OCT 26 1977

Mr. T. K. DeBoer, Director
Technological Development Programs
State of New York Energy Office
Swan Street Building, Core 1 - 2nd Floor
Empire State Plaza
Albany, New York 12223

Dear Mr. DeBoer:

This is in response to your letter of May 31, 1977 concerning the high rate of power increase (short periods) experienced at the Dresden Unit No. 2 and Monticello boiling water reactor facilities. We appreciate and share your interest in these events. Although neither of the events involved violation of a technical specification limit, fuel damage, or personnel radiation exposure, we have initiated measures to minimize the possibility that similar events will occur in the future.

Our interest in these events parallels yours and involves both the short reactor periods, which were the result of unusually high control rod notch worths, and the potential effects of high control rod worths on boiling waste reactor accident analyses.

We have concluded that the available redundant reactor trip capability during startup provides safe termination of power excursions of the type encountered at Dresden Unit No. 2 and Monticello independent of action by the operator. Nevertheless, we believe that the operator should be able to control power changes resulting from allowed control rod movements; and, therefore, we have recommended to boiling water reactor licensees, via IE Circular 77-7, measures to avoid short reactor periods and are continuing to investigate means of limiting the differential worth of control rods to prevent the recurrence of short reactor periods. Specifically, we have contacted the General Electric Company, the BWR vendor, and have been advised that new procedures have been issued to owners of operating BWRs which result in reduced control rod notch worths. While we are continuing to review this issue, we expect that the new control rod withdrawal procedures should reduce control rod notch worths as well as total control rod worths.

We will continue to evaluate, on a generic basis, the issue of rod withdrawal sequences to confirm that the sequences used at BWRs will allow proper operator control of reactivity changes and that potential dropped rod worths are within acceptable limits.

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For your information, we have attached a copy of the IE Circular and the General Electric Company's letter discussed above. Thank you for your interest in this matter and feel free to contact me should you have additional questions.

Sincerely,

Original Signed By
E. G. Case

Edson G. Case, Acting Director
Office of Nuclear Reactor Regulation

Enclosures:
1. IE Circular 77-7
2. GE letter dtd. 9/19/77

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NRC FORM 318 (9-76) NRCM 0240 ☆ U.S. GOVERNMENT PRINTING OFFICE: 1976 — 626-624

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We will continue to evaluate, on a generic basis, the issue of rod withdrawal sequences to confirm that the sequences used at BWRs will allow proper operator control of reactivity changes and that potential dropped rod worths are within acceptable limits.

Thank you for your interest in this matter and feel free to contact me should you have additional questions.

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Edson G. Case, Acting Director
Office of Nuclear Reactor Regulation

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State of New York Energy Office
Swan Street Building, Core 1 - 2nd Floor
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Additionally, we are evaluating, on a generic basis, the issue of rod withdrawal sequences to confirm that the sequences resulting from the IE circular will allow proper operator control of reactivity changes and that potential dropped rod worths are within acceptable limits.

Thank you for your interest in this matter and feel free to contact me should you have additional questions.

Sincerely,

Edson G. Case, Acting Director
Office of Nuclear Reactor Regulation

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Sincerely,

Edson G. Case, Acting Director
Office of Nuclear Reactor Regulation

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STATE OF NEW YORK
ENERGY OFFICE
SWAN STREET BUILDING
CORE 1 - 2ND FLOOR
EMPIRE STATE PLAZA
ALBANY, N.Y. 12223
(518) 474-8313

May 31, 1977

Mr. Edson Case, Acting Director
Office of Nuclear Regulation
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Subject: Reactivity Additions During Reactor Startups

Dear Mr. Case:

Recently, Dresden Unit 2 and Monticello experienced excessively high rates of power increase (short periods) during reactor startups. These rapid power increases were caused by high control rod notch worths with the reactor in a peak xenon condition. In both cases the power transient was terminated by an automatic Intermediate Rate trip.

On April 14, 1977 the NRC issued I E Circular 77-07 which discussed the Monticello and Dresden incidents and recommended the following actions:

> "These events indicate a need for all licensees of operating BWRs to review their startup procedures and practices to assure that their operating staff has adequate information to perform reactor startups avoiding such short periods in the event that the above-described conditions of peak xenon with no moderator voids exist at the time of startup. Operators should be made aware that extremely high rod notch worths can be encountered under these conditions. The procedures should include requirements for a thorough assessment following the occurrence of a short period before any further rod withdrawals are made. These considerations should be included in the operator training and requalification training programs".

We are frankly disturbed by these ill defined recommended actions which essentially permit reactors to continue to operate with control rod patterns and rod notch worths which, in the absence of equipment failure or operator error, could result in short reactor periods which the operator cannot control. We strongly feel that under no circumstances during normal operations should the withdrawal of any rod be permitted if it will result in an uncontrollable power excursion.

What is most disturbing about the NRC position is its apparent reliance on the automatic protection system (intermediate rate trip in this case) instead of insisting that design changes be made or that technical specifications and procedure changes be adopted that would specifically preclude the use of certain control rod patterns and limit the amount of reactivity that can be added by moving a rod one notch at any time during normal reactor operation.

The operator has been and should be the first level of protection, with the automatic protective system as a backup to respond to abnormal events. An operator has the right to expect that actions he takes which are permitted by the technical specifications will not result in an uncontrollable situation and the necessity of automatic protective actions.

It is therefore requested that the NRC require that appropriate changes be made in the technical specifications and operating procedures or the design of boiling water reactors to ensure that the amount of reactivity added via control rod movement during normal operations is limited to that which will result in a rate of power increase which is readily controllable by the operator. The NRC should also review the maximum and minimum rod worth values used in accident analyses for individual BWRs to ensure that in all applicable cases the rod worths used are greater than (or where appropriate less than) those which could occur during any xenon condition at any time during a fuel cycle.

Sincerely,

T. K. DeBoer, Director
Technological Development Programs

TKD:mfh

cc: Mr. Myer Bender, Chairman, ACRS