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June 7, 1983

Mr. A. Schwencer, Chief
Licensing Branch No. 2
Division of Licensing
U. S. Nuclear Regulatory Commission
Washington, D.C. 20555

Subject: Limerick Generating Station, Units 1&2
Response to Reactor Systems Branch
Draft Safety Evaluation Report (DSER)

Reference: A. Schwencer to E. G. Bauer, Jr.,
Letter dated March 11, 1983

File: GOVT 1-1 (NRC)

Dear Mr. Schwencer:

The attached document is a final response to Reactor System Branch (RSB) Draft Safety Evaluation Report Item No. 3, High/Low Pressure Interlocks on Limerick ECCS INJECTION VALVES, as discussed at the ICSB and RSB joint meeting held in Bethesda, Maryland on May 17, 1983.

Sincerely,

Eugene J. Bradley

RJS/gra/19

Copy to: See Attached Service List

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1/1

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HIGH/LOW PRESSURE INTERLOCKS ON LIMERICK ECCS INJECTION VALVES

NRC - RSB POSITION (per DSER transmitted to PECo on 3/11/83)

Interlocks of ECCS Injection Valves (6.3)

The HPCI system incorporates relief valves to protect the components and piping from inadvertent overpressure conditions resulting from either thermal expansion or backpressure leakage into the low pressure portions of the system.

The Core Spray and LPCI (RHR) systems are not designed to withstand normal reactor operating pressure. Each of the low pressure lines that interface with the reactor coolant system has a testable check valve inside primary containment backed up by a normally closed motor-operated gate valve outside of containment. Relief valves are provided in the low pressure lines to protect against leakage from the reactor coolant system. An interlock is provided on the motor-operated valves which prevents their opening until the differential pressure across the valve is below a specified value.

We require that (A) this interlock be present at all times for both automatic and manual valve actuation, and (B) that the setponts be such that the valve cannot be opened until reactor coolant pressure is below that of the low pressure ECC system involved.

RESPONSE

Part (A)

The interlock is present at all times for both automatic and manual valve actuation for both low pressure ECC systems. The following valves are series combinations of motor operated valves and testable check valves, which isolate low pressure ECC systems from the higher pressure primary system.

Core Spray (A Loop)

E21-F006A	Core Spray Testable Check Valve
E21-F005	Core Spray MOV
E21-F004A	Core Spray MOV

Core Spray (B Loop)

E21-F006B	Core Spray Testable Check Valve
E21-F038 (HV 108)	Core Spray Testable Check Valve
E21-F037	Core Spray MOV
E21-F004B	Core Spray MOV

LPCI (All 4 Loops)

E11-F017A, B, C, D	LPCI MOV
E11-F041A, B, C, D	LPCI Testable Check Valves

The normally closed Core Spray injection valves (E21-F005 and E21-F037) and the normally open, Core Spray injection valves (E21-F004A and E21-F004B) are interlocked by high reactor pressure (one out of two twice logic) to prevent their receiving an opening signal upon automatic system initiation. In addition, the valves are interlocked by limit switches to prevent both valves in each loop from being opened manually at the same time during testing.

E11-F017A, B, C, D LPCI Injection MOV's are interlocked to prevent opening when differential pressure across the valves exceeds the setpoint. This interlock applies to manual or automatic opening.

Part (B)

The permissive for Core Spray System injection is based on direct reactor pressure, nominally 450 psig. The permissive for opening the LPCI injection valves is based on the differential pressure across the valve, a nominal range of 50-100 psid. These Limerick features meet all applicable codes and regulations. Also the recommendations of Branch Technical Position ICSB 3 were followed in evaluating ECCS low pressure interlocks on an individual case basis (Section B.5).

Limerick's LPCI injection valve permissive is based on the differential pressure across the valve. The differential pressure setpoint range for the LPCI injection valves was selected such that the low pressure portion of the RHR piping will be protected from over-pressurization above the maximum service pressure, 500 psig. The 50-100 psid setpoint range is based on the rated maximum pump discharge head prior to opening the LPCI injection valve, 360 psig. This gives a pressure range of 410-460 psig downstream of the injection valve necessary to satisfy the permissive. The final selection of the differential pressure permissive setpont will be within the 50-100 psid range and will consider the final system configuration and performance characteristics.

When the permissive has been satisfied and the LPCI injection valve opens, injection into the reactor will begin when the system pressure upstream of the check valve exceeds the reactor pressure. If reactor pressure begins to rise above pump discharge head, the check valve will close, thus preventing high reactor pressure from over-pressurizing the low pressure RHR system pipe.