PDR-016

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

October 14, 1982

Diane Curran, Esquire
HARMON & WEISS
1725 I Street, N.W. - Suite 506
Washington, DC 20006

IN RESPONSE REFER
TO FOIA-82-426

Dear Ms. Curran:

This is in response to your letter dated September 10, 1982, in which you requested, pursuant to the Freedom of Information Act, copies of all documents considered or relied upon by the Commission (1) in promulgating the final rule on environmental qualification published at 47 FR 28363 on June 30, 1980, and (2) in connection with the proposed rulemaking on environmental qualifications published at 47 FR 2876 on January 20, 1982. You also requested copies of SECY-82-207(A), (B), (C), and any other amendments to SECY-82-207.

In response to your request, copies of the documents listed on Appendix A, and identified with a single asterisk (*), have been sent to the NRC Public Document Room (PDR) located at 1717 H Street, N.W., Washington, DC, where they will be available for public inspection and copying. The documents listed without an asterisk are being reviewed for a releasability determination and we will communicate with you again concerning them.

Documents 14 and 59 of Appendix A (identified with triple asterisks (***)) contain information which constitutes advice, opinions and recommendations of the staff. This information is being withheld from public disclosure pursuant to Exemption 5 of the Freedom of Information Act (5 U.S.C. 552(b)(5)) and 10 CFR 9.5(a)(5).

Pursuant to 10 CFR 9.9 and 9.15 of the Commission's regulations, it has been determined that the information withheld is exempt from production or disclosure, and that its production or disclosure is contrary to the public interest. The persons responsible for the denial of Appendix A document 14 are the undersigned and Mr. Richard C. DeYoung, Director, Office of Inspection and Enforcement. The person responsible for the denial of Appendix A document 59 is Mr. Guy H. Cunningham, Executive Legal Director, Office of the Executive Legal Director.

The denial by Mr. Richard C. DeYoung and myself may be appealed to the Commission's Executive Director for Operations within 30 days from the receipt of this letter. As provided in 10 CFR 9.11, any such appeal must be in writing, addressed to the Executive Director for Operations, U.S. Nuclear Regulatory Commission, Washington, DC 20555, and should clearly state on the envelope and in the letter that it is an "Appeal from an Initial FOIA Decision." The denial by Mr. Guy H. Cunningham may be appealed within 30 days to the Commission and should be addressed to the Secretary of the Commission.

As Mr. Frank W. Karas of my staff discussed with you by telephone on September 28, 1982, and in accordance with your request, we have enclosed the complete list of documents we identified as being subject to your request although 33 of the 76 documents identified are still under review. This has been done to provide you with the opportunity to promptly inspect the documents released to date and yet be aware of the overall sequence of the additional documents which will be the subject of our next letter to you.

Appendix B lists some additional documents and transcripts which are available in the PDR in response to your items one and two.

Sincerely,

J. M. Felton, Director
Division of Rules and Records
Office of Administration

Enclosures: As stated

Appendix A

*1.	3/2/81	Memo to Mult. Add. from Morrison - Proposed Rulemaking and Associated Regulatory Guide 1.89**8103310008 (70 pages)
*2.	3/17/81	Memo to Morrison from Sniezek - Standard Review Request - Proposed Rulemaking and Associated Regulatory Guide 1.89 - (1 page)
*3.	3/25/81	Memo to Rosztoczy from Watt - Proposed Rulemaking and Associated Regulatory Guide - (4 pages)
*4.	5/4/81	Memo to Knighton from Sullivan - Proposed Rulemaking, "Environmental Qualification of Electric Equipment for Nuclear Power Plants," (RS 025-1) and Regulatory Guide 1.89 (RS 042-2) (1 page)
*5.	5/11/81	Memo to Knighton from Rosztoczy - Proposed Rulemaking and Regulatory Guide - (4 pages)
*6.	6/17/81	Memo to Fraley from Minogue - Proposed Rulemaking and Regulatory Guide - (64 pages)
*7.	6/16/81	Memo to Arlotto from Ross - Package to ACRS on Proposed EQ Rule - (3 pages)
*8.	7/27/81	Memo to Kerr from Fischer - Subcommittee on Electrical Systems Meeting of July 22, 1981 - (7 pages)
*9.	8/7/81	Memo to ACRS Members from Savio - August 7, 5:00-6:00 pm Discussions on the Qualification of Electrical Equipment, Tab 9 - (20 pages)
*10.	---	Schedule for August 7, 1981 Discussion on Environmental and Seismic Qualification of Electrical Equipment Important to Safety, 5:00-6:00 pm - (4 pages)
*11.	8/7/81	Proposed Regulatory Guide 1.89, Rev. 1 - Draft 3 - (53 pages)
12.	8/21/81	Note to Chairman Palladino from Aggarwal - (30 pages)
13.	9/3/81	Memo to Chilk from Bradford - SECY-81-486 - Petition for Extension of Deadline for Environmental Qualification of Class IE Electrical Equipment - (2 pages)
***14.	9/4/81	Memo to Minogue from Stello - Proposed Rulemaking, "Environmental and Seismic Qualification of Electrical Equipment for Nuclear Power Plants - (1 page)
15.	9/11/81	Memo to Dircks from Bradford - Seismic Qualification of Electrical Equipment Important to Safety**8111120677 - (1 page)

