

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1) Oconee Nuclear Station, Unit 1	DOCKET NUMBER (2) 0 5 0 0 0 2 6 1 9	PAGE (3) 1 OF 0 3
---	--	----------------------

TITLE (4)  
Reactor Building Spray Valves Operability Concern at Low Switchyard Voltage

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)
1	1	1985	85	014	00	12	20	84	Oconee Unit 2			0 5 0 0 0 2 7 0
									Oconee Unit 3			0 5 0 0 0 2 8 7

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

OPERATING MODE (9)  POWER LEVEL (10) 1 0 0	<input type="checkbox"/> 20.402(b)	<input type="checkbox"/> 20.406(e)	<input type="checkbox"/> 60.73(a)(2)(iv)	<input type="checkbox"/> 73.71(b)
	<input type="checkbox"/> 20.406(a)(1)(i)	<input type="checkbox"/> 60.36(c)(1)	<input type="checkbox"/> 60.73(a)(2)(v)	<input type="checkbox"/> 73.71(c)
	<input type="checkbox"/> 20.406(a)(1)(ii)	<input type="checkbox"/> 60.36(c)(2)	<input type="checkbox"/> 60.73(a)(2)(vi)	<input checked="" type="checkbox"/> OTHER (Specify in Abstract below and in Text, NRC Form 366A)
	<input type="checkbox"/> 20.406(a)(1)(iii)	<input type="checkbox"/> 60.73(a)(2)(i)	<input type="checkbox"/> 60.73(a)(2)(viii)(A)	Voluntary
	<input type="checkbox"/> 20.406(a)(1)(iv)	<input type="checkbox"/> 60.73(a)(2)(ii)	<input type="checkbox"/> 60.73(a)(2)(viii)(B)	
	<input type="checkbox"/> 20.406(a)(1)(v)	<input type="checkbox"/> 60.73(a)(2)(iii)	<input type="checkbox"/> 60.73(a)(2)(ix)	
<input type="checkbox"/> 20.406(a)(1)(vi)	<input type="checkbox"/> 60.73(a)(2)(iv)	<input type="checkbox"/> 60.73(a)(2)(x)		

LICENSEE CONTACT FOR THIS LER (12)

NAME S.G. Godwin, Licensing	TELEPHONE NUMBER AREA CODE: 7 1 0 1 4 3 1 7 1 3 1 - 1 2 1 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
B	BIE	IVICIX	L121010	NO					

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 November 19, 1985 with all three units at 100% FP, it was determined that six 208VAC Motor Operated Valves (MOVs) could not be assured of performing their intended safety functions. In a November 1985 load study it was determined that for the six MOVs there was insufficient terminal voltage to assure operability assuming a degraded switchyard voltage condition. The effected valves were 1BS-1, 1BS-2, 2BS-1, 2BS-2, 3BS-1, and 3BS-2.

The immediate corrective actions were to declare 2BS-2 inoperable, to request system dispatcher to take all possible measures to keep the Oconee 230KV Switchyard voltage at or above 229KV, to place the RBS valves (except 2BS-2) in their engineered safeguards position, and to initiate the appropriate Nuclear Station Modifications (NSMs) to correct the voltage problem.

The root cause of the incident was design deficiency in a 1979 auxiliary power system load study. An industry standard rating of 200VAC was used to evaluate acceptable voltage levels for operability of the 208VAC MOVs instead of the nameplate voltage rating of 208VAC, the actual motor rating. This difference in voltage ratings was discovered and confirmed by the November, 1985 load study.

The Final Safety Analysis Report (FSAR), Section 15.14.5, states that with no Reactor Building (RB) cooling capacity, either from the RB Spray system or the redundant RB cooling system, the RB design pressure would not be exceeded. Therefore, an inoperable RB spray system would not have endangered the health and safety of the public.

8601020623 851220  
PDR ADDK 05000269  
S PDR

TE72  
111

## LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

APPROVED OMB NO. 3150-0104

EXPIRES: 8-31-88

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

TEXT (if more space is required, use additional NRC Form 368A's) (17)

DESCRIPTION OF OCCURRENCE:

The Reactor Building Spray (RBS) System is one of two independent Engineered Safeguards (ES) systems that remove heat directly from the Reactor Building atmosphere after an accident. Cold borated water is sprayed from the ceiling of the Reactor Building to quench steam from flashed primary coolant. Motor Operated Valves (MOVs) BS-1 and BS-2 are the RBS Inlet Header valves for the RBS trains "A" and "B", respectively. They are designed to open automatically upon an ES actuation. MOVs BS-1 and BS-2 are powered from the 208VAC Motor Control Centers (MCC) XS1 and XS2, respectively.

On November 15, 1985 as a result of continuing load studies on the Oconee auxiliary power systems, fifteen safety-related Motor Operated Valves (MOVs) were identified which potentially would not operate assuming a degraded voltage condition in the 230KV Switchyard. This situation assumed an accident condition which results in a unit trip, a transfer of loads from the normal power source to the offsite (preferred) power source, and an Engineered Safeguards (ES) actuation during a degraded 230KV Switchyard voltage condition.

