ACCELERATED DISTRIBUTION DEMONSTRATION SYSTEM

REGULATORY INFORMATION DISTRIBUTION SYSTEM (RIDS)

ACCESSION NBR:8909270141 DOC.DATE: 89/09/18 NOTARIZED: NO DOCKET #
FACIL:50-287 Oconee Nuclear Station, Unit 3, Duke Power Co. 0500028?
AUTH.NAME AUTHOR AFFILIATION
LOWERY,H.R. Duke Power Co.
TUCKMAN,M.S. Duke Power Co.
RECIP.NAME RECIPIENT AFFILIATION

SUBJECT: LER 89-004-00:on 890818,Unit 3 reactor tripped due to inappropriate action,poor work practice.

W/8 ltr.

DISTRIBUTION CODE: IE22T COPIES RECEIVED:LTR 1 ENCL 1 SIZE: 6
TITLE: 50.73/50.9 Licensee Event Report (LER), Incident Rpt, etc.

NOTES:

	RECIPIENT ID CODE/NAME	COPIES LTTR	COPIES ENCL	RECIPIENT ID CODE/NAME	COPIES LTTR	COPIES ENCL
	PD2-3 LA	1	1	PD2-3 PD	1	1
	WIENS,L	1	1			
INTERNAL:	ACRS MICHELSON	1	1	ACRS MOELLER	2	2
	ACRS WYLIE	1	1	AEOD/DOA	1	1
	AEOD/DSP/TPAB	1	1	AEOD/ROAB/DSP	2	2
	DEDRO	1	1	NRR/DEST/CEB 8H	1	1
	NRR/DEST/ESB 8D	1	1	NRR/DEST/ICSB 7	1	1
	NRR/DEST/MEB 9H	1	1	NRR/DEST/MTB 9H	1	1
	NRR/DEST/PSB 8D	1	1	NRR/DEST/RSB 8E	1	1
	NRR/DEST/SGB 8D	1	1	NRR/DLPQ/HFB 10	1	1
	NRR/DLPQ/PEB 10	1	1	NRR/DOEA/EAB 11	1	1
	NRR/DREP/RPB 10	2	2	NUDOCS-ABSTRACT	1	1
	REG FILE 02	1	1	RES/DSIR/EIB	1	1
	RGN2 FILE 01	1	1			
EXTERNAL:	EG&G WILLIAMS,S	4	4	L ST LOBBY WARD	1	1
	LPDR	1	1	NRC PDR	1	1
	NSIC MAYS,G	1	1	NSIC MURPHY,G.A	1	1
	NUDOCS FULL TXT	1	1			

NOTE TO ALL "RIDS" RECIPIENTS:

PLEASE HELP US TO REDUCE WASTE! CONTACT THE DOCUMENT CONTROL DESK, ROOM P1-37 (EXT. 20079) TO ELIMINATE YOUR NAME FROM DISTRIBUTION LISTS FOR DOCUMENTS YOU DON'T NEED!

FULL TEXT CONVERSION REQUIRED
TOTAL NUMBER OF COPIES REQUIRED: LTTR 39 ENCL 39

R I D S / A D D S

R I D S / A D D S

A04
cc

Duke Power Company
Oconee Nuclear Station
P.O. Box 1439
Seneca, S.C. 29679

(803) 882-5363

DUKE POWER

September 18, 1989

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

Subject: Oconee Nuclear Station
Docket Nos. 50-269, -270, -287
LER 287/89-04

Gentlemen:

Pursuant to 10 CFR 50.73 Sections (a)(1) and (d), attached is Licensee Event Report (LER) 287/89-04 concerning a Unit 3 reactor trip due to inappropriate action, poor work practice.

This report is being submitted in accordance with 10 CFR 50.73 (a)(2)(iv). This event is considered to be of no significance with respect to the health and safety of the public.