*16.	9/14/81	Letter to Chairman Palladino from Vandenburgh - Request Commission consideration of NRC Staff's planned program on equipment qualification**8112300009 - (5 pages)
*17.	9/18/81	Memo to Bradford from Dircks - Seismic Qualification of Safety-Grade Electrical Equipment in Diablo Canyon**8111120669 (2 pages)
*18.	9/22/81	Memo to Those on Attached List from Aggarwal - Proposed Rulemaking, "Environmental and Seismic Qualification of Electric Equipment for Nuclear Power Plants**8110080388 - (28 pages)
*19.	9/23/81	Memo to Case/Stello from Ross - EQ Rule - (2 pages)
*20.	9/30/81	Memo to Aggarwal from Felton - Regulatory Flexibility Statement in Environmental and Seismic Qualification of Electric Equipment for Nuclear Power Plant Proposed Rule - (2 pages)
*21.	10/9/81	Memo to Mult. Add. from Aggarwal - Proposed Rule, "Environmental and Seismic Qualification of Electric Equipment for Nuclear Power Plants" - Draft Dated October 8, 1981 - (35 pages)
*22.	10/19/81	Memo to Dircks from Aggarwal - Proposed Rule, "Environmental Qualification of Electric Equipment for Nuclear Power Plants" - (28 pages)
23.	10/20/81	Memo to Dircks from Chilk - Petition for Extension of Deadline for Environmental Qualification of Class 1E Electrical Equipment (SECY 81-486) - (6 pages)
24.	10/21/81	Memo to Chilk from Palladino - SECY 81-245 - Interim Amendments to 10 CFR Part 50 Related to Hydrogen Control and Certain Degraded Core Considerations - (1 page)
*25.	11/6/81	Memo to Commissioner Ahearne from Aggarwal - SECY 81-603 - (48 pages)
*26.	11/18/81	Memo to Dircks from Chilk - Staff Requirements - Briefing on SECY81-504, Equipment Qualification Program Plan, and SECY 81-603/ 603A, Proposed Rulemaking, "Environmental Qualification of Electric Equipment for Nuclear Power Plants"**8112100626 (3 pages)
*27.	11/24/81	Memo to Kopeck from Aggarwal - Proposed Rulemaking, "Environmental Qualification of Electric Equipment for Nuclear Power Plants" **8112110041 - (3 pages)
28.	11/30/81	Memo to Chilk from Roberts - SECY-81-603B - (1 page)
29.	12/2/81	Memo to Ahearne from Dircks - SECY 81-504 AND SECY 81-603 Your Memorandum dated November 17, 1981**8201120008 (6 pages)
*30.	12/9/81	Memo to Johnston from Vollmer - December 18 Briefing for Commissioner Bradford on Seismic Qualification - (1 page)
*31.	12/10/81	Memo to Mult. Add. from Stello - Equipment Qualification Rulemaking - (3 pages)
32.	12/11/81	Memo to Commission from Bradford - Proposed Rule on Environmental Qualification - SECY 81-603B - (5 pages)

33. 12/14/81 Memo to Chilk from Ahearne - SECY-81-603B - (5 pages)

34. 12/14/81 Memo to EDO from Ahearne - December 2, 1981 Memorandum: SECY 81-504 And SECY 81-603 - (1 page)

35. 12/17/81 Memo to Chilk from Gilinsky - SECY 81-603B - (1 page)

*36. 12/18/81 Memo to Kopeck from Aggarwal - Proposed Rulemaking, "Environmental Qualification"**8201150123 - (3 pages)

*37. 12/17/81 Memo to Bradford from Palladino - Proposed Rule on Environmental Qualification - SECY 81-603B**8201060398 - (7 pages)

*38. 12/17/81 Memo to Stello from Arlotto - Equipment Qualification Rulemaking (5 pages)

*39. 12/21/81 Memo to Commission from Dircks - Proposed Rule on Environmental Qualification of Electric Equipment**8201220033 - (32 pages)

*40. 12/29/81 Memo to Stello from Denton - Equipment Qualification Rulemaking - (1 page)

41. 1/6/82 SECY 81-603B - Proposed Rulemaking - Environmental Qualification of Electric Equipment for Nuclear Power Plants - (18 pages)

*42. 1/8/82 Memo to Felton from Minogue - Request forPublishing Federal Register Notice of Proposed Rule, "Environmental Qualification of Electric Equipment forNuclear Power Plants" - (1 page)

*43. 1/15/82 Letter to Mult. Add. from Minogue - Proposed Rulemaking**8202050446 (2 pages)

*44. 1/18/82 Letter to Thompson from Felton - Proposed Rulemaking - (15 pages)

45. 1/20/82 Memo to Ahearne from Dircks - December 14, 1981 Memorandum: SECY 81-504 And SECY 81-603**8202180082 - (4 pages)

*46. 1/21/82 Memo to Arlotto from Sullivan - Background Information on Proposed Revision to RG 1.89 - (3 pages)

*47. 2/11/82 Letter to Palladino from Reynolds - Proposed Rulemaking **8201010034 - (3 pages)

*48. 2/19/82 Letter to Mult. Add. from Arlotto - RG 1.89**8203050137 - (1 page)

*49. Undated Supporting Statement for 10 CFR 50 "Environmental Qualification of Electric Equipment for Nuclear Power Plants" - (3 pages)

*50. 3/2/82 Letter to Palladino from Reynolds - SECY 81-504, Rev.1, Equipment Qualification Program Plan - (3 pages)

*51. 3/8/82 Letter to Glenn from Palladino - NPC Comments on S 1080 **8204160204 - (7 pages)

*52. 3/8/82 Memo to Scott from Cameron - Request for OMB Clearance of Proposed Recordkeeping Requirement - (6 pages)

53. 3/15/82 Memo to EDO from Ahearne - Environmental Qualification of Electric Equipment--Justification for Continued Operation**8204130511 (1 page)

*54. 3/16/82 Memo to Dircks from Aggarwal - Proposed Rule, "Environmental Qualification of Electrical Equipment for Nuclear Power Plants " Comment Period - (3 pages)

*55. 3/15/82 Letter to Reynolds from Chilk -Response to 2/11/82 Letter - (3 pages)

*56. 3/17/82 Letter to Steptoe from Aggarwal - Proposed Rulemaking - (1 page)

*57. 4/16/82 Memo to Fraley from Minogue - Final Rule, Section 50.49 of 10 CFR Part 50 "Environmental Qualification of Electric Equipment for Nuclear Power Plants" - (37 pages)

