Duke Power®

RONALD A JONES
Vice President
Oconee Nuclear Site

Duke Power
ON01VP / 7800 Rochester Hwy.
Seneca, SC 29672

864 885 3158
864 885 3564 fax

October 31, 2005

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

Subject: Oconee Nuclear Station
Docket No. 50-287
Licensee Event Report 287/2005-01, Revision 0
Problem Investigation Process No.: O-05-05564

Gentlemen:

Pursuant to 10 CFR 50.73 Sections (a)(1) and (d), attached is Licensee Event Report 287/2005-01, Revision 0. This report addresses failure to meet Technical Specification required action completion times for LCO 3.5.3 Conditions A and C and 3.6.5 Conditions A and D due to a blocked air flow path in Unit 3 Low Pressure Injection/Building Spray Pump Room.

This report is being submitted in accordance with 10 CFR 50.73 (a)(2)(i)(B), operation or condition which was prohibited by the plant's Technical Specifications. This event is considered to be of no significance with respect to the health and safety of the public.

Very truly yours,

Bruce Hamilton /for

R. A. Jones

Attachment

IE22

cc: Mr. William D. Travers
Administrator, Region II
U.S. Nuclear Regulatory Commission
61 Forsyth Street, S. W., Suite 23T85
Atlanta, GA 30303

Mr. L. N. Olshan
Project Manager
U.S. Nuclear Regulatory Commission
Office of Nuclear Reactor Regulation
Washington, D.C. 20555

Mr. M. C. Shannon
NRC Senior Resident Inspector
Oconee Nuclear Station

INPO (via E-mail)

NRC FORM 366 (6-2004) U.S. NUCLEAR REGULATORY COMMISSION

LICENSEE EVENT REPORT (LER)

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

1. FACILITY NAME	2. DOCKET NUMBER	3. PAGE
Oconee Nuclear Station, Unit 3	05000- 0287	1 OF 7

4. TITLE
TS LCO Condition Allowed Outage Time and Required Action Completion Time Exceeded Due to Blockage of LPI/BS Pump Room Air Flow Path

5. EVENT DATE			6. LER NUMBER			7. REPORT DATE			8. OTHER FACILITIES INVOLVED	
MO	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REV NO	MO	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
									None	05000
08	30	2005	2005	- 01	- 0	10	31	2005	FACILITY NAME: None	DOCKET NUMBER: 05000

9. OPERATING MODE
1

10. POWER LEVEL
100

11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: *(Check all that apply)*

20.2201(b)	20.2203(a)(3)(i)	50.73(a)(2)(i)(C)	50.73(a)(2)(vii)
20.2201(d)	20.2203(a)(3)(ii)	50.73(a)(2)(ii)(A)	50.73(a)(2)(viii)(A)
20.2203(a)(1)	20.2203(a)(4)	50.73(a)(2)(ii)(B)	50.73(a)(2)(viii)(B)
20.2203(a)(2)(i)	50.36(c)(1)(i)(A)	50.73(a)(2)(iii)	50.73(a)(2)(ix)(A)
20.2203(a)(2)(ii)	50.36(c)(1)(ii)(A)	50.73(a)(2)(iv)(A)	50.73(a)(2)(x)
20.2203(a)(2)(iii)	50.36(c)(2)	50.73(a)(2)(v)(A)	73.71(a)(4)
20.2203(a)(2)(iv)	50.46(a)(3)(ii)	50.73(a)(2)(v)(B)	73.71(a)(5)
20.2203(a)(2)(v)	50.73(a)(2)(i)(A)	50.73(a)(2)(v)(C)	OTHER
20.2203(a)(2)(vi)	X 50.73(a)(2)(i)(B)	50.73(a)(2)(v)(D)	Specify in Abstract below or in NRC Form 366A

12. LICENSEE CONTACT FOR THIS LER

FACILITY NAME	TELEPHONE NUMBER (Include Area Code)
B.G. Davenport, Regulatory Compliance Manager	(864) 885-3044

13. COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT

CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX

14. SUPPLEMENTAL REPORT EXPECTED				15. EXPECTED SUBMISSION DATE	MONTH	DAY	YEAR
	YES (If yes, complete EXPECTED SUBMISSION DATE)	X	NO				

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

On August 30, 2005, while at 100% power, the stairwell into Room 81 on Unit 3 was found to be covered with a tent enclosure. Room 81 contains the B train pumps for the Low Pressure Injection System (LPI) and the Building Spray System (BS). Calculations credit an air flow path through the stairwell to ensure acceptable environmental conditions within the room. The tent enclosure blocked this air flow path. Another adverse condition was identified, involving temporary filters installed in the inlet and exhaust grilles for the air handling units serving the room. Consequently, for certain design basis accidents, the room temperature could have exceeded the qualification limits for the 3B LPI Pump and 3B BS Pump and their associated motors. The enclosure had been in place approximately 34 days, thus exceeding Technical Specification required action times for these systems. There was no loss of function, as redundant trains of LPI and BS were not affected. This event was caused by failure to provide adequate controls on critical inputs to safety analyses. Corrective actions included removal of the tent from the stairwell outside Room 81, removal of filters from ventilation grilles in Room 81, and placement of signs outside of all HPI, LPI, and BS pump rooms cautioning against blockage of these air flow paths.

