

**Tom Tynan**  
Vice President - Vogtle

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November 29, 2012



Docket No.: 50-424

NL-12-2383

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

Vogtle Electric Generating Plant – Unit 1  
Licensee Event Report 2012-005-00  
Main Steam Isolation Valve Failure

Ladies and Gentlemen:

Southern Nuclear Operating Company (SNC) is voluntarily submitting the enclosed Licensee Event Report. This letter contains no NRC commitments. If you have any questions, please contact Doug McKinney at (205) 992-5982.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "T. E. Tynan".

T. E. Tynan  
Vice President – Vogtle

TET/GWG

Enclosure: Unit 1 Licensee Event Report 2012-005-00

cc: Southern Nuclear Operating Company  
Mr. S. E. Kuczynski, Chairman, President & CEO  
Mr. D. G. Bost, Executive Vice President & Chief Nuclear Officer  
Mr. B. L. Ivey, Vice President – Regulatory Affairs  
Mr. B. J. Adams, Vice President – Fleet Operations  
Mr. M. J. Ajluni, Nuclear Licensing Director  
Mr. D. A. Jackson, Vogtle OE Coordinator  
RType: CVC7000

U. S. Nuclear Regulatory Commission  
Mr. V. M. McCree, Regional Administrator  
Mr. R. E. Martin, NRR Senior Project Manager - Vogtle  
Mr. L. M. Cain, Senior Resident Inspector – Vogtle

**Vogtle Electric Generating Plant Plant – Unit 1  
Licensee Event Report 2012-005-00  
Main Steam Isolation Valve Failure**

**Enclosure**

**Unit 1 Licensee Event Report 2012-005-00**

**LICENSEE EVENT REPORT (LER)**

Estimated burden per response to comply with this mandatory collection request: 80 hours. Reported lessons learned are incorporated into the licensing process and fed back to industry. Send comments regarding burden estimate to the FOIA/Privacy Section (T-5 F53), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to [inlocollects.resource@nrc.gov](mailto:inlocollects.resource@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.

<b>1. FACILITY NAME</b> Vogtle Electric Generating Plant – Unit 1	<b>2. DOCKET NUMBER</b> 05000 424	<b>3. PAGE</b> 1 OF 3
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**4. TITLE**  
Main Steam Isolation Valve Failure

5. EVENT DATE			6. LER NUMBER			7. REPORT DATE			8. OTHER FACILITIES INVOLVED	
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REV NO.	MONTH	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
10	08	2012	2012	- 005 -	00	12	3	2012	FACILITY NAME	DOCKET NUMBER

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

**12. LICENSEE CONTACT FOR THIS LER**

FACILITY NAME Vogtle Electric Generating Plant / George Gunn, Nuclear Licensing	TELEPHONE NUMBER (include Area Code) 706-826-3596
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**13. COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT**

CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX
B	SB	ISV	Rockwell	Y					

<b>14. SUPPLEMENTAL REPORT EXPECTED</b> <input type="checkbox"/> YES (If yes, complete 15. EXPECTED SUBMISSION DATE) <input checked="" type="checkbox"/> NO	<b>15. EXPECTED SUBMISSION DATE</b>	MONTH	DAY	YEAR

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

Vogtle Unit 1 experienced a mismatch in secondary steam flow during power ascension from 2% to 10% reactor power (Mode 2 to Mode 1). The control room operators confirmed the mismatch by observing divergence in reactor coolant system loop differential temperatures, secondary steam pressures, and secondary steam flows between loops one and four and loops two and three. At this time, the reactor was manually shutdown. Subsequent investigation determined the outboard main steam isolation valve on main steamlines two and three were indicating open in the Main Control Room when, in fact, the valves were closed. Neither the safety of the plant nor public health and safety were affected by this event.

**LICENSEE EVENT REPORT (LER)  
CONTINUATION SHEET**

1. FACILITY NAME	2. DOCKET	6. LER NUMBER			3. PAGE	
Vogtle Electric Generating Plant – Unit 1	05000 424	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	2	OF 3
		2012	- 005	- 00		

**NARRATIVE**

**A. REQUIREMENT FOR REPORT**

This report is being voluntarily submitted.

**B. UNIT STATUS AT TIME OF EVENT**

At the time of discovery the unit was in Mode 1. Other than described herein, there was no other inoperable equipment that contributed to the event.

**C. DESCRIPTION OF EVENT**

Vogtle Unit 1 experienced a mismatch in secondary steam flow during power ascension from 2% to 10% reactor power (Mode 2 to Mode 1). The control room operators confirmed the mismatch by observing divergence in reactor coolant system loop differential temperatures, secondary steam pressures, and secondary steam flows between loops one and four and loops two and three. At this time, the reactor was manually shutdown. Subsequent investigation determined the outboard main steam isolation valve on loops two and three were indicating open in the Main Control Room when, in fact, the valves were closed.

Control room main steam isolation valve (MSIV) handswitch position indication showed 1HV-3016B (loop 2 outboard) and 1HV-3026B (loop 3 outboard) MSIVs open, which was not supported by corresponding loop steam line pressure indications. Implementation of a trouble shooting plan determined 1HV-3016B (loop 2 outboard) and 1HV-3026B (loop 3 outboard) were closed with control room handswitches indicating open. Follow up ultrasonic testing (UT) identified stem length discrepancies on both 1HV-3016B and 1HV-3026B. Following valve disassembly, it was identified the valve stems were sheared above the T-head.

