

June 14, 1993

Docket Nos. 50-269, 50-270
and 0-287

Mr. J. W. Hampton
Vice President, Oconee Site
Duke Power Company
P. O. Box 1439
Seneca, South Carolina 29679

Dear Mr. Hampton:

SUBJECT: OFFSITE POWER FROM THE 100KV TRANSMISSION SYSTEM
(TACS M86233/M86234/M86235)

By letter dated April 14, 1993, you provided a discussion for NRC information of the acceptability of using the 100KV transmission system from the Central Switchyard as an offsite source of electrical power. Subsequently, you provided the NRC staff with the 10 CFR 50.59 evaluation and supporting calculations which evaluated the installation of degraded grid voltage relays in this system. On May 26, 1993, a conference call was held with members of your staff to discuss this use of Central Switchyard.

We have reviewed these documents and have a number of specific concerns with the proposed use of Central Switchyard as an offsite power source. These concerns are documented in the enclosure. We have two general areas of concern. First, the modification for installing degraded voltage relays and use of Central Switchyard may represent an unreviewed safety question. Secondly, the proposed line-up could result in Central Switchyard being part of the primary success path for mitigation of a Design Basis Accident. As such, technical specifications would be appropriate for the proposed change.

If you have questions regarding this matter, contact me at (301) 504-1495.

Sincerely,
ORIGINAL SIGNED BY:
Leonard A. Wiens, Project Manager
Project Directorate II-3
Division of Reactor Projects-I/II
Office of Nuclear Reactor Regulation

Enclosure:
Comments on the Use of
Central Switchyard

cc w/enclosure:
See next page

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Oconee Nuclear Station

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COMMENTS ON THE USE OF
CENTRAL SWITCHYARD

1. The licensee's 10 CFR 50.59 evaluation acknowledges the existence of NRC recommendations contained in NRC Generic Letter, "Adequacy of Station Electric Distribution Systems Voltages," dated August 8, 1979. Further, the licensee states that the modification meets the NRC recommendations for offsite sources contained in that generic letter. Our review indicates that the modification and supporting documentation fall short of those recommendations in the following areas:
 - Calculation OSC-3585 assumes one or two of the Oconee units are in shutdown (steady-state) when the third unit experiences a LOCA. This is contrary to the recommendations of the generic letter which states that a LOCA on one unit with the other units simultaneously shutting down (transient) should be analyzed. Also it is not clear if all loads resulting from automatic and manual actions were included in the licensee's analysis.
 - The generic letter recommends that all contingency plans which could result in a reduced grid voltage be considered. Calculation OSC-3585 assumes that Central Switchyard is at the lowest voltage value experienced over a ten year period. It is not clear if the licensee considered the effects of losing the 235kV tie on the 100kV system. Also it is not clear if the calculation encompasses the voltage drop and other loads on the 100kV Central Switchyard.
 - Calculation OSC-3585 shows that the reactor building cooling fan (RBCF) receives only .6705 per-unit voltage (69.9 % of nominal) which is below NEMA standards. The generic letter recommends that any identified inadequacy be addressed with immediate remedial action. The licensee has not provided a discussion of the apparent inadequacy and corrective action associated with the RBCF.
 - The generic letter recommends an analysis covering possible overvoltage conditions. The licensee uses the highest tap on transformer CT5. Overvoltage may be a problem and apparently has not been addressed by the licensee.

2. The licensee has installed new degraded voltage relays to support the use of the Central Switchyard. This new hardware should comply with the pertinent recommendations contained in the NRC Generic Letter dated June 2, 1977, regarding degraded voltage conditions. Our review indicates that the licensee's degraded grid circuitry fails to meet those recommendations in the following areas:
 - The generic letter states that the setpoints (time and voltage) be established from an analysis. Calculation OSC-4513 was provided by the licensee as the basis for the setpoint determination. Calculation OSC-2444 is referenced as a determining document. That calculation apparently provides a voltage drop study when Lee

Gas Turbine is used as an "onsite" source. Although we have not been provided a copy of that calculation, we feel that it may have the same shortcomings as expressed above for Calculation OSC-3585.

- Calculation OSC-4513 refers to other calculations for a discussion of the 9 second time delay. We have not been provided a copy of these other calculations which are required to satisfy the generic letter.
 - The generic letter recommends that technical specifications be proposed to include limiting conditions of operation, surveillance requirements, trip setpoints with minimum and maximum limits, and allowable values for the degraded voltage hardware. Our review indicates that some technical specifications have been proposed as part of the licensee's technical specification upgrade program, but these only partially satisfy the recommendations.
3. The new degraded voltage hardware installed for this modification should follow the latest staff guidance in Branch Technical Position PSB-1, "Adequacy of Station Electric Distribution System Voltages," contained in the Standard Review Plan (SRP), NUREG-75/087. This guidance is a refinement of the staff position contained in the NRC Generic Letter dated June 2, 1977. Our review indicates that the licensee's design for this circuitry fails to meet the SRP guidance in the following areas:
- The licensee has installed degraded voltage circuitry with one set of relays with a 9 second time delay and a setpoint of 97.4kV which rings an alarm. Another set of relays with a setpoint of 95.8kV trips the breakers from CT5 following the 9 second delay. This is counter to our position which requires one set of undervoltage relays with one setpoint and two separate time delays; the first is for an alarm, the second for the protective action. A safety injection signal should bypass the second time delay.
 - The licensee has installed the voltage sensors (potential transformers) between CT5 and the breakers for the 100kV transmission circuit and considers this not to be safety-related. This is counter to the NRC position which requires all Class 1E equipment.
 - The newly installed hardware is redundant, but not for each standby bus. This does not meet the SRP guidance which specifies an independent scheme for each division and coincident logic on a per bus basis.
 - The newly installed degraded voltage circuitry can be defeated by manual switches. It is not clear if annunciation for these switches has been provided in the control room as specified by the position.

- The position, like the Generic Letter dated June 2, 1977, recommends technical specifications to be proposed. As noted in Paragraph 2 above, only partial technical specifications have been proposed.
 - The position, like the Generic Letter dated August 8, 1979, recommends an analysis of possible overvoltage conditions. As noted in Paragraph 1 above, this apparently has not been addressed by the licensee.
4. The licensee's 10 CFR 50.59 evaluation does not address all possible failure modes for the new hardware installed with this modification. Specifically, the required closing of the SK breakers (part of the onsite emergency underground power path) on a loss of voltage could be prevented or delayed during accident conditions by the new degraded voltage hardware. This could represent an unreviewed safety question.
 5. In the conclusions section of the licensee's 10 CFR 50.59 evaluation, it is stated that no technical specifications are required. As stated under Paragraph 2 above, the generic letter recommends technical specifications to be proposed and the licensee has indeed proposed technical specifications (although only partial) for the modification.
 6. Our review of the plant's existing Technical Specifications indicates that most of the electrical Technical Specifications (3.7.1 through 3.7.9) require the SK breakers as part of the underground path to be operable. Because of the possible unreviewed safety question mentioned in Paragraph 4 above, the operability of the SK breakers may be in doubt because of the new hardware modification and its interlocking effect on the SK breakers.
 7. Many of the existing Oconee Technical Specifications for the electrical systems require that when used, the 100kV transmission circuit from Lee Gas Turbine must be separated from the 100kV system grid and its offsite non-safety-related loads. This could imply that the 100kV transmission circuit (including CT5) may not be considered operable when it is connected to the 100kV system grid.