



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
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SAFETY EVALUATION BY THE  
OFFICE OF NUCLEAR REACTOR REGULATION  
BOSTON EDISON COMPANY  
PILGRIM NUCLEAR POWER STATION  
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ENVIRONMENTAL QUALIFICATION OF SAFETY-RELATED ELECTRIC EQUIPMENT

INTRODUCTION

General Design Criteria 1 and 4 specify that safety-related electrical equipment in nuclear facilities must be capable of performing its safety-related function under environmental conditions associated with all normal, abnormal, and accident plant operation. In order to ensure compliance with the criteria, the NRC staff required all licensees of operating reactors to submit a re-evaluation of the qualification of safety-related electrical equipment which may be exposed to a harsh environment.

BACKGROUND

On February 8, 1979, the NRC Office of Inspection and Enforcement (IE) issued to all licensees of operating plants (except those included in the systematic evaluation program (SEP)) IE Bulletin (IEB) 79-01, "Environmental Qualification of Class IE Equipment." This Bulletin, together with IE Circular 78-08 (issued on May 31, 1978), required the licensees to perform reviews to assess the adequacy of their environmental qualification programs.

On January 14, 1980, NRC issued IE Bulletin 79-01B which included the DOR guidelines and NUREG-0588 as attachments 4 and 5, respectively.

Subsequently, on May 23, 1980, Commission Memorandum and Order CLI-80-21 was issued and stated the DOR guidelines and portions of NUREG-0588 form the requirements that licensees must meet regarding environmental qualification of safety-related electrical equipment in order to satisfy those aspects of 10 CFR 50, Appendix A, General Design Criterion (GDC) 4. Supplements to IEB 79-01B were issued for further clarification and definition of the staff's needs. These supplements were issued on February 29, September 30, and October 24, 1980.

In addition, the staff issued orders dated August 29, 1980 (amended in September 1980) and October 24, 1980 to all licensees. The August order required that the licensees provide a report, by November 1, 1980, documenting the qualification of safety-related electrical equipment. The October order required the establishment of a central file location for the maintenance of all equipment qualification records. The central file was mandated to be established by December 1, 1980. The staff subsequently issued Safety Evaluation Reports (SERs) on environmental qualification of safety-related electrical equipment to licensees of all operating plants in mid-1981. These SERs directed licensees to "either provide documentation of the missing qualification information which demonstrates that safety-related equipment meets the DOR Guidelines or NUREG-0588 requirements or commit to a corrective action (re-qualification, replacement (etc.))." Licensees were required to respond to NRC within 90 days of receipt of the SER. In response to

the staff SER issued June 3, 1981, the licensee submitted additional information regarding the qualification of safety-related electrical equipment.

#### EVALUATION

The acceptability of the licensee's equipment environmental qualification program was resolved for the Division of Engineering by the Franklin Research Center (FRC) as part of the NRR Technical Assistance Program in support of NRC operating reactor licensing actions. The consultant's review is documented in the report "Review of Licensees' Resolutions of Outstanding Issues from NRC Equipment Environmental Qualification Safety Evaluation Reports," which is attached.

We have reviewed the evaluation performed by our consultant contained in the enclosed Technical Evaluation Report (TER) and concur with its bases and findings.

#### CONCLUSIONS

Based on the staff's review of the enclosed Technical Evaluation Report, the following conclusions are made regarding the qualification of safety-related electrical equipment.

The staff is continuing to review the licensee's environmental qualification program. If any additional qualification deficiencies were identified during the course of this review, the licensee would be required to reverify the justification for continued operation. The staff will review this information to ensure that continued operation, until completion of the licensee's environmental qualification program, will not present undue risk to the public health and safety. The licensee must provide the plans

for qualification or replacement of the unqualified equipment and the schedule for accomplishing its proposed corrective action in accordance with 10 CFR 50.49.

The major qualification deficiencies that have been identified in the enclosed FRC TER (Tables 4-1, 4-2, 4-3 and 4-4) must be resolved by the licensee. Items requiring special attention by the licensee are summarized below:

- o Submission of information within thirty (30) days for items in NRC categories I.b, II.a, II.b and IV for which justification for continued operation was not previously submitted to NRC or FRC,
  - o The staff has reviewed the pressure and temperature profile inside containment (Section 4.3.3.1 of the FRC TER) and finds it acceptable,
  - o Resolution of the staff concern regarding the pressure and temperature profile outside containment (Section 4.3.3.2 of the FRC TER),
  - o Resolution of the staff concern regarding the radiation dose inside and outside containment (Section 4.3.3.3 of the FRC TER). As a result of the staff review, we conclude that the licensee must show that all equipment inside containment is qualified to radiation values in excess of  $1.8 \times 10^7$  Rads gamma (for beta shielded components) or  $2 \times 10^8$  (beta + gamma) for unshielded components, or that the radiation values inside the Pilgrim containment are less than the staff estimates.
- If the licensee elects to demonstrate that a smaller radiation

service condition is appropriate, all assumptions used in the dose evaluation and a sample calculation for the dose at the containment centerline from all sources must be provided.

