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Subject: Arkansas Nuclear One - Unit 1
Docket No. 50-313
License No. DPR-51
Commitments Made Concerning the
Unit 1 HPI Backflow Event

Gentlemen:

A review of previous commitments to the NRC is being conducted by the Commitment Management System Historical Review Project. Certain commitments associated with the Unit One High Pressure Injection System have been identified which need to be revised due to system modifications completed after the commitment was made. These commitments concern surveillance testing, temperature monitoring, and operator actions. The purpose of this letter is to revise these commitments, made after the Unit 1 HPI backflow event in 1989, and to update the NRC on current actions being taken as a result of this event No action is being requested from the NRC.

On January 20, 1989, Arkansas Nuclear One, Unit One experienced a transient during which reactor coolant was allowed to backflow through the High Pressure Injection (HPI) system due to a failed-open check valve and unbalanced Reactor Coolant Pump (RCP) operations (two on, two off). The corrective actions which were taken in response to this event were documented in letters to the NRC dated February 14, 1989 (1CAN028909), February 24, 1989 (1CAN028914), March 9, 1989 (1CAN038905), April 27, 1989 (1CAN048913), and May 25, 1989 (LER 50-313/89-004, 1CAN058911). The NRC issued a safety evaluation of these corrective actions dated August 11, 1989 (1CNA088904).

Since that time, modifications to the HPI system have been made which improve the system and supersede the necessity for certain tests, surveillances and operator responses. Specifically, temperature instrumentation has been installed and the injection lines have been modified to remove the crossover lines, eliminating the only credible flow path for reactor coolant backleakage. Therefore, the previous commitments are no longer needed and are being rescinded or revised.

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Attached is a summary of those commitments which have been affected by the modifications to the HPI system and a description of present requirements concerning surveillance testing, temperature monitoring, and response to abnormal temperatures. These changes were reviewed prior to implementation in accordance with ANO's 10 CFR 50.59 program and no unreviewed safety question was involved.

Should you have any questions, please contact me.

Very truly yours,

for James J. Fisicaro
Director, Licensing

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The Unit One HPI backflow event occurred after a reactor trip in which two reactor coolant pumps tripped and high pressure injection was briefly initiated. The unbalanced RCP operations created a differential pressure across the HPI system, and reactor coolant flowed backward through a failed open check valve (MU-34B) and the crossover line from the 'B' HPI line to the 'C' HPI line back to the RCS (see Figure 1). In response to this event, redundant check valves were installed on each HPI injection line. Requirements were instituted for testing the check valves, monitoring HPI line temperatures, and taking certain corrective actions if abnormal temperatures occurr (LER 50-313/89-004 reported this event.)

During refueling outage 1R9 (October 1, 1990 to January 6, 1991) two design change packages were implemented for the HPI system. DCP 89-1012B removed the crossover lines and installed two additional injection lines per HPI train (see Figure 2). With the crossover lines removed, no credible flow path exists for reactor coolant through the HPI system. (This DCP was installed to resolve a small break LOCA concern identified during analysis of the backflow event. License amendment request dated August 8, 1990 (1CAN089002), discusses the modification in detail.) DCP 89-1018 installed temperature instrumentation (RTDs) with a recorder and a control room annunciator alarm for the HPI lines. (This DCP also addressed the thermal stratification concerns discussed in NRC Bulletin 88-08.)

Previous commitments in 1989 correspondence (letters 1CAN028909, 1CAN028914, and LER 50-313/89-004) discussed actions being taken to monitor HPI line temperature for indications of reactor coolant backleakage. Local temperature indicators and temperature tape were placed on each HPI line and operators recorded readings once per shift. Also, the startup and shutdown procedures were revised to require logging HPI line temperature whenever unbalanced RCP operation occurred. With the crossover lines now removed, unbalanced RCP operation is inconsequential as there is no credible flow path for reactor coolant backleakage. Also, HPI line temperatures are now recorded by a remote temperature recorder and the control room has an annunciator alarm on high temperature (200°F). Therefore, the startup and shutdown procedures no longer require logging HPI line temperatures, and the operations logs procedure requires recording temperature readings daily from the remote indicator, not once per shift from local indicators.

Letter 1CAN028914 discussed actions to be taken if a high temperature occurred. If one or more HPI lines exceeded 240°F, the operators were instructed to close the corresponding crossover valve, which would require declaring one HPI train inoperable and entering an LCO. For temperatures greater than 150°F, a condition report would be initiated. Abnormal temperature differences between HPI lines (15-20°F) were to be confirmed by hand-held pyrometers and investigated. Currently, with the crossover lines removed, reactor coolant backflow is no longer credible. Therefore, no actions are required based on temperature differences between HPI lines. At a temperature of 200°F, operators receive an annunciator alarm. A condition report and an engineering evaluation is required. (The high alarm setpoint of 200°F is well above the normal operating temperature of the line to avoid spurious alarms but will detect a backflow of reactor coolant.) A note in the operations procedure states that temperatures greater than 240°F may result in an inoperable line but this is determined by an engineering evaluation.