*58. 4/26/82 Letter to Dale and Mult. Add. from Minogue - Proposed Rulemaking - (9 pages)

**59. 5/3/82 Memo to Aggarwal from Shields - Comments on EQ Rule - (40 pages)

*60. 5/4/82 Note to Tom Rehm from Aggarwal - Chronology Environmental Qualification Rule - (4 pages)

*61. 5/12/82 Letter to Palladino from Shewmon - Rulemaking on Environmental Qualification of Electric Equipment - (2 pages)

*62. 5/14/82 Note to Mult. Add. from Aggarwal - Section 50.49 EQ Rule - (4 pages)

*63. 5/14/82 Memo to Aggarwal from Felton - DRR Review of Final Rule Concerning Environmental Qualification of Electric Equipment for Nuclear Power Plants; 10 CFR Part 50 - (22 pages)

*64. 5/19/82 Memo to Dircks from Stello - Minutes of CRGR Meeting No. 13 - (3 pages)

65. 6/9/82 Memo to Commissioners from Dircks - Final Rule, "Environmental Qualification of Safety-Related Electric Equipment for Nuclear Power Plants"**8206220059 - (2 pages)

66. 6/10/82 Memo to Dircks from Chilk - SECY 82-207 - Final Rule - (2 pages)

*67. 6/17/82 Letter to Winkler from Aggarwal - Final Rule - (2 pages)

68. 6/21/82 Memo to Chilk from Asselstine - Extension of June 30, 1982 Deadline for Environmental Qualification of Safety Related Electric Equipment SECY 82-207B - (1 page)

*69. 6/25/82 Memo to Mult. Add. from Aggarwal - Final Rule - (7 pages)

70. 6/25/82 Memo to Dircks/Bickwit from Chilk - SECY 82-207/82-207A - Final Rule - (2 pages)

*71. 6/30/82 Federal Register Notice - Environmental Qualification of Electric Equipment (2 pages)

*72.	7/9/82	Memo to Arlotto from Felton - Review of Draft Final Rule, Dated 6/30/82, on the Environmental Qualification of Electric Equipment - (1 page)
73.	7/12/82	Memo to Aggarwal from DeYoung - Response to Mr. Chilk's Memorandum Pertaining to Section 50.49 to 10 CFR Part 50, Environmental Qualification of Electric Equipment Important to Safety for Nuclear Plants - (31 pages)
74.	8/8/82	Memo to Chilk from Palladino - SECY-82-207C - Final Rule, "Environmental Qualification of Electric Equipment Important to Safety for Nuclear Power Plants - (1 page)
75.	9/2/82	Memo to Commission from Shields - Draft Final Rule "Environmental Qualification of Electric Equipment Important to Safety for Nuclear Power Plants, SECY 82-207C/207D - (3 pages)
*76.	9/10/82	Letter to Palladino from Reynolds - NRC Staff's Proposed Rule Regarding Environmental Qualification of Electrical Equipment **8208010040 - (20 pages)

* = Document Placed in the NRC Public Document Room
** = NRC Accession Number
*** = Document WITHHELD per FOIA Exemption 5 - Contains Pre-decisional (advice, opinions and recommendations)

Appendix B

Documents available in the Public Document Room:

DATE	SUBJECT - DESCRIPTION	FROM	TO
10/20/81	Proposed Rulemaking, "Environmental Qualification of Electric Equipment for Nuclear Power Plants" SECY-81-603	W. Dircks	Commissioners
11/04/81	Proposed Rulemaking, "Environmental Qualification of Electric Equipment for Nuclear Power Plants" SECY-81-603A	W. Dircks	Commissioners
11/16/81	Proposed Rulemaking, "Environmental Qualification of Electric Equipment for Nuclear Power Plants" SECY-81-603B	W. Dircks	Commissioners
04/06/82	Public comments on Proposed Rule. 10 CFR §50.49, "Environmental Qualification of Electrical Equipment for Nuclear Power Plants"	69 different letters	NRC
05/24/82	RULEMAKING ISSUE Final Rule, "Environmental Qualification of Safety Related Electrical Equipment for Nuclear Power Plants" SECY-82-207	W. Dircks	Commissioners

Transcripts available in the Public Document Room:

DATE	SUBJECT - DESCRIPTION
07/22/81	Advisory Committee on Reactor Safeguards Subcommittee on Electrical Systems
08/07/81	Advisory Committee on Reactor Safeguards 256th General Meeting
11/10/81	Briefing on SECY-81-504, Equipment Qualification Program Plan, and SECY-81-603/603A, Proposed Rulemaking, "Environmental Qualification of Electric Equipment for Nuclear Power Plants"
05/05/82	Advisory Committee on Reactor Safeguards Subcommittee for Safety-Related Equipment
05/07/82	Advisory Committee on Reactor Safeguards 265th General Meeting
06/01/82	Briefing on Final Rule, Environmental Qualification of Safety Related Electric Equipment for Nuclear Power Plants

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File 5028

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

MAR 0 2 1981

MEMORANDUM FOR: R. B. Minogue, Director, RES
N. C. Moseley, Director, DROI, IE(2)
H. D. Thornburg, Director, DRCI, IE(2)
T. E. Murley, Director, DST, NRR(5)

FROM: W. M. Morrison, Assistant Director for General Engineering Standards, SD

SUBJECT: PROPOSED RULEMAKING AND ASSOCIATED REGULATORY GUIDE 1.89

Your assistance is requested in reviewing the enclosed documents and providing me with your comments. The following is a summary of this review request:

1. Title: (1) Proposed Rulemaking, "Environmental Qualification of Electric Equipment for Nuclear Power Plants." (RS 025-1)
(2) Regulatory Guide 1.89 (Revised), "Qualification of Electric Equipment for Light-Water-Cooled Nuclear Power Plants." (RS 042-2)

2. Requested Action: G. W. Knighton, NRR, is requested to forward the enclosed copies to Messrs. Z. Rosztoczy, A. Szukiewicz, and F. Rosa for their review and comment.

