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FACIL:50-400 Shearon Harris Nuclear Power Plant, Unit 1, Carolina 05000400
AUTH.NAME AUTHOR AFFILIATION
VERRILLI,M. Carolina Power & Light Co.
HINNANT,C.S. Carolina Power & Light Co.
RECIP.NAME RECIPIENT AFFILIATION

SUBJECT: LER 92-014-00:on 921013,identified excessive pipe wall thinning in portions of Main Feedwater & AFW sys.Caused by pre-heater bypass vibration mod.Piping that exihibited extensive erosion will be replaced.W/921117 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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RIDS/ADDS

CP&L
Carolina Power & Light Company
P.O. Box 165 • New Hill, N.C. 27562

C. S. HINNANT
General Manager - Harris Plant

NOV 17 1992

Letter Number: HO-920167

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 92-014-00

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.

Very truly yours

CS Hinnant

C. S. Hinnant
General Manager
Harris Nuclear Project

MV:dmw

Enclosure

cc: Mr. S. D. Ebneter (NRC - RII)
Mr. N. B. Le (NRC - RII)
Mr. J. E. Tedrow (NRC - SHNPP)
Mr. G. E. Vaughn

19004

MEM/LER92-014/1/OS1

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

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

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.

LICENSEE EVENT REPORT (LER)

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

FACILITY NAME (1)	DOCKET NUMBER (2)	PAGE (3)
Shearon Harris Nuclear Power Plant - Unit #1	05000/400	1 OF 3

TITLE (4) Voluntary LER - Identified pipe wall thinning in the Aux. Feedwater and Main Feedwater systems caused by Flow Accelerated Corrosion.

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
										05000
10	13	92	92	-- 014 --	00	11	17	92	FACILITY NAME	DOCKET NUMBER 05000

OPERATING MODE (9)	d
POWER LEVEL (10)	0

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)	X	OTHER
	20.405(a)(1)(iii)		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	(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
X	YES (If yes, complete EXPECTED SUBMISSION DATE).	NO		12	15	92

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

On October 13, 1992, during Refueling Outage #4, ultrasonic testing revealed several indications of excessive pipe wall thinning in portions of the Main Feedwater (MF) and Auxiliary Feedwater (AFW) System. This testing was being conducted as part of the Harris Plant Flow Accelerated Corrosion (FAC) Program. In accordance with the FAC program, when any pipe wall thinning is identified, the examined area is expanded until all thinning is located. Final results were obtained and evaluated by October 16, 1992 at which time the decision was made to replace the defective sections of pipe. The root cause for the flow accelerated corrosion identified in the AFW/MF system is currently being investigated. Immediate corrective actions include replacing the sections of AFW/MF piping that exhibited excessive wall thinning. The on-going investigation will include the evaluation of needed long term corrective actions. Based on preliminary operability conclusions, this condition does not meet the reporting requirements of 10CFR50.73. However, due to the significant impact of a potential AFW failure and the high level of industry interest that this situation has created, this condition is being submitted as a voluntary LER.

EVENT DESCRIPTION:

On October 13, 1992, the plant was shut down for Refueling Outage #4 with the reactor vessel defueled. As specified by the Harris Plant Flow Accelerated Corrosion (FAC) Program, nondestructive examination testing was being conducted on various plant piping to detect possible wall thinning. This testing utilizes an ultrasonic sound wave process to determine pipe wall thickness. One aspect that is factored into the FAC Program to help determine plant systems that are most susceptible to erosion/corrosion, is reviewing industry operating experience. NRC Information Notice 92-07 was issued on January 9, 1992 and documented a pipe wall thinning condition at Catawba Unit #2. As a result of IN 92-07, Auxiliary Feedwater System (AFW) and Main Feedwater System (MF) piping was modelled for inclusion into the Harris FAC Program and was scheduled to be included in RFO #4. These tests revealed indications of wall thinning in a portion of the AFW and MF Systems. In accordance with the FAC program, when any pipe wall thinning is identified, the examined area is expanded until adjacent thinning is located. By October 16, 1992, results of this expanded testing were compiled and reviewed. Utilizing a nominal wall thickness as a baseline, a thinning rate was determined. While the majority of wall thinning identified did not result in a wall thickness less than minimum design standards, continued thinning at this rate would potentially exceed design requirements prior to the next outage. The decision was made to replace approximately 280 feet of the six inch AFW/MF piping prior to plant startup. This represents approximately 1/4 of the AFW system piping.

The original design for the AFW system did not include the flow path from the 16" MF line. This section of six inch piping was originally designed to provide an AFW flow path inside containment to the steam generators. However, during plant construction a modification to the original design was provided by Westinghouse to minimize vibration in the steam generator (S/G) preheater section. This modification diverts 16% to 21% of normal Main Feed flow from the sixteen inch Main Feed header, through the six inch AFW piping mentioned above. This flow path then injects the feedwater into the S/G above the preheater section and thereby reduces preheater vibration.

CAUSE:

The root cause for the thinning of AFW/MF preheater bypass piping appears to be the introduction of additional flow due to the pre-heater bypass vibration modification. An on-going investigation is being conducted by

CAUSE: (cont.)

CP&L engineering and metallurgical personnel in conjunction with EPRI, to determine why the accelerated thinning rate occurred and what can be done to prevent future recurrence. The following factors that are used in predicting flow accelerated corrosion are being evaluated: pipe material and configuration, feedwater temperature, flow velocity, pressure, and chemistry (including pH and O_2). Portions of the eroded piping will under go various tests and examinations to aid in the completion of this evaluation. Upon conclusion of the on-going investigation, this report will be supplemented to provide any additional details or corrective actions that will be taken.

SAFETY SIGNIFICANCE:

Preliminary engineering evaluations indicate that the AFW system was capable of performing its design function during a design basis accident and was therefore operable during the previous cycle. The results of the on-going investigation will provide additional information to validate this assumption.

Based on these preliminary operability conclusions, this condition does not meet the reporting requirements of 10CFR50.73. However, due to the significant impact of a potential AFW failure and the high level of industry interest that this situation has created, this condition is being submitted as a voluntary LER.

CORRECTIVE ACTIONS:

1. Piping that exhibited extensive erosion/corrosion will be replaced prior to plant startup. The sections of Main Feed piping outside the containment building that were originally schedule 120 carbon steel pipe, were upgraded to chrome-moly pipe. The sections of Auxiliary Feedwater both outside and inside containment, that are schedule 80 carbon steel pipe were replaced with like material.

2. Investigation will continue to determine the cause for the accelerated rate of pipe wall thinning. Additional corrective actions will be taken as needed upon conclussion of the investigation.

3. A request was made to EPRI, to evaluate the effectiveness and current HNP utilization of CHECMATE® computerized pipe wall thinning program.