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FACIL:50-400 Shearon Harris Nuclear Power Plant, Unit 1, Carolina 05000400
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SCHWABENBAUER Carolina Power & Light Co.
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RECIP.NAME RECIPIENT AFFILIATION

SUBJECT: LER 89-021-00:on 891227,ESSFA due to loss of main feedwater caused by personnel error.

W/8 ltr.

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NOTES:Application for permit renewal filed. 05000400

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R. B. RICHEY
Manager
Harris Nuclear Project

JAN 2 6 1990
Letter Number: HO-900023 (O)

U.S. Nuclear Regulatory Commission
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Washington, DC 20555

SHEARON HARRIS NUCLEAR POWER PLANT UNIT 1
DOCKET NO. 50-400
LICENSE NO. NPF-63
LICENSEE EVENT REPORT 89-021-00

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,

R. B. Richey, Manager
Harris Nuclear Project

RBR:dgr

Enclosure

cc: Mr. R. A. Becker (NRR)
Mr. S. D. Ebneter (NRC - RII)
Mr. J. E. Tedrow (NRC - SHNPP)

MEM/LER-89-021/1/OS1

NRC FORM 366 (6-89)

U.S. NUCLEAR REGULATORY COMMISSION

APPROVED OMB NO. 3150-0104
EXPIRES: 4/30/92

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 50.0 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE RECORDS AND REPORTS MANAGEMENT BRANCH (P-630), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1)	DOCKET NUMBER (2)	PAGE (3)
SHEARON HARRIS NUCLEAR POWER PLANT - UNIT 1	0 5 0 0 0 4 0 0	1 OF 0 3

TITLE (4) Engineered Safety System Feature Actuation Due to the Loss of Main Feedwater Caused by Personnel Error

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 NAMES	DOCKET NUMBER(S)
1 2	2 7	8 9	8 9	0 2 1	0 0	0 1	2 6	9 0	N/A	0 5 0 0 0
										0 5 0 0 0

OPERATING MODE (9)	1	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11)			
POWER LEVEL (10)	0 1 2	20.402(b)	20.405(c)	X 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 (Specify in Abstract below and in Text, NRC Form 366A)
		20.405(a)(1)(iii)	50.73(a)(2)(i)	50.73(a)(2)(viii)(A)	
		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
Richard Schwabenbauer - Regulatory Compliance Technician	AREA CODE 9 1 9 3 6 2 - 2 6 6 9

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	
B	K N	I S V	T 0 2 0	N							

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 fifteen single-space typewritten lines) (16)

The plant was operating in Mode 1, POWER OPERATION, at 12 percent reactor power on December 27, 1989. The plant was in the process of increasing power following a turbine trip test. The 1A-NNS Main Feedwater (MFW) pump was in service. Steam Generator (SG) water levels were being manually controlled by the plant operators. At 1650 hours, the 1A-NNS MFW pump tripped on low-flow. The pump's recirculation valve was not capable of opening fast enough to maintain adequate water flow through the pump as feedwater flows were being manually adjusted. This resulted in a loss of MFW and an automatic start of both motor driven Auxiliary Feedwater (MDAFW) pumps occurred. The AFW actuation also causes an isolation of SG sampling lines. One of the sample valves closed but reopened and could not be manually closed. The operators manually reduced load and took the turbine generator off line. The turbine driven Auxiliary Feedwater (TDAFW) pump was actuated manually to help stabilize SG water levels. There was no turbine or reactor trip as a result of this event.

At 1655 hours, the operators started the 1B-NNS MFW pump to control SG water level and then proceeded to secure the AFW pumps.

The cause of the event was personnel error on the part of the operator in cutting back feedwater flow too fast which in turn caused the 1A-NNS MFW pump to trip on low-flow.

Corrective actions will include the repair of the sampling valve, appropriate procedure revision, training of applicable personnel, and a review of the MFW pump recirculation control and low-flow trips.

