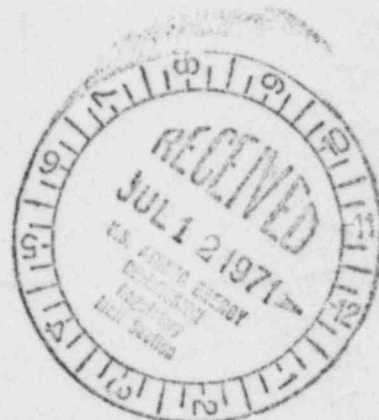


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Carolina Power & Light Company -

Raleigh, North Carolina 27602

July 1, 1971



Dr. Peter A. Morris
 Division of Reactor Licensing
 U. S. Atomic Energy Commission
 Washington, D. C. 20545

Dear Dr. Morris:

We described in our letter of April 13, 1971, the testing which was performed on the modifications to the Safety Injection System at our H. B. Robinson Unit No. 2. The modifications were previously discussed with your Staff on January 22, 1971, and documented in our letter to you of January 25, 1971. In response to a subsequent request from your Staff regarding our evaluation of the flow tests which could have been performed on the Safety Injection System after completing the modification as well as additional details of the flow test which was actually performed, we submit the following information:

A preoperational flow test was performed on the Safety Injection System to verify that the system fulfilled the design requirements. The preoperational test verified that the Safety Injection System fulfilled the performance requirements documented in the FSAR and revised by Mr. J. A. Jones' letter of August 12, 1970 to you regarding re-evaluation of the safety injection pump performance. Subsequent to the preoperational test, it was determined that the flow resistance of 2-inch high head safety injection piping was underestimated. The flow resistance error was factored into the calculation of system line losses. Subsequent system flow testing by Westinghouse at the Ginna Nuclear Power Plant has verified their calculational model for determining line losses and system delivery capability based on pump performance. The modified flow configuration of the Robinson Safety Injection System was used with the Westinghouse calculational model in the re-analysis of the system documented in the January 25, 1971 letter referenced above. Therefore, a system flow capacity test was not required on the modified Safety Injection System. The only flow test required was one to ensure that no blockage of the modified flow paths had been incurred.

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July 1, 1971

On February 5, 1971, a flow test was performed on the Safety Injection System following the piping modification. The purpose of the test was to ensure that unobstructed safety injection flow paths had been maintained after the addition of valves SI-870A and 870B and the hot leg cross-connection line.

The initial conditions for the flow test were as follows:

1. Reactor Coolant System (RCS) vented to the pressure relief tank (PRT) through the pressurizer with both power relief valves and their respective isolation valves open.
2. Pressurizer level at about 50% as read on level transmitter LT-462.
3. RCS temperature was below 200°F.
4. Safety Injection System (SIS) temperature at ambient temperature.
5. Boron concentration in the SIS suction and discharge headers and the boron injection tank were verified to be equal to that in the refueling water storage tank.
6. All accumulator test and fill lines were isolated.
7. Relief valve 842 set at 1750 psig.

For the flow test, Residual Heat Removal System (RHR) pump "B" was run to supply water to safety injection (SI) pumps "A" and "C". To verify that the cold leg injection path was open, the following flow path was set up with all other possible flow paths valved out:

Reactor coolant water at 200°F was taken from RCS loop 2 hot leg through RHR valves 750, 751, 752B, RHR pump "B", RHR valves 754B, 757B, RHR heat exchanger "B", SI valves 863B, 887, 886A, 886C, SI pumps "A" and "C", 888A, 888C, 878A, 878B, 867A, Boron Injection Tank, SI valves 870A or 870B, 868A, 868B, and 868C to the cold legs.

Valves SI-870A and 870B were opened one at a time. Flow element FT-943 verified that flow through both the valves was about 880 gpm at a hot leg pressure (PT-943) of about 740 psig.

For verification that the hot leg injection path through the hot leg cross-connection line was open, the following flow path was set up with all other possible flow paths valved out:

CO-11 IS CHECKING OUT DURING OF THIS
TEST - VERIFY IF ONLY PUMP PRESSURE OR
FLOW IS FLOWING

Cold

July 1, 1971

Reactor coolant water at 200°F was taken from RCS loop 2 hot leg through RHR valves 750, 751, and 752B, RHR pump "B", RHR valves 754B, 757B, RHR heat exchanger "B", SI valves 863B, 887, 886A, 886C, SI pumps "A" and "C", 888A, 888C, 878A, 878B, 869, 866A or 856B to loops 2 and 3 hot legs.

Valves SI-866A and 866B were opened one at a time. Flow element FT-940 verified that flow through both valves was about 670 GPM at a hot leg pressure (PT-940) at 1060 psig. A contact pyrometer was used in each case to verify flow through the hot leg cross-connection line by detecting an increase in the injection fluid temperature from ambient conditions to the reactor coolant temperature.

This flow test was designed to verify that no flow blockage existed following the Safety Injection System modification. The test was not designed to be a system capacity check. The preoperational test was run to ensure that the safety injection pumps deliver adequate injection flow during accident conditions. Therefore, it was not necessary to radically change plant conditions to verify system flow capacity again.

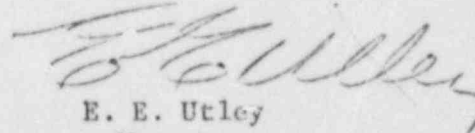
The Safety Injection System modification provided for the installation of two new valves (SI-870A and 870B). The valves were functionally tested and opening and closing times at 80% and 100% rated voltage were measured. The measured opening and closing times at the specified voltages for the valves are listed below:

<u>Valve</u>	<u>Voltage (volts)</u>	<u>Opening Time (sec)</u>	<u>Closing Time (sec)</u>
870A	480	7.5	7.5
870A	385	7.5	7.5
870B	480	8.0	8.0
870B	385	8.2	8.2

These measured opening and closing times were within the 10.0 seconds specified for the valves.

We hope that this information will allow your staff to complete their review of this matter.

Yours very truly,



E. E. Utley
Manager

Generation & System Operations

RLM/lcf

cc: Mr. J. A. Jones