

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1) Oconee Nuclear Station, Unit 2										DOCKET NUMBER (2) 0 5 0 0 0 2 7 1 0										PAGE (3) 1 OF 0 3																													
TITLE (4) Rod Index Limit Curve Violated (T.S. 3.5.2.5)																																																	
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 4			2 1			8 5				8 5			0 0 3			0 1			0 9			1 9			8 5														0 5 0 0 0										
OPERATING MODE (9)										THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR § (Check one or more of the following) (11)																				DOCKET NUMBER(S)																			
POWER LEVEL (10) 0 0 7										20.402(b)										20.406(c)										50.73(a)(2)(iv)										73.71(b)									
										20.406(a)(1)(i)										50.38(e)(1)										50.73(a)(2)(v)										73.71(c)									
										20.406(a)(1)(ii)										50.38(e)(2)										50.73(a)(2)(vi)										OTHER (Specify in Abstract below and in Text, NRC Form 366A)									
										20.406(a)(1)(iii)										X 50.73(a)(2)(i)										50.73(a)(2)(vii)(A)																			
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20.406(a)(1)(v)										50.73(a)(2)(iii)										50.73(a)(2)(ix)																													
LICENSEE CONTACT FOR THIS LER (12)																																																	
NAME Sandra G. Godwin, Licensing																				TELEPHONE NUMBER 7 1 0 4 3 1 7 3 1 - 1 2 3 1 6 1 2																													
COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)																																																	
CAUSE			SYSTEM			COMPONENT			MANUFACTURER			REPORTABLE TO NPDOS			CAUSE			SYSTEM			COMPONENT			MANUFACTURER			REPORTABLE TO NPDOS																						
A																																																	
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)																																																	
<p>On April 21, 1985 at approximately 1714 hours, during power escalation following Zero Power Physics Testing (ZPPT), the control rods were positioned beyond that allowed by the Technical Specifications (T.S.) Rod Position Index Limit curve. The rod withdrawal limit Statalarm did not actuate as it should when the limit was being approached, therefore, the violation was not discovered until 2250 hours when the alarm did actuate. The apparent cause of the incident was failure of Operations personnel to maintain the control rod group position within the T.S. limits.</p> <p>Although the Rod Position Index Limit was beyond that allowed per Technical Specifications, a 1% ΔK/K available shutdown margin was continually maintained throughout the power escalation sequence. Thus the health and safety of the public were not endangered.</p> <p>The immediate corrective action was to commence boration of the Reactor Coolant System until the control rods were within the acceptable operation region. Shutdown and ZPPT procedures will be revised to include statements to remind operators to consult the rod position limit curves prior to increasing power.</p>																																																	
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LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

U.S. NUCLEAR REGULATORY COMMISSION

APPROVED OMB NO. 3150-0104

EXPIRES 8/31/85

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

TEXT (if more space is required, use additional NRC Form 365A's) (17)

Description of Occurrence:

On April 21, 1985 between 1340 and 1500 hours, boron and control rod positions were set to meet the Technical Specifications (T.S.) requirements for control rod positions and established system conditions. This was done in preparation for power escalation testing, as outlined in the Zero Power Physics Test (ZPPT) procedure. ZPPT was at this time closed out. Operations personnel were told to continue in their procedures for power escalation. Rod index and boration requirements were not addressed as a prerequisite for power escalation.

At 1530 hours, power was increased by withdrawing Group 5 regulating rods. As reactor power was increased, the T.S. Rod Position Index Limit curve was approached, and at approximately 1714 hours it was violated. When the violation occurred, reactor power was ~6.5%. Normally at $\geq 5\%$ of Thermal Power Best, a computer alarm associated with the Control Rod Withdrawal Index program is operable. However, for reasons still under investigation, this alarm did not actuate.

At 2250 hours, with rod Group 5 at 70% withdrawn and reactor power at 15%, the Rod Withdrawal Limit Statalarm was actuated. Immediately upon receiving the alarm, the rod position was compared with the Error Adjusted Rod Index Limit curve and determined to be beyond the limit allowed by the curve. Appropriate personnel were notified, and boration was started to move the rods within the allowable operating region. At 0055 hours on April 22, 1985 the rods were within the allowable operating region.

Cause of Occurrence:

The cause of the incident is attributable to personnel error, in that there was failure to verify the control rod position and maintain the rods within the Error Adjusted Rod Position Limit curve during power escalation.

Additional factors that contributed to this incident are:

1. The ZPPT procedure did not address the rod index or boration requirements for power escalation subsequent to the test.
2. Operations procedure did not address verifying the rod position with the allowable limits prior to withdrawing the regulating rods for power escalation.
3. The computer program, used to monitor Rod Index and to actuate an alarm before exceeding the limit, did not respond until after the violation had occurred.