Very truly yours,

M. S. Tuckman

M. S. Tuckman
Station Manager

EGL/ftr

Attachment

xc: Mr. S. B. Ebneter
Regional Administrator, Region II
U.S. Nuclear Regulatory Commission
101 Marietta St., NW, Suite 2900
Atlanta, Georgia 30323

Mr. L. A. Weins
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Washington, DC 20555

Mr. P. H. Skinner
NRC Resident Inspector
Oconee Nuclear Station

American Nuclear Insurers
c/o Dottie Sherman, ANI Library
The Exchange, Suite 245
270 Farmington Avenue
Farmington, CT 06032

INPO Records Center
Suite 1500
1100 Circle 75 Parkway
Atlanta, Georgia 30339

M&M Nuclear Consultants
1221 Avenue of the Americas
New York, NY 10020

IE22
1/1

NRC Form 366
(9-83)

U.S. NUCLEAR REGULATORY COMMISSION
APPROVED OMB NO. 3150-0104
EXPIRES: 8/31/88

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1)	DOCKET NUMBER (2)	PAGE (3)
Oconee Nuclear Station, Unit 3	0 5 0 0 0 2 8 7	1 OF 0 5

TITLE (4)
Unit 3 Reactor Tripped Due To Inappropriate Action, Poor Work Practice

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)
0 8	1 8	8 9	8 9	0 0 4	0 0	0 9	1 8	8 9		0 5 0 0 0
										0 5 0 0 0

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

OPERATING MODE (9)	N					
POWER LEVEL (10)	1 0 0	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
	AREA CODE
Henry R. Lowery, Chairman Oconee Safety Review Group	8 0 3 8 8 5 - 3 0 3 4

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 fifteen single-space typewritten lines) (16)

On August 18, 1989, at 1233 hours, Oconee Unit 3 tripped from 100% full power. The Reactor trip was an anticipatory trip resulting from a false Electrohydraulic Control (EHC) System low hydraulic pressure trip signal. The false signal was generated when water drops made momentary contact across the terminal strip associated with the low hydraulic pressure trip circuit. The station janitorial service vendor and Operations personnel had washed the floor around the EHC hydraulic power unit cabinet prior to the unit trip. The cabinet door was inadequately shut, potentially allowing moisture to enter the hydraulic power unit cabinet. Plant response to the trip was normal with no radiological releases or Engineered Safeguard actuations. The root cause of this incident is classified as an Inappropriate Action, poor work practice. Immediate corrective actions were to stabilize the unit at hot shutdown conditions.

U.S.GPO:1984-0-454-481/10759

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
Oconee Nuclear Station, Unit 3	0 5 0 0 0 2 8 7	8 9	— 0 0 4	— 0 0	0 2 OF 0 5

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

BACKGROUND

The Electrohydraulic Control (EHC) [EIIS:TA] system controls the opening and closing of the Main Turbine (MT) [EIIS:TA] valves and therefore controls the operation of the main turbine. It also provides safeguards to protect the turbine.

The EHC system is composed of a hydraulic system and an electrical system. The hydraulic system consists basically of a high pressure oil pumping system that applies oil pressure to the operating cylinders on the turbine steam valves. The electrical system develops the electrical signals which control the high pressure oil supply to the operating cylinders.

The hydraulic power unit cabinet is part of the EHC system. The hydraulic power unit cabinet contains pumps, oil, tanks, filters, oil coolers, accumulators, terminals, etc. and is located in the basement of the turbine building.

There are numerous protective systems built into the EHC system to ensure safe operation of the turbine. The EHC low hydraulic pressure trip is one of several protective turbine trips. The hydraulic manifold pressure is monitored by three pressure switches. These switches have a two out of three logic configuration. When any two switches actuate on low oil pressure, the intermediate relay energizes, thereby energizing the master trip bus. The master trip bus will trip the turbine and cause an anticipatory reactor trip. The first hit circuitry in the EHC monitoring cabinet will indicate on the monitoring panel which event, of several tripping events, occurred first.

K-Mac is the janitorial service vendor on site.

EVENT DESCRIPTION

On August 17, 1989, at 1130 hours, a K-Mac person washed the turbine building floor around the Electrohydraulic Control (EHC) System hydraulic power unit cabinet. On August 18, 1989, at 0800 hours, an Operations person also washed the floor in the same general area. Both used a High Pressure Service Water (HPSW) [EIIS:KP] hose.

On August 18, 1989, at 1233 hours, Unit 3 tripped from 100% full power when an anticipatory Reactor trip occurred due to a turbine trip. The EHC system first hit circuitry indicated that the trip was due to an EHC low hydraulic oil pressure signal. The standby EHC oil pump B was in auto and

did not start on the low hydraulic oil pressure signal. The Main Turbine (MT) trip signal, due to EHC low hydraulic pressure, existed only for 18 milliseconds and did not lock in.

