

ACCELERATED DISTRIBUTION DEMONSTRATION SYSTEM

REGULATORY INFORMATION DISTRIBUTION SYSTEM (RIDS)

ACCESSION NBR: 9208210136 DOC. DATE: 92/08/17 NOTARIZED: NO
 FACIL: 50-269 Oconee Nuclear Station, Unit 1, Duke Power Co.
 AUTH. NAME AUTHOR AFFILIATION
 BENESOLE, S. G. Duke Power Co.
 HAMPTON, J. W. Duke Power Co.
 RECIP. NAME RECIPIENT AFFILIATION

DOCKET #
05000269

SUBJECT: LER 92-008-00: on 920717, discovered that closing circuit fuse in ACB-8 breaker blow, causing inoperability of Keowee Unit 2. Caused by failure of positive 10 amp 1B feeding breaker. Fuses removed & replaced by DT10 fuses. W/920817 ltr.

DISTRIBUTION CODE: IE22T COPIES RECEIVED: LTR 1 ENCL 1 SIZE: 11
 TITLE: 50.73/50.9 Licensee Event Report (LER), Incident Rpt, etc.

NOTES:

	RECIPIENT ID CODE/NAME	COPIES LTTR ENCL			RECIPIENT ID CODE/NAME	COPIES LTTR ENCL	
	PD2-3 LA	1	1		PD2-3 PD	1	1
	WIENS, L	1	1				
INTERNAL:	ACNW	2	2		ACRS	2	2
	AEOB/DOA	1	1		AEOB/DSP/TPAB	1	1
	AEOB/ROAB/DSP	2	2		NRR/DET/EMEB 7E	1	1
	NRR/DLPQ/LHFB10	1	1		NRR/DLPQ/LPEB10	1	1
	NRR/DOEA/OEAB	1	1		NRR/DREP/PRPB11	2	2
	NRR/DST/SELB 8D	1	1		NRR/DST/SICBBH3	1	1
	NRR/DST/SPLBBD1	1	1		NRR/DST/SRXB 8E	1	1
	REG FILE 02	1	1		RES/DSIR/EIB	1	1
	RGN2 FILE 01	1	1				
EXTERNAL:	EG&G BRYCE, J. H	2	2		L ST LOBBY WARD	1	1
	NRC PDR	1	1		NSIC MURPHY, G. A	1	1
	NSIC POORE, W.	1	1		NUDOCS FULL TXT	1	1

NOTE TO ALL "RIDS" RECIPIENTS:

PLEASE HELP US TO REDUCE WASTE! CONTACT THE DOCUMENT CONTROL DESK.
 ROOM P1-37 (EXT. 504-2065) TO ELIMINATE YOUR NAME FROM DISTRIBUTION
 LISTS FOR DOCUMENTS YOU DON'T NEED!

FULL TEXT CONVERSION REQUIRED
 TOTAL NUMBER OF COPIES REQUIRED: LTTR 31 ENCL 31

AD4

Duke Power Company
Oconee Nuclear Generation Department
P.O. Box 1439
Seneca, SC 29679

J.W. HAMPTON
Vice President
(803)885-3499 Office
(704)373-5222 FAX



DUKE POWER

August 17, 1992

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

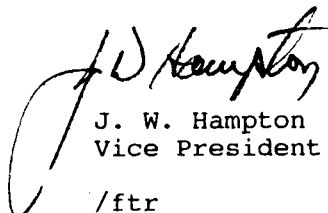
Subject: Oconee Nuclear Site
Docket Nos. 50-269, -270, -287
LER 269/92-08

Gentlemen:

Pursuant to 10 CFR 50.73 Sections (a)(1) and (d), attached is Licensee Event Report (LER) 269/92-08, concerning the concurrent inoperability of both onsite emergency power sources.

This report is being submitted in accordance with 10 CFR 50.73 (a)(2)(v)(D). 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

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

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

Mr. L. A. Wiens
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Washington, DC 20555

Mr. P. E. Harmon
NRC Resident Inspector
Oconee Nuclear Site

210000
9208210136 920817
PDR ADOCK 05000269
S PDR

IF22
11

LICENSEE EVENT REPORT (LER)

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 50.0 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE RECORDS AND REPORTS MANAGEMENT BRANCH (P-530), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

FACILITY NAME (1) Oconee Nuclear Station, Unit 1										DOCKET NUMBER (2) 0 5 0 0 0 2 6 9				PAGE (3) 1 OF 1 0			
TITLE (4) Equipment Failure And Inappropriate Action Result In The Concurrent Inoperability Of Both Onsite Emergency Power Sources And A Technical Specification Violation																	
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)				
									Oconee, Unit 2				0 5 0 0 0 2 7 0				
0 7	1 7	9 2	9 2	0 0 8	0 0	0 8	1 7	9 2	Oconee, Unit 3				0 5 0 0 0 2 8 7				
OPERATING MODE (9)		THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §. (Check one or more of the following) (11)															
N		20.402(b)				20.405(c)				50.73(a)(2)(iv)				73.71(b)			
POWER LEVEL (10)		20.405(a)(1)(i)				50.36(e)(1)				X 50.73(a)(2)(v) (D)				73.71(c)			
1 0 0		20.405(a)(1)(ii)				50.36(e)(2)				50.73(a)(2)(vii)				OTHER (Specify in Abstract below and in Text, NRC Form 366A)			
		20.405(a)(1)(iii)				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)(ix)							
LICENSEE CONTACT FOR THIS LER (12)																	
NAME S. G. Benesole, Safety Review Group										TELEPHONE NUMBER							
										AREA CODE							
										8 0 3 8 8 5 - 3 5 1 8							
COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)																	
CAUSE	SYSTEM	COMPONENT	MANUF. TURER	REPORTABLE TO NPRDS		CAUSE	SYSTEM	COMPONENT	MANUF. TURER	REPORTABLE TO NPRDS							
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)

