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FACIL:50-270 Oconee Nuclear Station, Unit 2, Duke Power Co. 05000270
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HAMPTON,J.W. Duke Power Co.
RECIP.NAME RECIPIENT AFFILIATION

SUBJECT: LER 95-001-00:on 950216,determined that valve had been inoperable since last stroke test on 951024.Caused by degraded subcomponent.Affected components replaced & sureveillance testing increased.W/950316 ltr.

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DUKE POWER

March 16, 1995

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

Subject: Oconee Nuclear Station
Docket Nos. 50-269, -270, -287
LER 270/95-01

Gentlemen:

Pursuant to 10 CFR 50.73 Sections (a)(1) and (d), attached is Licensee Event Report (LER) 270/95-01, concerning a Technical Specification which was exceeded due to equipment failure.

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

Very truly yours,

J. W. Hampton
Vice President

/ftr

Attachment

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Oconee Nuclear Site

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)
Oconee Nuclear Station, Unit 2	05000 270	1 OF 6

TITLE (4)
Technical Specification Exceeded Due to Equipment Failure

EVENT DATE (5)			LER NUMBER (6)			REPORT NUMBER (7)			OTHER FACILITIES INVOLVED (8)	
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	MONTH	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
02	16	95	95	-- 01 --	00	03	16	95		05000
									FACILITY NAME	DOCKET NUMBER
										05000

OPERATING MODE (9)		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)
POWER LEVEL (10)		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) (B)		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)
L. V. Wilkie, Safety Review Manager	(803) 885-3518

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
F	BP	52	G080	Yes						

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 8, 1995, Oconee Unit 2 was at 100% full power. During the performance of quarterly valve stroke tests, valve 2LP-19 failed to open from its remote control switch. Maintenance personnel began investigating the reason for the valve failure to open. It was determined that a close contact was periodically sticking in the open position. The contact was cleaned, adjusted and the valve was satisfactorily tested. On February 9, 1995 the contact was replaced and the valve tested satisfactorily. On February 16, 1995, engineering determined the valve had been inoperable since the last stroke test on October 24, 1994. The root cause is Equipment Failure due to a degraded subcomponent. Corrective actions include replacing the affected components, increasing the surveillance testing, and continuing the investigation to determine the cause of the sticking contact.

BACKGROUND

The Low Pressure Injection (LPI) (EIIS:BP) system at Oconee is an Emergency Safeguards system designed to maintain core cooling for large break Loss Of Coolant Accidents. The Reactor Building Emergency Sump (RBES) is designed to provide suction to the LPI pumps after the Borated Water Storage Tank source is depleted following an accident. There are two flow paths from the RBES, each containing a valve (LP-19 or LP-20) which must open to provide suction to the LPI pumps.

The control circuits for motor operated valve 2LP-19 have two contactor relays. The first is an open relay, which, when energized, will operate to close contacts such that the valve will open. The second is a close relay, which, when energized, will operate to close a second set of contacts such that the valve will close. The two relays are interlocked, with normally closed auxiliary contacts to prevent energizing the two simultaneously.

Technical Specification 3.3.2 requires that two independent LPI system trains shall be operable when fuel is in the core and Reactor Coolant System [EIIS:AB] pressure is equal to or greater than 350 psig or temperature is equal to or greater than 250 F.

EVENT DESCRIPTION

On October 24, 1994, the Unit 2 procedure for Refueling Valve Stroke Test was in progress. Valve 2LP-19 was successfully stroked as part of this test.

On February 8, 1995, at 1130 hours, the 2A Low Pressure Injection (LPI) train was prepared for performing quarterly valve stroke tests. At 1151 hours, Operations personnel attempted to stroke valve 2LP-19 from the Control Room switch. The valve position indication did not change. The Unit 2 Shift Supervisor was notified of the condition and a decision was made to attempt the operation again. On the second attempt to cycle the valve, no position indication change was observed. The quarterly valve stroke test was stopped, appropriate personnel notified, a 72 hour Technical Specification (TS) Limiting Condition for Operation (LCO) was entered, and a work order was issued to investigate/repair valve 2LP-19.

Maintenance personnel began investigating the failure of valve 2LP-19 to open on demand. The electrical motor control center compartment was opened and checked for a possible overload. The overload relays were verified as "not tripped" and the compartment door was closed. While returning to the Control Room to continue the investigation, maintenance personnel were informed that the valve had spuriously opened. The problem associated with the valve opening is addressed in Problem Investigation Process Report number 2-095-0194.

