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September 22, 2006

Docket Nos.: 50-424  
50-425

NL-06-1982

U. S. Nuclear Regulatory Commission  
ATTN: Document Control Desk  
Washington, D. C. 20555-0001

Vogtle Electric Generating Plant - Units 1 and 2  
Licensee Event Report 1-2006-002  
Rosemont Transmitters Determined to be in a Condition  
Prohibited by the Technical Specifications

Ladies and Gentlemen:

In accordance with the requirements of 10 CFR 50.73, Southern Nuclear Operating Company hereby submits a Vogtle Electric Generating Plant Units 1 and 2 Licensee Event Report for a condition that was determined to be reportable on July 26, 2006.

Sincerely,

A handwritten signature in black ink, appearing to read "Don E. Grissette".

Don E. Grissette

DEG/DWM/daj

Enclosure: LER 1-2006-002

cc: Southern Nuclear Operating Company  
Mr. J. T. Gasser, Executive Vice President  
Mr. T. E. Tynan, General Manager – Plant Vogtle  
RType: CVC7000

U. S. Nuclear Regulatory Commission  
Dr. W. D. Travers, Regional Administrator  
Mr. C. Gratton, NRR Project Manager – Vogtle  
Mr. G. J. McCoy, Senior Resident Inspector – Vogtle

## LICENSEE EVENT REPORT (LER)

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

Estimated burden per response to comply with this mandatory collection request: 50 hours. Reported lessons learned are incorporated into the licensing process and fed back to industry. Send comments regarding burden estimate to the Records and FOIA/Privacy Service Branch (T-5 F52), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to [infocollects@nrc.gov](mailto:infocollects@nrc.gov), and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202, (3150-0104), Office of Management and Budget, Washington, DC 20503. If a means used to impose 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.

1. FACILITY NAME Vogtle Electric Generating Plant – Unit 1	2. DOCKET NUMBER 05000-424	3. PAGE 1 OF 5
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4. TITLE Three Technical Specification (TS) instruments were determined to be in a condition which was prohibited by TS.
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5. EVENT DATE			6. LER NUMBER			7. REPORT DATE			8. OTHER FACILITIES INVOLVED	
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	MONTH	DAY	YEAR	FACILITY NAME	DOCKET NUMBER(S)
07	26	2006	2006	002	00	9	22	2006	Vogtle Unit 2	05000-425
									FACILITY NAME	DOCKET NUMBER(S)
										05000

9. OPERATING MODE  1	11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR § : (Check all that apply)						
	20.2201(b)		20.2203(a)(3)(i)		50.73(a)(2)(i)(C)		50.73(a)(2)(vii)
	20.2201(d)		20.2203(a)(3)(ii)		50.73(a)(2)(ii)(A)		50.73(a)(2)(viii)(A)
	20.2203(a)(1)		20.2203(a)(4)		50.73(a)(2)(ii)(B)		50.73(a)(2)(viii)(B)
10. POWER LEVEL  100	20.2203(a)(2)(i)		50.36(c)(1)(i)(A)		50.73(a)(2)(iii)		50.73(a)(2)(ix)(A)
	20.2203(a)(2)(ii)		50.36(c)(1)(ii)(A)		50.73(a)(2)(iv)(A)		50.73(a)(2)(x)
	20.2203(a)(2)(iii)		50.36(c)(2)		50.73(a)(2)(v)(A)		73.71(a)(4)
	20.2203(a)(2)(iv)		50.46(a)(3)(ii)		50.73(a)(2)(v)(B)		73.71(a)(5)
	20.2203(a)(2)(v)		50.73(a)(2)(i)(A)		50.73(a)(2)(v)(C)		OTHER
	20.2203(a)(2)(vi)	X	50.73(a)(2)(i)(B)		50.73(a)(2)(v)(D)		Specify in Abstract below or in NRC Form 366A

12. LICENSEE CONTACT FOR THIS LER	
NAME Amy Whaley, Engineering Support	TELEPHONE NUMBER (Include Area Code) (706) 826-3858

13. COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT										
CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX		CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX
B	HHC	FIT	R369	Y						

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

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

The week of June 6, 2005, a Vogtle Equipment Qualification Program self-assessment was performed that identified a potential problem with the Rosemount model 1153 Series B and 1154 transmitters if the neck seal is broken. This seal protects the transmitter electronics from moisture intrusion to ensure the safe operation of the transmitter during accident conditions. This self-assessment resulted in the development of an inspection plan to determine if this condition existed at Vogtle. The inspection plan was initiated in June 2005 and completed in August 2006. The following three Technical Specification (TS) instruments were determined to have been inoperable as a result of a broken neck seal: 1FT-5152, Steam Generator (SG) 1 Auxiliary Feedwater Flow, 2PT-0455, Pressurizer Channel 1 Pressure, and 1PT-0456, Pressurizer Channel 2 Pressure.

