



October 26, 1973

Mr. John F. O'Leary, Director
Directorate of Licensing
Office of Regulation
U.S. Atomic Energy Commission
Washington, D. C. 20545

Dear Mr. O'Leary:

TURKEY POINT UNIT NO. 3
DOCKET NUMBER 50-250
ABNORMAL OCCURRENCE NO. 3-73-10
HIGH BORON CONCENTRATION
IN THE BORIC ACID STORAGE TANKS AND
THE BORON INJECTION TANK



I. Introduction

This report is submitted in accordance with Technical Specification 6.6.2a, Operating License No. DPR-31. This Abnormal Occurrence Report No. 3-73-10 describes an abnormal occurrence identified on October 18, 1973. The Directorate of Regulatory Operation, Region II, was notified on October 18, 1973.

II. Description of Occurrence

On October 18, 1973, a plant review of the Technical Specification was conducted with supervisory personnel reminding them of the upper limit on boron concentration. Subsequently, a review of the October 18, 1973 chemistry analysis log sheets for the boric acid storage tanks and the boron injection tanks indicated that "A" boric acid storage tank had a boron concentration of 22,671 ppm. This boron concentration is in excess of the Technical Specification upper limit of 22,500 ppm. Further review of the chemistry logs revealed that all three boric acid storage tanks had exceeded the upper specification on boron concentration on several occasions over the past few months, and that the Unit No. 3 boron injection tank had also exceeded the upper specification of 22,500 ppm boron on two occasions. A maximum boron concentration of 24,309 ppm was recorded for the "B" boric acid storage tank on May 16, 1973.

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III. Investigation and Analysis of the Occurrence

Both Unit Nos. 3 and 4 piping and components associated with the boric acid storage tanks and the Unit Nos. 3 and 4 boron injection tanks were checked for indications of boric acid crystallization that might have been caused by the high boron concentrations. No such indications of boric acid crystallization were found.

The nuclear operator logs were reviewed for the dates that the high boron concentrations occurred and the logs showed that the boric acid storage tanks and boron injection tank temperatures were at least 154 F, which corresponds to the saturation temperature for a solution of approximately 26,000 ppm boron. The average temperature for these tanks was about 160 F which corresponds to the saturation temperature for a solution of approximately 29,500 ppm boron.

The cause of the abnormal occurrence was an oversight by chemistry laboratory and supervisory personnel with respect to the maximum allowable boron concentration. The oversight stemmed from the laboratory personnel's preoccupation with maintaining the lower limit on boron concentration which had recently been exceeded on the boron injection tank and the safety injection accumulator tanks.

IV. Corrective Action

The immediate corrective action consisted of sampling the "A" boric acid tank with the intention of returning it to a boron concentration within the Technical Specification limits. However, the analysis showed the boron concentration was now 260 ppm lower at 22,411 ppm and was within the specified limits. Because the second sample was taken on the day following the out of specification sample, the tank contents had been slightly diluted as a result of recirculation with the boron injection tank. The boron injection tank contained a solution of lower boron concentration than the boric acid storage tank but was still within the specifications.

The permanent corrective action instituted to prevent recurrence is as follows:

- a. The Technical Specification limits associated with the various plant chemistry analyses have been printed on the Laboratory Results Cards as a constant reminder to the laboratory technician performing the analyses.
- b. All laboratory and supervisory personnel involved have been instructed to make a thorough review of all chemistry specifications emphasizing the potential hazards of exceeding the high limit as well as the low limit.

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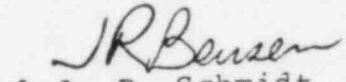
V. Evaluation of Safety Implications of the Occurrence

The main consideration of the occurrence was the potential for precipitating boric acid out of solution with the possibility of creating flow blockages in the concentrated boric acid system. However, all checks indicated that no significant precipitation of boric acid occurred. Without precipitation, the increased boric acid concentration is in the favorable direction of improving the safety function of negative reactivity addition.

VI. Conclusions

- a. The cause of the abnormal occurrence was an oversight by chemistry laboratory and supervisory personnel with respect to maintaining the boron concentration below the high limit prescribed by the Technical Specifications.
- b. The corrective action taken will reduce the probability of having similar incidents in the future.
- c. The high boron concentration did not result in any danger to the public health and safety nor was the safe operation of the reactor jeopardized.

Very truly yours,


A. D. Schmidt
Director of Power Resources

cc: Mr. Norman C. Moseley, Director
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