This event has no significance with respect to public health and safety.

1. FACILITY NAME	2. DOCKET	6. LER NUMBER			3. PAGE
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
Oconee Nuclear Station, Unit	05000287	2005	- 01 -	0	2 OF 7

17. NARRATIVE *(If more space is required, use additional copies of NRC Form 366A)*

EVALUATION:

BACKGROUND

Technical Specification (TS) 3.5.3 requires two trains of Low Pressure Injection to be operable in Mode 1. Required Action A.1 of this specification states that a single inoperable train must be restored to operable status within 7 days. If operability is not restored within 7 days (Condition C), Required Actions C.1 and C.2, respectively, require the unit to be in Hot Standby (Mode 3) within 12 hours and in Hot Shutdown (Mode 4) within 60 hours.

TS 3.6.5 requires two trains of the Reactor Building Spray System to be operable in Mode 1. Required Action A.1 of this LCO allows 7 days to restore a single inoperable train. If operability is not restored within 7 days, Required Action D.1 requires that the unit be in Hot Standby (Mode 3) within 12 hours.

Prior to this event Unit 3 was operating at 100% power with no safety systems or components out of service that would have contributed to this event.

This event is reportable per the criteria of 10CFR50.73 (a)(2)(i)(B) because the unit operated for approximately 27 days in a condition prohibited by TS.

EVENT DESCRIPTION

July 27, 2005:

Room 81 houses the B trains of the Unit 3 Low Pressure Injection [BP] Pumps [P] and Reactor Building Spray [BE] Pumps [P]. In preparation for lead and asbestos paint removal work in this room, Maintenance personnel began sealing off the stairwell above the room using 6 mil poly sheeting. The enclosure was installed to facilitate establishment of a negative pressure condition in Room 81 to allow lead and asbestos paint removal work to proceed with minimal risk to personnel outside of the room.

Room 81 has an open spiral staircase which opens at the top to an entry area. The "Auxiliary and Turbine Building Loss of

Cooling/Ventilation Analysis" for Oconee Nuclear Station credits the stairwell to this room as a ventilation path necessary to ensure environmental qualification of the motors which drive these pumps.

August 3, 2005:

Maintenance completed installation of tent enclosure at stairwell above Room 81.

August 30, 2005:

System Engineers performing unrelated work in the Unit 3 Auxiliary Building discovered the tent enclosure had been installed. Operations Shift Manager (OSM) is notified to declare 3B LPI Pump and 3B BS Pump inoperable. At the time of discovery, these pumps have been inoperable for 34 days (inoperability is assumed to begin at start of tent installation due to low operability margin).

August 30, 2005 at 1020 hrs:

OSM declares 3B LPI Pump and 3B BS Pump inoperable, enters applicable TS conditions.

August 30, 2005:

Further inspection finds filters installed on ventilation grilles on the air handling units for the room.

August 30, 2005 at 1525 hrs:

Tent enclosure removed and ventilation filters removed. OSM declares 3B LPI Pump and 3B BS Pump operable. Duration of inoperability is 34 days. Redundant train (A train) of LPI and BS remained operable and available throughout the period of B train inoperability. At no time was the system function lost.

September 6, 2005:

Request submitted to Operations to revise procedure for performing Primary rounds. Procedure change will require Nuclear Equipment Operator to verify ventilation flow path is not obstructed through

1. FACILITY NAME	2. DOCKET	6. LER NUMBER			3. PAGE
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
Oconee Nuclear Station, Unit	05000287	2005	- 01 -	0	4 OF 7

17. NARRATIVE *(If more space is required, use additional copies of NRC Form 366A)*

the stairwell or ventilation ports (air handling unit intake grilles).

September 11, 2005:

Signs are posted outside of each LPI/BS Pump Room prohibiting blockage of stairway.

CAUSAL FACTORS

The personnel performing these maintenance activities, including those responsible for planning the work, were unaware of the requirement for maintaining a ventilation flow path in Room 81. Two root causes have been identified.

The first cause was a failure of Engineering to capture critical design inputs and assumptions (such as the need for open air flow path through the LPI/BS Pump Rooms) in design deliverable documents. Had this requirement been reflected in System Design Basis Specifications through the site Engineering Change Process, other site groups would have had an opportunity to review the change and assess impact to their areas of work responsibility. Engineering was aware of the need to capture critical inputs on design deliverable documents, since other key inputs such as initial room temperature were appropriately captured using the Engineering Change Process. However, the engineers involved incorrectly assumed that the physical characteristics of the room (as related to air flow path) would not change. Therefore, they did not realize the need for having controls to ensure no changes would occur.

The second cause was a lack of management guidance for managing and controlling design passive features.

CORRECTIVE ACTIONS

Immediate:

1) Removed tent enclosure from Room 81 stairwell.

2) Removed filter from ventilation grilles on air handling units in Room 81.

