



Serial: HNP-07-110
10 CFR 50.73

AUG 13 2007

U.S. Nuclear Regulatory Commission
ATTN: NRC Document Control Desk
Washington, DC 20555

Subject: Shearon Harris Nuclear Power Plant, Unit 1
Docket No. 50-400/License No. NPF-63
Licensee Event Report 2007-002-00

Ladies and Gentlemen:

The enclosed Licensee Event Report 2007-002-00 is submitted in accordance with 10 CFR 50.73. This report describes a control rod shutdown bank anomaly whereby the plant entered Technical Specification 3.0.3. This event is reportable under 10 CFR 50.73(a)(2)(i)(B).

Please refer any questions regarding this submittal to Mr. Dave Corlett, Supervisor - Licensing/Regulatory Programs, at (919) 362-3137.

Sincerely,

Eric A. McCartney
Plant General Manager
Harris Nuclear Plant

EAM/kms

Enclosure: LER 2007-02 "Control Rod Shutdown Bank Anomaly Causes Entry into Technical Specification 3.0.3"

cc: Mr. P.B. O'Bryan, NRC Sr. Resident Inspector
Ms. M.G. Vaaler, NRC Project Manager
Dr. W.D. Travers, NRC Regional Administrator

Progress Energy Carolinas, Inc.
Harris Nuclear Plant
P. O. Box 165
New Hill, NC 27562

NRR

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, 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 Harris Nuclear Plant – Unit 1	2. DOCKET NUMBER 05000400	3. PAGE 1 OF 4
---	------------------------------	-------------------

4. TITLE Control Rod Shutdown Bank Anomaly Causes Entry into Technical Specification 3.0.3

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	12	2007	2007	- 002 -	00	08	13	2007	N/A	05000
									FACILITY NAME	DOCKET NUMBER
									N/A	05000

9. OPERATING MODE 1	11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR§: (Check all that apply)									
10. POWER LEVEL 100	<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 Dave Corlett – Licensing Supervisor	TELEPHONE NUMBER (Include Area Code) 919-362-3137

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	AA	ECBD	Westing-house	Y					

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

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

At 13:10 EDT on June 12, 2007, with the reactor at approximately 100 percent power, surveillance test OST-1005, "Control Rod and Rod Position Indicator Exercise Quarterly Interval Mode 1-3," was being performed to satisfy Technical Specification (TS) 4.1.3.1.2 where each operable shutdown and control rod not fully inserted into the core is determined to be operable by movement of at least 10 steps in any one direction at least once per 92 days. During this test, while inserting Shutdown Bank A rods, a Rod Control Urgent Alarm activated, rendering the affected rods inoperable and initiating entry into TS 3.0.3. However, throughout this event, all rods were capable of manually or automatically tripping into the core to shutdown the reactor. The cause was determined to be a failed Master Cycler Counter Card in the Westinghouse Rod Control System [AA] (Printed Wiring Assembly part number 3360C94G01, s/n WSN0595). TS 3.0.3 was exited at 16:41 EDT. The plant was in TS 3.0.3 for 3 hours and 31 minutes.

The most likely mechanism for the Master Cycler Counter Card failure is aging of Z13 and Z15 logic chips. In addition to the completed corrective action of replacing the Counter Card, a planned corrective action is the establishment of a structured program of card replacements, to be tracked through the corrective action program.

LICENSEE EVENT REPORT (LER)

1. FACILITY NAME	2. DOCKET	6. LER NUMBER			3. PAGE
Harris Nuclear Plant – Unit 1	05000400	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	2 OF 4
		2007	- 002	- 000	

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

I. DESCRIPTION OF EVENT

At 12:46 EDT on June 12, 2007, with the reactor at approximately 100 percent power, surveillance test OST-1005, "Control Rod and Rod Position Indicator Exercise Quarterly Interval Mode 1-3," was commenced to satisfy Technical Specification (TS) 4.1.3.1.2 where each operable shutdown and control rod not fully inserted into the core is determined to be operable by movement of at least 10 steps in any one direction at least once per 92 days.

While inserting Shutdown Bank "A" (SBA) rods, the first bank of rods selected for testing, Rod Control Urgent Alarm ALB13/7-1 was received at 13:10 EDT. This alarm originated in the logic cabinet and automatically stopped rod motion, as designed. SBA step group counters both indicated 227 steps. As required, Operators suspended OST-1005 and entered procedure AOP-001, "Malfunction of Rod Control and Indication System." TS 3.1.3.1. ACTION C and TS 3.0.3 were entered since compliance with TS 3.1.3.5, requiring all shutdown banks be fully withdrawn, was not possible.

At 13:30 EDT maintenance commenced troubleshooting. At 16:15 EDT the Rod Control Urgent Alarm was cleared and the Master Cycler was subsequently reset at 16:38 EDT. T.S. 3.0.3 was exited at 16:41 EDT with SBA withdrawn to 228 steps. The plant was in TS 3.0.3 for 3 hours and 31 minutes. TS 3.1.3.1 Action C (be in hot standby within the following 6 hours with more than one rod inoperable due to a rod control urgent failure alarm) was exited at 16:54 EDT on June 12, 2007.

