

# CATEGORY 1

REGULATORY INFORMATION DISTRIBUTION SYSTEM (RIDS)

ACCESSION NBR: 9802240350    DOC.DATE: 98/02/20    NOTARIZED: NO    DOCKET #  
FACIL: 50-400 Shearon Harris Nuclear Power Plant, Unit 1, Carolina    05000400  
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DONAHUE, J.W.    Carolina Power & Light Co.  
RECIP.NAME    RECIPIENT AFFILIATION

SUBJECT: LER 98-002-00: on 980121, solid state protection sys testing deficiency occurred. Caused by inadequate review of initial Tech Specs. TS testing frequency for P-11 permissive revised. W/980217 ltr.

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NOTES: Application for permit renewal filed.

05000400

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Carolina Power & Light Company  
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FEB 17 1998

U.S. Nuclear Regulatory Commission  
ATTN: NRC Document Control Desk  
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Serial: HNP-98-014  
10CFR50.73

SHEARON HARRIS NUCLEAR POWER PLANT UNIT 1  
DOCKET NO. 50-400  
LICENSE NO. NPF-63  
LICENSEE EVENT REPORT 98-002-00

Sir or Madam:

In accordance with 10CFR50.73, the enclosed Licensee Event Report (LER) is submitted. This LER describes a Solid State Protection System testing deficiency that resulted in a violation of Technical Specification required surveillance testing.

Sincerely,



J. W. Donahue  
Director of Site Operations  
Harris Plant

11  
JLZ

MV

Enclosure

240118

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

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**LICENSEE EVENT REPORT (LER)**

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

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS MANDATORY INFORMATION COLLECTION REQUEST: 50.0 HRS. REPORTED LESSONS LEARNED ARE INCORPORATED INTO THE LICENSING PROCESS AND FED BACK TO INDUSTRY. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE INFORMATION AND RECORDS MANAGEMENT BRANCH (T-6 F33), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555-0001, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

FACILITY NAME (1)

Harris Nuclear Plant Unit-1

DOCKET NUMBER (2)

50-400

PAGE (3)

1 OF 3

TITLE (4)

Solid State Protection System (P-11 Permissive) Testing Deficiency

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
1	21	98	98	002	00	2	20	98		
OPERATING MODE (9)		1	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR 5: (Check one or more) (11)							
POWER LEVEL (10)		100%	20.2201(b)			20.2203(a)(2)(v)			X 50.73(a)(2)(i)	50.73(a)(2)(viii)
			20.2203(a)(1)			20.2203(a)(3)(i)			50.73(a)(2)(ii)	50.73(a)(2)(x)
			20.2203(a)(2)(i)			20.2203(a)(3)(ii)			50.73(a)(2)(iii)	73.71
			20.2203(a)(2)(ii)			20.2203(a)(4)			50.73(a)(2)(iv)	OTHER
			20.2203(a)(2)(iii)			50.36(c)(1)			50.73(a)(2)(v)	Specify in Abstract below or in NRC Form 366A
			20.2203(a)(2)(iv)			50.36(c)(2)			50.73(a)(2)(vii)	

LICENSEE CONTACT FOR THIS LER (12)

NAME

Michael Verrilli Sr. Analyst - Licensing

TELEPHONE NUMBER (Include Area Code)

(919) 362-2303

COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPROS	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPROS

SUPPLEMENTAL REPORT EXPECTED (14)

YES (If yes, complete EXPECTED SUBMISSION DATE).  NO

EXPECTED SUBMISSION DATE (15)

MONTH DAY YEAR

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

On January 21, 1998, with the plant at approximately 100% power in Mode 1, Harris Plant Engineering personnel determined that Westinghouse Nuclear Safety Advisory Letter (NSAL) 97-011 was applicable to the HNP Solid State Protection System (SSPS). This NSAL notified the industry that the current SSPS design did not allow for complete overlap testing of the P-11 (Pressurizer Low Pressure) Permissive function at power.

The P-11 Permissive provides the following functions below 2000 psig; (1) allows low pressurizer safety injection to be blocked, (2) allows steamline low pressure safety injection to be blocked, (3) blocks automatic operation of the pressurizer power operated relief valves, (4) blocks the automatic open signal for the safety injection accumulators; (5) enables Main Steam Isolation on high steam pressure rate decrease.

NSAL 97-011 explained that the capability to test the P-11 Permissive from the process protection system at power is limited to the setpoint and does not include the overlap to the SSPS logic input relay since the bistable test switch is opened prior to testing the channel. Opening the bistable test switch is required by the SSPS system design to satisfy the test logic for safety injection. Since the SSPS input relay is de-energized above 2000 psig pressurizer, opening of the bistable test switch does not allow the input relay to change state during bistable setpoint verification; and therefore, complete overlap testing for the SSPS input relay is not accomplished. This condition constitutes a TS surveillance testing violation.