1. FACILITY NAME	2. DOCKET	6. LER NUMBER			3. PAGE
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
Oconee Nuclear Station, Unit	05000287	2005	- 01 -	0	5 OF 7

17. NARRATIVE *(If more space is required, use additional copies of NRC Form 366A)*

Subsequent:

1) Placed sign outside LPI/BS Pump Rooms on all units stating requirement to maintain air flow path through stairwell.

Planned:

1) Auxiliary and Turbine Building Loss of Cooling/Ventilation Analysis will be reviewed to ensure all critical design inputs are captured in design deliverable documents.

2) Operator rounds procedure will be revised to require verification of available flow path through stairwell and ventilation grilles.

3) A review of calculations related to passive and other features (in general) will be performed to identify post-accident conditions that have the potential to take credit for physical characteristics of the plant. The purpose of this review is to ensure that assumptions and inputs built into the associated models have been placed in appropriate licensing and design deliverable documents.

4) A review of nuclear system directives (NSDs) will be conducted to determine whether the installation of a tent enclosure over a stairwell should have been controlled by the Engineering Change Program (NSD-301) or Temporary Structures Program (NSD-315).

5) Guidance for managing and controlling design passive features shall be developed and incorporated into work management processes.

There are no NRC commitment items contained in this LER.

SAFETY ANALYSIS

This event did not include a Safety System Functional Failure. The installation of the tent enclosure at the stairwell of Room 81 would have prevented adequate ventilation for removal of heat from 3B LPI Pump, 3B BS Pump, and associated motors. This could have resulted in the overheating and subsequent failure of the pumps and/or motors and loss of the B train of each safety system. The A train of these systems, however, remained fully operable and available for the entire duration of the event. Therefore, the

effect of the inoperability in the B train would have been a loss of redundancy and failure to satisfy design basis single failure criteria for a period of time. Nevertheless, these systems would have been fully capable of mitigating the consequences of all Design Basis Accidents for which they were designed. There would have been no loss of system function as a result of this event.

The Low Pressure Injection (LPI) System is required to mitigate consequences of design basis Loss Of Coolant Accidents by providing emergency core cooling functions including safety injection and long term cooling of the reactor core. This system also provides for containment heat removal by transferring heat from the pool of water in the reactor building basement to the Low Pressure Service Water System through the Low Pressure Injection Heat Exchangers. These functions provide protection for two fission product barriers, the fuel and the containment building.

The Reactor Building Spray System is required to mitigate the consequences of Loss of Coolant Accidents as well as secondary side pipe breaks (feedwater and main steam). This system removes heat from the containment atmosphere in conjunction with the Reactor Building Cooling Units, provides long term pressure control in containment, and removes fission product nuclides from post-accident containment atmosphere for severe accidents. Thus, the system functions to protect one fission product barrier, the containment building.

Since no system functions were lost during the reported event, all system functions of the LPI and BS systems would have been performed by the unaffected safety system train as designed. Therefore, there would be no adverse effect on fission product barriers as a result of this event, and no impact to the health and safety of the public.

The core damage significance of this event has been evaluated quantitatively using the Oconee PRA Model Revision 3a considering actual maintenance unavailability during the period and the degraded cooling capacity for the LPI pump room. The PRA model was also modified to credit normal ventilation cooling for accident sequences in which it would be available. Temperature analysis of the room determined that the normal auxiliary building fans can provide adequate cooling even with the staircase sealed.

1. FACILITY NAME	2. DOCKET	6. LER NUMBER			3. PAGE
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
Oconee Nuclear Station, Unit	05000287	2005	- 01 -	0	7 OF 7

17. NARRATIVE *(If more space is required, use additional copies of NRC Form 366A)*

The incremental conditional core damage probability (ICCDP) associated with this event is estimated to be 7.6E-07, and the incremental conditional large early release probability (ICLERP) is estimated to be 4.3E-09. These results indicate that this event is of low risk significance. The dominant accident sequences involve either a loss of off-site power or loss of 3TC bus (4kV) initiating event. These events are important because power to the normal ventilation system is lost. A loss of all emergency feedwater sources leads to HPI forced cooling which later requires alignment to the containment sump when the BWST inventory is depleted.

Note: This analysis did not take credit for restoration of normal ventilation flow following a loss of power. Additional human reliability analysis of these recovery actions or further enhancement of the temperature analysis could be expected to further reduce the estimated risk impact of this event. Therefore, these risk results are considered to be conservative.

The failure of Reactor Building Spray (RBS) System does not play an important role in the large early release frequency (LERF) and is not modeled in the OR3 Simplified LERF model. The long-term nature of this failure mode for the 3B RBS pump also means that the containment temperature and pressure control functions should be able to perform as intended for most LOCA initiating events. Further, the Reactor Building Cooling Units (RBCUs) were not affected by the ventilation problem. Therefore, the impact of the inoperability of the 3B RBS pump is not considered in the analysis of the ICCDP and ICLERP because it is not expected to have any measurable risk impact.

ADDITIONAL INFORMATION

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

This event is not considered reportable under the Equipment Performance and Information Exchange (EPIX) program.