Further, the licensee has not provided the radiation environment for equipment located outside containment as identified in the June 1, 1981 SER. The licensee must provide either a reference for this information or identify all the assumptions used in determining the qualification values and a sample calculation for one piece of equipment.

#### PROPRIETARY REVIEW

Enclosed in the FRC Technical Evaluation Report (TER) are certain identified pages on which the information is claimed to be proprietary.

During the preparation of the enclosed TER, FRC used test reports and other documents supplied by the licensee that included material claimed to be proprietary. NRC is now preparing to publicly release the FRC TER and it is incumbent on the agency to seek review of all claimed proprietary material. As such, the licensee is requested to review the enclosed TER and notify NRR whether any portions of the identified pages still require proprietary protection. If so, the licensee must clearly identify this information and the specific rationale and justification for the protection from public disclosure, detailed in a written response. The level of specificity necessary for such continued protection should be consistent with the criteria enumerated in 10 CFR 2.790(b) of the Commission's regulations.

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## PROPRIETARY REVIEW GUIDELINES

It is the policy of the Nuclear Regulatory Commission that the records of the agency are available for inspection and copying in the NRC Public Document Room, except for matters that are exempt from public disclosure pursuant to the nine exemptions of the Freedom of Information Act. (See 10 C.F.R. 2.790)

Recently, the NRC has had its contractor, Franklin Research Center (FRC), prepare Technical Evaluation Reports for all 10 CFR Part 50 licensees. These reports evaluate and comment upon the references cited by the licensee as evidence of qualification in accordance with the documentation reference instructions established by IE Bulletin 79-01B.

In a typical evaluation, FRC generates a report of approximately 750 pages. Any page which mentions or comments upon a licensee's referenced material that was marked or claimed to be proprietary is marked at the top of the page with the legend "Proprietary Information". FRC has used this marking in a liberal manner and has not fully investigated the licensee's claim to determine whether portions of proprietary reports that they reproduced or mentioned were in fact "proprietary". A report typically contains 15 to 25 pages that are marked "Proprietary Information". Usually, no more than 4 licensee proprietary references are so discussed. In order to make any of the reports available to the public, FRC has produced two versions of each: those containing proprietary information and those having the proprietary information removed. The NRC now seeks the assistance of licensees in reviewing the proprietary versions of the FRC reports to determine whether still more information can be made available to the public.

For this reason, each licensee has been sent the Staff Equipment Qualification SER and a copy of the proprietary version of the FRC Technical Evaluation Report. It is believed that the licensee can review the few pages containing proprietary information in a relatively short period of time. The licensee is to send the third party owner of the reference report, which has been claimed to be proprietary, a copy of those pages from the FRC report that relates to its test report. The third party owner can quickly review these pages and determine whether the information claimed to be proprietary must still be so categorized. All reviewers should be aware of the NRC's policy, as specified in SECY-81-119, that summary data on Equipment Qualification testing will not be treated as proprietary by the NRC. If the review identifies no data that requires protection, the NRC should be notified and that portion of the report will be placed in the Public Document Room. If, however, the licensee identifies to the NRC portions that are still claimed to require proprietary protection, then compliance must be made with the requirements for withholding under 10 C.F.R. 2.790. This can be accomplished in two ways: (1) If the reference proprietary report has previously been submitted to the NRC pursuant to 10 C.F.R. 2.790 and the NRC has made a determination that portions are proprietary, then

those same portions can be protected again simply by notifying the NRC that this material is covered in the NRC's acceptance letter of a given date. If the reference proprietary report has not previously been submitted to the NRC pursuant to 10 C.F.R. 2.790, then the licensee and the proprietary owner must at this time make such an application and request for withholding from public disclosure.

The NRC recognizes that this proprietary review places an administrative burden upon its licensees and any third party owners. However, it is the policy of the NRC to make all non-proprietary information public, and the only way to protect the owner of proprietary information is to insure that the Franklin reports have been appropriately scrutinized.

The NRC will grant extensions of time for these reviews if necessary, on a case-by-case basis. If you have any further questions regarding this review, please contact either Edward Shomaker, OELD, at 492-8653 or Neal Abrams, Patent Counsel, at 492-8662.