On June 25, 2007, recording equipment was installed in the rod control logic cabinet in support of troubleshooting scheduled on June 26, 2007. These recorders resulted in isolating the cause of the trouble to either the A105 Master Cycler Logic card or the A104 Master Cycler Counter card in the Westinghouse Rod Control System [AA], both of which were replaced on June 26, 2007.

Testing on removed Master Cycler Counter Card (Printed Wiring Assembly part number 3360C94G01, s/n WSN0595) on July 16, 2007, revealed that some of the Motorola High Threshold Logic (MHTL) chips (Z13 and Z15) exhibited a noisy response and were unreliable, depending on the switching speed, affecting proper counter operation. The most likely mechanism for this failure is component aging of the logic chip.

This action is being reported as a condition prohibited by Technical Specifications in accordance with 10 CFR 50.73(a)(2)(i)(B).

Energy Industry Identification System (EIIS) codes are identified in the text within brackets [].

LICENSEE EVENT REPORT (LER)

1. FACILITY NAME	2. DOCKET	6. LER NUMBER			3. PAGE
Harris Nuclear Plant – Unit 1	05000400	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	3 OF 4
		2007	- 002	- 000	

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

II. CAUSE OF EVENT

The cause was faulty MHTL logic chips in the Master Cyclor Counter Card (Printed Wiring Assembly part number 3360C94G01, s/n WSN0595) in the Westinghouse Rod Control System [AA]. Testing revealed that some of these MHTL Z13 and Z15 logic chips exhibited a noisy response and were unreliable depending on switching speed. Component aging is the most likely mechanism for this failure, given that the date code of the failed chip is 1972.

III. SAFETY SIGNIFICANCE

This event has no actual safety significance.

Actual Safety Consequences:

The rod control malfunction during OST-1005 was an urgent failure originating in the rod control logic cabinet. The malfunction precluded motion of all control banks and Shutdown Banks A and B. Shutdown Bank C could have been moved using the "bank select" mode since its motion is not controlled through the standard rod control circuits. Shutdown Bank A was the first rod bank selected for movement. At the time of the failure, both groups of Shutdown Bank A rods were positioned at 227 steps. TS LCO 3.1.3.5 normally requires all shutdown bank rods be fully withdrawn; however, a Special Test Exception is provided by the LCO to allow the performance of this rod exercise surveillance test. The actual consequence of the rod control malfunction was the inability to insert or withdraw all control bank and shutdown bank rods except Shutdown Bank C. This condition rendered all affected rods inoperable and required entry into TS 3.1.3.1 Action C, which provided 36 hours to correct the condition. Additionally, Operations personnel entered TS 3.0.3 based on the fact the Special Test Exception was no longer valid and the applicable Action statement for TS 3.1.3.5 allows only one rod not fully withdrawn. TS 3.0.3, which provides one hour to correct and then six hours to be in Hot Standby, was exited prior to any load reduction or other plant impact. Although the affected rods were inoperable, all control and shutdown bank rods were capable of inserting into the core to shutdown the reactor.

Potential Safety Consequences:

The minimal insertion of the Shutdown Bank A rods did not impact core shutdown margin, neutron flux distribution or any core operating limits or peaking factors that might be assumed in the initial condition of any transient or accident analysis. Axial flux difference did not change significantly during the entire performance of the surveillance test. The inability to move the control rods had the potential to impact core response should a reactor shutdown become required, or a transient such as a turbine runback been imposed on the plant. Various computer generated reactivity plans projected that any shutdown performed with control rods at the height during this event would result in the indicated Axial Flux Difference (AFD) turning in the positive direction and exceeding the bands prescribed in Technical Specifications. The short term operation beyond TS AFD limits would have no adverse impact on the fuel pellets or rods during either a planned downpower or in subsequent power operations. Throughout this event all rods would have been capable of manually or automatically inserting into the core to shutdown the reactor.

This condition is being reported as a condition prohibited by Technical Specifications in accordance with 10 CFR 50.73(a)(2)(i)(B).

LICENSEE EVENT REPORT (LER)

1. FACILITY NAME	2. DOCKET	6. LER NUMBER			3. PAGE
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
		2007	- 002	- 000	
Harris Nuclear Plant – Unit 2	05000400				4 OF 4

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

III. PREVIOUS SIMILAR EVENTS

LER 2004-003 dated July 2, 2004, was associated with an automatic reactor trip due to a Rod Control Power Cabinet Card failure. Diagnostic tests and visual examinations were completed for the installed Power Cabinet Cards but not for the Logic Cabinet Cards. However, this type of test is static in nature and it is unlikely that it would have predicted or detected the type of age related failure associated with the Master Cyclor Counter Card.

LER 2007-001 dated May 8, 2007, was generated for a rod control urgent alarm due to a failed Slave Cyclor Logic Card in the Westinghouse Rod Control System. The most likely mechanism for the Slave Cyclor Logic Card failure is aging of a Z4 chip. A planned corrective action is to establish a structured program of card replacements.

IV. CORRECTIVE ACTIONS

Completed corrective actions included the replacement of the failed A104 Master Cyclor Counter Card on June 26, 2007. A planned corrective action is to establish a structured program of card replacements and to ensure the appropriate equivalency evaluations are completed. This action is being tracked through the corrective action program.

V. COMMITMENTS

This document contains no new regulatory commitments.