Letters 1CAN028909, 1CAN038905, and LER 50-313/89-004 discussed testing the redundant check valves in the four HPI injection lines. As described, the testing included individual leak rate testing during refueling outages, full flow testing during cold shutdown, and performing a gross leak rate test in which operators observe HPI line pressure for one minute and initiate a condition report if the pressure increases by 200 psi. With the removal of the crossover lines and the subsequent elimination of the only credible flow path for reactor coolant backflow, individual leak rate testing of these check valves is no longer needed. Full flow test[illegible]d gross leak rate testing are still being done. Full flow testing [illegible]old shutdown is performed in accordance with the ANO inservice test[illegible]ogram. The gross leak rate test is being performed quarterly in conjunction with the quarterly stroke test of the motor operated injection valves.

FIGURE 1
RCS BACKLEAKAGE INTO HPI SYSTEM

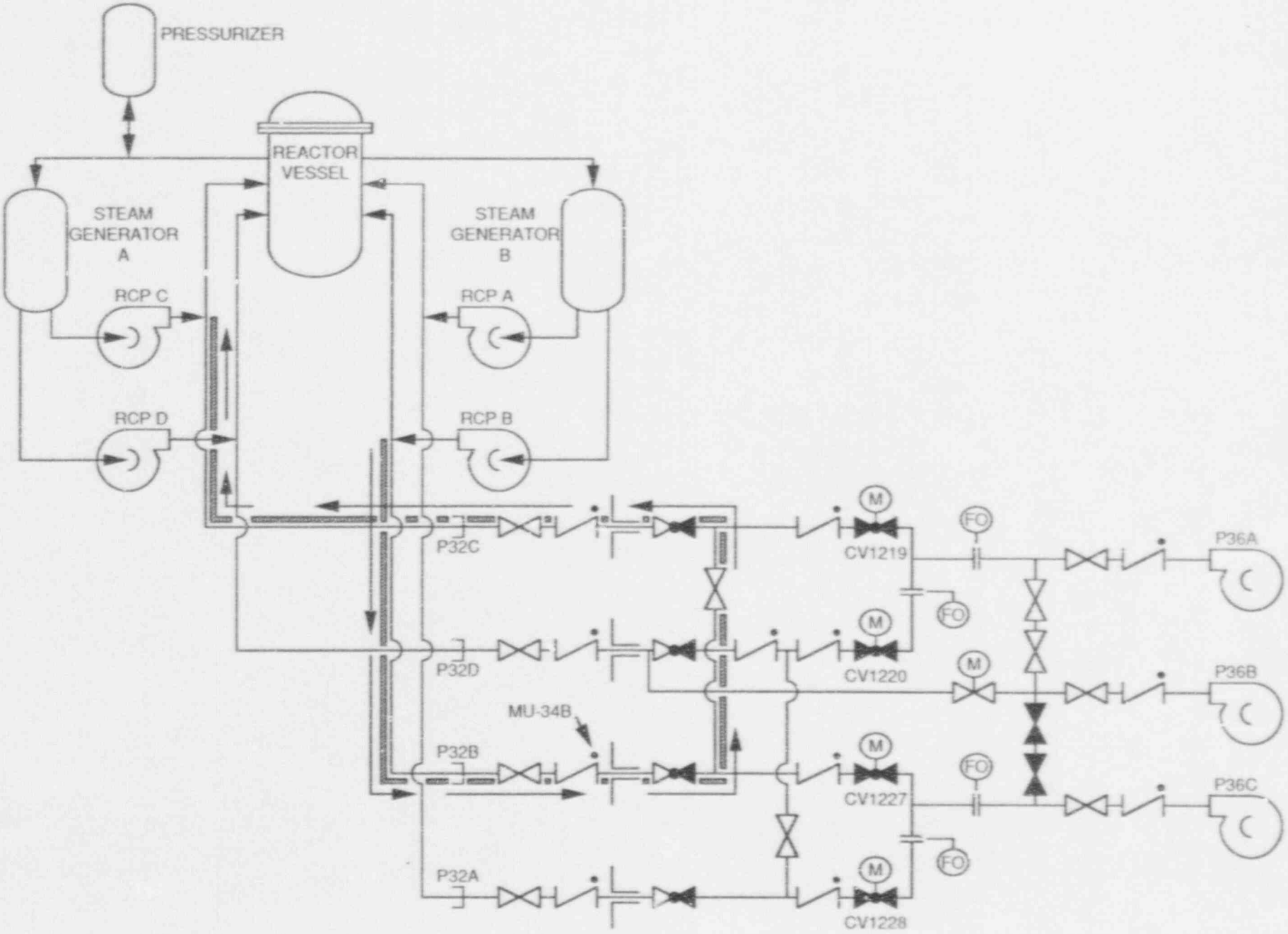

FIGURE 2
CURRENT CONFIGURATION