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 AUTH. NAME AUTHOR AFFILIATION
 LOWERY, H.R. Duke Power Co.
 TUCKER, H.B. Duke Power Co.
 RECIP. NAME RECIPIENT AFFILIATION

SUBJECT: LER 89-005-00: on 890222, emergency steam air ejector inoperable due to defective procedure.

W/8 ltr.

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LICENSEE EVENT REPORT (LER)

FACILITY NAME (1) Oconee Nuclear Station, Unit 1	DOCKET NUMBER (2) 0 5 0 0 0 2 6 9 1	PAGE (3) 1 OF 0 5
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TITLE (4)
 Emergency Steam Air Ejector Inoperable Due to Defective Procedure

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	2	2	8	9	0	0	5	0			0 5 0 0 0
											0 5 0 0 0

OPERATING MODE (9) N

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

20.402(b)	20.405(c)	50.73(a)(2)(iv)	73.71(b)
20.405(a)(1)(i)	50.38(c)(1)	50.73(a)(2)(v)	73.71(c)
20.405(a)(1)(ii)	50.38(c)(2)	50.73(a)(2)(vii)	OTHER (Specify in Abstract below and in Text, NRC Form 366A)
20.405(a)(1)(iii)	<input checked="" type="checkbox"/> 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 H. R. Lowery, Oconee Safety Review Group	TELEPHONE NUMBER AREA CODE: 8 0 3 8 8 5 - 3 0 3 4
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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)

YES (If yes, complete EXPECTED SUBMISSION DATE) NO

EXPECTED SUBMISSION DATE (15)

MONTH	DAY	YEAR

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

On February 22, 1989, at 1030 hours with Units 1, 2, and 3 at 100% full power, valve IMS-45; Main Steam supply to the Emergency Steam Air Ejector, was discovered to be in the closed position while performing a periodic test. This had isolated Main Steam to the Emergency Steam Air Ejector which is required to be operable as part of the Emergency Condenser Cooling Water System per Technical Specification 3.4.5. The root cause of this incident was a defective procedure due to incomplete information. The operating procedure did not give proper guidance to ensure that Main Steam was aligned to supply the Emergency Steam Air Ejector. The immediate corrective action taken was to open IMS-45, thereby returning the Emergency Condenser Cooling Water system to an operable state.

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TEXT IF MORE SPACE IS REQUIRED, USE ADDITIONAL NRC Form 306A (1/77)

BACKGROUND

The purpose of the Emergency Condenser Cooling Water (ECCW) [EIIS:BS] System is to provide water to the condenser for the removal of decay heat during an emergency situation. In a Station Blackout event, condenser cooling is achieved by establishing a siphon flow from the intake, through the condenser, to the Keowee Hydro Station [EIIS:EK] tailrace. Decay heat, in a Station Blackout event, is removed via the Main Steam [EIIS:SB] Turbine Bypass Valves [EIIS:S0] discharging to the condenser. For the siphon, or gravity, flow to function properly, many components and systems must operate. The Main Steam supplied Emergency Air Ejector [EIIS:SH] is one of the components which must function to ensure noncondensibles are removed allowing the siphon to function. 1MS-45 [EIIS:V] is a manually operated block valve in the Main Steam supply to the Emergency Air Ejector.

Technical Specification (TS) 3.4 (Secondary System Decay Heat Removal) specifies the minimum conditions necessary to assure the capability to remove decay heat from the reactor core. TS 3.4.5 states that the Reactor Coolant System [EIIS:AB] shall not be heated above 250 degrees Fahrenheit unless the Emergency Condenser Cooling Water system is operable.

EVENT DESCRIPTION

On January 19, 1989, during a Unit 1 refueling outage, Maintenance began work on 1MS-45 under Work Request 54176H, which was to replace the valve under Exempt Change #2294. During the performance of this work, 1MS-45 was documented to be in the "as found" position of closed as per step 6.19 of MP/0/B/1810/15 (Welding-Piping and Valves-Removal and Replacement of Class "G", "H", and QA Condition 3). On January 27, 1989, 1MS-45 was cut out and replaced. The valve 1MS-45 was then left by the Maintenance crew in the documented "as found" position as required by step 12.2 of their procedure.

