

# NORTHEAST UTILITIES



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

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March 3, 1980

Docket No. 50-336

Mr. Boyce H. Grier, Director  
Region I  
Office of Inspection and Enforcement  
U. S. Nuclear Regulatory Commission  
631 Park Avenue  
King of Prussia, PA 19406

- References:
- (1) B. H. Grier letter to W. G. Council dated February 8, 1979 forwarding I&E Bulletin No. 79-01.
  - (2) B. H. Grier letter to W. G. Council dated June 6, 1979 forwarding Supplement No. 79-01A to I&E Bulletin No. 79-01.
  - (3) B. H. Grier letter to W. G. Council dated January 14, 1980 forwarding I&E Bulletin No. 79-01B.
  - (4) W. G. Council letter to Norman C. Mosely dated June 12, 1979.
  - (5) W. G. Council letter to Norman C. Mosely dated September 4, 1979.
  - (6) W. G. Council letter to Norman C. Mosely dated October 31, 1979.
  - (7) W. G. Council letter to Norman C. Mosely dated January 18, 1980.
  - (8) Meeting at the Offices of I&E, Region I, King of Prussia, PA, February 7, 1980.

Gentlemen:

Millstone Nuclear Power Station, Unit No. 2  
Environmental Qualification of Class 1E Equipment

Reference (1), as supplemented by Reference (2), requested Northeast Nuclear Energy Company (NNECO) to respond to NRC concerns regarding the environmental qualification of Class 1E equipment. NNECO responded to this request in Reference (4) as updated by References (5), (6), and (7).

In Reference (3), under the provisions of 10CFR50.54(f), the NRC Staff has requested additional information to facilitate their evaluation of the adequacy of the environmental qualification of Class 1E electrical equipment. The information requested by Reference (3), as clarified in Reference (8), pertains only to that Class 1E equipment subjected to a harsh environment as a result of:

- (1) a LOCA or High Energy Line Break (HELB) inside containment, or
- (2) a HELB outside containment,

and required by the plant's FSAR or emergency procedures to be functional following the event.

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In response to Item (1) of Reference (3), NNECO provides Attachment 1. Included in Attachment 1 is a partial listing of all Class 1E electrical systems, identified components of the systems, and their locations within the plant. NNECO is continuing to review plant drawings in an effort to compile a complete list of all Class 1E electrical systems, components, and locations. NNECO intends to update Attachment 1 on or before the submittal date required by Item (7b) of Reference (3). Please note that the information contained in the two (2) right-hand columns of Attachment 1 was not requested by Reference (3). This information has been developed by NNECO for internal purposes, and may be disregarded by the Staff.

In response to Item (2) of Reference (3), NNECO provides Attachment 2, a listing of each Class 1E electrical component requiring qualification as described in Reference (3), identified to date. The following information is included in the Attachment:

- o environment for which the component is required to operate
- o environment to which the component has been qualified to operate
- o qualification documentation references

This information is provided in the format of Attachment 3 of Reference (3) and includes qualification for temperature, pressure, humidity, radiation, and chemical sprays.

The adverse effects on Class 1E electrical equipment inside the containment associated with the radiological consequence of a LOCA are addressed using the results of a plant-specific analysis performed by NNECO for Millstone Unit No. 2. Values for the radiation dose specification for the equipment located within the containment were derived from the plant-specific analysis.

Radiation dose specifications for Class 1E electrical equipment located outside containment were calculated as part of NNECO's response to Section 2.1.6.b of NUREG-0578, Three Mile Island Short-Term Lessons Learned. Post-accident dose rates in areas outside the containment from systems processing primary coolant and containment sump fluids were calculated and reported in the W. G. Council letter to H. R. Denton dated December 31, 1979.

In response to Item (3) of Reference (3), NNECO provides Attachment 3, accident condition profiles for areas inside and outside the containment which may be subjected to adverse environmental conditions following a LOCA or HELB, and which contain Class 1E equipment as described in Reference (3). Included in the Attachment are temperature and pressure profiles inside the containment which exist following the design basis event, a double-ended pump suction break. The temperature and pressure profiles are identified as Profile 18 and Profile 19, respectively.

The curves were extrapolated beyond the time interval of previous analyses to ambient conditions. The extrapolation was performed utilizing data generated in the analysis of the 2.0 ft<sup>2</sup> hot leg break design basis accident as this analysis was not terminated until ambient conditions were achieved. NNECO has determined that the mass and energy releases for both events during the time periods in question (10<sup>3</sup> - 10<sup>5</sup> seconds) are similar and will generate the same containment response with respect to temperature and pressure.

This approach has produced temperature and pressure profiles for the duration of the harsh environment precipitated by a LOCA which fulfill the intent of Reference (3).

For those areas located outside the containment in which Class 1E electrical equipment is exposed to adverse environments resulting from HELB, NNECO has reviewed Amendments 17, 28, and 33 of the Millstone Unit No. 2 Final Safety Analysis Report in which the HELB outside containment was analyzed. Areas containing Class 1E electrical equipment as described in Reference (3), identified to date, will experience insignificant (i.e.,  $< 10^{\circ}\text{F}$  increase) adverse environmental conditions resulting from a HELB outside containment with the exception of the East and West Main Steam Isolation Valve (MSIV) Rooms.

The MSIV Rooms will experience a temperature excursion should a Main Steam Line Break (MSLB) occur in the rooms. Included in Attachment 3 are temperature Profiles 20 and 21 for the West and East MSIV Rooms, respectively. These curves were derived from Amendments 17, 28, and 33 of the Millstone Unit No. 2 FSAR.

The pressure transient experienced in the East and West MSIV Rooms following a MSLB is negligible ( $< 1.8$  psig peak and return to ambient conditions within 13 seconds), and, therefore, no pressure profiles are included.

In certain instances, complete information is not yet available. Efforts are continuing on an expedited basis to identify any remaining Class 1E electrical equipment, as described in Reference (3), not included in Attachment 1.

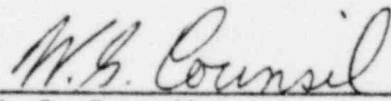
Areas with environmental qualification documentation omitted in Attachment 2 will be updated on an ongoing basis as information becomes available from the equipment vendor and as information becomes available from ongoing reviews of existing documentation.

It is NNECO's intention to provide updated lists of identified Class 1E electrical equipment, as described in Reference (3), and updated lists of qualification documentation, in the 90-day submittal required by Reference (3). This submittal is scheduled for docketing by April 17, 1980. Included in the 90-day response will be a schedule for the resolution of those items which remain open at that time. To date, no reportable discrepancies have been identified.

We trust you find the attached information responsive to your requests.

Very truly yours,

NORTHEAST NUCLEAR ENERGY COMPANY

  
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W. G. Council  
Vice President

Attachment

STATE OF CONNECTICUT )  
                                  )  
COUNTY OF HARTFORD )

ss. Berlin

*March 3, 1980*

Then personally appeared before me W. G. Council, who being duly sworn, did state that he is Vice President of Northeast Nuclear Energy Company, a Licensee herein, that he is authorized to execute and file the foregoing information in the name and on behalf of the Licensees herein and that the statements contained in said information are true and correct to the best of his knowledge and belief.

*Sheila M. Oates*  
Notary Public

My Commission Expires March 31, 1981