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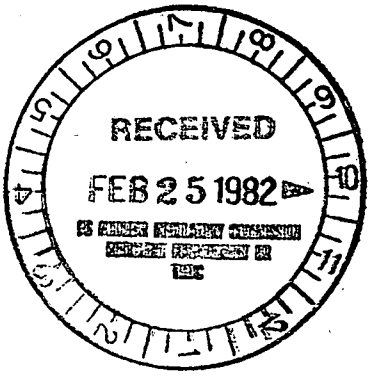
Docket No. 50-237
LS05-82-02-094



Mr. L. DelGeorge
Director of Nuclear Licensing
Commonwealth Edison Company
Post Office Box 767
Chicago, Illinois 60690

Dear Mr. DelGeorge:

SUBJECT: SEP TOPIC VI-7.A.4, CORE SPRAY NOZZLE EFFECTIVENESS
DRESDEN 2

Attached is our final evaluation of SEP Topic VI-7.A.4 for the Dresden 2 facility. This evaluation concludes that core spray distribution adequacy is not a safety concern for Dresden 2. However, this conclusion is partially based on GE analysis results which have not yet been submitted for staff review. The GE analysis will be reviewed as part of NRR Generic Activity A-16, "Steam Effect on BWR Core Spray Distribution." We will reopen the issue if our review of the GE analysis reveals results which are contrary to our present understanding.

This evaluation will be a basic input to the integrated safety assessment for your facility unless you identify changes needed to reflect the as-built conditions at your facility. This assessment may be revised in the future if your facility design is changed or if NRC criteria relating to this subject are modified before the integrated assessment is completed.

Sincerely,

SE04
5.1
DSU USE EX(16)

Paul O'Connor, Project Manager
Operating Reactors Branch No. 5
Division of Licensing

Enclosure:
As stated

cc w/enclosure:
See next page

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Mr. L. DelGeorge

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SYSTEMATIC EVALUATION PROGRAM
TOPIC VI-7.A.4

DRESDEN 2

TOPIC: VI-7.A.4, Core Spray Nozzle Effectiveness

I. INTRODUCTION

Core spray systems are designed with a nozzle or a set of nozzles arranged above the core in such a way that, following a LOCA, a spray of water will be distributed over the top of the core so that each fuel bundle will receive a specified minimum flow which will provide adequate core cooling.

Recent Japanese tests raised concerns that bundles in the center of the reactor core for a BWR/4 and a BWR/5 may receive low core spray flow. This information was reviewed to determine if affected SEP plants have adequate core spray distributions.

II. REVIEW CRITERIA

The plant design was reviewed with regard to 10 CFR Part 50.46, "Acceptance Criteria for Emergency Core Cooling Systems for Light Water Nuclear Power Reactors," which require that each boiling water reactor shall be provided with an emergency core cooling system designed to provide adequate cooling of the nuclear fuel under postulated accident conditions. Appendix K to 10 CFR Part 50, "ECCS Evaluation Models," sets forth the required and acceptable factors of the evaluation models.

III. RELATED SAFETY TOPICS

Various other topics relate to the analysis of ECCS operation and effectiveness. The Design Basis Event evaluations provide an analysis of plant response to postulated accidents.

IV. REVIEW GUIDELINES

The review is being performed in accordance with NRR Generic Activity A-16, "Steam Effect on BWR Core Spray Distribution."

V. EVALUATION

Dresden 2 is a BWR/3 design. We have evaluated the related information and have concluded that the Japanese data do not provide a basis for changing our conclusion that core spray flows for a BWR/3 are not less than the minimum flow required for core spray heat transfer and, additionally, we have concluded that spray distribution adequacy is not a safety concern for the following reasons:

a. The Japanese data for a BWR/5 may be applicable only to a BWR/4 and a BWR/5 because they have a similar spray nozzle design. The BWR/3 spray nozzle design is different from BWR/4 or BWR/5 designs.

b. Even though there is no core spray test data in a steam condition for a BWR/3 configuration, a BWR/6 30° sector steam tests and 360 full-scale tests in an air environment performed in the U.S. indicate that the core spray overlaps the center bundles, causing high flow rate over the central region of the core. As a result, flow to each bundle is not less than the minimum spray flow required for core spray heat transfer.

c. In a conversation with the staff, GE has informed us that analyses performed by them show that for limiting cases of a BWR/3 with core spray assumed to flow down peripheral channels to increase the reflood rate, as observed in the Lynn test, the calculated peak clad temperature did not exceed the 10 CFR 50.46 limit of 2200°F with no credit taken for the spray cooling effect. The staff has requested GE to submit these analyses for our review. We will address our findings if our review of the analyses concludes unfavorable results.

VI. CONCLUSION

Based on the above considerations we have concluded that the core spray distribution is not a safety concern for Dresden 2. Therefore, our review of this topic is complete.