This condition was caused by an inadequate review of initial Technical Specifications for consistency and the capability for testing SSPS permissive signals at power.

Corrective actions will include a revision to the Technical Specification testing frequency for the P-11 Permissive.



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

FACILITY NAME (1)	DOCKET	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
Shearon Harris Nuclear Plant - Unit #1	50-400	98	002	00	2 OF 3

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

**EVENT DESCRIPTION:**

On January 21, 1998, with the plant at approximately 100% power in Mode 1, Harris Plant Engineering personnel determined that Westinghouse Nuclear Safety Advisory Letter (NSAL) 97-011 was applicable to the HNP Solid State Protection System (SSPS). This NSAL notified the industry that the current SSPS design did not allow for complete overlap testing of the P-11 (Pressurizer Low Pressure) Permissive. Specifically, the monthly Analog Channel Operational Test (ACOT) required by Technical Specification (TS) 4.3.2.1 Table 4.3-2 Item 10a for the P-11 function could not be adequately performed at power.

The P-11 Permissive provides the following functions below 2000 psig; (1) allows low pressurizer safety injection to be blocked, (2) allows steamline low pressure safety injection to be blocked, (3) blocks automatic operation of the pressurizer power operated relief valves, (4) blocks the automatic open signal for the safety injection accumulators, (5) enables Main Steam Isolation on high steam pressure rate decrease.

NSAL 97-011 explained that the capability to test the P-11 Permissive from the process protection system at power is limited to the setpoint and does not include the overlap to the SSPS logic input relay since the bistable test switch is opened prior to testing the channel. Opening the bistable test switch is required by the SSPS system design to satisfy the test logic for safety injection. Since the SSPS input relay is de-energized above 2000 psig pressurizer, opening of the bistable test switch does not allow the input relay to change state during bistable setpoint verification; and therefore, complete overlap testing for the SSPS input relay is not accomplished.

At 1025 hours on January 21, 1998, this condition was determined to be a violation of TS surveillance requirement 4.3.2.1 due to inadequate past testing of the P-11 Permissive. TS 4.0.3 was entered at this time to allow proper P-11 testing. NSAL 97-011 recommended that a Technical Specification change be initiated to revise the ACOT surveillance frequency to "Refueling" based on relay reliability and consistency with other Reactor Protection System permissive signals. Alternately, a modification was also recommended to allow failing of the P-11 function low for testing. HNP initially elected to revise the surveillance procedure to fail the P-11 low by lifting transmitter leads. However, during a Harris Plant Engineering review of the proposed procedure changes intended to implement the recommended testing, a potential unreviewed safety question was identified per 10CFR50.59. This potential unreviewed safety question was related to the failure to comply with single failure criterion of IEEE Standard 338 (1971), while in the temporary test configuration. Based on this concern, it became apparent that testing would not be completed within the allotted 24 hours per TS 4.0.3; therefore, P-11 was declared inoperable.

A comprehensive TS surveillance procedure review project is currently in progress to support HNP's conversion to the new Westinghouse Improved Standard Technical Specifications. This project had not reviewed the surveillance procedures associated with P-11 testing when this condition was identified. Review of this section of TS and the corresponding surveillance procedures are currently scheduled to begin in mid 1998.

**CAUSE:**

This condition was caused by an inadequate review of initial Technical Specifications for consistency with other permissive signals and the capability for testing SSPS permissive signals at power. The TS testing frequency for the P-6, P-7, P-8, P-10 and P-13 permissives, which have the same relay reliability, are "once per refueling outage," which would allow testing while shutdown.





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

FACILITY NAME (1)	DOCKET	LER NUMBER (5)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
Shearon Harris Nuclear Plant - Unit #1	50-400	98	002	00	3 OF 3

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

**SAFETY SIGNIFICANCE:**

There were no actual safety consequences associated with the failure to provide complete overlap testing for the P-11 permissive function. The inability to completely test the P-11 function above 2000 psig pressurizer pressure would potentially cause an inoperable SSPS input relay to remain undetected until pressurizer pressure drops below 2000 psig. If this inoperability existed, the operators would not be able to manually block safety injection. This would be an operational concern, but not a safety issue. Additionally, the reliability of the SSPS input relays has been excellent. There have been no failures of the 258 input relays in 10 years of operation.

This event is being reported as a condition prohibited by TS per 10CFR50.73.a.2.i.B.

**PREVIOUS SIMILAR EVENTS:**

LER 97-24 was submitted to the NRC on December 18, 1997. This LER also reported a SSPS testing deficiency, but was specifically related to a logic card failure scenario. Therefore, the corrective actions completed for LER 97-24 would not have been expected to identify the P-11 overlap testing issue.

**CORRECTIVE ACTIONS PLANNED:**

1. A revision to Technical Specification 4.3.2.1 Table 4.3-2 Item 10a will be developed and submitted to the NRC. This revision will change the P-11 and not P-11 ACOT to a "Refueling" frequency. This will be completed by April 30, 1998.

