

NORTHEAST UTILITIES



THE CONNECTICUT LIGHT AND POWER COMPANY
WESTERN MASSACHUSETTS ELECTRIC COMPANY
HOLYOKE WATER POWER COMPANY
NORTHEAST UTILITIES SERVICE COMPANY
NORTHEAST NUCLEAR ENERGY COMPANY

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September 1, 1982

Docket No. 50-213
50-336
B10552

Director of Nuclear Reactor Regulation
Attn: Mr. Dennis M. Crutchfield, Chief
Operating Reactors Branch #5
Mr. Robert A. Clark, Chief
Operating Reactors Branch #
U. S. Nuclear Regulatory Commission
Washington, D.C. 20555

Gentlemen:

Haddam Neck Plant
Millstone Nuclear Power Station, Unit No. 2
Degraded Grid Protection for Class 1E Power Systems

In a telephone conversation with the NRC Staff on June 8, 1982, Connecticut Yankee Atomic Power Company (CYAPCO) and Northeast Nuclear Energy Company (NNECO) were requested to address certain concerns the Staff had regarding degraded grid voltage issues at the Haddam Neck Plant and Millstone Unit No. 2.

One concern dealt with response procedures for a degraded grid condition. This concern will be addressed in future correspondence. The remaining concerns are answered in the Attachments.

We trust this is responsive to the Staff's request.

Very truly yours,

CONNECTICUT YANKEE ATOMIC POWER COMPANY
NORTHEAST NUCLEAR ENERGY COMPANY

W. G. Council
Senior Vice President

R. P. Werner
Vice President
Generation Engineering
and Construction

A015

ATTACHMENT I
HADDAM NECK PLANT
DEGRADED GRID VOLTAGE PROTECTION

AUGUST, 1982

HADDAM NECK PLANT
DEGRADED GRID VOLTAGE PROTECTION

Concern: The basis for the 4 hour and 24 hour time limits used for operator response before requiring shutdown for level 2 and level 3 degraded voltage.

Response: The 24 hour level 3 response time was chosen to allow sufficient time for a considered response to the situation. Adequate voltage is present for continued operation for an extended period of time and for required shutdown operation.

The 4 hour time limit for a level 2 response allows sufficient time for CONVEX to improve system voltage without resorting to drastic measures such as load shedding. Voltage corrections in this case could be made by adjusting VAR flows or by bringing another generator on line. The slightly degraded nature of the voltage will have no negative impact on safe plant operation while measures are being taken to improve voltage. The concern about operating in this alarm mode with voltage significantly below level 2 will be addressed by the alarm response procedures currently being generated.

Concern: If all four service water pumps are operating and trip due to a degraded voltage condition and should the diesels start automatically due to a spurious SI signal, cooling water will not be available for the diesels.

Response: Since the overload elements in the circuit breakers are of the dashpot variety and reset in a matter of seconds once the breaker has tripped the pumps can be restarted immediately from the main control board. The operator will know of the pump trips because the circuit breakers annunciate when they trip. Control power is not affected by a degraded voltage condition. Operator action should not be necessary, however, because the rapid reset of the overload elements will allow the service water pump circuit breakers to automatically close when the sequence timer operates at 33 seconds.

ATTACHMENT II
MILLSTONE UNIT NO. 2
DEGRADED GRID VOLTAGE PROTECTION

AUGUST, 1982

MILLSTONE UNIT NO 2
DEGRADED GRID VOLTAGE PROTECTION

Concern: If all three service water pumps are operating and trip due to overload caused by a degraded voltage condition and should the diesels start automatically due to a spurious SI signal, cooling water will not be available for the diesels.

Response: There is not normally a need to run all three service water pumps at one time, as these pumps are arranged in a swing installed spare arrangement. Thus, only two of the motors would be subjected to a possible degraded voltage, with the third pump remaining available to cool the diesel generators.

Additionally, the relay setpoints for protection of these motors are calibrated to trip at 200% of full load current. This corresponds to a voltage which would be below that required to initiate loss of offsite power protective functions. Thus, the motors would not trip on overload due to a degraded voltage. To prevent significant loss-of-life due to operation with an overload, the motor protection provides an alarm at 125% of rated current.

Since the motors alarm at 125% of rated current, will not lockout due to a degraded voltage induced overload, and a spare pump is available even if the other two are damaged, diesel generator cooling will be available in the event the diesel generators are required to operate.