



December 2, 1974

Mr. Edson G. Case, Acting Director
Directorate of Licensing
Office of Regulation
U. S. Atomic Energy Commission
Washington, D. C. 20545

Dear Mr. Case:



ABNORMAL OCCURRENCE NO. 251-74-8
DECEMBER 2, 1974
OCCURRENCE DATE: NOVEMBER 23, 1974
TURKEY POINT UNIT NO. 4
RESTRICTED FLOW PATH FROM BORIC ACID TANKS
TO REACTOR COOLANT SYSTEM

A. CONDITION PRIOR TO OCCURRENCE:

Unit No. 4 was operating at 99% Reactor Power. Unit No. 3 was at refueling shutdown condition.

B. DESCRIPTION OF OCCURRENCE:

On November 23, 1974, an indication of low boric acid flow in the flow path from the boric acid tanks to the reactor coolant system was observed. Immediate operator action verified the flow path from the refueling water storage tank to the reactor coolant system was established and operable.

An immediate investigation revealed the boric acid line heat tracing system was operable. The boric acid pumps were checked and found to be operable. Standby boric acid pumps were also checked and found to be operating satisfactorily. No. 4 boric acid filter was bypassed with no effect on the flow restriction. The boric acid line temperature recorders indicated the boric acid line temperatures were within normal operating temperature range. Evaluation of the results of tests at 6:10 P.M., November 23, 1974, concluded the flow restriction was located between No. 4 boric acid filter outlet and the boric acid blender.

Accordingly, Unit No. 4 was removed from service at 8:57 P.M., November 23, 1974, and the reactor placed in hot shutdown condition.

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C. CAUSE OF OCCURRENCE:

Evaluation of the results of investigations, concluded the flow restriction in the boric acid line was caused by an accumulation or buildup of boric acid crystals in the line. Localized cooling in the boric acid line was considered the most probable cause of the flow restriction.

D. ANALYSIS OF OCCURRENCE:

Boric acid is supplied to the reactor coolant system for makeup to the reactor coolant during normal reactor operation and reactor shutdown. Boric acid is also supplied to the reactor coolant system when the reactor is at hot shutdown to ensure reactor shutdown is established and maintained.

To accomplish this, two separate flow paths from different sources of boric acid solution are provided. One flow path is from the boric acid tanks to the reactor coolant system. The second flow path is from the refueling water storage tank to the reactor coolant system.

During the time the flow path from the boric acid tanks to the reactor coolant system was restricted, the flow path from the refueling water storage tank to the reactor coolant system was established and operable. This flow path was used for normal makeup to the reactor coolant system when Unit No. 4 was removed from service on November 23, 1974. This flow path was used, as required, to ensure that reactor shutdown margin was maintained while the reactor was at hot shutdown conditions.

In addition, a third flow path can be used to supply boric acid solution to the reactor coolant system when the reactor coolant system pressure is less than 1400 psig. This flow path uses the safety injection pumps, safety injection system piping, and the refueling water storage tank.

The requirements of the safety analyses to supply boric acid solution to the reactor coolant system for the incidents analyzed and presented in the Safety Analysis Report are satisfied by use of the Engineering Safeguards System (including the safety injection system). During the time the flow path from the boric acid tanks to the blender was restricted, the Engineered Safeguards System was operable. Therefore, neither reactor safety nor the health and safety of the public was jeopardized by this occurrence.

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E. CORRECTIVE ACTION:

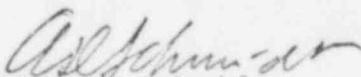
The immediate corrective action consisted of isolation of the boric acid flow path from the reactor coolant system, flushing the boric acid line with primary water to remove the flow restriction, and verifying that boric acid solution was supplied at proper flow rates through each flow path to Unit No. 4 reactor coolant system.

Additional corrective action was replacement of insulation on an elbow in the boric acid line. This insulation was accidentally removed from the boric acid line while performing maintenance work on equipment located in the area of the boric acid line. The scaffolding erected for performing the maintenance work prevented the early detection of the missing thermal insulation. The maintenance work has been completed and the scaffolding removed.

F. FAILURE DATA:

This is the first incident of flow restriction in the flow path from the boric acid tanks to the blender that can be attributed to an accumulation or buildup of boric acid crystals in the line.

Very truly yours,



A. D. Schmidt
Director of Power Resources

VTC/cpc

cc: Mr. Norman C. Moseley
Jack R. Newman, Esquire