ABSTRACT

On July 17, 1992, at 1330 hours, all three Oconee units were at 100 percent Full Power. With Keowee Unit 1 out of service for planned maintenance, it was discovered that the closing circuit fuse in ACB-8 breaker was blown causing an inoperability of Keowee Unit 2. With these conditions both onsite emergency power sources were technically inoperable. Procedures were implemented to energize the Standby Buses via the Lee Gas Turbines through the 100 KV dedicated lines. The blown fuse was replaced, returning Keowee Unit 2 to operable status. Problems with the start up of the Lee Gas Turbines and a misunderstanding led to exceeding the Technical Specifications time frame by 58 minutes. The root causes of this event are classified as Equipment Failure and Inappropriate Action (proper response identified but not in time). Corrective actions include diagnosing the specific failure mode of the fuse, implementing administrative procedural controls, and training on the modes of control power indicator failures and the time restraints of Technical Specifications.

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 50.0 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE RECORDS AND REPORTS MANAGEMENT BRANCH (P-530), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

FACILITY NAME (1) Oconee Nuclear Station, Unit 1	DOCKET NUMBER (2) 0150000269	LER NUMBER (6)			PAGE (3)		
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER			
		92	008	00	02	OF	10

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

BACKGROUND

The Keowee Emergency Power System (EIIS:EK) consists of two hydroelectric generators which provide an emergency onsite power source for Oconee Nuclear Station via two separate and independent paths. One path is the underground feeder through transformer CT-4 (EIIS:XFMR) and the Standby Buses (EIIS:EB) and the other is the overhead through the 230 KV Switchyard (EIIS:FK).

Each Keowee Unit is provided with its own automatic start equipment. Both units undergo a simultaneous automatic start and run in standby on: a loss of the grid, an Engineered Safeguards actuation on any of the three Oconee Units, or an extended loss of voltage on any Oconee unit's main feeder bus. On an emergency automatic startup, the Keowee Unit connected to the underground feeder supplies the Oconee Standby Bus while the other Keowee Unit, remains in standby. If there is a grid disturbance, the unit in standby ties to the overhead path and is automatically connected to the Oconee 230 KV Switchyard Yellow Bus after the yellow bus is automatically isolated from the grid. Therefore, in the event of a Loss of Coolant Accident and the simultaneous loss or degradation of the grid, emergency power is available from either Keowee Unit through the underground feeder and/or the overhead transmission line. Technical Specification (TS) 3.7.2 allows one Keowee Unit to be out of service for 72 hours provided the other unit is aligned to the underground and verified operable within one hour and every eight hours thereafter. Operability is verified by starting the available Keowee Unit and energizing the Standby Bus.

The Keowee 600 VAC Switchgears 1X and 2X with their normal and alternate feeder breakers will provide power to the Keowee auxiliary loads. (See Attachment 1) Keowee's Auxiliary Switchgear 1X and 2X receive their normal, non-emergency power from the 230 KV switchyard back charging Keowee's Main Step-up Transformer through ACB-5 and ACB-6. An alternate power source is provided to 1X and 2X Switchgear from one of Oconee Unit 1's 4160 VAC Switchgear (1TC) through Keowee's CX Transformer and the Alternate Feeder Breakers ACB-7 and ACB-8, respectively. With only one Keowee Unit available and tied to the underground and a Loss of Offsite Power occurs, the only available Keowee Auxiliary power source is through CX. Therefore, a loss of CX or ACB-7 or 8 makes the associated Keowee Unit tied to the underground technically inoperable.

If both Keowee Units are unavailable, the Oconee Standby Buses can be energized from the Lee Steam Station Combustion Turbines through the dedicated 100 KV transmission lines. TS 3.7.7 requires that, in the event that both Keowee Units become unavailable for unplanned reasons, the Oconee Standby Buses shall be energized within one hour by the Lee Gas Turbines through the 100 KV transmission lines and shall be separated from the system grid and all offsite non-safety related loads.