By November 19, 1985, after further evaluation, it was determined that six 208VAC MOVs: 1BS-1, 1BS-2, 2BS-1, 2BS-2, 3BS-1, and 3BS-2 could not be assured of performing their intended safety functions under the conditions noted above. Based on the present transmission and generating system capability, the lowest expected voltage during a postulated degraded grid voltage condition is 219KV. Further evaluation also showed the nine remaining MOVs could perform their safety functions under the above conditions.

The following are the minimum 230KV Switchyard voltages required to assure operability of the Reactor Building Spray (RBS) MOVs assuming the same accident conditions as above:

1BS-1: 224KV	2BS-1: 226KV	3BS-1: 225.5KV
1BS-2: 224KV	2BS-2: 229KV	3BS-2: 220KV

The 230KV Switchyard voltages on November 19, 1985, ranged from 226KV to 229KV. As a result, MOV 2BS-2 was declared inoperable at 1745 hours, November 19, 1985.

At the time of the incident, all three Oconee Units were operating at 100% full power.

CAUSE OF OCCURRENCE:

The root cause of this incident is classified as a design deficiency. The 1979 study of Oconee Units 3's auxiliary power system evaluated the 208VAC MOV operability using 200VAC as the nominal MOV voltage rating instead of 208VAC, the MOV's design rating. Use of 200VAC versus 208VAC was a result of an inaccurate assumption. However, the assumption was based on industry practices, but did not consider the specific Oconee MOV ratings. In the November 1985 study, the appropriate MOV rating was used and subsequently resulted in identifying the MOV operability concern.

A review of past incident reports revealed three occurrences of RBS MOVs failing to open electrically. These failures were caused by mechanical or torque switch failures. Thus, it is concluded that the RBS MOV operability concern, because of low terminal voltage, was not a concern in these past incidents.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

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

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

CORRECTIVE ACTION:

The immediate corrective action was to declare MOV 2BS-2 inoperable because at the time of the discovery the 230KV Switchyard voltage was ranging from 226KV to 229KV and MOV 2BS-2 required 229KV to assure operability. NSMs were initiated to replace the RBS Inlet Header MOVs power cables with a larger size to reduce the voltage drops between the 208VAC MCC and the associated MOVs, thus assuring an adequate starting voltage at the MOVs. In addition, the system dispatcher was requested to take all possible measures to keep Oconee 230KV Switchyard voltage at or above 229KV, to assure the remaining five MOVs would provide their intended function in the event of an Engineered Safeguard (ES) actuation.

As a temporary measure, until the cable replacements were installed, the RBS MOVs (except 2BS-2) were opened to their ES position. Additionally "ONS Criteria for Load Addition" was implemented which stated that loads which operate continuously and all safety loads must be approved before the loads are added to the electrical system. Further, the appropriate personnel have been instructed regarding use of correct voltages when analyzing the Oconee 208VAC systems.

ANALYSIS:

The results of the November 1985 load study revealed that the operability of the Reactor Building Spray (RBS) MOVs could not be assured because of postulated degraded voltage conditions. This safety analysis analyzes the consequences of the RBS System being inoperable.

The FSAR, Section 15.14.5, states for a condition with no Reactor Building cooling capacity, either from the RBS System or the redundant Reactor Building Cooling (RBC) System, the Reactor Building design pressure for all design basis loss-of-coolant accidents (LOCAs) would not be reached. Therefore, an inoperable RBS System would not have caused an unsafe condition.

Further, after the ONS personnel were made aware of the RBS MOV operability concerns resulting from the 1985 load study, the 208VAC RBS MOVs were opened in their ES positions (except 2BS-2 which was inoperable), and the system dispatcher was requested to keep the 230KV Switchyard voltage at or above 229KV. All three of the cooling units for each unit's RBC System were operable.

With the implementation of a NSM, the potential low voltage conditions at the RBS 208VAC MOVs resulting from a postulated degraded switchyard voltage was corrected.

In conclusion, the health and safety of the public were not affected by this incident.

DUKE POWER COMPANY

P.O. BOX 33189

CHARLOTTE, N.C. 28242

HAL B. TUCKER  
VICE PRESIDENT  
NUCLEAR PRODUCTION

TELEPHONE  
(704) 373-4531

December 20, 1985

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

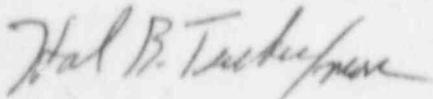
Subject: Oconee Nuclear Station, Unit 1  
Docket Nos. 50-269, -270, -287  
LER 269/85-14

Gentlemen:

Pursuant to 10 CFR 50.73 Sections (a) (1) and (d), attached is Licensee Event Report 269/85-14 concerning six 208VAC Motor Operated Valves that could not be assured of performing their intended safety function.

This report is being submitted on a voluntary basis. This event was considered to be of no significance with respect to the health and safety of the public.

Very truly yours,



Hal B. Tucker

SGG/jgm

Attachment

cc: Dr. J. Nelson Grace, Regional Administrator  
U.S. Nuclear Regulatory Commission  
Region II  
101 Marietta Street, NW, Suite 2900  
Atlanta, GA 30323

Ms. Helen Nicolaras  
Office of Nuclear Reactor Regulation  
U.S. Nuclear Regulatory Commission  
Washington, D.C. 20555

IE22  
/1

Document Control Desk

December 20, 1985

Page 2

cc: 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, GA 30339

Mr. J.C. Bryant  
NRC Resident Inspector  
Oconee Nuclear Station

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