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

NOV 9 1979

Docket No. 50-358)

Mr. Earl A. Borgmann
Vice President - Engineering
The Cincinnati Gas and Electric Company
P. O. Box 960
Cincinnati, Ohio 45201

Dear Mr. Borgmann:

SUBJECT: ENVIRONMENTAL QUALIFICATION OF CLASS IE INSTRUMENTATION AND ELECTRICAL EQUIPMENT (WM. H. ZIMMER NUCLEAR POWER STATION, UNIT 1)

During our review of the Wm. H. Zimmer Nuclear Power Station, Unit 1 application for an operating license we have been evaluating the environmental qualifications of Class IE instrumentation and electrical equipment. This evaluation is being performed on a generic basis as well as plant specific both for equipment supplied by the NSSS supplier as well as equipment supplied for the Balance-of-Plant. As a result of our evaluation we have requested and you have supplied information regarding this matter. The information provided by you is substantial and is presented in sections of the Final Safety Analysis Report as well as by reference to Westinghouse Topical Reports and specific equipment testing reports.

As you know, requirements for environmental qualification of Class IE instrumentation and equipment have been evolving as a result of considerable effort expended by both the staff and nuclear industry. As a result of these efforts we have developed an interim position regarding environmental qualifications. A draft copy of this position is enclosed.

Prior to completion of our review of the qualification related documentation you have submitted as part of the Diablo Canyon application, we plan to assess the degree to which the qualification programs described in that document action comply with the guidelines contained in our interim position. As part of this assessment, we plan to identify that equipment which was not qualified in accordance with our guidelines and, provided it is justified, we will establish a basis for the acceptability of these deviations. To assist us in completing this task promptly, we request that you provide the information identified in the Enclosure.

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This information should allow us to complete our evaluation and make the determination that the environmental qualification of Class IE instrumentation and electrical equipment is acceptable.

Please inform us within seven days after receipt of this letter of your schedule for providing this information.

Sincerely,

John F. Stolz

John F. Stolz, Chief
Light Water Reactors Branch No. 1
Division of Project Management

Enclosure:
Request for Additional
Information

cc: See next page

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ENCLOSURE

ADDITIONAL REQUEST FOR INFORMATION

(Equipment Qualification)

1. The FSAR Tables that identify the operational requirements of equipment which must function during and subsequent to the design basis accidents are general and are not sufficiently complete for purposes of documenting equipment qualification parameters. Therefore, provide a table listing of all Class 1E safety-related equipment and appropriate qualification related data for each as noted in the attachment. This table should include all equipment located both inside and outside of containment, including balance-of-plant and nuclear steam system supplied equipment.

Where components have been qualified by an equipment system test, identification of the equipment is sufficient, i.e., individual components need not be listed. Equipment components should be identified where qualified by separate tests or analysis. Where more than one item of a given type is used, it is only necessary to present the required information for one representative item of that type for the worst case environment.

For equipment located outside containment which may not have been qualified to abnormal environmental conditions, the environmental design requirements for this equipment should be provided and noted as such in column 5. For each area of the plant where such equipment is located the normal operating extremes in environmental conditions should be provided and noted as such in column 4. A footnote should be provided for each such area to provide the basis that the normal operating extremes in environmental conditions will not be exceeded. Such basis should include the quality of environmental control systems, their redundancy, sources of power and cooling, and operating requirements to maintain suitable environmental conditions during all modes of plant operation. The monitoring of enviornmental conditions in such areas and of the equipment controlling such environments should also be addressed to provide assurance that such conditions are maintained.

2. IEEE Std. 323-1971 does not specifically address aging mechanisms as a consideration in the qualification of safety related electrical equipment. Subsequently, IEEE Std. 323-1974 addressed aging in the sequence of factors to be considered. While for many components, aging may not play a significant role in the ability of a component to withstand the effects of an abnormal or accident environment and still perform its required function; there are certain materials which may be subjected to degradation over a long period of time. It is the staff's position that applicants with qualification programs for safety-related electrical equipment, conducted in accordance with IEEE Std. 323-1971, should undertake an investigation of the electrical equipment to ensure that significant aging mechanisms do not exist which could invalidate the conclusions of prior qualification. Sources of information, specifically material manufacturers data, should be consulted as a part of this review. Therefore, you are requested to conduct such an evaluation and to report your findings at the earliest opportunity. For any equipment for which significant aging mechanisms are identified, provide the justification and time interval for acceptable use of this equipment which does not invalidate its prior qualification or provide other proposed alternatives such as requalification or replacement with qualified equipment and not subject to aging concerns.

EXHIBIT [illegible]
ENVIRONMENTAL QUALIFICATION OF ELECTRICAL EQUIPMENT

1	2	3	4	5	6	7	8	9	10
Type of Equipment/ Location(8)	Manufacturer	Model No. or Identification No. (9)	Abnormal or Accident Environment(1)	Environment to Which Qualified(2)	Operability Requirements (3)	Operability Demonstrated (4)	Accuracy Requirements (5)	Accuracy Demonstrated (6)	Qualification Report and Method (7)

1) Temperature and pressure as a function of time, time interval for containment sprays, and total integrated radiation dose for equipment location. Include submergence if applicable. Reference may be made to figures in FSAR or other docketed material for pressure and temperature envelope. Other information should be listed in this table.

2) Temperature and pressure, as a function of time, time interval containment sprays simulated, and total integrated radiation dose for which equipment was qualified. If the same piece of equipment was not subjected to all environmental conditions, describe separate effects testing and justify. Include submergence test if applicable. Reference may be made to figures for qualification envelopes or actual test conditions for pressure and temperature conditions noted in qualification reports submitted for staff review. Other information should be listed in this table.

[illegible] ipment is required to operate during and subsequent to a design basis event consistent with plant safety analysis. Distinguish between trip functions and post accident monitoring for sensors and transmitters if accuracy requirements differ for these functions.

4) Time that equipment operability was demonstrated by qualification method. Distinguish between trip functions and post accident monitoring for sensors and transmitters if accuracy requirements differ for these functions.

5) Provide the accuracy requirements for sensors and transmitters for trip functions and post accident monitoring as used in plant safety analysis. Note applicability of each if they differ.

6) Accuracy for sensors and transmitters should distinguish between trip functions and post accident monitoring if requirements differ for these functions.

7) Method should indicate test, analysis or combination as applicable. If qualification considered aging include in this column the qualified life and accelerated aging time and temperature conditions used.

8) For BWR containment, specify upper or lower compartment.

9) Model or identification number should be adequate to define specific equipment identity (do not provide plant specific tag item number).