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TO: Mr. Edson G. Case

FROM: Duke Power Company
Charlotte, North Carolina
William O. Parker, Jr.

DATE OF DOCUMENT: 12/09/77

DATE RECEIVED: 12/21/77

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DESCRIPTION

(1-P)

PLANT NAME: Oconee Units 1-2-3
RJL 12/22/77

ENCLOSURE

Consists of response to NRC request for additional information concerning Seismic Capability of the Emergency Power Path....

(2-P)

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DUKE POWER COMPANY
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WILLIAM O. PARKER, JR.
VICE PRESIDENT
STEAM PRODUCTION

December 19, 1977

TELEPHONE: AREA 704
373-4083

Mr. Edson G. Case, Acting Director
Office of Nuclear Reactor Regulation
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Attention: Mr. A. Schwencer, Chief
Operating Reactor Branch #1

Reference: Oconee Nuclear Station
Docket Nos. 50-269, -270, -287

Dear Sir:

My letter of November 7, 1977 transmitted information concerning the details of the seismic design of the overhead emergency power path at Oconee Nuclear Station. Attached, please find responses to questions 12 and 13 of your letter dated September 13, 1977.

Very truly yours,

William O. Parker, Jr.

RLG:ge
Attachment

Oconee Nuclear Station

Seismic Capability of the Emergency Power Path
Request for Additional Information

Question 12

In your response to Q2 it should be noted that the National Electric Safety Code (NESC) heavy loading provides for ice and wind loading, and does not include the effects of seismic loading. Since the load combinations referred to in section 5A.2.2 of the Appendix 5A to the FSAR are notapplicable to the transmission line and the towers, appropriate load combinations and the corresponding acceptance criteria should be chosen from the sections 3.8.4.II.3 &5 of the Standard Review Plan, and clearly identified in your response. The model analysis for the tower, in an unloaded condition, to predict the seismic loading is not acceptable. The effect of seismic loading consists of two parts: (1) the effect of inertia loading on both towers and the transmission line; for the towers the input may be the ground response spectra, but the input for the lines should be the appropriate amplified response spectra corresponding to the attachment point, (2) the effect of ground displacement; the ground displacement would cause stretching of the lines and this in turn would impose corresponding loading on the towers. The stresses from (1) and (2) above should be combined by the absolute sum method to obtain the seismic loading which in turn should be used in appropriate load combinations along with other loads. Provide specific responses to the previous Q2 including the concerns expressed in the clarifications detailed above.

Response

As indicated in the response to previous Question Q2, the transmission line towers are designed in accordance with the National Electric Safe Code (NESC) heavy loading criteria.

These towers have been analyzed using the absolute sum method for the combined loadings of 1) the NESC heavy loads, 2) inertia forces of the tower and lines for a 0.15 g earthquake, and 3) the forces resulting from ground displacement (a ground displacement of three inches was considered in this analysis, i.e., it was assumed that the two dead-end towers moved six inches apart at their bases).

The analysis of the tower design using the above combined loadings demonstrated the adequacy of the tower to withstand the postulated 0.15 g seismic event.

Question 13

In your response to Q2 failure of secondary bracing members is predicted. In combination with Q12 above it should be noted that whenever members are predicted to fail, subsequent analyses must be performed on the model that excludes the failed members, and the resulting stresses and displacements must meet appropriate acceptance criteria.

<u>Response</u>

Analyses have been performed on the model of the dead-end tower excluding the secondary bracing members that were predicted to fail. These analyses demonstrate that the tower's compression bracing enables it to withstand the additional stresses resulting from the predicted failure of certain secondary members during the postulated 0.15 g seismic event.