During the Unit 1 startup of the Condenser Circulating Water (CCW) System, Enclosure 4.1 (CCW System Startup) and Enclosure 4.19 (Valve Checklist) of OP/1/A/1104/12 (Condenser Cooling Water System) were completed. Procedure step 2.17 of Enclosure 4.1 gives instructions to the operator to "Verify steam available to the Emergency Steam Air Ejector." On February 17, 1989, Reactor Operator (RO) "A" signed step 2.17 of Enclosure 4.1 as complete based on the CCW startup valve checklist (OP/1/A/1104/12, Enclosure 4.19) being complete and the Main Steam System being in service. RO "A" also verified that there was no plant status documentation indicating that any valves on Enclosure 4.19 (Valve Checklist) were out of their required position. Investigation revealed that 1MS-45 was not

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Oconee Nuclear Station, Unit 1	0150101269	89	005	010	013	05

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included in and has never been included in Unit 1's Enclosure 4.19 (Valve Checklist) for startup of the CCW system. Further investigation revealed that Units' 2 and 3 MS-45 was included in their respective valve checklist for CCW startup.

On February 22, 1989, during the performance of PT/1/A/150/22L (Valve Functional Test for HPSW Supply to TDEFWP), 1MS-45 was discovered in the closed position. This had isolated steam to the Emergency Steam Air Ejector. The last documented evidence of this valve being open was on August 2, 1988 per a previously completed PT/1/A/150/22L. Based on information from Technical Specification 3.4.5 and Final Safety Analysis Report (FSAR) 15.8.3, the Emergency Steam Air Ejector must be operable for the Continuous Vacuum Priming System and thus the ECCW system to be operable. Technical Specification 3.4.5 also requires the Emergency Condenser Cooling Water (ECCW) to be operable at a Reactor Coolant System temperature greater than 250 degrees Fahrenheit. Since 1MS-45 was closed, the ECCW system was rendered inoperable and was in violation of T.S. 3.4.5 until February 22, 1989. 1MS-45 was then opened and the ECCW system returned to operability.

CONCLUSION

It is concluded that the root cause of this event was the failure of OP/1/A/1104/12 (Condenser Circulating Water System) to give adequate guidance to ensure the operability of the Emergency Condenser Cooling Water (ECCW) system. Step 2.17 of OP/1/A/1104/12, Enclosure 4.1 (CCW System Startup) states "Verify steam available to the Emergency Steam Air Ejector." Interviews with Operations staff and shift personnel yielded various interpretations of this step. According to Shift Operations Manager "A", the acceptable response to Enclosure 4.1, step 2.17 would be to ensure the applicable valve checklists are complete and Main Steam is available. This was the action of Reactor Operator "A" who signed the step as complete. However, Enclosure 4.1, step 2.17 does not clearly state what actions are expected. Investigation of OP/1/A/1104/12, Enclosure 4.19 revealed that Valve 1MS-45 was not included on the valve checklist. However, the Condenser Circulating Water (CCW) system procedures for Units 2 and 3 do include the corresponding valve for their respective units. Therefore, since step 2.17 of Enclosure 4.1 was vague in its guidance and Enclosure 4.19 did not include 1MS-45, it is concluded that the root cause of this event is a defective procedure due to incomplete information.

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TEXT OF THIS REPORT IS REQUIRED FOR COMPLIANCE WITH 10 CFR 201.11(b)

A review of incidents occurring during the past year revealed one other incidence of a Technical Specification violation with a root or contributing cause of a defective procedure. This other incident (reference LER 270/89-01) involved rendering inoperable an emergency electrical power path due to a defective procedure. Therefore, this event is classified as a recurring event. Analysis of the corrective actions resulting from LER 270/89-01 indicated that none of those corrective actions would have prevented this event.