3. Completion Date: March 20, 1981

4. Background: The proposed rulemaking is being undertaken in response to the Commission's Memorandum and Order (CLI-80-21), dated May 23, 1980, relating to the environmental qualification of electric equipment, including consideration of backfit.

Regulatory Guide 1.89 has been concurrently revised and contains methods acceptable to NRC Staff for meeting the Commission's requirements for the environmental qualification of electric equipment important to safety.

In view of the above, the review of both documents, Rulemaking and Regulatory Guide 1.89, should be accomplished concurrently. Upon publication of the effective rule and Regulatory Guide 1.89, the DOR Guidelines and NUREG-0588 will be withdrawn.

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5. Point of Contact: Rulemaking - Mr. Satish K. Aggarwal, RSSB
x35921

Reg. Guide - Mr. A. S. Hintze, RSSB
x35913

W. M. Morrison, Assistant Director
for General Engineering Standards
Office of Standards Development

Enclosures:
Commission Paper, Draft dated 2/26/81
Enclosure "A" - Notice of Proposed
Rulemaking
Enclosure "B" - Value/Impact Statement
Enclosure "C" - Draft Public Announcement
Enclosure "D" - Reg. Guide 1.89 (Revised)
Working Paper C, dated 2/24/81

FEB 26 1981

For: The Commissioners

From: William J. Dircks, Executive Director for Operations

Subject: PROPOSED RULEMAKING, "ENVIRONMENTAL QUALIFICATION OF ELECTRIC EQUIPMENT FOR NUCLEAR POWER PLANTS"

Purpose: To obtain Commission approval for publication of the "Proposed Rulemaking - Environmental Qualification of Electric Equipment for Nuclear Power Plants," in the FEDERAL REGISTER.

Discussion: The proposed rulemaking is being undertaken in response to the Commission's Memorandum and Order (CLI-80-21), dated May 23, 1980, relating to the environmental qualification of electric equipment, including considerations of backfit.

The current requirements for qualification of structures, systems and components important to safety are contained in General Design Criteria 1, 2, 4 and 23 of Appendix A, Part 50, Criterion III of Appendix B Part 50 and 10 CFR 50.55a(h). These are general requirements stating the principle that structures, systems and components important to safety in a nuclear power plant shall be designed to accommodate the effects of environmental conditions and that design control measures, such as testing, shall be used to check the adequacy of design.

Contact:
Satish K. Aggarwal, SD
443-5921

E. C. Wenzinger, Br. Ch., RSSB
443-5920

Specific qualification methods have evolved over the past several years to ensure that these general requirements are met for electric equipment important to safety. Although documented in various national standards, regulatory guides and NRC publications, these specific methods have not been explicitly codified as requirements in NRC's regulations.

In brief, the evolution has been as follows: For the oldest plants, qualification was based on the fact that the electrical components were of high industrial quality. For newer plants after 1971, qualification was judged on the basis of IEEE 323-1971. In November 1974, Regulatory Guide 1.89, "Qualification of Class IE Equipment for Nuclear Power Plants," was issued which endorsed IEEE 323-1974, "Qualifying Class IE Equipment for Nuclear Power Generating Stations," subject to supplementary provisions. Subsequently, more definitive criteria for environmental qualification of electric equipment important to safety were developed by the staff. DOR "Guidelines for Evaluating Environmental Qualification of Class 1E Electrical Equipment in Operating Reactors" were issued in November 1979. In addition, NUREG-0588, "Interim Staff Position on Environmental Qualification of Safety-Related Electrical Equipment," was issued in December 1979. NUREG-0588 (which was revised and reissued on _____), includes two sets of qualification

requirements; the first for plants originally reviewed in accordance with IEEE 323-1971, and the second for plants reviewed in accordance with IEEE 323-1974.

As an interim step, the Commission ordered in its Memorandum and Order CLI-80-21, that the DOR Guidelines and NUREG-0588 will form the requirements which licensees and applicants must meet. The Commission also noted that the guidelines and NUREG-0588 apply progressively less strict standards to the older plants, and that this problem is best resolved by a rulemaking.

The proposed rule, which is included in the FEDERAL REGISTER notice of Enclosure "A", is based principally on the DOR Guidelines and the "1974" requirements of NUREG-0588. Its purpose is to codify as explicitly as practical the current NRC practice with respect to qualification of electric equipment important to safety. The proposed rule will apply the same uniform criteria to all operating nuclear power plants and plants for which application has been made for a construction permit or an operating license. Included are specific technical requirements such as (a) qualification by test, operating experience, analysis, or a combination of these, (b) on-going qualification, (c) accelerated aging, and (d) synergisms.

In addition, Regulatory Guide 1.89 is being concurrently revised and will contain methods acceptable to the NRC staff for meeting

the Commission's requirements for the environmental qualification of electric equipment important to safety. Attached as Enclosure "D" is a copy of the Draft Regulatory Guide 1.89 (revised), "Qualification of Electric Equipment for Light-Water-Cooled Nuclear Power Plants," for information. ACRS Regulatory Activities Subcommittee (RAS) review of this Rule and Regulatory Guide were completed on _____. ACRS-RAS concurrence to issue the Rule and Guide for public comment was received at that time.

The staff plans to issue Regulatory Guide 1.89 and the proposed Rule together and invite public comments on both. Upon publication of the effective rule and Regulatory Guide 1.89, the DOR Guidelines and NUREG-0588 will be withdrawn.

Recommendation: That the Commission:

(1) Approve publication of the proposed rulemaking, "Environmental Qualification of Electric Equipment for Nuclear Power Plants," for public comments.