This prompted the Instrumentation and Electrical (I&E) technicians to investigate the EHC system. During the investigation the I&E technicians opened the power unit cabinet door for trouble shooting purposes and found water droplets on the terminal strip associated with the low hydraulic pressure trip circuit. At 1400 hours, the I&E technicians also reported water on the floor around the EHC System hydraulic power unit cabinet. They also discovered that the bottom latch of the cabinet door was broken. The terminals in the EHC System hydraulic power unit cabinet were dried out prior to putting the turbine on line.

All Control Rod Drive breakers [EIIS:AA] opened and all control rods dropped to shutdown the unit. The Reactor Coolant System (RCS) [EIIS:AA] responded as expected. The average RCS temperature stabilized at 550 degrees Fahrenheit. Pressurizer [EIIS:VSL] level decreased from 220 inches to a minimum of 70 inches, then was maintained at 160 inches by manually starting the 3B high pressure injection pump [EIIS:BQ]. The RCS maximum pressure was 2200 psig and Steam Generator (SG) levels were maintained at approximately 25 inches. Steam Generator (SG) [EIIS:SG] pressure was maintained at 1000 psig. Turbine header pressure was manually lowered to approximately 970 psig to reseat Main Steam (MS) [EIIS:SB] relief valve 3MS-4.

CONCLUSION

The root cause of this event is Inappropriate Action, poor work practice. Prior to the trip K-Mac and Operations personnel had washed the turbine building basement floor by hosing down around the Electrohydraulic Control (EHC) System hydraulic power unit cabinet door causing water to enter the cabinet circuitry. Later, at 1400 hours, Instrumentation and Electrical (I&E) technicians reported water on the floor. However, no adjacent source of leakage was identified. There was a concern at the Post-trip Review meeting that water droplets caused the trip. Investigation concluded that water entered the EHC System hydraulic power unit cabinet during cleaning. This conclusion was based on the fact that the EHC System hydraulic power unit cabinet door latch was broken, and there was no observed adjacent source of leakage. It was also concluded that moisture in the EHC System hydraulic cabinet had made momentary contact across the terminals and initiated the false EHC low hydraulic pressure signal causing an anticipatory Reactor trip. The first hit circuitry indicated the trip was due to EHC low hydraulic pressure. Also, the

standby pump B, which was in automatic, did not start upon the low hydraulic pressure signal. Had the actual pressure dropped to 1300 psig this pump would have started automatically.

This event is not NPRDS reportable. Although other unit trips have occurred within the past twelve months, none were due to similar failure modes, therefore, this event is classified as non-recurring.

There were no releases of radioactive materials, radiation exposure, or personnel injuries during this event.

CORRECTIVE ACTIONS

Immediate

1. Operations shift personnel took appropriate action to control the transient and bring Unit 3 to stable hot shutdown.

Subsequent

1. Electrohydraulic power unit cabinet was dried before returning the unit to service.

Planned

1. Station Management will emphasize to all employees and contract personnel the potential for adverse effect which can result from poor work practices such as those identified in this report.
2. Electrohydraulic control (EHC) hydraulic power cabinet doors will be sealed per work requests 23528C, 23529C, 23530C.
3. The broken latch of the EHC hydraulic power unit cabinet door will be repaired per work request 56216A.

SAFETY EVALUATION

Following the Reactor trip, the unit was safely stabilized at hot shutdown conditions. There were no Engineered Safeguard actuations and no Emergency Feedwater [EIIS:BA] actuations. Operations safely controlled the unit following the trip. The pressurizer relief valves were not challenged. The Technical Specification (TS) maximum cooldown rate of 50 degrees per half hour was not exceeded. Main Steam pressure was reduced

to 970 psig to reseat Main Steam Relief Valve 3MS-4. The pressurizer level reached a minimum of approximately 70 inches. The integrated control systems responded properly. No Reactor Coolant System leakage was created by this trip. Post trip response was expected. The trip response did not degrade plant performance and no safety concerns were generated. TS limits were not exceeded and there were no radioactive releases. Therefore, the health and safety of the public were not affected.