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October 31, 1980

Docket No. 50-336
A01204

Mr. Darrell G. Eisenhut, Director
Division of Licensing
Office of Nuclear Reactor Regulation
U. S. Nuclear Regulatory Commission
Washington, D.C. 20555

References: (1) D. G. Eisenhut letter to W. G. Counsil dated September 19, 1980, transmitting the Revised Order for Modification of License.
(2) B. H. Grier letter to W. G. Counsil dated January 14, 1980, transmitting I&E Bulletin No. 79-01B.

Gentlemen:

Millstone Nuclear Power Station, Unit No. 2
Environmental Qualification of Electrical Equipment

By Reference (1), the NRC issued an Order and Modification of License, effective immediately, which requires Northeast Nuclear Energy Company (NNEC) to submit information regarding the environmental qualification of safety-related electrical equipment by November 1, 1980. Specifically, the NRC ordered the submittal of information which fully and completely responds to the Staff's requests specified in Reference (2).

The purpose of this submittal is to satisfy the requirements of Reference (1), in a timely fashion, by providing information regarding the environmental qualification status of safety-related electrical equipment in accordance with the Commission's guidance in this matter. It is recognized that total conformance to all of the applicable environmental qualification requirements is not provided for all safety-related electrical equipment subjected to harsh environments resulting from a Loss-of-Coolant Accident (LOCA), a Main Steam Line Break (MSLB) inside containment, or High Energy Line Breaks (HELB) inside and outside containment. However, there exists no evidence that the equipment will fail to perform its design function or that public health and safety is compromised.

Where total qualification information is not incorporated into the attached report, justification for continued operation until total conformance can be achieved is provided. Justification for continued operation is founded on several considerations, some of which are generic, others unique to specific components. Generic considerations are discussed on the following pages. Component-specific justification is provided on equipment summary sheets in Appendix II of this report. Particular emphasis is directed towards the following bases and assumptions utilized in preparing the attached report.

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(1) Where available, qualification documentation for electrical equipment associated with TMI requirements has been included. The current absence of documentation for equipment not required to mitigate the effects of a design basis event or equipment which is not yet installed is acceptable and is consistent with the requirements of I&E Bulletin No. 79-01B, Supplement 3. Qualification documentation is an integral part of post-TMI requirements and will be provided in accordance with lessons-learned requirements or other commitments previously made.

(2) There are instances where safety-related electrical equipment will have performed and completed its safety function within the first several seconds of the start of an accident. Recognition of this fact provides reasonable justification for continued operation until fully qualified replacements can be procured and installed. The NRC requirement for qualification of equipment for a period of at least one hour beyond its functional requirement is arbitrary and has not been supported from a technical standpoint. Substantive industry comments were forwarded to the NRC on this matter subsequent to the initial publication of NUREG-0588. Disposition of these comments would provide an appropriate vehicle for resolving the divergent points of view which now exist between the NRC Staff and the industry.

(3) The development of the list of equipment requiring qualification included equipment required to achieve a cold shutdown condition. However, the fundamental objective of the program is to demonstrate that safe shutdown, i.e., hot shutdown, can be successfully achieved. This approach is consistent with NRC requirements as stated in Supplement 1 to I&E Bulletin No. 79-01B, which was issued on February 29, 1980, and Supplement 3 which was issued on October 24, 1980. In addition, the ability to achieve a cold shutdown condition using safety-grade equipment was not a design requirement for Millstone Unit No. 2. It is NNECO's intention to provide additional information documenting environmental qualification of electrical equipment required for cold shutdown by February 1, 1981.

(4) In certain cases, justification for continued operation recognizes the existence of safety-related equipment which is redundant to equipment lacking one or more facets of the requisite qualification. Although redundancy considerations are affected by the absence of full qualification for both redundant components, it is unlikely that such failures would occur simultaneously. In many instances, the redundant equipment has significant physical separation which would introduce additional conservatism into the specification of environmental profiles. These conservatisms are in addition to those inherent in the profile development in that worst-case initial conditions and assumptions were utilized for those calculations.

