

RLB-90-294

November 30, 1990

U. S. Nuclear Regulatory Commission Document Control Desk Washington, DC 20555

Reference: Quad Cities Nuclear Power Station Docket Number 50-254, DPR-27, Unit One

Enclosed is Licensee Event Report (LER) 90-023, Revision 00, for Quad Cities Nuclear Power Station.

This report is submitted in accordance with the requirements of the Code of Federal Regulations, Title 10, Part 50.73(a)(2)(v)(D): The licensee shall report any event or condition that alone could have prevented the fulfillment of the safety function of structures or systems that are needed to mitigate the consequences of an accident.

Respectfully,

COMMONWEALTH EDISON COMPANY QUAD CITIES NUCLEAR POWER STATION

R. L. Bax Sta ion Manager

RLB/M 'B/jmt

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ABSTRACT:

On October 31, 1990 Unit One was in the Run mode at 91 percent of rated core thermal power.

At 0415 hours, the station entered Technical Specification 3.0.A due to the 1A Core Spray Room drain line check valve being discovered inoperable.

A plug was installed in the drain line for flood protection. The 1A Reactor Building Floor drain sump pump, which was out of service (OOS) for routine maintenance, was temporarily returned to service and the 1A Reactor Building floor drain sump was pumped down. As a precautionary measure, the remaining corner room drains for both Unit One and Two were plugged and Operations initiated a twice per shift surveillance of both units Reactor Building corner rooms.

Corrective actions will include maintaining the twice per shift surveillance of the corner rooms until the replacement valve is purchased and installed in each drain line. The drain line plugs will remain installed until that time.

This report is being submitted in accordance with 10 CFR 50.73 (a)(2)(v)(D).

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PLANT AND SYSTEM IDENTIFICATION:

General Electric - Boiling Water Reactor - 2511 MWt rated core thermal power.

EVENT IDENTIFICATION:

Reactor Core Isolation Cooling and 1A Core Spray Pumps Declared

Inoperable Due To Drain Line Check Valve Failure

A. CONDITIONS PRIOR TO EVENT:

Unit: One

Event Date: October 31, 1990 Event Time:

Reactor Hode: 4

Mode Name: RUN

Power Level: 91%

This report was initiated by Deviation Report D-4-1-90-111

RUN Mode (4) - In this position the reactor system pressure is at or above 825 psig, and the reactor protection system is energized, with APRM protection and RBM interlocks in service (excluding the 15% high flux scram).

B. DESCRIPTION OF EVENT:

On October 31, 1990 at 0415 hours, Unit One was in the RUN mode at 91 percent of rated core thermal power. At this time, it was reported by an Equipment Attendant (EA) on routine rounds that there was water coming back up through the floor drain in the 1A Core Spray [BM] room. This was due to the failure of a check valve [V] in the drain line to the sump. There was also a high level in the Reactor Building floor drain sump (RBFDS)[WK]. The Core Spray room floor had an area of approximately 30 square feet of standing water. The Reactor Core Isolation Cooling (RCIC) [BN] and the 1A Core Spray pumps, which are both in the 1A Core Spray room, were declared inoperable. A Shift Foreman (SF) was immediately dispatched to the area to install a plug in the floor drain in the IA Core Spray room. Plugs were installed in both the 1A Core Spray and 1A Residual Heat Removal (RHR)[BO] rooms because the drain lines from both rooms feed the 1A RBFDS. At 0515 hours, the plugs had been installed and the Unit One RCIC and IA core spray pump were declared operable. At 0600 hours, the 1A RBFDS pump [P], which was undergoing routine maintenance, was temporarily returned to service and the sump was pumped down.

At 0730 hours, as a precautionary measure, Operations initiated actions to plug the remaining reactor basement corner room floor drains on both Unit One and Two.

At 0750 hours, an Emergency Notification System (ENS) phone call was completed as required by 10 CFR 50.72(b)(2)(111)(D).

At 1055 hours, drain plugs had been installed on the remaining basement corner room drains for both units per a temporary alteration. Operations initiated a twice per shift check of all the corner rooms.

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C. APPARENT CAUSE OF EVENT:

This report is being submitted in accordance with 10 CFR 50.73(a)(2)(v)(D): The licensee shall report any event or condition that alone could have prevented the fulfillment of the safety function of structures or systems that are needed to mitigate the consequences of an accident.

The check valve failure is due to the original design. The check valves were installed to prevent leakage between the rooms. The type of check valve installed is not effective for controlling slow leaks which may occur in the rooms.

The check valves had previously been inspected and replaced or repaired in July 1990 as described in LER 254/90-015.

D. SAFETY ANALYSIS OF EVENT:

The safety consequences of this event were minimal. Operators inspect plant conditions, including the Reactor Building sump levels, once per shift. This inspection discovered the water and provided the early warning of a potential flooding condition.

Safety evaluation #90-467 had been previously written and approved to allow the installation of the drain line plugs as an interim measure. The safety evaluation concluded that the installation of the plugs insured flood protection consistent with that described in the FSAR.

E. CORRECTIVE ACTIONS:

Upon notification of the water in the 1A Core Spray room, the drain lines in that room and the 1A RHR room were plugged. The 1A RBFDS pump was returned to service and the sump was pumped down. Additionally, the drain lines in the remaining corner rooms for both units were plugged. Inspection of the corner rooms for water was increased from once per shift to twice per shift.

Temporary Procedure 6307, Reactor Building Sump Pump Check Valve Testing, was performed. The procedure was written to determine which check valves leaked and would permit backflow from each sump into the respective corner rooms. Six of the eight check valves were checked and it was found that four of these allowed backflow into their respective corner rooms. The 2B RBFDS pump was out of service for maintenance and therefore the two check valves associated with that sump were not checked.

AS FURTHER CORRECTIVE ACTIONS:

 The station has found a suitable replacement valve. The valve is in the procurement process and will be installed as soon as practical. (NTS 2542009011101).

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- BWR Systems Engineering is reviewing the feasibility of a separate sump and sump pump for each corner room which will be tied into separate discharge piping (NTS 2542009011102).
- The twice per shift surveillance of the corner rooms will continue until the suitable valves are installed (NTS 2542009011103).

F. PREVIOUS EVENTS:

The only previous documented event concerning the failure of the ECCS drain line check valves is Licensee Event Report (LER) 254/90-015, Reactor Building Corner Room Floor Drain Check Valve Stuck Open.

G. COMPONENT FAILURE DATA:

The installed check valve is a 4" diameter, carbon steel, offset tilting disc check, 150 pound pressure riting, manufactured by Daniel Industries, catalog number 1601.