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ACCESSION NBR:9503080127 DOC.DATE: 95/03/02 NOTARIZED: NO DOCKET #
FACIL:50-400 Shearon Harris Nuclear Power Plant, Unit 1, Carolina 05000400
AUTH.NAME AUTHOR AFFILIATION
VERRILLI,M. Carolina Power & Light Co.
DONAHUE,J.W. Carolina Power & Light Co.
RECIP.NAME RECIPIENT AFFILIATION

SUBJECT: LER 95-002-00:on 950207,unanalyzed condition existed re potential of loss of automatic ESF actuations & subsequent TS 3.0.3 entry.Caused by both trains of SSPS declared inoperable.Plant evolutions avoided.W/950303 ltr.

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TITLE: 50.73/50.9 Licensee Event Report (LER), Incident Rpt, etc.

NOTES:Application for permit renewal filed. 05000400

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PRIORITY 1 DOCUMENT

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CP&L

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

MAR 0 3 1995

Letter Number: HO-950117

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

SHEARON HARRIS NUCLEAR POWER PLANT UNIT 1
DOCKET NO. 50-400
LICENSE NO. NPF-63
LICENSEE EVENT REPORT 95-002-00

Gentlemen:

In accordance with Title 10 to the Code of Federal Regulations, the enclosed Licensee Event Report is submitted. This report fulfills the requirement for a written report within thirty (30) days of a reportable occurrence and is in accordance with the format set forth in NUREG-1022, September 1983.

Sincerely,

J. W. Donahue
General Manager
Harris Plant

MV

Enclosure

cc: Mr. S. D. Ebneter (NRC - RII)
Mr. N. B. Le (NRC - PM/NRR)
Mr. S. A. Elrod (NRC - SHNPP)
Mr. W. R. Robinson

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Mr. R. Schlichter (BNP)
Mr. R. S. Stancil
HNP Real Time Training
INPO
NLS File: HI/A-2D (L. M. Randall)

NRC FORM 366 (5-92) U.S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB NO. 3150-0104
EXPIRES 5/31/95

LICENSEE EVENT REPORT (LER)

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

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 50.0 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE INFORMATION AND RECORDS MANAGEMENT BRANCH (MNBB 7714), 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)	DOCKET NUMBER (2)	PAGE (3)
Shearon Harris Nuclear Plant-Unit #1	05000/400	1 OF 3

TITLE (4) Unanalyzed condition due to the potential for loss of automatic ESF actuations and subsequent Technical Specification 3.0.3 entry due to declaring both trains of SSPS inoperable.

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
02	07	95	95	-- 002 --	00	3	2	95		05000
									FACILITY NAME	DOCKET NUMBER 05000

OPERATING MODE (9)	1
POWER LEVEL (10)	100%

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more) (11)

20.402(b)		20.405(c)		50.73(a)(2)(iv)	73.71(b)
20.405(a)(1)(i)		50.36(c)(1)		50.73(a)(2)(v)	73.71(c)
20.405(a)(1)(ii)		50.36(c)(2)		50.73(a)(2)(vii)	OTHER
20.405(a)(1)(iii)	X	50.73(a)(2)(i)		50.73(a)(2)(viii)(A)	(Specify in Abstract below and in Text, NRC Form 366A)
20.405(a)(1)(iv)		50.73(a)(2)(ii)		50.73(a)(2)(viii)(B)	
20.405(a)(1)(v)		50.73(a)(2)(iii)		50.73(a)(2)(x)	

LICENSEE CONTACT FOR THIS LER (12)

NAME	TELEPHONE NUMBER (Include Area Code)
Michael Verrilli Sr. Specialist - Licensing	(919) 362-2303

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

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS		CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS

SUPPLEMENTAL REPORT EXPECTED (14)			EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR
YES (If yes, complete EXPECTED SUBMISSION DATE).	X	NO				

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

On February 7, 1995, both trains of the Solid State Protection System (SSPS) were declared inoperable following investigation/evaluation of the postulated accident scenario described in NRC Information Notice #95-10. This Information Notice involved a potential loss of automatic Engineered Safety Features (ESF) actuation, due to a steam line break in the turbine building which causes electrical faults in ESF input signals. These electrical faults could result in the SSPS logic cabinet power supply fuses failing, which would in turn render an entire SSPS train inoperable. If a random single failure of the other SSPS train is assumed, no automatic protective functions would be available. This was considered to be an unanalyzed condition and was reported to the Nuclear Regulatory Commission as a 1-hour Non Emergency ENS notification. Also, declaring both trains of SSPS inoperable resulted in entering Technical Specification 3.0.3. Both of these conditions are reportable per 10CFR50.73. Harris Plant actions were discussed via teleconference with NRC Region II on February 7, 1995, at which time an enforcement discretion period of ten days was requested and granted. A plant modification was developed to electrically isolate and coordinate the power feeds for the SSPS logic cabinets. Installation and satisfactory testing of this modification was completed on February 15, 1995, thus exiting the discretionary enforcement period and eliminating the possibility of the postulated scenario. The cause of this condition is attributed to the original SSPS design configuration, wherein each set of SSPS logic cabinets was provided input power through a common set of fuses, and the fact that the initial design analysis did not evaluate the effect of a main steam line break in the turbine building on the Class 1 ESF-SSPS logic cabinet power supply circuits.