(2) Note:

(a) That the notice of proposed rulemaking in Enclosure "A" will be published in the FEDERAL REGISTER allowing 60 days for public comment.

(b) That if after expiration of the comment period no significant adverse comments or significant questions have been received and no substantial changes in the text of the rule are indicated, the Executive Director for Operations will arrange for publication of the amendment in final form.

(c) That pursuant to § 5.15(d) of Part 51 of the Commission's regulatons neither an environmental impact statement nor a negative declaration need be prepared in connection with the amendment since the amendment is nonsubstantive and insignificant from the standpoint of environmental impact.

(d) The Subcommittee on Energy and the Environment of the House Committee on Interior and Insular Affairs, the Subcommittee on Energy Conservation and Power of the House Committee on Energy and Commerce, the Subcommittee on Environment, Energy and Natural Resources of the House Committee on Government Operations, and the Subcommittee on Nuclear Regulation of the Senate Committee on Environment and Public Works will be informed.

(e) That the FEDERAL REGISTER notice of proposed rulemaking will be distributed to power reactor

licensees/permit holders, applicants for a construction permit for a power reactor, public interest groups, and nuclear steam system suppliers.

(f) That a public announcement prepared by the Office of Public Affairs will be issued when the FEDERAL REGISTER Notice is filed with the Office of the FEDERAL REGISTER.

(g) That the Chief Counsel for Advocacy of the Small Business Administration will be informed of the certification regarding economic impact on small entities together with the reason for it.

Scheduling: Recommend affirmation at an open meeting.

William J. Dircks
Executive Director for Operations

Enclosure:
"A" - Notice of Proposed Rulemaking
"B" - Value/Impact Statement
"C" - Draft Public Announcement
"D" -Draft Regulatory Guide 1.89 (Revised)

FEB 26 1981

NUCLEAR REGULATORY COMMISSION

10 CFR Part 50

DOMESTIC LICENSING OF PRODUCTION AND UTILIZATION FACILITIES
CONSIDERATIONS RELATED TO ENVIRONMENTAL QUALIFICATION
OF ELECTRIC EQUIPMENT FOR NUCLEAR POWER PLANTS

AGENCY: U.S. Nuclear Regulatory Commission

ACTION: Proposed Rule

SUMMARY: The Nuclear Regulatory Commission is proposing to amend its regulations to clarify and strengthen the criteria for environmental qualification of electric equipment important to safety. Specific qualification methods currently contained in national standards, regulatory guides, and certain NRC publications for equipment qualification have been evolutionary in nature, are subject to diverse interpretation and have been without the force of a definitive regulation. The proposed Rule has been developed to codify these qualification methods and to otherwise clarify the Commission's requirements in this area.

DATES: Comment period expires (60 days after notice in FEDERAL REGISTER). Comments received after expiration date will be considered if it is practical to do so, but assurance of consideration cannot be given except as to comments filed on or before that date.

ADDRESSEES: Written comments and suggestions may be mailed to the Secretary of the Commission, Attention: Docketing and Service Branch, U.S. Nuclear Regulatory Commission, NW., Washington, D.C. 20555, or hand delivered to

Enclosure "A"

the Commission's Public Document Room at 1717 H Street, NW., Washington, D.C. between the hours of 8:30 am and 4:45 pm on normal work days.

FOR FURTHER INFORMATION CONTACT: Satish K. Aggarwal, Office of Standards Development, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555, Telephone 301-443-5921.

SUPPLEMENTARY INFORMATION: Equipment that is needed to perform a safety function must be capable of maintaining functional operability under all conditions postulated to occur during its installed life. This requirement, which is embodied, in general, in General Design Criteria 1 and 4 of Appendix A, Part 50, Criterion III of Appendix, Part 50 and 10 CFR 50.55a(h), which references IEEE 279-1971,* "Criteria for Protection Systems for Nuclear Power Generating Stations," is applicable to equipment located inside as well as outside containment.

The NRC has used a variety of methods to see that these general requirements are met for electric equipment important to safety. For nuclear plants after 1971, qualification was judged on the basis of IEEE-1971. For the newer plants, whose Safety Evaluation Reports were issued after July 1, 1974, the Commission has used Regulatory Guide 1.89, " Qualification of Class 1E Equipment for Nuclear Power Plants," which endorsed the IEEE 323-1974,* "Qualifying Class 1E Equipment for Nuclear Power Generating Stations," subject to supplementary provisions.

Currently, the Commission has underway a program to reevaluate the qualification of electric equipment important to safety in all operating reactors. As a part of this program, more definitive criteria for environmental qualification of electric equipment have been developed by the

*Copies can be obtained from the Institute of Electrical and Electronics Engineers, Inc., 345 East 47th Street, New York, 10017.

NRC staff. The "Guidelines for Evaluating Environmental Qualification of Class 1E Electrical Equipment in Operating Reactors" (DOR Guidelines) were issued in November 1979. In addition, the NRC staff has issued NUREG-0588, "Interim Staff Position on Environmental Qualification of Safety-Related Electrical Equipment," which carries two sets of criteria; the first for plants originally reviewed in accordance with IEEE 323-1971, and the second for plants reviewed in accordance with IEEE 323-1974.

NUREG-0588 was revised and reissued on _____. By its Memorandum and Order (CLI-80-21) dated May 23, 1980, the Commission directed that the DOR guidelines and NUREG-0588 form the requirements which licensees and applicants must meet. The Commission directed that the staff proceed with a rulemaking on environmental qualification of safety-grade equipment, and that the proposed rulemaking should address the question of backfit.

This proposed rulemaking is based on the requirements of the DOR guidelines and NUREG-0588, and is intended to codify as explicitly as practical the Commission's requirements for the qualification of electric equipment important to safety. Technical areas addressed include (a) testing as the principle means of qualification, (b) analysis and operating experience in lieu of testing, (c) on-going qualification, (d) accelerated aging, (e) synergistic effects, (f) test parameter envelopes, (g) source terms, (h) margins, (i) documentation, and (j) backfit requirements. In addition, Regulatory Guide 1.89 is being concurrently revised and will describe methods acceptable to the NRC staff for meeting the provisions of this proposed rule.