Westinghouse representatives were consulted and conveyed to the site the material used for the MSIV stems, ASME SA564 Gr. 630 condition H1075, is susceptible to embrittlement when exposed to temperatures above 500°F. Metallurgy analysis was performed on the sheared stems validating that thermal embrittlement was the failure mechanism. The failure analysis concluded the stem fracture was a sudden failure which occurred during the opening of the valves. UT and visual inspections were performed on the remaining (6) MSIV stems for Unit 1 with no significant stem fractures detected.

**LICENSEE EVENT REPORT (LER)  
CONTINUATION SHEET**

1. FACILITY NAME	2. DOCKET	6. LER NUMBER			3. PAGE	
Vogtle Electric Generating Plant – Unit 1	05000 424	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	3	OF 3
		2012	- 005	- 00		

**NARRATIVE**

**D. CAUSE OF EVENT**

Main steam isolation valve stem thermal embrittlement due to long term exposure to temperatures greater than 500 degrees.

**E. SAFETY ASSESSMENT**

The MSIV systems isolate steam flow from the secondary side of the steam generators following a high energy line break thus terminating flow from the unaffected steam generators. The failure mode results in closure of the affected MSIV thereby performing the required safety function.

**F. CORRECTIVE ACTION**

The valve stems for the affected MSIVs were replaced. Long range corrective actions are to replace the valves stems on all MSIVs on both units with a material resistant to thermal embrittlement at temperatures within the normal system operating range.

**G. ADDITIONAL INFORMATION**

1) Failed Components:

Rockwell International A-290 Main Steam Isolation Valve Actuator


2) Previous Similar Events:

None

3) Energy Industry Identification System Code: [SB] – Main / Reheat Steam

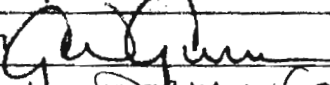
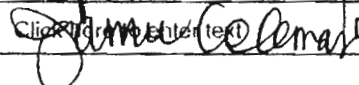
4) Other Systems Affected: None

5) Commitment Information: This report does not create any new permanent licensing commitments.

<b>Southern Nuclear Operating Company</b>		
	<b>Nuclear Licensing Form</b> Licensing Action and Concurrence	NL-006-F03 Version 1.0 Page 1 of 6

NL Letter Number: NL-12-2383  
 Subject: LER 2012005, MSIV Failure  
 RLE / Extension: G. Gunn 8.695.3596

Due Date (if applicable): 12/4/2012

SECTION I – CORRESPONDENCE SCREENING (to be completed by RLE)	YES	NO
I.1. Does this letter affect the FSAR or any other License Basis Documents? <i>If YES, complete 1.1.a. If unsure, obtain peer review from 10 CFR 50.59 qualified individual.</i>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
I.1.a Has Section III been completed to update each document? <input type="checkbox"/> YES <input type="checkbox"/> NO		
I.2. Does this letter require posting per 10 CFR 19? <i>If YES, ensure posting after submittal.</i>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
I.3. Does this letter contain Safeguards Information? <i>If YES, do NOT scan to SNC Intranet. Enter Special Handling Instructions below and review with the AA.</i>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
I.4. Does this letter contain information to be withheld from public disclosure (e.g., Proprietary or Non-Safeguards Security-Related Information)? <i>If YES, do NOT scan to SNC Intranet. If Proprietary, include appropriate affidavit. Enter Special Handling Instructions below and review with the AA.</i>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
I.5. Does this letter contain sensitive, limited access or distribution items? <i>If YES, enter Special Handling Instructions below and review with the AA.</i>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<b>Special Handling Instructions</b>		
Click here to enter text.		
I.6. Oath or Affirmation Required? <i>If YES, verify proper letter template is used.</i>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
I.7. Verification Required? <i>If YES, use the guidance of NL-006-GL04.</i>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
I.8. Office of External Affairs and General Counsel Consultation Required? <i>If YES, obtain concurrence signature in Section II.</i>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
I.9. Engineering Independent Technical Review (ITR) Required? <i>If YES, obtain concurrence signature in Section II.</i>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
I.10. Challenge Board Required? <i>If YES, complete 1.10.a.</i>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
I.10.a Has Section III been completed to document results? <input type="checkbox"/> YES <input type="checkbox"/> NO		
I.11 RLE Signature: G.W. Gunn 	Date: 11/15/2012	
I.12 Licensing Peer Review Signature: 	Date: Click here to enter a date. 11/15/12	

**Southern Nuclear Operating Company**



**Nuclear  
Licensing  
Form**

Licensing Action and Concurrence

NL-006-F03  
Version 1.0  
Page 4 of 6

**SECTION IV – FINAL REVIEW AND APPROVAL**

(Mark "NA" for signatures that are not required, including individual signing letter)

NL Manager or Supervisor: BOM Date: 12/3/12

NL Director: mgg Date: 12/3/12

FNP Vice President: N/A Date: \_\_\_\_\_

HNP Vice President: N/A Date: \_\_\_\_\_

VEGP Vice President: N/A Date: \_\_\_\_\_

Vice President: N/A Date: \_\_\_\_\_  
Engineering

Vice President: N/A Date: \_\_\_\_\_  
Fleet Operations

Executive Vice President: N/A Date: \_\_\_\_\_

IV.1. Does this letter contain Commitments? *If YES, complete 1.a and 1.b.*

IV.1.a Has the NL Principal Licensing Engineer been notified?  YES  NO

IV.1.b Has Section III been completed for each Commitment?  YES  NO

RLE Final Review: Tracy [Signature] Date: 12/3/12

Admin (date and distribution): H. Shipley Date: 12/3/12

*x add report & date (form #?)  
as date draws notified  
to NRC BOM 12/3/12*