrective Steps That Will Be Taken to Avoid Further Violations

Within CP&L's reply to the EDSFI Inspection Report it was acknowledged that the EDGs should periodically be tested to ensure their ability to carry accident kW and current loadings. Plans have been established and procedures are being developed to perform this testing on a refueling interval frequency commencing with the upcoming Refueling Outage which is currently scheduled to begin in September 1993. However, during the development of these testing procedures, it has been recognized that the analyzed accident load of 2610 kW exceeds the EDG continuous load rating of 2500 kW as specified within TS 4.6.1.4. Since this TS can be interpreted as prohibiting loading of the EDG above 2500 kW, performance of the accident load testing appears to be contingent upon revising TS 4.6.1.4.

In addition, to eliminate the ambiguity and confusion caused by the term "nameplate rating," TS 4.6.1.1 will be revised. It is intended that this revision will incorporate wording and requirements similar to those provided by the Improved Standard TS which were approved and issued by the NRC as NUREG-1431.

4. The Date When Full Compliance Will Be Achieved

Testing of the EDGs' ability to carry accident kW and current loadings will be performed prior to the end of Refueling Outage 15 which is currently scheduled to begin in September 1993. However, and as described above, the approval of this testing procedure appears to be contingent upon a revision to TS 4.6.1.4.

Proposed revisions to TS 4.6.1.1 and 4.6.1.4 are being developed and should be presented to the Plant Nuclear Safety Committee (PNSC) on or before June 30, 1993. Following PNSC approval, these revisions will be submitted to the NRC by July 28, 1993.