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Energy to Serve Your World<sup>SM</sup>

October 26, 1999

LCV-1394

Docket No. 50-425

U. S. Nuclear Regulatory Commission  
ATTN: Document Control Desk  
Washington, D. C. 20555

Ladies and Gentlemen:

VOGTLE ELECTRIC GENERATING PLANT  
LICENSEE EVENT REPORT 2-99-002  
SI PUMPS DECLARED INOPERABLE DUE TO AIR INTRUSION

In accordance with the requirements of 10 CFR 50.73, Southern Nuclear Operating Company hereby submits a Vogtle Electric Generating Plant licensee event report for a condition that occurred on Unit 2 on September 26, 1999.

Sincerely,

J. B. Beasley, Jr.

JBB/JPC

Enclosure: LER 2-99-002

cc: Southern Nuclear Operating Company  
Mr. J. T. Gasser  
Mr. M. Sheibani  
SNC Document Management

U. S. Nuclear Regulatory Commission  
Mr. L. A. Reyes, Regional Administrator  
Mr. Ramin R. Assa, Vogtle Project Manager, NRR  
Mr. J. Zeiler, Senior Resident Inspector, VEGP

IE22

PDR ADOCK

**LICENSEE EVENT REPORT (LER)**  
 (See reverse for required number of digits/characters for each block)

FACILITY NAME (1) **Vogtle Electric Generating Plant - Unit 2**

DOCKET NUMBER (2) **05000425** PAGE (3) **1 OF 5**

TITLE (4) **SAFETY INJECTION PUMPS DECLARED INOPERABLE DUE TO AIR INTRUSION**

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
09	26	1999	1999	002	00	10	26	1999		05000
										05000

OPERATING MODE (9) **1**

POWER LEVEL (10) **94**

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more) (11)

20.2201(b)	20.2203(a)(2)(v)	<input checked="" type="checkbox"/>	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)	OTHER
20.2203(a)(2)(iii)	50.36(c)(1)	<input checked="" type="checkbox"/>	50.73(a)(2)(v)	Specify in Abstract below
20.2203(a)(2)(iv)	50.36(c)(2)		50.73(a)(2)(vii)	or in NRC Form 366A

LICENSEE CONTACT FOR THIS LER (12)

NAME **Mehdi Sheibani, Nuclear Safety and Compliance** TELEPHONE NUMBER (include area code) **706-826-3209**

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

SUPPLEMENTAL REPORT EXPECTED (14)

YES (If yes, complete EXPECTED SUBMISSION DATE)  NO

EXPECTED SUBMISSION DATE (15)

MONTH	DAY	YEAR

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

On September 26, 1999, a monthly ECCS flowpath verification test was performed. As part of the testing, operators opened the Train B Safety Injection (SI) pump casing vents and noticed air exiting from the vent valves. The unit shift supervisor then directed operators to vent the Train A SI pump casing vents and a lesser amount of air exited from these vent valves. Both SI pumps were declared inoperable and a Technical Specification (TS) 3.0.3 entry was made. Each pump was vented again, but no more air was found. Pump runs of five (5) minutes each were performed with no anomalies observed and TS 3.0.3 was exited. The inadequate venting of both trains of SI also represented a condition that alone could have prevented the performance of the safety function of a system needed to mitigate the consequences of an accident. Several more ventings were conducted over the next two days with no anomalies and only insignificant amounts of air vented.

The causes of this event were inadequate filling and venting following SI train outages in the days before the discovery of this condition. Corrective actions include changes to the work planning process for maintenance involving filling and venting, along with revisions to appropriate procedures.

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

A. REQUIREMENT FOR REPORT

This report is required per 10 CFR 50.73 (a)(2)(v) because a condition existed that alone could have prevented the fulfillment of the safety function of a system needed to mitigate the consequences of an accident. It is also reportable per 10 CFR 50.73 (a)(2)(i) because the unit operated in a condition prohibited by the Technical Specifications when TS 3.0.3 was entered.

B. UNIT STATUS AT TIME OF EVENT

At the time of the discovery of this event, Unit 2 was operating at 94 percent of rated thermal power. Other than that described herein, there was no inoperable equipment that contributed to the occurrence of this event.

C. DESCRIPTION OF EVENT

On September 9 and 10, 1999, a system outage was performed on safety injection (SI) Train B. The purpose of this outage was to perform minor maintenance on the SI pump motor; calibrate the discharge pressure transmitter; and replace pressure relief valves, thermal overloads, and a handswitch. Post-maintenance functional testing included valve stroking and a 30-second pump run to verify proper breaker alignment. Upon completion, Train B was returned to service on September 10, 1999.

On September 20 and 21, 1999, a similar system outage was performed on safety injection (SI) Train A. Post-maintenance functional testing included valve stroking and a 29-minute pump run as part of quarterly in-service testing (IST). The train was returned to service on September 21, 1999.

