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AUG 26 2011

U. S. Nuclear Regulatory Commission
Attn: Document Control Desk
Mail Stop OP1-17
Washington, DC 20555

**SUSQUEHANNA STEAM ELECTRIC STATION
LICENSEE EVENT REPORT 50-388/2011-002-00
LICENSE NO. NPF-22
PLA-6755**

Docket No 50-388

Attached is Licensee Event Report (LER) 50-388/2011-002-00. The event involved an unknown inoperability of Unit 2 RCIC that resulted in a condition prohibited by Technical Specifications. As a result, this event is being reported under 10 CFR 50.73(a)(2)(i)(B) as a condition prohibited by Technical Specification.

There were no actual consequences to the health and safety of the public as a result of this event.

No regulatory commitments are associated with this LER.

T. S. Rausch

A handwritten signature in dark ink, appearing to read "Timothy Rausch", is written over the printed name.

Attachment

Copy: NRC Region I
Mr. P. W. Finney, NRC Sr. Resident Inspector
Mr. R. R. Janati, DEP/BRP
Mr. B. K. Vaidya, NRC Project Manager

NRC FORM 366 (10-2010)		U.S. NUCLEAR REGULATORY COMMISSION			APPROVED BY OMB: NO. 3150-0104 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 infocollects.resources@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.						
LICENSEE EVENT REPORT (LER) (See reverse for required number of digits/characters for each block)											
1. FACILITY NAME Susquehanna Steam Electric Station Unit 2					2. DOCKET NUMBER 05000388		3. PAGE 1 OF 3				
4. TITLE Condition Prohibited by Technical Specification Due to Unknown RCIC Inoperability											
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
06	27	2011	2011	- 002	- 00	08	26	2011	FACILITY NAME		DOCKET NUMBER
											05000
											05000
9. OPERATING MODE 2			11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check all that apply)								
10. POWER LEVEL 0%			<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 type="checkbox"/> OTHER								
			<input type="checkbox"/> 20.2203(a)(2)(vi) <input checked="" type="checkbox"/> 50.73(a)(2)(i)(B) <input type="checkbox"/> 50.73(a)(2)(v)(D) Specify in Abstract below or in NRC Form 366A								
12. LICENSEE CONTACT FOR THIS LER											
FACILITY NAME								TELEPHONE NUMBER (Include Area Code)			
C. E. Manges, Jr., Senior Engineer - Nuclear Regulatory Affairs								(570) 542-3089			
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		
X	BN	65	W290	Yes							
14. SUPPLEMENTAL REPORT EXPECTED						15. EXPECTED SUBMISSION DATE		MONTH	DAY	YEAR	
<input checked="" type="checkbox"/> YES (If yes, complete 15. EXPECTED SUBMISSION DATE) <input type="checkbox"/> NO								10	21	2011	
ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines)											
On June 29, 2011 during startup from a refueling outage, Operations conducted the RCIC quarterly flow surveillance. During the testing, RCIC tripped on overspeed. Subsequent troubleshooting determined the problem to be the ramp generator signal converter (RGSC). Engineering evaluation determined that RCIC had been inoperable as a result of the RGSC problem on June 27, 2011 when the plant exceeded 150 psig and the RCIC LCO became applicable. Since RCIC was not known to be inoperable when the inoperability occurred on June 27, 2011, a condition prohibited by Technical Specifications occurred.											
The apparent cause of the condition is unexpected, random failure of the RGSC since the RGSC contains no age sensitive components.											
Key corrective actions included replacing the failed RGSC.											

(10-2010)

LICENSEE EVENT REPORT (LER) CONTINUATION SHEET

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Susquehanna Steam Electric Station Unit 2	05000388	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	2 OF 3
		2011	- 002	- 00	

NARRATIVEEVENT DESCRIPTION

On June 29, 2011 during startup from a refueling outage, Operations conducted the Unit 2 RCIC [EIS Code: BN] quarterly flow surveillance. During the testing, RCIC tripped on overspeed. Subsequent troubleshooting determined the problem to be the ramp generator signal converter (RGSC). Engineering evaluation determined that RCIC had been inoperable as a result of the RGSC problem on June 27, 2011 when the plant exceeded 150 psig and the RCIC LCO became applicable.

Technical Specification Information

Limiting Condition for Operation (LCO) 3.5.3 requires that the RCIC system be OPERABLE in MODE 1 and in MODE 2 and 3 with steam dome pressure greater than 150 psig. With RCIC inoperable, Condition A requires that HPCI [EIS Code: BJ] be immediately verified OPERABLE by administrative means and that RCIC be restored to OPERABLE status within 14 days. With the required action and completion time not met, Condition B requires that the plant be in Mode 3 in 12 hours and that steam dome pressure be reduced to less than or equal to 150 psig within 36 hours.