Upon publication of the effective rule, the DOR guidelines and NUREG-0588 will be withdrawn. Also, since the rule is based primarily on these

two documents, and these documents form the requirement which all licensees (and applicants) must meet, backfit should be virtually accomplished when the effective rule is published. Thus, the impact of the rule itself because of backfit considerations should be minimal.

Pursuant to the Atomic Energy Act of 1954, as amended, the Energy Reorganization Act of 1974, as amended, and section 553 of title 5 of the United States Code, notice is hereby gven that adoption of the following amendment to 10 CFR Part 50 is contemplated.

A new Appendix...is added to read as follows:

APPENDIX -- ENVIRONMENTAL QUALIFICATION OF ELECTRIC EQUIPMENT IMPORTANT TO SAFETY

I. INTRODUCTION

This appendix applies to all licensed nuclear power plants and to those plants for which application has been made for a construction permit or an operating license.

The purpose of this appendix is to state the Commission's detailed requirements for the qualfication of electric equipment important to safety. General requirements for qualification of structures, systems and components important to safety are contained in General Design Criteria 1 and 4 of Appendix A, Part 50, Criterion III of Appendix B, Part 50 and 10 CFR 50.55a(h), which references IEEE 279-1971,* "Criteria for Protection Systems for Nuclear Power Generating Station." These general requirements state the

*Copies can be obtained from the Institute of Electrical and Electronics Engineers, Inc., 345 East 47th Street, New York, N.Y. 10017.

principle that structures, systems and components important to safety in a nuclear power plant shall be designed to accommodate the effects of environmental conditions and that design control measures, such as testing, shall be used to check the adequacy of the design.

For the oldest plants, qualification was based on the fact that the electric components were of high industrial quality. For newer plants, after 1971, qualification was judged on the basis of IEEE 323-1971. In November 1974, Regulatory Guide 1.89, "Qualification of Class 1E Equipment for Nuclear Power Plants," was issued which, in many respect endorsed the more recent IEEE 323-1974,* "Qualifying Class 1E Equipment for Nuclear Power Generating Stations." Subsequently, more definitive criteria for environmental qualification of the electric equipment important to safety were developed by the NRC staff. DOR guidelines for "Evaluating Environmental Qualifications of Class 1E Electrical Equipment in Operating Reactors" were issued in November 1979. In addition, NUREG-0588, "Interim Staff Position on Environmental Qualification of Safety-Related Electrical Equipment," was issued in December 1979. These two documents (NUREG-0588 and DOR guidelines), were designated by the Commission to form the requirements which licensees and applicants must meet for the qualification of electric equipment, pending issuance of this appendix as an effective rule. Compliance with the provisions of the DOR Guidelines or NUREG-0588, whichever is applicable, will be considered as complying with this appendix for all plants whose operating license was issued within 180 calendar days after publication of this appendix.

*Copies can be obtained from the Institute of Electrical and Electronics Engineers, Inc., 345 East Street, New York, N.Y. 10017.

II. GENERAL REQUIREMENTS

The applicant shall establish and execute an equipment qualification program to comply with this Appendix. Requirements are as follows:

1. The applicant shall identify in his FSAR the electric systems and components important to safety whose function is required to assure safe operation of a nuclear power plant.

2. Electric equipment specifications shall define, but not be limited to:

(a) performance characteristics (such as accuracy, response time, etc) and preservation of integrity requirements, under defined normal, abnormal, containment test, design basis event, and post design basis event conditions.

(b) The range of voltage, frequency, load and other electrical characteristics, for which the performance specified in II.2(a) above can be assured.

(c) The environmental conditions, including temperature, pressure, humidity, radiation, chemicals, vibration and seismic forces and their predicted variations with time in which the equipment must perform as specified in II.2(a) and II.2(b) above.

4. Synergistic effects shall be considered and included in the qualification program.

5. Aging effects on all electric equipment important to safety, regardless of its location, shall be considered and included in the qualification program.

6. All equipment qualified by test shall, where practicable, be preconditioned by natural or artificial (accelerated) aging to its

installed end-of-life condition. This shall be the qualified life for the equipment. Where preconditioning to a qualified life equal to the installed end-of-life condition is not possible, qualification to a lesser qualified life shall be performed. Such equipment shall either (a) be replaced at the end of its qualified life, or (b) be qualified to a new qualified life by the process of "on-going qualification," as specified in III.D.

III. SPECIFIC REQUIREMENTS

A. Qualification Methods

1. Electric equipment important to safety, which much function to mitigate the consequence of an anticipated operational occurrence or accident, shall be shown to be capable of meeting its performance requirements, as specified in II.2(a), when operated from a power source with characteristics, as specified in II.2(b), and when subjected to the environmental conditions, as specified in II.2(c), by one of the following methods:

(a) Testing of an identical item of equipment.

(b) Testing of a similar item of equipment supported by analysis to show that the equipment to be qualified is acceptable.

(c) Testing or experience with identical or similar equipment under similar conditions supported by analysis to show that the equipment to be qualified is acceptable.

(d) Analysis supported by partial type testing is acceptable when complete type testing is precluded by the physical size of the equipment or by state-of-art testing limitation, and only when approved by the NRC staff. Partial type testing shall be accomplished by the separate testing of all individual modules, subsystems, etc, of the equipment to be qualified.

2. Equipment important to safety that need not function to mitigate a particlar anticipated operational occurrence or accident, shall be qualified as specified in III.A.(a),(b),(c), or (d) to assure that it will not fail or malfunction in such a manner that would prevent the proper operation of other equipment important to safety.