Per the vendor manual, the connection between the electronic housing and the sensor module is hermetically sealed with a baked-on environmentally qualified neck seal. The cause of the event was a result of inadequate installation and calibration procedure guidance in that a caution statement from the vendor manual not to break the neck seal between the sensor module and the electronics housing was not included. All three transmitters were replaced, and appropriate maintenance procedures have been updated to reflect the vendor manual caution to not rotate the head.

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

## A) REQUIREMENT FOR REPORT

This report is required per 10 CFR 50.73 (a)(2)(i)(B), any operation or condition which was prohibited by Technical Specifications (TS), because flow transmitter 1FT-5152 and pressure transmitters 2PT-0455 and 1PT-0456 were inoperable for longer than allowed by the TS. Transmitter 1FT-5152 is one of the two channels that provides Auxiliary Feedwater flow indication for Steam Generator 1 as required by TS 3.3.3, Post Accident Monitoring Instrumentation. With one channel of flow indication inoperable, TS 3.3.3 requires the inoperable channel to be restored within 30 days. Since the electronics housing was apparently rotated during initial installation or a subsequent calibration, 1FT-5152 had been inoperable for longer than allowed by the TS. 2PT-0455 and 1PT-0456 are one of four channels per unit providing Pressurizer Pressure indication required by TS 3.3.1, Reactor Trip System Instrumentation. With one channel of pressure indication inoperable, TS 3.3.1 requires placing the channel in trip within 72 hours. Since the electronics housing was apparently rotated during initial installation or a subsequent calibration, 2PT-0455 and 1PT-0456 had been inoperable for longer than allowed by the TS.

## B) UNIT STATUS AT TIME OF EVENT

1FT-5152 was determined to have been inoperable on July 26, 2006. 2PT-0455 was determined to have been inoperable on August 21, 2006. 1PT-0456 was determined to have been inoperable on August 30, 2006. At the time of the events, the affected units were in Mode 1 (Power Operation) at 100% rated thermal power.

## C) DESCRIPTION OF EVENT

Transmitters 2PT-0455, 1FT-5152, and 1PT-0456 were discovered with the electronics housing rotated with respect to the sensor module during walk downs on December 12, 2005, July 14, 2006, and August 7, 2006 respectively. The electronics housing on these transmitters (Rosemount model 1153 Series B and model 1154) cannot be rotated at all, because the connection between the sensor module and electronics housing is hermetically sealed before shipment. Rotating the electronics housing with respect to the sensor module could break the seal causing a moisture path to the electronics. On July 26, 2006, an engineering evaluation determined that the integrity of this seal is necessary for reliable operation of 1FT-5152 during accident conditions. The transmitter was declared inoperable on July 26, 2006 and replaced with an operable transmitter on July 28, 2006. On August 21 and 30, 2006, engineering evaluations determined that the integrity of this seal is necessary for reliable operation of 2PT-0455 and 1PT-0456 respectively. Transmitter 2PT-0455 was replaced with an operable transmitter on December 22, 2005, and transmitter 1PT-0456 was replaced with an operable transmitter on August 9, 2006.

The issue of rotating these transmitter electronic housings with respect to the sensor modules was first identified during a Vogtle Equipment Self-assessment the week of June 6, 2005. An Equipment

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

Engineer from another utility company was aware that the transmitter vendor manual cautioned, "Be careful not to break the neck seal between the sensor module and the electronics housing. The threaded interface between the sensor module and the electronics housing is hermetically sealed before shipment. The integrity of this seal is necessary for the safe operation of the transmitter during accident conditions." The neck seal is assumed to be broken when the electronics housing (head) is rotated. This resulted in an inspection plan to walk down these transmitters to determine if this condition applied to Vogtle. The inspection plan was initiated in June 2005 and completed during August 2006. As a result of the inspection, three Technical Specification (TS) instruments were found to have been rendered inoperable per the TS.

