

November 30, 1981

Docket No. 50-237
LS05-81-11-084



Mr. L. Del George

Director of Nuclear Licensing
Commonwealth Edison Company
Post Office Box 767
Chicago, Illinois 60690

Dear Mr. Del George:

SUBJECT: SEP TOPIC VIII-4, ELECTRICAL PENETRATIONS OF REACTOR
CONTAINMENT - SAFETY EVALUATION REPORT (DRESDEN UNIT
2)

Enclosure 1 is the staff's safety evaluation report for SEP Topic VIII-4.
The basis for Enclosure 1 is given in Enclosure 2.

Enclosure 2 is our contractor's technical evaluation that has been revised
by the additional information and comments provided in your letter of
June 25, 1981.

Enclosure 1 is the staff's position with regard to the acceptability of
the electrical penetrations for your facility. The staff has concluded
that your commitments to assure that your facility meets current licensing
criteria is an acceptable basis for considering this topic complete.

Sincerely,

Dennis M. Crutchfield, Chief
Operating Reactors Branch No. 5
Division of Licensing

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G. Cwalina

Enclosure:
As stated

cc w/enclosure:
See next page

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Mr. L. DelGeorge

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SYSTEMATIC EVALUATION PROGRAM
TOPIC VIII-4

DRESDEN UNIT 2

TOPIC VIII-4, ELECTRICAL PENETRATIONS OF REACTOR CONTAINMENT

I. INTRODUCTION

The safety objective of Topic VIII-4, "Electrical Penetrations of Reactor Containment," is to assure that all electrical penetrations in the containment structure are designed not to fail from electrical faults during a high energy line break.

As part of the Systematic Evaluation Program (SEP) the NRC staff performed an audit, comparing sample containment electrical penetrations in SEP facilities with current licensing criteria for protection against fault and overload currents following a postulated accident.

II. REVIEW CRITERIA

The review criteria are presented in Section 2.0 of EG&G Report EGG-EA-5627, "Electrical Penetrations of the Reactor Containment." In addition, in licensing new plants, the staff requires compliance with the recommendations of Regulatory Guide 1.63 or an acceptable alternative method.

For each containment electrical penetration, the protective systems should provide primary and backup circuit protection devices to prevent a single failure in conjunction with a circuit overload from impairing containment integrity. The primary and backup protection devices must have trip time vs. current response characteristics which assure protection against penetration failure. The protection devices are to be periodically tested to verify trip setpoints and adequacy of response.

No single failure should allow excessive currents in the penetration conductors that will degrade the penetration seals. Where external control power is used for actuating the protection systems the power for primary and backup breakers should be derived from separate sources. Overcurrent signals for tripping primary and backup system devices should be electrically independent and physically separated.

III. RELATED SAFETY TOPICS AND INTERFACES

The scope of review for this topic was limited to avoid duplication of effort since some aspects of the review were performed under the related Topic III-12, "Environmental Qualification." The related topic report contains the acceptance criteria and review guidance for its subject matter.

Theoretically, there are no safety topics that are dependent on the present topic information for their completion, however, the results of the present topic have a definite impact upon the capability of equipment inside of containment to function after a high energy line break.

IV. REVIEW GUIDELINES

The review guidelines are presented in Section 3.0 of EG&G Report EGG-EA-5627, "Electrical Penetrations of the Reactor Containment."

V. EVALUATION

As noted in the EG&G Report on this topic with a LOCA environment inside containment, the protection for some low voltage penetrations do not conform to the current licensing criteria, but the medium voltage penetrations are adequately protected. However, the licensee has implemented a corrective program which is described in their June 25, 1981 submittal.

Their program includes qualifying some low voltage circuits inside of containment and demonstrating the adequacy of the low voltage primary protection devices over the range of 200 to 600 amperes. Where Class 1E circuits are not provided, the licensee will provide suitable backup protection or, will assure that the circuit is either de-energized during operation or, is de-energized by an accident signal.

Furthermore, the staff notes that the low voltage penetration type (NS04) was approved previously for Millstone Unit 1. In our review of Millstone Unit 1, the staff used a lower qualification temperature of 325°F (177°C) and an initial temperature of 90°C for the outer seal with a higher (1600 ampere) fault current.

VI. CONCLUSIONS

As a result of our review we have concluded that a suitable program is in place to assure that the low voltage penetrations conform to the current licensing criteria. We also have concluded that the present design of the medium voltage penetrations is acceptable.

The results of previous reviews using higher currents and lower qualification limits indicate that there is no significant risk in the continued operation of Dresden 2 during the time required to complete the present breaker testing program because of the margins that appear to be available between outer seal damage and the breaker trip limits.