B. Qualification Parameters

1. Temperature and Pressure Condftions Inside Containment; Loss-of-Coolant Accident

(a) The time-dependent temperature and pressure established by the plant safety analysis shall be used as the basis for the environmental qualification of electric equipment important to safety.

(b) The containment pressure and temperature envelopes, and the mass and energy release rates shall be established. Such calculations shall be plant-specific, unless otherwise justified.

2. Temperature and Pressure Conditions Inside Containment - Main Steam Line Break (MSLB)

(a) The temperature and pressure values used for equipment qualification shall be calculated with a plant-specific model approved by the NRC staff.

(b) Where LOCA conditions are used in lieu of MSLB conditions, the applicant shall demonstrate that the LOCA conditions exceed or are equivalent to the maximum calculated MSLB conditions.

3. Effects of Chemical Spray

The concentration of chemicals used for qualification of electric equipment important to safety shall be equivalent to, or more severe

than that resulting from the most limiting mode of plant operation (e.g., containment spray, ECCS or recirculation). If the composition of the chemical spray can be affected by equipment malfunctions, the most severe chemical spray environment that results from a single failure in the spray system shall be assumed.

4. Radiation Conditions Inside and Outside Containment

The radiation environment used for qualification of electric equipment important to safety shall be based on the integrated effects of the normally expected environment, including radiation, over the equipment installed life, plus that associated with the most severe design basis event during or following which the equipment is required to remain functional.

5. Environmental Conditions Outside Containment

Electric equipment important to safety located outside containment that could be subjected to high-energy pipe breaks shall be qualified for the conditions resulting from such events. The techniques used for calculating the environmental parameters shall employ a plant-specific model approved by the NRC staff. Equipment located in general plant areas outside containment where equipment is not subjected to a design basis event environment shall be qualified to the range of conditions specified in II.2 postulated to occur at the equipment location.

C. Qualification by Test

1. The acceptance criteria shall be established prior to testing.

2. The tests shall be designed and conducted to demonstate that the equipment can perform its required function as specified in II.2(a)

for all conditions as specified in II.2(b) and (c). The test profile (pressure, temperature, radiation, etc., vs time) shall include sufficient margin to account for minor differences among various production units of the tested equipment and for errors within the instrumentation monitoring and controlling the test. This margin shall be in addition to that applied in deriving the values of the accident parameters.

3. The test profile shall be either (a) a single profile that envelopes the environmental conditions resulting from any design basis event during any mode of plant operation (e.g., a profile that envelopes the conditions produced by the main steamline break and loss-of-coolant accidents), or (b) separate profiles for each of the events (e.g., separate profiles for the MSLB and LOCA).

4. The same piece of equipment shall be used throughout the complete test sequence.

D. On-Going Qualification

In the event that prototype equipment cannot be aged to its design life, a lesser qualified life is acceptable provided that, when the installed life equals the qualified life, (a) the equipment is replaced with equipment of a known qualified life, (b) prototype equipment naturally aged in plant service is shown, by artificial aging and type testing, to have additional qualified life.

E. Documentation

The qualification shall be documented in a form to permit verification that each item of electric equipment important to safety is qualified for its application and meets its specified performance requirements,

when subjected to conditions present when it must perform its safety function up to the end of its qualified life.

REGULATORY FLEXIBILITY STATEMENT

In accordance with the Regulatory Flexibility Act of 1980, 5 U.S.C. 605(b), the Commission hereby certifies that this rule, if promulgated, will not have a significant economic impact on a substantial number of small entities. This proposed rule affects the method of qualification of electric equipment by utilities. Utilities do not fall within the definition of a small business found in Section 3 of the Small Business Act, 15 U.S.C. 632. Additional testing required under this rule will generate business for small entities engaged in environmental testing.

Dated at _____ this _____ day of _____, 1981.

For the Nuclear Regulatory Commission.

_____
Samuel J. Chilk
Secretary of the Commission

FEB 26 1981

VALUE/IMPACT STATEMENT

1. PROPOSED ACTION

1.1 Description

The applicant (licensee) of a nuclear power plant is required by the Commission's regulations to verify that structures, systems and components important to safety will perform their intended functions in spite of the environments which may result from the anticipated operational occurrences or postulated accidents. This verification includes environmental qualification by test, operating experience, and analysis, or a combination of these. The proposed rule sets forth the Commissions requirements for the qualification by test and analysis of electric equipment important to safety, including requirements for backfit.

1.2 Need for Proposed Action

The current general requirements for qualification of electric equipment important to safety are found in General Design Criteria 1, 2, 4, and 23 of Appendix A, Part 50; Section III and XI of Appendix B, Part 50; and 10 CFR 50.55a(h) which references IEEE 279-1971,* "Criteria for Protection System for Nuclear Power Generating Stations." The NRC has used several methods to ensure that these general requirements are met for electric equipment important to safety. For the oldest plants, qualification was based on the fact that the electric components were of high industrial quality. For the newer plants after 1971, qualification was judged on the basis of IEEE 323-1971. However, no Regulatory Guide was ever issued endorsing IEEE 323-1971, although some of the plants referenced the standard in their licensing submissions to the Commission. For the newest plants whose safety evaluation reports were issued after July 1, 1974, the Commission has issued Regulatory Guide 1.89 which, in most respects, endorsed IEEE 323-1974,* subject to supplementary provisions.

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Currently, the Commission has underway a program to reevaluate the qualification of electric equipment important to safety in all operating reactors. As part of this program, the Staff has developed more definitive criteria for the environmental qualification. DOR "Guidelines for Evaluating Environmental Qualification of Class IE Electrical Equipment in Operating Reactors" were issued in November 1979. In addition, for reactors under licensing review, the Staff has issued NUREG-0588, "Interim Staff Position on Environmental Qualification of Safety-Related Electrical Equipment."

