

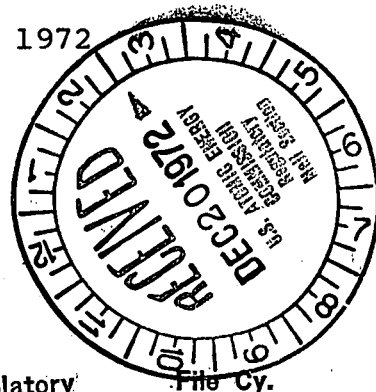
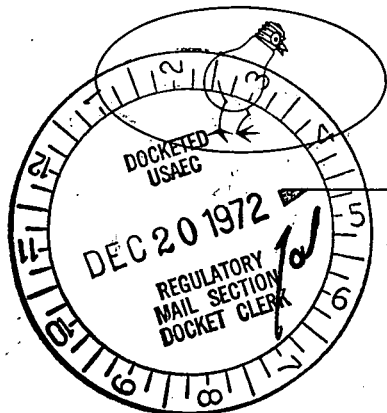
Commonwealth Edison Company

ONE FIRST NATIONAL PLAZA ★ CHICAGO, ILLINOIS

Address Reply to:

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December 18, 1972



Mr. D. J. Skovholt
Assistant Director for
Operating Reactors
Directorate of Licensing
U.S. Atomic Energy Commission
Washington, D.C. 20545

Regulatory File Cy.

Subject: Scram Reactivity Limitations for Dresden
2 and 3 and Quad-Cities 1 and 2, AEC Dkts
50-237 50-249, 50-254 and 50-265

Dear Mr. Skovholt:

This is in response to your letter of November 14, 1972, which requested our analyses of the scram reactivity curves for Dresden Units 2 and 3 and Quad-Cities Units 1 and 2.

As your letter indicates, Commonwealth Edison was appraised of the possible problem by the General Electric Company. The major cause for the change in the transient analysis was the shape of the scram reactivity response. This limiting scram curve was associated with an end of cycle, full power, all control rods out condition in an exposed core. For such a condition the control rods tend to "push" the power ahead of the rods during the initial portion of the scram. The statistical weighting of the power shape is such that the scram reactivity insertion is low during the initial portion of the control rod movement. This low initial scram or negative reactivity insertion rate results in the increased pressure rise.

During most of the cycle a substantial number of control rods are inserted in the core at full power. Qualitatively, these inserted control rods are ready to "bite" quickly into the power shape during any scram. Scram rates of 1.5 to 2.0 higher can be obtained in early cycle operation compared to the end of cycle condition.

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Commonwealth Edison Company

Mr. D. J. Skovholt

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December 18, 1972

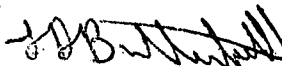
The technical judgement is that the Quad-City 1 and 2 and Dresden 2 plants cannot operate until an end of cycle condition within existing technical specifications. It is the judgement that the exposure at this time is sufficiently low causing the control rod inventory to be sufficiently high such that a scram rate can be obtained which will not result in operation outside technical specification. The exact point at which some plant change or revision in operating strategy must be made is not known and could be determined only by extensive calculations. The judgement is that the plants should not operate beyond 7500 MWD/T.

For Dresden 3 there are two conditions which appear to keep it out of immediate problems. First, the exposure shape, because of control rod patterns associated with offgas control, is highly peaked to the top of the core. In an all control rod out condition the power shape will be peaked significantly toward the bottom of the core. This will give a higher scram reactivity insertion rate. Second, the core at early March will have a projected exposure of 5800 MWD/T compared to an exposure capability of approximately 8600 MWD/T. Thus, a significant number of control rods will be inserted in the core.

The suggested means of implementing the required changes in plant performance to conform to the new scram curve and technical specification requirements are presently being reviewed. It has been noted that several other BWR plants have proposed modifications to their systems which have been acceptable to the Commission. These types of modifications are under review by our staff but it is felt that these modifications may not be the best solution from an operating viewpoint. Therefore, engineering evaluations by our staff are continuing toward a solution and it is anticipated that a program will be finalized early in the spring of 1973 and a report will be submitted to the AEC by March 15, 1973.

One signed original and 59 copies of this letter are provided for your use.

Very truly yours,



L.D. Butterfield, Jr.

Nuclear Licensing Administrator