No radioactive material releases, radiation exposures, or personnel injuries occurred as a result of this event. The health and safety of the public was not compromised. This incident did not involve any component failures; therefore, it is not NPRDS reportable.

CORRECTIVE ACTIONS

IMMEDIATE

1MS-45 (Steam Supply to Emergency Steam Air Ejector) was opened.

SUBSEQUENT

1. The Condenser Circulating Water (CCW) System procedure, OP/1/A/1104/12, Enclosure 4.19 (Valve Checklist) was revised to include 1MS-45 as open.
2. The CCW System procedure OP/1,2,3/A/1104/12 Enclosure 4.1 (CCW System Startup) were revised to give clear guidance on ensuring verification that steam to the Emergency Steam Air Ejector is available.
3. The CCW System procedure valve checklist on Units 2 and 3 were reviewed to ensure that (2)(3)MS-45 were included and in the proper position.

PLANNED

1. Operations will do a random comparison of valve checklists on select systems to check for missing valves.

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SAFETY ANALYSIS

Oconee Final Safety Analysis Report (FSAR) Section 15.8.3 includes the operability of the Emergency Condenser Cooling Water (ECCW) System to remove decay heat in a Loss of all AC power event (Station Blackout). Part of the ECCW system consists of the ability to maintain gravity flow of Condenser Circulating Water (CCW) through the condenser of each unit upon a Loss of all AC Power. This is accomplished by an emergency line from the condenser discharge to the Keowee Dam tailrace which sets up the required siphon flow. For the siphon flow to function properly, the Continuous Vacuum Priming (CVP) System or its backup, the Main Steam (MS) supplied Emergency Steam Air Ejector must operate correctly. Also included within the analysis of Section 15.8.3 is the operability of the Turbine Driven Emergency Feedwater Pump (TDEFWP) and the Turbine Bypass Valves to recirculate feedwater [EIIS:SJ] through the condenser to remove decay heat. According to FSAR Section 15.8.3, immediate operation of the TDEFWP and the ECCW system is not of critical nature because of the sufficient condensate inventory maintained on site. This would provide decay heat removal following a Station Blackout without the operation of the ECCW system for approximately 6.2 hours by steaming directly to the atmosphere through the Main Steam Relief Valves. Based on the redundancy designed into the Oconee AC power distribution system, it can be assumed that AC power would be restored within 4 hours of a Station Blackout event. Therefore, the normal Emergency Feedwater (EFW) and CCW systems could be restored to service before depleting the condensate supply.

The Loss of Coolant Accident (LOCA) assumes a loss of offsite power and a worst case single failure. In this scenario, a load shed could occur which would de-energize the CCW pumps, and flow to the Low Pressure Service Water (LPSW) [EIIS:BI] system would be provided by the siphon until the CCW pumps are restarted. The siphon from the intake canal to the suction of the LPSW pumps does not depend on the operation of the Emergency Steam Air Ejectors (ESAE). This is demonstrated by periodic testing, which maintains this siphon for 4 hours without ESAE operation. For the LOCA scenario, therefore, this incident had no impact on any systems required for mitigation. It should also be noted that in a LOCA scenario following a load shed, power is available for CCW pumps restart from Keowee Hydro Station [EIIS:EK] via transformer CT-4 [EIIS:XFMR]. During the period of time that IMS-45 was closed, no event occurred which warranted the actuation of ECCW system and there were no releases of radiation to the public. Therefore, the inoperability of the ECCW system did in no way affect the health and safety of the public.



DIRECTOR

March 27, 1989

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

Subject: **Oconee Nuclear Station**
Docket Nos. 50-269, -270, -287
LER 269/89-05

Gentlemen:

Pursuant to 10CFR 50.73 Sections (a) (1) and (d), attached is Licensee Event Report (LER) 269/89-05 concerning emergency steam air ejector inoperability.

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,

Hal B. Tucker

PJN

Attachment

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

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

Mr. D. Matthews
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Washington, DC 20555

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

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

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

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