



Carolina Power & Light Company
Harris Nuclear Plant
PO Box 165
New Hill NC 27562

JUN 12 2000
U.S. Nuclear Regulatory Commission
ATTN: NRC Document Control Desk
Washington, DC 20555

Serial: HNP-00-103
10CFR50.73

SHEARON HARRIS NUCLEAR POWER PLANT UNIT 1
DOCKET NO. 50-400
LICENSE NO. NPF-63
LICENSEE EVENT REPORT 2000-004-00

Sir or Madam:

In accordance with 10CFR50.73, the enclosed Licensee Event Report is submitted. This report describes a Technical Specification violation caused by an inoperable excore nuclear instrument.

Sincerely,

R. J. Duncan II
General Manager
Harris Plant

MSE/mse

Enclosure

c: Mr. J. B. Brady (HNP Senior NRC Resident)
Mr. R. J. Laufer (NRC-NRR Project Manager)
Mr. L. A. Reyes (NRC Regional Administrator, Region II)

LICENSEE EVENT REPORT (LER)

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

FACILITY NAME (1) Harris Nuclear Plant, Unit 1		DOCKET NUMBER (2) 05000400	PAGE (3) 1 OF 3
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TITLE (4)
Technical Specifications violation due to inoperable Power Range Nuclear Instrumentation

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
05	12	2000	2000	- 004	-- 00	06	12	2000	FACILITY NAME	DOCKET NUMBER
										05000
									FACILITY NAME	DOCKET NUMBER
										05000

OPERATING MODE (9) 2	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more) (11)									
	<input type="checkbox"/> 20.2201(b)	<input type="checkbox"/> 20.2203(a)(2)(v)	<input checked="" type="checkbox"/> 50.73(a)(2)(i)	<input type="checkbox"/> 50.73(a)(2)(viii)						
POWER LEVEL (10) 000	<input type="checkbox"/> 20.2203(a)(1)	<input type="checkbox"/> 20.2203(a)(3)(i)	<input type="checkbox"/> 50.73(a)(2)(ii)	<input type="checkbox"/> 50.73(a)(2)(x)						
	<input type="checkbox"/> 20.2203(a)(2)(i)	<input type="checkbox"/> 20.2203(a)(3)(ii)	<input type="checkbox"/> 50.73(a)(2)(iii)	73.71						
	<input type="checkbox"/> 20.2203(a)(2)(ii)	<input type="checkbox"/> 20.2203(a)(4)	<input type="checkbox"/> 50.73(a)(2)(iv)	OTHER	Specify in Abstract below or in NRC Form 366A					
	<input type="checkbox"/> 20.2203(a)(2)(iii)	<input type="checkbox"/> 50.36(c)(1)	<input type="checkbox"/> 50.73(a)(2)(v)							
	<input type="checkbox"/> 20.2203(a)(2)(iv)	<input type="checkbox"/> 50.36(c)(2)	<input type="checkbox"/> 50.73(a)(2)(vii)							

LICENSEE CONTACT FOR THIS LER (12)

NAME Mark Ellington, Project Analyst - Licensing	TELEPHONE NUMBER (Include Area Code) (919) 362-2057
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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
A	IG	CON	WESTINGHOUSE	y					

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

On 5/12/00 at 00:15 hours with Harris Nuclear Plant (HNP) performing a reactor startup following a refueling outage, the Excure Nuclear Instrumentation power range channel N44 failed to indicate as expected. Reactor power was increased to the point of adding heat when power range channel N44 was observed to have an indication of zero on the percent power meter and zero on both the upper and lower detector current meters. At this time the other power range channels were indicating 1.4 to 1.5 % reactor power with detector currents readings of 1.8 microamperes to 2.7 microamperes.

The malfunction was determined to be the result of a failed high voltage cable connector at the high voltage power supply. This condition was most likely caused when the drawer was pulled out and the cable jacket hooked on the sharp edge of another cable connector resulting in the center pin being pulled from the high voltage power supply connector. Entry into Mode 2 occurred at 10:36 on 5/11/00 at 10:36 hrs. The failure was identified on 5/12/00 at 00:15 hrs. No work has been identified on N-44 after entry into Mode 2. Therefore, HNP has determined that N-44 was inoperable longer than the six hours allowed by Technical Specification 3.3.1 Action 2 without placing the channel in the trip condition.

(1) Cause of this event: Inadequate self-checking and inattention to detail during the opening of the N44 drawer. Corrective actions include: (1) N-44 high voltage cable connector was repaired. (2) Review of this Condition Report with Crews working with Nuclear Instrumentation System. (3) Revise applicable procedures associated with the power range excure nuclear instrumentation to have a signoff for additional personnel assigned at the cabinet to ensure the cables are positioned properly.