An extensive checkout of the circuitry, switch, and cabling to the breaker was performed. The switch and cabling were inspected and no problems were noted. The normally closed auxiliary contact in the motor control circuit was noted to be periodically sticking in the open position, preventing the motor portion of the valve circuit from being energized, and therefore preventing 2LP-19 from opening. The contactor assembly was removed from the breaker, cleaned, adjusted, and reinstalled. The evaluation concluded that the relay plunger mechanism was sticking such that a combination of gravity and spring tension could not overcome the restriction. After the cleaning and adjustment, the contacts did not stick in the open position when manually actuated. The valve was stroke tested with acceptable results.

At approximately 1800 hours, a decision was made to replace the affected components in the motor control center and the control switch.

On February 9, 1995, the replacement of the affected components was initiated utilizing components from a spare motor control center. The control switch was replaced, the performance testing was completed with acceptable results, and the TS LCO was exited. A decision was made to stroke test valve 2LP-19 monthly for three months to ensure the reliability of the replacement parts. Also, an infra-red scan of the starter contacts was recommended to ensure the contacts were performing satisfactorily.

A past operability evaluation of valve 2LP-19 was completed on February 16, 1995. It was determined that the failure occurred when the valve was last placed in the closed position. Therefore, the valve was considered to be inoperable from October 24, 1994 (when it was last closed) until February 8, 1995.

CONCLUSIONS

Valve 2LP-19 would not open on demand during the quarterly stroke test. The engineering evaluation determined that the failure had been present since the previous stroke test that placed the valve in the closed position. The root cause of the event is Equipment Failure due to a degraded subcomponent. The cause of the degraded subcomponent (sticking contactor) is unknown but believed to be due to mechanical binding in the contactor mechanism. When the auxiliary contact was manually exercised, it stuck in the open position. After cleaning and adjustment of the spring, the contact did not stick open when manually exercised.

Valve 2LP-19 spurious opening during the investigation of its failure to open is being investigated as a separate Problem Investigation Process. There appears to be no relationship between the failure to open and the spurious opening.

A review of the work history for all electric motor operated valves indicated that one other failure of this type (stuck contactor) has occurred in the last two years. The failure occurred on a different valve and did not result in an operability concern.

There have been several events over the past two years where the root cause was determined to be a degraded subcomponent. LER 270/94-05 identified a breaker failure resulting in a Reactor trip due to a loose lug. LER 287/94-01 involved a defective Moisture Separator Reheater high level switch which resulted in a Reactor trip. LER 270/94-02 concerned a failure of a subcomponent in the Main Feedwater Pumps resulting in a Reactor trip. However, the equipment and/or modes of failure were different from the failure noted in this report. Therefore, this event is considered not recurring.

The failure of valve 2LP-19 to operate is NPRDS reportable. The failure was associated with the General Electric breaker model number TED134015.

There were no personnel injuries, radiation exposures, or releases of radioactive materials associated with this event.

CORRECTIVE ACTIONS

Immediate

1. The contactor for the open position was cleaned, adjusted and valve 2LP-19 was satisfactorily tested.

Subsequent

1. The contactor and associated parts for the open and closed position and the control switch were replaced and valve 2LP-19 was satisfactorily tested.

2. The stroke test frequency for valve 2LP-19 was increased to monthly, for the next three months.

3. An infra-red scan of the starter contacts was performed, during the initial of the three monthly tests, with satisfactory results.

Planned

1. Continue the investigation into the cause of the sticking starter contact and take appropriate actions to correct the problem.

2. Complete the stroke tests on a monthly frequency for the next three months for valve 2LP-19.

SAFETY ANALYSIS

The Low Pressure Injection (LPI) system provides emergency coolant injection which is necessary following a Loss Of Coolant Accident (LOCA). For small break scenarios, it also provides suction to the High Pressure Injection [EIIS:BG] system after the Borated Water Storage Tank (BWST) is depleted and the Reactor Building Emergency Sump (RBES) becomes the long term suction supply for cooling the core. The RBES has two separate lines supplying the LPI system for this purpose. The isolation valve in one of these two lines was discovered electrically inoperable. The other supply line and isolation valve were operable. However, since the inoperability exceeded the Technical Specification Limiting Condition for Operation for approximately three months, the safety significance of a failure in the operable line is considered.

A review of the failure mode for valve 2LP-19 indicates the valve could have been opened at the breaker by manually closing in the contacts to start the motor. This electrical breaker is located in the equipment room of the auxiliary building which may be accessed from the turbine building with minimal radiological concerns.

It is expected that, if both RBES recirculation valves failed to open, the Operators would dispatch personnel to the equipment room and the LPI pump room to manually open the valves within a time that precludes fuel damage.

The annual frequency of an event requiring 2LP-19 to function to avoid core damage is 1.0E-05 per year. This frequency includes an independent failure of 2LP-20.

The other valve (2LP-20) was not affected by the failure of 2LP-19 and was available for control switch actuation. An event requiring the utilization of the BWST or the RBES did not occur during the time valve 2LP-19 was inoperable.

The health and safety of the public was not affected by this event.