PSE&G

Public Service Electric and Gas Company 80 Park Place Newark, N.J. 07101 Phone 201/430-7000

November 10, 1979

Mr. Boyce H. Grier
Director of USNRC
Office of Inspection and Enforcement
Region 1
631 Park Avenue
King of Prussia, Pennsylvania 19406

Dear Mr. Grier:

LICENSE NO. DPR-70
DOCKET NO. 50-272
REPORTABLE OCCURRENCE 79-56/01T
SUPPLEMENTAL REPORT

Pursuant to the requirements of Salem Generating Station Unit No. 1 Technical Specifications, Section 6.9.1, we are submitting supplemental Licensee Event Report 79-56/01X-1.

Sincerely yours,

F. P. Librizzi
General Manager -
Electric Production

CC: Director, Office of Inspection
and Enforcement (30 copies)
Director, Office of Management
Information and Program Control
(3 copies)

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1903-1978 75 YEARS OF SERVICE

7912040 311

Report Number: 79-56/01X-1

Report Date: 11/10/79

Occurrence Date: 8/31/79

Facility: Salem Generating Station
Public Service Electric & Gas Company
Hancock's Bridge, New Jersey 08038

IDENTIFICATION OF OCCURRENCE:

RHR Pump Exceeds Design Runout Flow

CONDITIONS PRIOR TO OCCURRENCE:

Operational Mode 5

DESCRIPTION OF OCCURRENCE:

On July 13, 1979, Unit No. 2 RHR pumps were tested to establish the maximum flow for the worst hydraulic configuration and to evaluate the available NPSH based on that flow. The worst hydraulic configuration for NPSH evaluation (during recirculation mode) of the RHR pump is when one (1) RHR pump is feeding two (2) charging pumps, two (2) safety injection pumps also, directly into the two (2) cold legs. The water source for the defined flow configuration was the Refueling Water Storage Tank. The results of this test were as follows:

Pump No.	Throttle Valve Position	Flow (GPM)
21	60%	4,132
22	60%	4,686

The test was stopped after the above results were reached because it was obvious that if the throttle valves were to be opened to 100%, the pump would reach high runout conditions and the motor current reading would exceed that which is normally desired. The design runout flow for the RHR pump is 4500 gpm with the throttle valve full open.

Salem Unit No. 1 has an identical configuration and the reported deficiency and the corrective action on Unit 2 will be applicable to Unit No. 1.

DESIGNATION OF APPARENT CAUSE OF OCCURRENCE:

As indicated by the Unit 2 test results, it would appear that the RHR System flow resistance is low.

ANALYSIS OF OCCURRENCE:

The configuration to which the RHR pumps were tested is not a design basis for Salem Nuclear Power Plant. The Salem plant design for cold leg recirculation phase operation with only one RHR pump consists of

aligning the RHR discharge such that the running RHR pump is supplying the suction of two charging pumps, two safety injection pumps and the containment spray headers. Therefore, the configuration to which the RHR pump was tested is not representative of the plant design. The purpose of the test was to establish the maximum flow for the RHR pump, and the flow path represented the worst hydraulic configuration for the pumps.

The test result demonstrated that the system resistance was lower than desired and there is a possibility of the pump reaching runout conditions during other modes of operation. However, to be conservative, it was decided to increase the system resistance and decrease the maximum flow.

CORRECTIVE ACTION:

The system resistance on the discharge side of the RHR pumps has been increased by changing the orifices on the flow elements that are located both upstream and downstream of the RHR Heat Exchanger. The flow instrument on these resized orifices has been recalibrated/reset to meet its functional requirements.

The orifice size to give the necessary increase in system resistance was determined to be 5-1/2" from field tests performed on Unit #2 RHR pumps operating under the worst flow configuration described above with throttle valves full open. The maximum pump flows observed from the test were as follows:

Pump No.	Throttle Valve Position	Flow (GPM)
21	100%	4,532
22	100%	4,180

System calculations show that RHR pump has adequate NPSH for flows up to 4800 GPM during recirculation phase. Therefore, 5-1/2" orifices installed at stated locations on Unit 1 will limit the maximum flow to less than 4600 GPM and prevent the RHR pump from reaching runout condition. Westinghouse Electric Corporation evaluated the changed RHR System resistance for safety injection performances and concluded it to be above the performance on which Salem FSAR is based.

The flow configuration to which Unit #2 was tested cannot be repeated on Unit 1 since the Reactor Vessel head is closed. Since Salem Units 1 and 2 are identical, acceptability of system modification established by Unit 2 tests will apply to Unit 1.

RHR pumps will be tested to the specified conditions for maximum flow during the next refueling outage with RWST as the water source.

Prepared By A. W. Kapple

SORC Meeting No. 82-79

Manager - Salem Generating Station