There were no safety consequences as a result of this event as the AFW pumps started as required supplying water to the SGs. This event is being reported in accordance with 10CFR50.73(a)(2)(iv) as an Engineered Safety System Feature actuation.

Description:

The plant was operating in Mode 1, POWER OPERATION, at 12 percent reactor power on December 27, 1989. The plant was in the process of increasing power following a turbine trip test. Both the 1A-NNS and 1B-NNS Condensate and Condensate Booster pumps were running with the 1A-NNS Main Feedwater (MFW) pump in service. The 1B-NNS MFW pump was not in service at the time due to the low power level and Steam Generator (SG) water levels were being manually controlled by plant operators.

Operating personnel were in the process of transferring feedwater flow from the by-pass flow control valves to the main feedwater regulating valves (MFRV). During this evolution, total water flow was sufficient for the 1A-NNS MFW pump recirculation valve to go shut at its normal flow set point. This increased water flow to the SGs. The plant operator noticed that SG water levels were increasing rapidly and began throttling back on the feedwater regulating valves to decrease water flow to the SGs. The pump's recirculation valve was not capable of opening fast enough to maintain adequate water flow through the pump to prevent a pump trip on low-flow.

At 1650 hours, the 1A-NNS MFW pump tripped on low-flow. This resulted in a total loss of feedwater to the SGs and an automatic start of both motor driven Auxiliary Feedwater (AFW) pumps. Plant operators then manually ran back the main turbine generator to under 10 percent load and opened the output breakers. They also started the turbine driven AFW pump to help stabilize SG water levels.

At 1655 hours, plant operators started the 1B-NNS MFW pump to control SG water levels and then proceeded to secure the AFW pumps.

There was no turbine or reactor trip as a result of this event. All plant safety systems responded as required with the exception of valve 1SP-226 (MANUFACTURER--TARGET ROCK, MODEL #1032001-4-8-3/4-S) which is in the Steam Cycle Sampling System. The valve closed as required but reopened and could not be reclosed. This valve is an isolation valve for 1C-SN SG tube outlet to sampling panel which closes on an AFW actuation.

Cause:

The cause of the event was personnel error on the part of the operator. While the applicable operating procedure does not prohibit the simultaneous transfer to all three MFRVs, simultaneous transfer of all three is more difficult. While the evolution can be accomplished on the plant simulator, it is very difficult in actual plant practice. In the course of the evolution, the operator was forced to drastically reduce feedwaterflow to prevent a turbine trip due to high SG water level (P-14 interlock). The recirculation flow control for the MFW pump is not modulated, the recirculation path is either

fully open or closed based on the low-flow set point and reset point. The flow reduction occurred so quickly that the recirculation flow control valve could not open before the time delay on the low flow trip.

Analysis:

There were no safety consequences as a result of this event as the AFW pumps started as required supplying water to the SGs. This particular event is only possible during low power operations where the flow through the MFW pump is just above the recirculation valve set point.

Depending on power level, the loss of a MFW pump could result in a reactor trip due to low SG water level.

This event is being reported in accordance with 10CFR50.73(a)(2)(iv) as an Engineered Safety System Feature (ESF) actuation.

There have not been any previous similar events reported where operator action caused a loss of MFW and ESF actuation.

Correction Action:

1. A work request WR&A 89-BANZ1 has been generated to repair valve 1SP-226. The sample line has been isolated by another valve until the repair can be completed.

2. General Procedure (GP)-005, Power Operation Mode 2 to Mode 1, will be revised to require that the transfer to the MFRV's will not be done simultaneously for all three SGs.

3. An evaluation will be done of the relative times for the MFW pump low-flow trip time delay and the response time of the recirculation flow control valve.

4. Training will be done for applicable personnel on this event.

EIIS Code Information:

Main Turbine	TA
Main Generator	TB
Condensate Pump	SD
Condensate Booster Pump	SD
Main Feedwater Pump	SJ
Main Feedwater Regulating Valve	SJ
Steam Generator	SB
Auxiliary Feedwater Pump	BA
Engineered Safety System Feature	JE
Steam Cycle Sampling System	KN