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Docket Nos.: 50-390  
and 50-391

Mr. H. G. Parris  
Manager of Power  
Tennessee Valley Authority  
500 A Chestnut Street, Tower III  
Chattanooga, Tennessee 37401

Dear Mr. Parris:

Subject: Revised SER Regarding the Boron Dilution Event Concern on the  
Watts Bar Nuclear Plant, Units 1 and 2

By letter dated June 18, 1982, we inadvertently transmitted an incorrect version of the SER Section 15.2.4.4 concerning resolution of the Staff's concerns regarding postulated boron dilution events at the Watts Bar Nuclear Plant, Units 1 and 2. Attached is the correct version.

Please disregard the SER transmitted to you on June 18, 1982. If you have any questions concerning this matter, please contact the project manager, T. J. Kenyon, at (301)492-7266.

Sincerely,

*[Signature]*  
Elinor G. Adensam, Chief  
Licensing Branch No. 4  
Division of Licensing

Enclosure:  
As stated

cc: See next page

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DI: LB#A T Kenyon: eb 6/22/82	LA: DE: LB#4 MDuncan 6/22/82	DL: LB#4 EAdensam 6/24/82	DR: RSR 6/23/82
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WATTS BAR

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Manager of Power  
Tennessee Valley Authority  
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Commission  
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Mr. David Ormsby  
Tennessee Valley Authority  
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Chattanooga, Tennessee 37401

James P. O'Reilly, Regional Administrator  
U.S. Nuclear Regulatory Commission,  
Region II  
101 Marietta Street, Suite 3100  
Atlanta, Georgia 30303

ENCLOSURE

RSB SER ON BORON DILUTION (15.2.4.4)

"Pressurized water reactors use soluble boron compounds to control core reactivity. The staff is concerned that accidental dilution during power operation, refueling, startup, or shutdown could result in an uncontrolled increase in the core reactivity. The applicant has identified alarms which would alert the operator to a boron dilution event in time to allow him appropriate response times per Standard Review Plan 15.4.6 for all modes of operation. A particular concern was a postulated boron dilution event while the plant was being shutdown. During this period and while refueling, valves are administratively locked closed to isolate all known sources of unborated water. At this time the applicant relies on an alarm from the source range neutron flux detector. The applicant provided justification for maintaining the alarm setpoints within one-half decade of the source flux level. Based on this margin and on the maximum possible rates of dilution, the applicant's analysis showed that

the event would be detected and announced by the high flux at shutdown alarm within a time period that left sufficient margin for the operator to correct the situation before criticality occurred. Fifteen minutes is the required minimum time margin at these conditions in accordance with our Standard Review Plan.

The applicant has committed to a schedule for setting and monitoring the gap between the high flux at the shutdown alarm level and the shutdown source flux level that is consistent with the analysis presented. The setting is to be no higher than 1/2 decade above the count rate, and the margin is to be verified (or reset if necessary) every 30 minutes for the first 2 hours, every 2 hours for the next 6 hours, and once per shift thereafter until the flux level has stabilized. The required procedures and schedule for verification of the setpoint are to be incorporated in the operator's Surveillance Instructions. The staff finds that the procedures and analysis provided by the applicant acceptably justify the use of a high flux at shutdown alarm to alert the operator to a boron dilution event during shutdown and refueling on a timely basis. However, the staff concludes that there is insufficient information for it to judge that the criteria for single failure are met. The staff requires that the applicant resolve this issue before startup by providing an evaluation of the boron dilution event that shows how the single failure criterion is met.

The staff finds that in the analysis, the reactivity changes in the boron dilution event are accounted for satisfactorily. The applicant's analysis defines a region of reactor conditions for the event that are considered safe, according to NRC criteria as described in SRP Section 15.4.6, and, with resolution of our concern about meeting the single failure criterion, the applicant's boron dilution event analyses can be acceptable."