



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

August 23, 1985

TO ALL LICENSEES OF OPERATING REACTORS AND APPLICANTS FOR AN OPERATING
LICENSE (Generic Letter 85-16)

Gentlemen:

SUBJECT: HIGH BORON CONCENTRATIONS

Boron Injection Tanks were originally incorporated into Westinghouse plant designs as a means of mitigating steam line break events. To overcome the reactivity addition resulting from a rapid cooldown, a high concentration of boron in the form of boric acid was used in the injection tanks. High concentrations of boron result in maintenance and operational burdens to licensees because of the need to prevent boron precipitation.

In the recent past, there have been incidents at operating reactor plants in which boric acid has crystallized in the internals of vital safety related pumps and piping, thereby rendering those systems inoperable. One example is an incident at Indian Point 2 on December 28, 1984 in which the safety injection system was inoperable because all three pumps in the system were frozen with crystallized boric acid.


Over the past several years, the analysis methods for calculating the consequences of a steam line break have improved. These revised calculations demonstrate that the negative reactivity that needs to be added is lower than originally thought and consequently the need for highly concentrated boron injection is reduced or eliminated. Many licensees with Westinghouse plants (e.g. Surry 1&2), have requested that they be allowed to either physically remove the boron injection tank from the safety injection piping, or at least reduce boron concentrations in the tank to the levels safely used in other sections of the safety injection piping and refueling water storage tank (e.g., to 2000 ppm). To support their requests, licensees have submitted new analyses of the steam line break event that demonstrated the regulatory criteria (i.e., 10 CFR 100 guidelines dose values) were met. The staff has reviewed these analyses and granted these requests.

In light of the safety risks inherent in the present system and these new calculations which show a reduced need for boron injection, the staff encourages you to reevaluate the need for maintaining high concentrations of boron in your boron injection tanks. In the event you perform a reanalysis of the steam line break event or any other event which requires or assumes credit for boron injection, the staff is willing to consider a relaxation of excess conservatism in your analyses, provided the relaxation can be justified. As a result, it may be possible to remove the boron injection tanks or reduce the boron concentration.

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INFO-4TR

If you require any further information regarding this subject, please contact your project manager.


Hugh L. Thompson, Director
Division of Licensing
Office of Nuclear Reactor Regulation

*PREVIOUS CONCURRENCE SEE DATE

ORAB:DL*
RKarsch:c1
02/05/85

SL:ORAB:DL*
JHannon
02/05/85

Amz
C:ORAB:DL
GHolahan
02/22/85

Am
AD:SR:DL
DCFutchfield
02/24/85

D/DSI*
RBernero
02/10/85

AM
D/DL *JH*
HThompson
02/21/85

Am
D/DST
JSpets
02/10/85

LIST OF RECENTLY ISSUED GENERIC LETTERS

<u>GENERIC LETTER NO.</u>	<u>SUBJECT</u>	<u>DATE</u>
85-01	Fire Protection Policy Steering Committee Report	1/9/85
85-02	Staff Recommended Actions Stemming From NRC Integrated Program for the Resolution of Unresolved Safety Issues Regarding Steam Generator Tube Integrity	4/15/85
85-03	Clarification of Equivalent Control Capacity For Standby Liquid Control Systems	1/28/85
85-04	Operator Licensing Examinations	1/29/85
85-05	Inadvertent Boron Dilution Events	1/31/85
85-06	Quality Assurance Guidance for ATWS Equipment that is not Safety-Related	4/16/85
85-07	Implementation of Integrated Schedules for Plant Modifications	5/02/85
85-08	10 CFR 20.408 Termination Reports - Format	5/23/85
85-09	Technical Specifications for Generic Letter 83-28, Item 4.3	5/23/85
85-10	Technical Specifications for Generic Letter 83-28, Items 4.3 and 4.4	5/23/85
85-11	Completion of Phase II of "Control of Heavy Loads at Nuclear Power Plants" NUREG-0612	6/28/85
85-12	Implementation of TMI Action Item II.K.3.5, "Automatic Trip of Reactor Coolant Pumps"	6/28/85
85-13	Transmittal of NUREG-1154 Regarding the Davis Besse Loss of Main and Auxiliary Feedwater Event	8/5/85
84-14	Commercial Storage at Power Reactor Sites of Low Level Radioactive Waste not Generated by the Utility	8/1/85
85-15	Information Relating to the Deadlines for Compliance with 10 CFR 50.49, "Environmental Qualification of Electric Equipment Important to Safety for Nuclear Power Plants"	8/6/85
85-16	High Boron Concentrations	8/23/85
85-17	Availability of Supplements 2 & 3 to NUREG-0933, "A Prioritization of Generic Safety Issues"	8/23/85