A review of past incident reports indicated this is a non-recurring event.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

U.S. NUCLEAR REGULATORY COMMISSION

APPROVED OMB NO. 3150-0104

EXPIRES: 8/31/85

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)		
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Oconee Nuclear Station, Unit 2	0 5 0 0 0 2 7 0	8 5	- 0 0 3	- 0 1	0 3	OF	0 3

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

Analysis of Occurrence:

The ability to shutdown the core from any operating condition by 1% $\Delta K/K$ is a Technical Specification requirement. This is accomplished by analytical calculation during the reload design. Rod index limits are set such that at least a 1% $\Delta K/K$ shutdown margin is available for a trip from any allowable operation condition. When the rod index limit (shutdown margin curve) was violated the available shutdown margin was 2.78% $\Delta K/K$ with the worst case stuck rod out. This demonstrates that at least a 1% $\Delta K/K$ available shutdown margin was maintained during power escalation. Therefore the reactor could have been safely shutdown and made subcritical by $\geq 1\%$ $\Delta K/K$ had a trip occurred at the time. During the reload design analysis the beginning of cycle maximum ejected rod worth was calculated to be 0.289% ρ with control rod groups (CRGP's) 5-7 fully inserted. Including a 15% calculational uncertainty results in a maximum worth of 0.332% ρ . This is clearly less than either the HZP limit ($< 1.00\% \rho$) on the HFP limit ($< 0.65\% \rho$). Since the reactor power was near HZP (6.5%FP) and CRCP 5 partially withdrawn these conditions are conservatively bounded by the previous calculation. The health and safety of the public were not affected.

Corrective Action:

The immediate corrective action was to commence boration of the Reactor Coolant System. This action was continued until the rods were within the acceptable operating region. In addition, involved personnel were counseled on the matter.

Planned corrective action is for Operations management to provide training to their personnel to increase awareness of rod position limits during power maneuvers. In addition, shutdown procedures and ZPPT procedures will be revised to include statements to remind personnel of Rod Index and Boration requirements, and remind them to consult the rod position limit curves prior to increasing power. An investigation is being performed to determine the cause for the Computer Rod Index program malfunction and to correct it.

DUKE POWER COMPANY

P.O. BOX 33189
CHARLOTTE, N.C. 28242

HAL B. TUCKER
VICE PRESIDENT
NUCLEAR PRODUCTION

September 19, 1985

TELEPHONE
(704) 373-4531

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

Subject: Oconee Nuclear Station, Unit 2
Docket Nos. 50-269, -270, -287
LER 270/85-03

Gentlemen:

Attached is Licensee Event Report 270/85-03, Revision 1 which supersedes LER 270/85-03 dated May 21, 1985. Revision 1 is being submitted in order to provide additional information to the safety analysis.

Very truly yours,

H.B. Tucker

Hal B. Tucker

SGG:slb

Attachment

cc: Dr. J. Nelson Grace, Regional Administrator
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Mr. J. C. Bryant
NRC Resident Inspector
Oconee Nuclear Station

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LICENSEE EVENT REPORT (LER)

FACILITY NAME (1) Oconee Nuclear Station, Unit 2 DOCKET NUMBER (2) 0500021710 PAGE (3) 1 OF 03

TITLE (4) Rod Index Limit Curve Violated (T.S. 3.5.2.5)

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)							
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OPERATING MODE (9)			THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR § (Check one or more of the following) (11)														
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LICENSEE CONTACT FOR THIS LER (12) NAME Sandra G. Godwin, Licensing TELEPHONE NUMBER 710437131-123612

COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)									
CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPDs	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPDs
A									

SUPPLEMENTAL REPORT EXPECTED (14)

YES (If yes, complete EXPECTED SUBMISSION DATE) X NO

EXPECTED SUBMISSION DATE (15)

MONTH DAY YEAR

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

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LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

U.S. NUCLEAR REGULATORY COMMISSION

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EXPIRES 8/31/85

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At 1530 hours, power was increased by withdrawing Group 5 regulating rods. As reactor power was increased, the T.S. Rod Position Index Limit curve was approached, and at approximately 1714 hours it was violated. When the violation occurred, reactor power was 26.5%. Normally at >5% of Thermal Power Best, a computer alarm associated with the Control Rod Withdrawal Index program is operable. However, for reasons still under investigation, this alarm did not actuate.

At 2250 hours, with rod Group 5 at 70% withdrawn and reactor power at 15%, the Rod Withdrawal Limit Statalarm was actuated. Immediately upon receiving the alarm, the rod position was compared with the Error Adjusted Rod Index Limit curve and determined to be beyond the limit allowed by the curve. Appropriate personnel were notified, and boration was started to move the rods within the allowable operating region. At 0055 hours on April 22, 1985 the rods were within the allowable operating region.

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U. S. Nuclear Regulatory Commission
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101 Marietta Street, NW, Suite 2900
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Mr. J. C. Bryant
NRC Resident Inspector
Oconee Nuclear Station

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