In its Memorandum and Order (CLI-80-21), issued on May 23, 1980, the Commission endorsed the staff's actions to use the DOR Guidelines to review operating plants and NUREG-0588 to review plants under licensing review. Further, the Commission ordered that these two documents form the requirements which licensees and applicants must meet in order to satisfy those aspects of 10 CFR 50, Appendix A, which relate to the environmental qualification of electric equipment important to safety. The Commission also ordered that licensees of operating reactors are to comply with these requirements so that the applicable equipment in all operating plants shall meet the DOR Guidelines or NUREG-0588.

The Commission also noted that the guidelines and NUREG-0588 apply progressively less strict standards to older plants, and that this problem is best resolved by a rulemaking. The purpose of the proposed rule is to codify as explicitly as practicable current NRC practice with respect to qualification of electric equipment important to safety. The proposed rule will apply the same uniform criteria to all operating nuclear power plants and plants for which application has been made for a construction permit or an operating license.

1.3 Value/Impact of Proposed Action

1.3.1 NRC Operations

Since regulations specifically setting forth requirements for the qualification of electric equipment important to safety in new and operating plants have never been issued in the past, the proposed action should result in more effective effort by the staff in reviewing applications for construction permits and operating licenses, and in the backfitting of the these requirements to operating plants. The proposed action will codify an NRC position by taking advantage of previous staff effort (1) in completion of a generic activity (A-24),

"Qualiication of Class 1E Safety-Related Equipment," (2) in the preparation of the DOR Guidelines and NUREG-0588, (3) in IEEE standards committee work, and (4) in the development, funding and monitoring of related research programs.

There should be little impact on the staff vis-a-vis the level of effort at the time the rule is approved. Approximately two man-years of effort is anticipated in preparation of the rule.

1.3.2 Other Government Agencies

Not applicable, unless the government agency is an applicant.

1.3.3 Industry

The rule is expected to codify existing Regulatory practice with respect to the application of the DOR Guidelines and NUREG-0588. Should this be the case when the rule is published effective, and as now proposed, the rule would have no impact.

The value of this proposed rule is that the industry will have clearly specified requirements to follow with respect to the qualification of electric equipment important to safety for new and existing plants. This, in turn, should ease the licensing process for industry by eliminating delays resulting from misinterpretation of NRC's requirements.

1.3.4 Public

The proposed action will improve public safety by further ensuring that electric equipment important to safety will perform its safety functions in spite of environments which may result from the design basis events.

1.4 Decision on Proposed Action

The proposed action has been mandated by the Commission in its Memorandum and Order CLI-80-21, datad May 23, 1980.

2. TECHNICAL APPROACH

During the course of rule development over the next two years, it is not anticipated that significant technical improvement over the material in the DOR Guidelines and NUREG-0588 will be forthcoming from national standards

committees. In fact, a proposed revision (update) to IEEE 323-1974 is based substantially on the technical material in NUREG-0588. Additional new material may, however, be developed as a result of the various equipment qualification research programs currently underway. Therefore, the technical approach will be essentially to codify the programs of the DOR Guidelines and NUREG as applied at the time of effective rule publication, with additional supplementary material to reflect acceptable technical advances in this area. Backfit considerations will be explicitly addressed.

3. PROCEDURAL APPROACH

Rulemaking has been mandated by the Commission in its Memorandum and Order cited above.

4. STATUATORY CONSIDERATIONS

4.I NRC Authority

Authority for this Rulemaking is derived from the safety requirements of the Atomic Energy Act and, in particular, the Commission's Memorandum and Order cited above.

4.2 Need for NEPA Assessment

The proposed action is not a major action as defined in paragraph 51.5(a)(10) of 10 CFR Part 51 and does not require an environmental impact statement.

5. RELATIONSHIP TO OTHER EXISTING OR PROPOSED REGULATIONS OR POLICIES

No conflicts or overlaps with requirements promulgated by other agencies are foreseen.

6. SUMMARY AND CONCLUSIONS

This Rulemaking mandated by the Commission should be initiated immediately and developed in a timely manner for issuance for public comment.

FEB 2 6 1981

NRC PROPOSES RULEMAKING ON ENVIRONMENTAL
QUALIFICATION OF ELECTRIC EQUIPMENT

The Nuclear Regulatory Commission is proposing a rulemaking on Environmental Qualification of Electric Equipment Important To Safety.

The current requirements for qualification of structures, systems and components important to safety are contained in General Design Criteria 1, 2, 4 and 23 of Appendix A, Part 50, Criterion III of Appendix B, Part 50 and 10 CFR 50.55a(h). These are general requirements stating the principle that structures, systems and components important to safety in a nuclear power plant shall be designed to accommodate the effects of environmental conditions and that design control measures, such as testing, shall be used to verify the adequacy of design.

Specific qualification methods have evolved over the past several years to ensure that these general requirements are met for electric equipment important to safety. Although documented in various national standards, regulatory guides and NRC publications, these specific methods have not been explicitly codified as requirements in NRC's regulations.

The proposed rule will explicity codify the current NRC practice with respect to qualification of electric equipment important to safety. Regulatory Guide 1.89 is being concurrently revised to provide additional guidance and will contain methods acceptable to the NRC Staff for meeting requirements for the environmental qualification of electric equipment important to safety.

The full text of the proposed rule is being published in the Federal Register on _____. Interested persons are invited to submit written comments and suggestions on the proposed rule, and/or the supporting value/impact statement, to the Secretary of the Commission, ATTN: Docketing and Service Branch, Nuclear Regulatory Commission, Washington, DC 20555.

Enclosure C

Single copies of the proposed rule and the value/impact statement may be obtained upon request from Mr. Satish K. Aggarwal, Office of Standards Development, U.S. Nuclear Regulatory Commission, Washington, DC 20555, Telephone: (301) 443-5921.

Copies of the comments received by the Commission will be available for public inspection at the Commission's Public Document Room, 1717 H Street, NW, Washington, D.C.