On September 26, 1999, a monthly ECCS flowpath verification test was performed. As part of the testing, operators opened the Train B SI pump casing vents and air exited from the vent valves. Air venting continued until no air was observed and the unit shift supervisor (USS) was notified. The USS then directed the operators to vent the Train A SI pump casing vents. This resulted in a lesser amount of air exiting from these vent valves. Both SI pumps were declared inoperable and TS 3.0.3 was entered at 0330 EDT. At 0400 EDT, actions were initiated to commence unit mode reduction pursuant to TS 3.0.3. Each pump was vented again, but no additional air was found. Pump runs of five (5) minutes each were performed with no anomalies observed and TS 3.0.3 was exited at 0610 EDT. The NRC Operations Center was notified at 0645 EDT, per 10 CFR 50.72 (b)(2)(iii)(D),

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because the inadequate venting of both trains of SI represents a condition that alone could have prevented the fulfillment of the safety function of a system needed to mitigate the consequences of an accident. Several more ventings were conducted satisfactorily over the next two days with no anomalies.

The work histories for both Unit 1 SI systems were reviewed. No work has been performed that could have resulted in air being introduced into the Unit 1 SI systems since the most recent Unit 1 ECCS monthly flowpath verification.

D. CAUSE OF EVENT

A subsequent investigation determined that adequate vent points were not identified to ensure that the discharge piping was properly filled and vented. The air remaining in the system subsequently migrated to each pump casing.

Contributing to the occurrence of this event was: 1) inadequate understanding of the piping configuration by the operators performing the filling and venting and, 2) inadequate post-maintenance functional testing following the system outages that did not ensure air pockets had been removed.

E. ANALYSIS OF EVENT

This event represents a safety system failure. The safety significance of the event was addressed by performing an evaluation using the Vogtle Electric Generating Plant (VEGP) probabilistic safety assessment (PSA) model in conjunction with the EOOS risk monitor. This evaluation very conservatively assumed that both SI pumps were unavailable from the beginning of the first system outage on September 9, 1999, until TS 3.0.3 was exited on September 26, 1999. All other equipment was assumed to be available unless it was actually out of service for maintenance. The evaluation determined that, assuming both SI pumps were unavailable, the core damage frequency (CDF) averaged over the 16.7 day period would increase by approximately 2.3% to 2.24 E-5/year. The evaluation also determined that this condition caused the large early release frequency (LERF) averaged over the 16.7 day period to increase by approximately 6.6% to 1.06 E-6/year. The effects on CDF and LERF, assuming unavailability of both SI pumps, are not localized to any particular equipment maintenance but spread over the entire period. It was also concluded from this review that the change in core damage probability for the maintenance performed during the time period

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that the SI pumps were considered out of service was acceptable, based on the guidance for temporary changes in the EPRI PSA Applications Guide. Therefore, the impact on the CDF and LERF of concurrent equipment maintenance during the period of concern was not risk significant.

In addition, the in-service testing of the Train A SI pump on September 21, 1999, provided reasonable assurance that this pump was capable of performing the system's intended safety function in spite of the small amount of air that was vented on September 26, 1999. Finally, there was no event during the period of time involved that required an actuation of the safety injection system.

Based on the above stated considerations, there was no adverse effect on plant safety or on the health and safety of the public as a result of this event.

F. CORRECTIVE ACTIONS

- 1) During planned online system outage maintenance, a detailed fill and vent plan will be included as part of the system outage plans.
- 2) Appropriate procedures will be revised by January 21, 2000, to ensure that selected safety significant systems are operated following draining and refilling for maintenance activities. This would ensure that any possible air pockets are swept to high points followed by venting from those points.
- 3) System diagrams will be developed by April 1, 2000, for selected safety significant systems (Chemical and Volume Control System, SI System, Residual Heat Removal System and Containment Spray System) that would show the relative elevation differences between piping runs and the location of loop seals. These diagrams will be made available for personnel developing fill and vent plans.
- 4) This event will be addressed in licensed operator requalification training, non-licensed operator requalification training and technical staff update training by March 1, 2000.
- 5) The plant evaluations of INPO SOER 97-01 and INPO SOER 98-01 will be changed by December 1, 1999, to reflect revised practices regarding filling and venting.

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G. ADDITIONAL INFORMATION

1) Failed Components:  
None

2) Previous Similar Events:  
LER 50-424/1996-010, dated November 27, 1996. This LER addressed air found in the Nuclear Service Cooling Water (NSCW) System and its impact to cooling of other systems' components. Its corrective action was specific to the NSCW system.

3) Energy Industry Identification System Code:  
Safety Injection System – BQ  
Chemical Volume and Control System – CB  
Residual Heat Removal System – BP  
Containment Spray System – BE  
Nuclear Service Cooling Water System - BS