PSEG

Public Service Electric and Gas Company P.O. Box 236 Hancocks Bridge, New Jersey 08038-0236

Nuclear Business Unit

JUL 1 1999

LR-N990315

Regional Administrator
U.S. Nuclear Regulatory Commission
Region 1
475 Allendale Road
King of Prussia, PA 19406-1415

Gentlemen:

LICENSEE EVENT REPORT 99-006-01
SALEM GENERATING STATION – UNIT 2
FACILITY OPERATING LICENSE NO DPR 75
DOCKET NO. 50-311

This Licensee Event Report Supplement entitled " High Head Safety Injection Flow Balance Discrepancy Noted During Surveillance " is being submitted on a voluntary basis and is not required under the reporting requirements of 10CFR50.73

Sincerely,

David F. Garchow
General Manager-
Salem Operations

Attachment

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

/JCN
Distribution:
LER File 3.7

NRC FORM 366 U.S. NUCLEAR REGULATORY COMMISSION (6-1998)

LICENSEE EVENT REPORT (LER)

(See reverse for required number of digits/characters for each block)

APPROVED BY OMB NO. 3150-0104 EXPIRES 06/30/2001

Estimated burden per response to comply with this mandatory information collection request: 50 hrs. Reported lessons learned are incorporated into the licensing process and fed back to industry. Forward comments regarding burden estimate to the Records Management Branch (T-6 F33), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, and to the Paperwork Reduction Project (3150-0104), Office of Management and Budget, Washington, DC 20503. If an information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

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TITLE (4)

High Head Safety Injection Flow Balance Discrepancy Noted During Surveillance.

EVENT DATE (5)			LER NUMBER (6)			REPORT DATE (7)			OTHER FACILITIES INVOLVED (8)	
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	MONTH	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
										05000
05	01	99	99	006	01	07	01	99	FACILITY NAME	DOCKET NUMBER 05000

OPERATING MODE (9)	5	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more) (11)					
POWER LEVEL (10)	0		20.2201(b)	20.2203(a)(2)(v)	50.73(a)(2)(i)		50.73(a)(2)(viii)
			20.2203(a)(1)	20.2203(a)(3)(i)	50.73(a)(2)(ii)		50.73(a)(2)(x)
			20.2203(a)(2)(i)	20.2203(a)(3)(ii)	50.73(a)(2)(iii)		73.71
			20.2203(a)(2)(ii)	20.2203(a)(4)	50.73(a)(2)(iv)	X	OTHER
			20.2203(a)(2)(iii)	50.36(c)(1)	50.73(a)(2)(v)		Specify in Abstract below or in NRC Form 366A
			20.2203(a)(2)(iv)	50.36(c)(2)	50.73(a)(2)(vii)		

LICENSEE CONTACT FOR THIS LER (12)

NAME	TELEPHONE NUMBER (Include Area Code)
John C. Nagle Senior Licensing Engineer	609-339-3171

COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX
B	BQ	ISV	147E	Y					

SUPPLEMENTAL REPORT EXPECTED (14)			EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR
YES (If yes, complete EXPECTED SUBMISSION DATE).	X	NO				

ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines) (16)

On April 30, May 1, 1999, during performance of a surveillance on the safety injection system throttling valves to balance injection flow, it was determined that there was no flow in one of the four injection legs (21 leg). Upon throttling the valves in the remaining legs the flow was re-established to the 21 leg. It is believed that the 21SJ17 (safety injection line to cold leg) check valve had been stuck closed. The four legs were subsequently flow balanced successfully.

The 21SJ17 was cut out of the system and replaced in kind. Subsequent inspection of the valve found no evidence of malfunction which would have rendered the valve inoperable. The valve seats were in specification and the internal clearances were at the low end of the manufacturer's (Edwards) recommendation. It is suspected that there may have been foreign material which jammed the valve in the closed position.

This voluntary report is being submitted in order to provide a record of the failure which was initially communicated in a 4-hour report to the NRC under 10CFR50.72. In accordance with NUREG 1022, Revision 1 guidance, which states that the out of service time is calculated using the "time of discovery unless there is firm evidence based on a review of relevant information (e.g. the equipment history and cause of failure) to believe the discrepancy existed previously," this event is not reportable. Technical specification requirements for this system were satisfied for the mode of operation at the time of discovery and the event is bounded by current analyses.

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TEXT *(If more space is required, use additional copies of NRC Form 366A)* (17)

PLANT AND SYSTEM IDENTIFICATION

Westinghouse - Pressurized Water Reactor

Safety Injection system/Isolation Valve {SI/ISV}*

* Energy Industry Identification System (EIIS) codes and component function identifier codes appear as {SS/CCC} in the text.

CONDITIONS PRIOR TO OCCURRENCE

The unit was shutdown for refueling prior to the event.

DESCRIPTION OF OCCURRENCE

During the performance of the 18 month high head injection test S2.OP-ST.SJ-0016, the 21 cold leg showed no flow until flow into the other cold legs was throttled. Flow began with an audible indication, possibly associated with a stuck check valve unseating. The flow balance of the injection pathways was subsequently performed successfully.

CAUSE OF OCCURRENCE

The cause of the occurrence is believed to be sticking of the check valve (21SJ17) in the safety injection discharge line to the 21 cold leg due to close tolerances and possible foreign material in the valve. Inspection of the valve revealed no evident failure mechanism. The internal clearances were close to the minimum manufacturer's tolerance range thus there may have been sticking caused by foreign material. The replacement valve had greater clearance, more in line with optimal tolerances.

While there have been no similar failures with these types of valves in the safety injection system, there have been 2 instances of problems with valves of this family in the closed cooling system. In addition, this specific valve did initially experience difficulty seating during the surveillance testing for RCS pressure isolation valve leakage (S2.OP-ST.SJ-0020) prior to the start-up from the extended outage in 1997. A review of industry data revealed no instances of similarly sticking closed valves although there were several other types of failures identified.

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TEXT *(If more space is required, use additional copies of NRC Form 366A)* (17)

SAFETY CONSEQUENCES AND IMPLICATIONS

If the valve had been stuck during operations, the plant would have been in a condition prohibited by technical specifications and the appropriate Action would have been taken. There are two accidents which are potentially impacted by this high head safety injection system discrepancy, namely small break LOCA and main steam line break (UFSAR sections 15.3.1 and 15.4.2). The assumptions for these accidents include the loss of a single train of Safety Injection thus there would be only a single pump injecting into the cold legs. With a stuck check valve there would only be three legs available. Preliminary review indicates that the accident analyses bound the current event.

A review was performed in order to assure that the event was bounded by existing accident analyses and that the plant was not outside the design basis. In support of this review, a calculation was prepared for the purpose of evaluating the available flow assuming that one of the cold leg injection pathways was not available due to a stuck closed check valve. The intent of the calculation performed was not to determine RCS injection rates but to show that more flow is provided by two Charging/Safety Injection pumps through two intact legs than is provided by one Charging/Safety Injection pump through three intact legs, given that in each case the fourth leg spills to the containment assumed to be at 0 psig. For the simple model generated, the safety analysis minimum safeguards assumption remains bounding.

CORRECTIVE ACTIONS

1) The 21SJ17 valve, an Edwards 1.5 inch Model # D36274, was cut out of the system and replaced in kind with a valve having tolerances in the mid-range of the manufacturer's recommendations. The flow balance was successfully re-performed and the system returned to available status.

2) The potential generic implications of foreign material in the system will be reviewed under the corrective action system. This review will be completed by 7/30/99.