Flow transmitter 1FT-5152, Steam Generator (SG) 1 Auxiliary Feedwater Flow, was discovered as having the head rotated after initial installation in the plant such that the seal which protects the transmitter electronics from moisture intrusion may have been damaged or degraded. In addition, pressure transmitters 2PT-0455, Pressurizer Channel 1 Pressure, and 1PT-0456, Pressurizer Channel 2 Pressure, were also discovered as having the heads rotated after initial installation in the plant such that the seal which protects the transmitter electronics from moisture intrusion may have been damaged or degraded. This rotation appears to have been to allow connection of the loop wiring to the transmitter in the field or during calibration. An engineering evaluation determined that the integrity of this seal is necessary for reliable operation of the transmitter during accident conditions. 1FT-5152 is one of two transmitters for SG 1 required by Technical Specification (TS) 3.3.3, Post Accident Monitoring Instrumentation. With one channel inoperable, TS 3.3.3 requires restoration within 30 days. 2PT-0455 and 1PT-0456 are one of four channels per unit providing Pressurizer Pressure indication required by TS 3.3.1, Reactor Trip System Instrumentation. With one channel inoperable, TS 3.3.1 requires placing the channel in trip within 72 hours. 1FT-5152 was found rotated on July 14, 2006 and replaced on July 28, 2006. 2PT-0455 was found rotated on December 12, 2005 and was replaced on December 22, 2005. 1PT-0456 was found rotated on August 7, 2006 and was replaced on August 9, 2006.

**D. CAUSE OF EVENT**

Transmitters 1FT-5152, SG 1 Auxiliary Feedwater Flow, 2PT-0455, Pressurizer Channel 1 Pressure, and 1PT-0456, Pressurizer Channel 2 Pressure, were discovered as having the head rotated after initial installation in the plant. This rotation appears to have been to allow connection of the loop wiring to the transmitter in the field or during calibration. The cause of the event was a result of inadequate installation and calibration procedure guidance in that a caution statement from the vendor manual not to break the neck seal between the sensor module and the electronics housing was not included.

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## E. ANALYSIS OF EVENT

Flow transmitter 1FT-5152 is one of two transmitters that provide auxiliary feedwater (AFW) flow indication for SG 1. Auxiliary feedwater flow instrumentation loops 5152, 15152, 5153, 15153, 5151, 15151, 5150, and 15150 are Regulatory Guide 1.97, Type A instrumentation loops that provide information required by control room operators to perform certain manual actions specified in the Emergency Operating Procedures. The other instrument loop that provides AFW flow indication for SG 1, 1FT-15152, was operable with its electronics housing in the proper orientation with respect to the sensor module. A review of maintenance work orders for the last 3 years has indicated that there were approximately 3 instances where 1FT-15152 was out of service for maintenance. However, had an event occurred while 1FT-15152 was out of service, this would not have prevented delivery of AFW flow to SG 1. In addition, the AFW flow indication for the other three SGs was not affected by this condition. Pressure transmitters 2PT-0455 and 1PT-0456 are one of 4 transmitters per unit that provide Pressurizer Pressure indication. The Pressurizer Pressure instruments are part of the Reactor Trip System (RTS) and Engineered Safety Feature Actuation System (ESFAS). Signals from these transmitters are processed by the RTS and ESFAS actuation logic to provide reactor trip and safety injection actuation signals which protects the core fuel design limits and Reactor Coolant System (RCS) pressure boundary during Anticipated Operational Occurrences (AOOs) and mitigates accidents. The other instruments that provide Pressurizer Pressure indication, 2PT-0456, 2PT-0457, 2PT-0458, 1PT-0455, 1PT-0457, and 1PT-0458, were operable with the electronics housing in the proper orientation with respect to the sensor module. Therefore, Pressurizer Pressure indication would have been available on both units to make up the required actuation logic in the event of an AOO or an accident even with another channel out of service for maintenance. Furthermore, no event occurred while 1FT-5152, 2PT-0455, and 1PT-0456 were in this condition that would have challenged their ability to perform their function. Therefore there was no adverse impact to the health and safety of the public.

## F. CORRECTIVE ACTIONS

- 1) Transmitters 1FT-5152, 2PT-0455, and 1PT-0456 have been replaced.
- 2) The maintenance installation and calibration procedures for the affected model transmitters has been updated to reflect the vendor manual caution about not breaking the neck seal. This information has also been incorporated into the Equipment Qualification Data Package for these transmitters.
- 3) The Root Cause evaluation and supporting documentation will be included as part of the I&C personnel continuing training. Estimated completion date is January 19, 2007.
- 4) The plant "Vendor Document Control" and "Procedures Review and Approval" procedures will be revised to add a requirement to consider Equipment Qualification (EQ) impacts in the procedure review process for EQ identified equipment. Estimated completion date is November 15, 2006.

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- 5) The corporate "Vendor Document Review, Update, and Transmittal" procedure will be revised to specifically require a documented review for Environmental Qualification impacts during the preparation of a new vendor document. Estimated completion date is November 15, 2006.

## G. ADDITIONAL INFORMATION

- 1) Failed Components:  
Flow Transmitter, Pressure Transmitter
- 2) Previous Similar Events:  
None
- 3) Energy Industry Identification System Codes:  
Auxiliary Feedwater System – BA  
Reactor Coolant System - AB