September 14, 1990

Docket No. 50-245

MEMORANDUM FOR: John F. Stolz, Director
Project Directorate I-4
Division of Reactor Projects - I/II

FROM: Michael L. Boyle, Senior Project Manager
Project Directorate I-4
Division of Reactor Projects - I/II

SUBJECT: FORTHCOMING MEETING WITH NORTHEAST UTILITIES (TAC 60207)

DATE & TIME: Wednesday, September 26, 1990
10:00 am - 4:00 pm

LOCATION: One White Flint North
Room 14-B13
Rockville, Maryland

PURPOSE: To discuss the Millstone 1 undervoltage protection design.
See attached discussion points.

PARTICIPANTS:

NRC	NU
J. Stolz	P. Hiner, et al.
M. Boyle	
F. Rosa	
J. Knight	
J. Lazevnick	

original signed by Michael Boyle

Michael L. Boyle, Senior Project Manager
Project Directorate I-4
Division of Reactor Projects - I/II

Attachment:
As stated

cc: w/Attachment
See next page

PDI-4:LA	PDI-4:PM	PDI-4:D
SNorris	MBoyle:dr	JStolz
9/14/90	9/14/90	9/14/90

*Meetings between NRC technical staff and applicants or licensees are open for interested members of the public, petitioners, intervenors, or other parties to attend as observers pursuant to "Open Meeting Statement of NRC Staff Policy," 43 Federal Register 28058, 5/28/78.

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

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MILLSTONE UNIT 1 UNDERVOLTAGE PROTECTION SPLIT-LOGIC DESIGN DISCUSSION POINTS

In its July 20, 1990 letter and other past correspondence, Northeast Nuclear Energy Company (NNECO) spoke of problems with its proposed undervoltage protection logic at Millstone Unit 1 which it attributed to the "split-logic design" (design would transfer a single division to emergency power upon a loss of normal power [LNP] to only that division). They stated that:

> "The revised design resulted in operator confusion due to the significantly different unit response to a loss of offsite power. NNECO was concerned with the operators' ability to assess the developing scenario in time to prevent events such as serious level transients, since the reactor would not be directly scrammed by the new scheme, but rather would scram some time later due to a process variable exceeding its setpoint."

> "In the final analysis, NNECO concluded that these concerns were significant enough that the new scheme should not be placed into service without, at a minimum, the addition of a turbine generator or reactor trip initiated directly as a result of low voltage."

As a result, NNECO's final design proposal for the undervoltage protection at Millstone 1 did incorporate a reactor trip initiated directly as a result of a low voltage (less than 40%) on buses 14A, 14B, 14C, or 14D. The new design however, also eliminated the split-logic concept resulting in a design that would no longer automatically transfer a safety division to its standby power source if a LNP occurred only on that one division. No specifics were given with regard to problems with the split-logic design separate from the direct scram issue (which seems to have been resolved by the direct scram on loss of voltage to bus 14A, 14B, 14C, or 14D) other than to attribute it to the assymetrical bus arrangement at Millstone 1 and a statement that, "NNECO's probabilistic safety evaluation and testing of operator response on the plant

specific simulator showed that such a design would potentially have adverse impacts on plant safety." NNECO also stated that they were "concerned that the use of a split-bus operational capability could well lead to iterative design changes with repeated "bandaid" type fixes as specific problems were identified in partial LNP scenarios."

In order for the staff to properly assess NNECO's concerns with the split-logic design, they should be prepared to discuss:

1. The specific reactor system, electrical system, or other system responses to a partial LNP that Millstone Unit 1 operators are having a problem dealing with. In their discussion they should be prepared to identify the specific equipment involved and should assume that the reactor will be automatically scrammed when voltage is less than 40% on buses 14A,B,C, or D.

2. Why the system responses or the operators ability to deal with them are worse for a LNP to one division with subsequent automatic reenergization from its standby power source, than it is when the LNP occurs on the one division with no automatic reenergization from the standby power source. It should be assumed that the reactor will be automatically scrammed when voltage is less than 40% on buses 14A,B,C, or D.

3. Why the system responses or the operators ability to deal with them are worse for a LNP to one division with subsequent automatic reenergization from its standby power source, than it is when the LNP occurs on both divisions with subsequent automatic reenergization of both divisions from their standby power sources. It should be assumed that the reactor will be automatically scrammed when voltage is less than 40% on buses 14A,B,C, or D.

4. Why proper training of the operators and a comprehensive analysis of the split-logic design wouldn't alleviate NNECO's concerns with the split-logic concept, since the heart of the issue seems to rest with the differences between this approach and the plant's original design and NNECO's unfamiliarity with the new approach.

DISTRIBUTION FOR MEETING NOTICE DATED:

Facility: Millstone 1

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