EVENT DESCRIPTION:

As described in NRC Information Notice IE 95-10, a new scenario was identified which could result in a failure of the Solid State Protection System (SSPS) to perform its intended design function. Specifically, the scenario involved a double-ended rupture steamline break in the turbine building. The break could occur in such a fashion that electrical conduits and junction boxes containing ESF input signals from the turbine stop valves and auto-stop oil pressure sensors might be damaged by pipe whip and/or steam jet forces. Electrical faults (shorts to ground) resulting from this damage could cause the fuses to fail in the input bays of the affected SSPS channel. Since this would disable the AC power feeds to the DC power supplies in the SSPS logic cabinets, that train of SSPS could no longer perform the Engineered Safety Feature (ESF) actuation functions to mitigate the event. If a random single failure of the other SSPS train is assumed, both trains of SSPS would be rendered inoperable. A reactor trip would occur as the SSPS de-energizes, but no ESF automatic actuations would occur.

After evaluation and investigation into this scenario and its applicability to the Harris Nuclear Plant's (HNP) design configuration and design bases, it was concluded on February 7, 1995 that HNP could be susceptible to this scenario. Following a review of this condition by the HNP Plant Nuclear Safety Committee, both trains of SSPS were declared inoperable at 1055 hours. Shortly thereafter, the required 1-hour non-emergency ENS notification was made to the Nuclear Regulatory Commission as an unanalyzed condition per 10CFR50.72. HNP's conclusions and intended actions were discussed via teleconference with NRC Region II on February 7, 1995, at which time an enforcement discretion period of ten days was requested and granted to allow for development and installation of a plant modification to electrically isolate and coordinate the power feeds for the SSPS logic cabinets. Installation and satisfactory testing of this modification was completed on February 15, 1995, thus exiting the discretionary enforcement period and eliminating the possibility of the postulated scenario.

Cause:

The cause of this condition is attributed to the original SSPS design configuration, wherein each set of SSPS logic cabinets was provided input power through a common set of fuses and the fact that the initial design analysis did not evaluate the effect of a main steam line break in the turbine building on Class 1E ESF-SSPS logic cabinet power supply circuits.

SAFETY SIGNIFICANCE:

The potential concern posed no significant safety implications, based on the low probability of a Main Steam Line High Energy Break coincident with the random failure of one train of SSPS and the fact that the event is bounded by FSAR Chapter 15 DNB limits. The risk of core damage from the steamline break-SSPS failure scenario is estimated at 3.3×10^{-8} per reactor year, which is more than three orders of magnitude less than the annual core damage frequency for HNP due to all causes. The event frequency is only slightly above the 10^{-8} truncation limit used in the Probabilistic Safety Analysis. A reactor trip would occur during the postulated scenario when SSPS is de-energized. In an evaluation performed by Westinghouse, the reactor trip was assumed but no automatic or manual actions were credited for the first ten minutes. The conclusion reached was that FSAR Chapter 15 Accident Analysis DNB limits would remain bounding per the original licensing basis.

Additionally, control room operators would be following appropriate emergency operating procedures during the scenario and would still have the ability to manually start ESF components and position valves as needed to mitigate the accident and place the plant in a safe shutdown condition.

CORRECTIVE ACTIONS:

The following actions were taken as interim measures, prior to modification installation (c/a #6):

1. Optional train-related maintenance and surveillance testing was minimized and suspended where possible.

2. Plant evolutions significant to risk were avoided.

3. Operations Orders were prepared describing the condition and proper implementation of the emergency operating procedure for responding to a MSLB and the effects of possible SSPS failure. Operators on-shift were briefed on the scenario of concern, how to identify the symptoms of the scenario and the mitigating actions to take.

4. Activities in the turbine building that could result in damage to the Main Steam Lines (such as movement of loads over the high pressure turbines and piping) were restricted.

5. Lessons learned from the Salem modification installation were reviewed and incorporated into the HNP modification implementation plan.

6. A plant modification (ESR-95-00254) to electrically isolate and coordinate the power feeds for the SSPS logic cabinets was developed, installed and satisfactorily tested on February 15, 1995.

EIIS INFORMATION:

N/A