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UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D. C. 20555

July 1, 1980

Docket No. 50-213

Mr. W. G. Council  
Nuclear Engineering & Operations  
Connecticut Yankee Atomic Power Company  
P.O. Box 270  
Hartford, Connecticut 06101

Dear Mr. Council:

You are requested to provide the information specified in the enclosure to this letter regarding the adequacy of station electric distribution system voltages for the Haddam Neck Plant. A copy of the enclosure was telecopied to you on June 19, 1980. Receipt of your response is requested within 45 days of your receipt of this letter.

Sincerely,

*Dennis M. Crutchfield*  
Dennis M. Crutchfield, Chief  
Operating Reactors Branch #5  
Division of Licensing

Enclosure:  
Request for Additional  
Information

cc w/enclosure:  
See next page

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Mr. W. G. Council

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cc w/enclosure:  
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REQUEST FOR ADDITIONAL INFORMATION  
HADDAM NECK  
ADEQUACY OF STATION ELECTRIC DISTRIBUTION SYSTEM VOLTAGES

- Ref. 1: NRC Letter (W. Gammill) to all Power Reactor Licensees, dated August 8, 1979
- Ref. 2: Attachment 1 of Northeast Utilities letter (W. G. Council) to NRC (D. L. Ziemann), dated November 15, 1979
- Ref. 3: Connecticut Yankee Atomic Power Co. letter (D. C. Switzer) to NRC (A. Schwencer), dated July 21, 1977

1. Guidelines 1 and 7 (Ref. 1) require that a separate analysis be performed for all available connections to the offsite network and that the analysis be adequately documented for each condition analyzed. Ref. 2 does not fully meet these requirements. To confirm the acceptability of the voltage conditions on the station electric distribution system, submit adequate voltage analysis documentation for each case and condition analyzed in Ref. 2 and additional documentation, specifically:
  - a. Requirements of Guidelines 6 and 11 as well as 5 and 13 (Ref. 1) must be included in each separate case analyzed. These guidelines refer to the use of minimum and maximum expected grid voltages, maximum loads assumed for each analyzed case and a list of assumptions made for each analyzed case.
  - b. Supply the calculated voltages for all low voltage AC (less than 480 volts) Class 1E buses (including all available source connections) for each analyzed case. Do these buses supply instrumentation or control circuits as required by GDC 13? If so, is all equipment capable of sustaining the analyzed voltages without

blowing fuses, overheating, and without affecting the equipment's ability to perform the required function?

- c. Per Guidelines 3 and 9 (Ref. 1), compare the effect of starting and running the largest non-Class 1E load on all Class 1E buses and loads with the required voltage range for normal operation of all Class 1E equipment (starters, contactors, motors, etc.) for each available connection of offsite power. This comparison should occur after the Class 1E buses are fully loaded.
  - d. By the use of disconnect links or other means, is it possible to backfeed from the 345 KV switchyard through the main transformer (319) and the service station transformer (309) to the Class 1E buses? If this is a viable connection, an analysis is required for this source connection or identify limiting conditions of operation.
2. Ref. 2, Page 5, Paragraph 2 refers to a proposal for installing a second second-level of undervoltage protection for the Class 1E equipment when only one of two service station transformers is available (389 or 399). The operation of this second second-level protection scheme is stated to be the same as that of the first second-level scheme detailed in Ref. 3. The design of the second-level of undervoltage protection (NRC Staff Position 1, June 2, 1977 letter) is to protect all Class 1E equipment from grid voltage degradation under all modes of operation. Explain in detail why this second second-level protection scheme is necessary.

3. Ref. 2, Page 3 identifies that overvoltages can occur on the Class 1E buses under minimum load and high offsite grid voltage conditions. Installation of overvoltage alarms will be added to initiate operator corrective action. Credit will be given for this corrective action only if the overvoltage monitors and alarms are Class 1E and in the interim period of correction, the overvoltage condition does not shorten equipment life or affect the Class 1E equipment's ability to perform the required function. Provide documentation which demonstrates the equipment can meet these overvoltage conditions. Also, provide the calculated overvoltages on all Class 1E equipment for each case analyzed.
4. Per Guidelines 10 and 12 (Ref. 1), submit the undervoltage protection scheme setpoints (voltage and time delay) in terms of Class 1E nominal bus voltage, not in terms of switchyard voltage as stated in Ref. 2.