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

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

I. DESCRIPTION OF EVENT

On 5/12/00 at 00:15 hours with Harris Nuclear Plant (HNP) performing a reactor startup following a refueling outage, the Excore Nuclear Instrumentation power range channel N44 (EIIIS System IG CON) failed to indicate as expected. Reactor power was increased to the point of adding heat when power range channel N44 was observed to have an indication of zero on the percent power meter and zero on both the upper and lower detector current meters. At this time the other power range channels were indicating 1.4 to 1.5 % reactor power with detector currents readings of 1.8 microamperes to 2.7 microamperes.

The malfunction was determined to be the result of a failed high voltage cable connector at the high voltage power supply. This condition was most likely caused when the drawer was pulled out and the cable jacket hooked on the sharp edge of another cable connector resulting in the center pin being pulled from the high voltage power supply connector. Entry into Mode 2 occurred at 10:36 on 5/11/00 at 10:36 hrs. The failure was identified on 5/12/00 at 00:15 hrs. No work has been identified on N-44 after entry into Mode 2. Therefore, HNP has determined that N-44 was inoperable longer than the six hours allowed by Technical Specification 3.3.1 Action 2 without placing the channel in the trip condition.

Power Range Detector, N44, is part of the Nuclear Instrumentation System (NIS) which consist of two (2) Source Range detectors (N31, N32), two (2) Intermediate Range detectors (N35, N36), and four (4) Power Range Detectors (N41, N42, N43, N44).

The Power Range Detector assemblies contain two ionization chambers per detector. These detectors have nominal thermal neutron sensitivity for each section of 1.7×10^{-13} amperes per neutron per square centimeter per second and a gamma sensitivity of 10^{-10} amp/R/hr. These detectors provide a 120-inch sensitive length which permits full core-height coverage of reactor power. The detector is constructed with integral coaxial mineral filled cables. The connectors are sealed with an epoxy to make them moisture tight. Each power range channel monitors two ion chamber current signals received from a two-section uncompensated detector. The signal currents are received at the channel input and handled through separate high accuracy milliamp meters. The circuit is so designed that a failure of the meter or switch that selects shunt resistors for the meter will not interrupt the signal to the average power circuitry. The detectors are supplied high voltage for operation and the signal is supplied to the NI drawer by a triaxial cable. Each channel has a high-voltage power supply. A failure monitor provides both local and remote annunciation upon loss of respective high-voltage supplies. The triaxial cable connector to the high voltage power supply is the area where the failure occurred.

Without the high voltage present, the detector would not function. There is no designed test circuit, so this condition was discovered during the power accession when the neutron flux increased to a point where the detectors would display actual values. This was noticed when N41, N42 and N43 detectors showed increasing count rates and N44 did not show the increasing count rate. Troubleshooting identified that the center conductor of the high voltage power supply connector was severely recessed. The extent of the condition was limited to the N44 detector's high voltage cable. The connector was repaired and the N44 channel was returned to service.

The cause of the N44 detector failure was the center conductor and the associated dielectric material was out of position to that it could not make contact with the N44 circuit and provide high voltage from the power supply to the detector. The most likely cause for the condition of the high voltage cable is when the drawer was opened, the cable was caught on a sharp object (causing the tear on the heat shrink installed on the cable). The outer jacket and outer metal braid were found properly attached to the high voltage connector. However, the center conductor and dielectric material were out of position in the plug. So when the drawer was opened, the high voltage cable was caught and the cable connector was strained to the point where the center conductor in the connector was not in contact with the high voltage power supply.

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TEXT CONTINUATION

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

II. CAUSE OF EVENT

Inadequate self-checking and inattention to detail during the opening of the N44 drawer.

III. SAFETY SIGNIFICANCE

There were no actual safety consequences as a result of this event. There were three OPERABLE Power Range Channels to provide protection for sub-critical low power operations (still providing the 2/3 trip logic). The design of the Intermediate Range Detectors (2 channels) provide redundant protection to the low setpoint of the Power Range Detectors. This report is being submitted pursuant to the criteria of 10CFR50.73(a)(2)(i) for a violation of Technical Specifications.

IV. CORRECTIVE ACTIONS

- (1) N-44 high voltage cable connector was repaired.
- (2) Review of this Condition Report with crews working with the Nuclear Instrumentation System.
- (3) Revise applicable procedures associated with the power range excore nuclear instrumentation to have a signoff for additional personnel assigned at the cabinet to ensure the cables are positioned properly.

V. SIMILAR EVENTS

There have been no previous reportable events at HNP where an excore nuclear instrumentation power range channel was inoperable due a cable connector failure.