When an LCO is not met, LCO 3.0.4 allows entry into a MODE or other specified condition in the applicability only if one of the following conditions is met:

1. The ACTION to be entered permits continued operation in the MODE or other specified condition for an unlimited period of time
2. A risk assessment is performed that supports the acceptability of entering the MODE or other specified condition (LCO 3.5.3 states that this is not applicable)
3. An allowance is stated in the individual value, parameter, or other Specification.

Basis for Reportability

Since RCIC was not known to be inoperable when the inoperability occurred on June 27, 2011, the required actions of Technical Specification 3.5.3 were not taken resulting in a condition prohibited by Technical Specifications. In addition, a condition prohibited by Technical Specifications associated with Technical Specification 3.0.4 occurred on two occasions since the plant exceeded 150 psig on June 27, 2011 with RCIC inoperable and a MODE change from MODE 2 to MODE 1 was made on June 28, 2011 with RCIC inoperable.

System Information

The RGSC and electronic governor module (EGM) normally operate as follows:

With the RCIC turbine in standby, the flow controller senses no pump flow and, therefore, produces the maximum output signal calling for turbine rated high speed to the RGSC. This signal is bypassed by the Low Signal Selector, which only passes the lower "idle" signal from the Ramp Generator to the Speed Reference Section of the EGM.

Upon system initiation, the turbine steam supply valve begins to open. The ramp function initiates after the valve is partially open. As soon as the ramp voltage (in transient) is greater in amplitude than the flow controller maximum signal reference voltage, the "Low Signal Selector" will sense the Flow Controller output signal as the lowest (least positive voltage) signal and will pass the signal to the Speed Reference Section of the EGM.

On the completion of the ramp function, the RGSC will function as a Signal Converter during the period of turbine operation, with the Ramp Generator output voltage being higher than the flow controller operating range.

Performance Monitoring

System Engineering periodically monitors the RCIC EGM output. System Engineering increased monitoring the EGM output following a 2009 Browns Ferry event (ML093360186) in which EGM output was lower than expected resulting in RCIC failing to inject when required following a scram.

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NARRATIVEAnalysis of Event

Following the overspeed trip, the EGM and RGSC output data was reviewed. The review identified that the outputs became abnormal when the flow controller was returned to AUTO following RCIC Turbine Overspeed Testing on May 10, 2011. The output remained abnormal until the flow controller was placed in MANUAL prior to the starting the RCIC turbine to perform the 24 month RCIC Flow Verification Test on June 27, 2011. Following the testing, the outputs returned to the abnormal values and remained abnormal following the overspeed trip on June 29, 2011. RCIC was restored to OPERABLE status on July 2, 2011. A Root Cause Analysis is in progress.

Failure Analysis

The failed component was a Woodward Model 8271-083 RGSC. The RGSC circuit board did not show any indications of heat damage. The RGSC has no age-sensitive components. Review of Operating Experience also supports that the RGSC components do not experience age-related failures. Additional analysis of the failed RGSC is planned.

CAUSE OF THE EVENT

The apparent cause of the condition is an unexpected, random failure of the RGSC since the RGSC contains no age sensitive components.

The investigation of this event is continuing. Additional insight into the cause is expected based on sending the failed RGSC to the vendor to identify the failed component and completion of a root cause analysis.

ANALYSIS/SAFETY SIGNIFICANCEActual Consequences:

The failure rendered the RCIC system unavailable for 109.15 hours from the time reactor pressure exceeded 150 psig until the system became available following RGSC replacement and quarterly flow surveillance retest.

Potential Consequences:

Even though the RCIC System is not an Engineered Safety Feature System and no credit is taken in the safety analyses for RCIC system operation, RCIC would have been unable to perform its terminal mission (Risk Significant Function) in automatic to inject 600 gpm on a low reactor water level. For an approximate four hour period between June 28, 2011 and June 29, 2011, LCO 3.5.1 was entered due to planned HPCI inoperability during quarterly flow verification. Since HPCI and RCIC are relied upon in the PRA to provide high pressure makeup for event mitigation, unavailability of the systems over the approximate four hour period resulted in elevated risk levels for both core damage frequency and large early release frequency.

CORRECTIVE ACTIONS

The following are the key corrective actions associated with this issue:

1. The RGSC was replaced.

Additional corrective actions will be developed based on the root cause analysis and the expected vendor report on the failed RGSC.

PREVIOUS SIMILAR EVENTS

None