(5) The mention of electrical equipment in emergency operating procedures does not, of itself, necessitate qualification of such components in accordance with all applicable NRC requirements. The emergency operating procedures were not developed by considering safety-related components to the exclusion of all others. Although safety-related equipment was given priority, other systems and components are justifiably involved. A realistic evaluation of plant incidents would result in situations and hostile environments significantly different from those assumed for the purposes of conducting the environmental qualification program. The absence of full qualification for certain components which fall into this category is not, by itself, sufficient grounds to classify the equipment inoperable or to remove these components from being utilized in the procedures. Specific applications of this philosophy are identified in the Appendix of System Component Evaluation Work Sheets (SCEWS) and the associated justifications for continued operation where applicable.

(6) The section of qualification test reports addressing chemical spray is normally based upon an assumption of there being a buffered spray solution rather than pure borated water. A preliminary engineering evaluation suggests that this difference is not significant, and is, therefore, not considered to be grounds for disqualification at this time. It is noted that the containment spray system is redundant to the containment air recirculation system regarding design basis containment heat removal demands. Even without the containment spray system, operation of three of the four available CAR fans is sufficient for containment heat removal.

(7) Although the qualification requirements address a design life of 40 years, it is emphasized that the equipment currently in service is typically only 8 - 12 years old, and in some cases, is much newer. This provides additional assurance of its ability to function as required.

(8) Although many components were installed prior to the qualification requirements for aging, the effects will be identified by a materials susceptibility analysis. The results of the review will be included in the considerations for equipment replacement on a case-by-case basis, recognizing the requirement for fully qualified equipment by June 30, 1982.

(9) In all instances where the qualification documentation is less than complete, there exists no evidence that the equipment will fail to perform its design function, or that public health and safety is compromised.

Consideration of a historical summary of this issue provides additional insight into understanding the difficulties encountered by NNECO in addressing this concern to the satisfaction of the Staff with optimum utilization of limited resources. Issuance of new criteria during the latter stages of this segment of the qualification program has impeded its resolution.

Since the issuance of I&E Bulletin No. 79-01, NNECO has devoted significant resources to the resolution of this issue. However, upon the issuance of I&E Bulletin No. 79-01B, NNECO embarked upon a comprehensive qualification effort to assemble the requested information, support the audit activities of the Staff, and to support the Staff's schedule. Section A of the attached report elaborates on the numerous and significant changes in NRC requirements which have occurred during the past 18 months. It is unfortunate that such changes continue to occur even during the final stages of preparation of this document. The issuance of Supplement 3 to I&E Bulletin No. 79-01B on October 24, 1980 is supportive of this position. The myriad of Staff guidance documents on this subject and the significant technical judgments which must be exercised render it extremely difficult to ascertain what level of qualification documentation would constitute indisputable conformance with Reference (1). NNECO has endeavored to comply with its interpretation of the intent of the Staff requirements. Specifically, the purpose of the attached report is to assure that all equipment which is required to function in a harsh environment will, in fact, do so. The absence of full and complete compliance to the Staff requirements is judged to be acceptable, as in these instances, justification is provided for continued operation. Where appropriate, commitments have been made to complete a replacement program as soon as practicable before June 30, 1982, assuming procurement delays do not prohibit replacement by this date. In the May 23, 1980 Memorandum and Order, the Commission stated that:

> "We believe that current Commission requirements in . . . environment qualification areas and those actions we order today provide reasonable assurance that the public health and safety is being adequately protected during the time necessary for corrective action."

Very substantial progress towards total equipment qualification documentation has been made by NNECO since the date of issuance of this Order, which further supports the reasonableness and appropriateness of the Commission's determination that public health and safety is being adequately protected.

In summary, in accordance with Commission requirements, it is NNECO's intention to have all necessary electrical equipment fully qualified by June 30, 1982. In many instances where a replacement strategy has been identified, the replacement process is intended to be completed as much before this deadline as possible.

Based upon the information in the attached report entitled "Environmental Qualification of Electrical Equipment -- Millstone Unit No. 2", as clarified and supplemented by the above information, NNECO concludes that a full and complete response to Reference (1) is hereby provided.

Very truly yours,

NORTHEAST NUCLEAR ENERGY COMPANY

W. G. Counsil
Senior Vice President

Attachments

STATE OF CONNECTICUT )
) ss. Berlin Oct. 31, 1980
COUNTY OF HARTFORD )

Then personally appeared before me W. G. Counsil, who being duly sworn, did state that he is Senior 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

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