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Dockets Nos. 50-269, 50-270 and 50-287

Mr. William O. Parker, Jr.
Vice President - Steam Production
Duke Power Company
P. O. Box 33189
422 South Church Street
Charlotte, North Carolina 28242

Dear Mr. Parker:

We have reviewed your January 31, 1980 and June 4, 1980 submittals regarding the adequacy of offsite power systems and degraded grid voltage, which were in response to NRC letters dated August 8, 1979 and May 5, 1980. Our review has determined that sufficient detail has not been provided to enable us to complete our evaluation. Therefore, we request that you provide, within 45 days of your receipt of this letter, responses to the enclosed request for additional information.

Because of the scope of this request, it may be advantageous to conduct a conference call between NRR, NRR Consultants (EG&G) and members of your organization to clarify what information is needed. Please contact your NRC Project Manager to establish such a call if you deem one to be desired or if you have any other questions on this subject.

Since this request is related only to the Oconee Nuclear Station, the response affects fewer than ten respondants and, therefore, OMB clearance is not required under P. L. 96-511.

Sincerely,
*ORIGINAL SIGNED BY
JOHN F. STOLZ*

John F. Stolz, Chief
Operating Reactors Branch #4
Division of Licensing

Enclosure:
Request for Additional
Information

cc w/enclosure:
See next page

OFFICE	ORB#4:DL	C-ORB#4:DL					
SURNAME	PWagner/cb	JStolz					
	11/30/81	12/1/81					

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USGPO: 1981—335-9

Duke Power Company

cc w/enclosure(s):

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ENCLOSURE

REQUEST FOR ADDITIONAL INFORMATION REGARDING THE ADEQUACY OF STATION ELECTRIC DISTRIBUTION SYSTEM VOLTAGES

OCONEE UNITS 1, 2, AND 3

References

1. Duke Power letter, William O. Parker, Jr. to Harold R. Denton, dated January 31, 1980

2. Duke Power letter, William O. Parker, Jr. to Harold R. Denton, dated June 4, 1980

1. The scenario at Oconee where an outage of one startup transformer can automatically cause a remaining transformer to overload by 167% and bus voltages to drop below 85% is alarmingly similar to the situation which occurred at Arkansas Nuclear One. As ESG loads are added (Ref. 1, Fig. 4) motor voltages in some instances could be below 80%. At this voltage level, the staff is aware from reports at Millstone that some MCC contactors did not pick-up and this caused control transformers to overload and control fuses to blow. Also, if degraded voltages are sustained, motor heaters and possibly some motor circuit overcurrent protective devices will open and ESG loads will be dropped. Provide justification supported by analysis and data that substantiates your claim that there will not be spurious operation of controls, breakers or blown fuses (if used) during the postulated low voltage condition at the motors.

2. On page 4, paragraph 2 of Ref. 2, you indicate that the ESG motors can operate at 80% voltage for four hours with minimal loss of life. The staff is unable to corroborate this statement with published information. Provide your analysis, manufacturer's data and references to enable the staff to verify this statement. Data submitted should include manufacturer's curves of motor undervoltage versus temperature rise at rated loads, Arrhenius plots of expected life versus temperature, speed/torque curves, or results of tests performed by you or others.

3. In your January 31, 1980 submittal, response #5 states that MCC fuses will not blow when motors are operated at 90% nominal voltages (worst case condition of the Oct. 29, 1979 analysis). The worst case condition of the June 4, 1980 submittal produced voltage levels substantially lower than those produced by the October 29, 1979 analysis. Have the fuses, motor contactors, and control transformer been tested at these lower voltages to substantiate the statement in Ref. 2, page 5, paragraph III 4?

4. Justify that the motor-operated-valves will perform satisfactorily at the lowest voltages experienced at the 208 volt MCC's noted in the Reference 2 tables.

5. Provide your estimated date for submitting the results of your testing of valves and valve operators under degraded voltage (Ref. 2, page 4, paragraph 3).

6. Are there other 1E equipment such as battery chargers or electronic equipment which could impose a more severe voltage limitation on the 1E buses then the motors?

7. In Reference 2, Figures 1-4, 7, and 8, does the per unit voltage motor base take into account the feeder voltage drop from MCC to the motor? If not, then the per unit values in this column are overstated and should be recalculated considering feeder voltage drop.

8. What is the minimum pick-up voltage and hold-in voltage of the MCC contactors as determined by the manufacturer's tests (Ref. 2, Page 5, paragraph 4 and Ref. 1, item 3).

9. When the voltages of Ref. 2, tables 1 and 2 were recorded, what was the load on the distribution buses. (The load on the distribution buses should have been at least 30%.)

10. What assurances can you give that there will be close correlation between calculated and actual voltages at Units 1 and 2, based on the results of the Unit 3 correlation tests.

11. A voltage analysis using either CT4 or CT5 as the source of the 4160 volt ESG power for three units should be provided.

12. The proposed reduction in second-level undervoltage protection setpoints from 88% to 77% (80%-3% relay tolerance) is unacceptable unless manufacturers documentation or testing results by Duke Power Company can be provided for NRC review that clearly demonstrate that all Class 1E equipment can operate continuously at this degraded voltage level without damage or a significant reduction in equipment life.