

DUKE POWER COMPANY

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VICE PRESIDENT  
NUCLEAR PRODUCTION

January 17, 1984

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Mr. Harold R. Denton, Director  
Office of Nuclear Reactor Regulation  
U. S. Nuclear Regulatory Commission  
Washington, D. C. 20555

Attention: Ms. E. G. Adensam, Chief  
Licensing Branch No. 4

Re: Catawba Nuclear Station  
Docket Nos. 50-413 and 50-414

Dear Mr. Denton:

Section 8.4.10 of the Catawba Safety Evaluation Report discusses Confirmatory Item 38, 100% Load Reduction Capability. In response to this item, please find attached a revised response to Question 430.110.

Very truly yours,

*H.B. Tucker*  
Hal B. Tucker

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Attachment

cc: Mr. James P. O'Reilly, Regional Administrator  
U. S. Nuclear Regulatory Commission  
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NRC Resident Inspector  
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Section 10.4.4.1 of the FSAR indicates Catawba can accept up to 100% turbogenerator load reduction without tripping the reactor or main steam relief valve actuation. Since this allows the turbine generator to remain on line powering station loads following a loss of the offsite power system, describe the magnitude and effect of the transient and steady state voltage and frequency output of the main generator on the station loads (especially on Class 1E loads) starting with and following load reduction.

Response:

If the turbine generator is subjected to a 100% load reduction, the maximum voltage on the output of the generator is estimated to be approximately 129% of rated with the period of the excursion where voltage is above 110% of rated being approximately 3.2 seconds. The maximum frequency is estimated to be approximately 107.5% of rated. The minimum values of voltage and frequency do not exceed normal equipment ratings.

Per industry standards, power equipment such as 4 KV switchgear, 4160/600 V transformers, and 600 V switchgear is designed to withstand voltages in excess of 1.4 per unit for a duration of 60 seconds. Motors are typically subjected to hi-pot tests at 2150 volts for volt motors, and 9000 volts for 4 KV motors for a duration of 60 seconds. Although industry standards which define voltage ratings/ limits are not available on every type of equipment, industry experience has not indicated a problem with voltage excursions following load rejections. the frequency excursion would result in a motor speed increase of 7½%; however, NEMA standards require that motors be designed to withstand overspeeds of 20% for short durations without damage.

Although the turbine generator is designed to accept a 100% load rejection, it is extremely unlikely that the unit will be subjected to a 100% load reduction while remaining on line powering station loads. This is especially the case since the unit is tied to the switchyard through two separate circuits which terminate in separate bays of a breaker-and-a-half arrangement.