EXPIRES: 4/30/92

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 50.0 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE RECORDS AND REPORTS MANAGEMENT BRANCH (P-530), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)		
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER			
Oconee Nuclear Station, Unit 1	05010101269	92	008	00	03	OF	10

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

EVENT DESCRIPTION

On June 7, 1992, at approximately 1400 hours, with Oconee Nuclear Station (ONS) Unit 1 at Hot Shutdown (Start-up in progress), and Unit 2 and 3 at 100 percent Full Power, an operability test (PT/O/A/610/05B "Electro-Mechanical Relay Breaker Trip Test") was performed on Keowee Unit 2's 2X Alternate Feeder Breaker (ACB-8) and the Normal Feeder Breaker (ACB-6). This test opened ACB-6 and closed ACB-8 to 2X, then returned the breakers to a normal status by opening ACB-8 and closing ACB-6. Test results were satisfactory.

On July 16, 1992, at 0436 hours, while all three Oconee units were at 100 percent Full Power, Keowee Unit 2 was verified operable in accordance with Technical Specifications (TS) 3.7.2 prior to removing Keowee Unit 1 from service. This test was completed approximately every eight hours, thereafter, per requirements. At 0515 hours, Keowee Unit 1 was removed from service for implementation of Nuclear Station Modification (NSM) 52917 (Replacing Keowee X Relay Electro-Mechanical Scheme With a X-Y Electrical Scheme) and a Limiting Condition for Operation (LCO) was entered. NSM 52917 was a response/commitment item initiated in response to Licensee Event Report (LER) 269/92-02 (Equipment Failure in Emergency Power System and Inappropriate Action Result in Technical Specification Violation). This LER is related to the failure of Keowee's field and field flashing breakers' X relay.

On July 16, 1992, at approximately 1200 hours, Hydro Operations Specialist (HOS), while performing a inspection of plant equipment, found the Green (Trip) control power indicating light for ACB-8 glowing, but not as bright as expected for normal conditions; however, it is not unusual to have varying degree of brightness of indicating lights.

At approximately 1430 hours, the HOS noticed, after cupping his hand over the Red (Close) Control Power indicating light for ACB-8, it was also glowing but not as bright as the Trip light. At this time, ACB-8 was open and ACB-6 was closed as required for the plant conditions. Keowee Unit 2 was scheduled to be taken out of service on July 17th for implementation of NSM 52917. Suspecting dirty contacts in the control power light circuits and not an operability question, the HOS decided to wait and investigate the problem during the outage.

Due to modification delays, Keowee Unit 1 remained out of service and on July 17, 1992, at approximately 1200 hours, the HOS, the Component Engineer (CE) and the Instrumentation and Electrical Plant Maintenance Supervisor (IEPMS) began investigating several possible causes for the control power lights to be lit in that combination.

At approximately 1330 hours, the CE and the IEPMS decided to remove one of the bulbs to troubleshoot the lighting problem. This action caused both control power indicating lights to go out. While tracing the circuitry for series power sources, the investigation revealed that the close circuit

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 50.0 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE RECORDS AND REPORTS MANAGEMENT BRANCH (P-530), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

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		
		9 2	0 0 8	0 0	0 4	OF 1 0

TEXT (If more space is required, use additional NRC Form 386A's) (17)

"1B" positive 10 amp (OT10) fuse feeding ACB-8 had blown. A check of the close circuit "1B" negative fuse for ACB-8 revealed that a 15 amp (OT15) fuse was installed instead of a OT10 fuse as called for on electrical print KEE-27-2. The OT15 fuse was not blown. The HOS recognized that he had an operability/Limiting Condition for Operation concern and began to make contacts to the Commodities and Facilities department in search for replacement fuses, and Quality Control Staff to monitor the work. Unsuccessful attempts were made to contact the Oconee Operations Support Manager and the Oconee Operations Switchyard Coordinator for assistance in addressing and resolving the operability of the Keowee Units in accordance with TS.

At 1415 hours, the HOS notified ONS Unit 2 Supervisor that a blown fuse had been found in ACB-8. The ONS Unit 2 Supervisor recognized that this caused the CX Transformer to be out of service. Therefore, Keowee Unit 2 was declared technically inoperable. With Keowee Unit 1 out of service for modifications, a 24 hour Limiting Condition for Operations (LCO) in accordance with TS 3.7.7 was entered. This required the energizing of the Standby Buses via the Lee Gas Turbines through the 100 KV dedicated lines. Lee Steam Station (Lee) personnel were notified of the condition of the Keowee Units as a "heads-up" that their services would be required.

At 1423 hours, Operations began performing OP/O/A/1107/03 (100 KV Power Supply) Enclosure 3.3 (Charging Standby Bus No. 1 and 2 from Lee Steam Station for Backup Power) due to both Keowee Units being inoperable.

At 1436 hours, Lee was notified per OP/O/A/1107/03, enclosure 3.3 that backup power was required.

Replacement OT10 fuses requested from Commodities and Facilities were determined to be Quality Assurance (QA) qualified fuses and none were in stock at ONS.

Attempts were made by the CE to find qualified QA OT10 fuses and a dialogue was opened with the Electrical Engineer Supervisor (EES) from Oconee Engineering Division. The EES suggested to the CE to use the OT10 fuses from a spare compartment, since these fuses came with the original equipment and should be of the same grade as those installed in ACB-8. The fuses in the spare compartment were examined and were OT10 fuses. They were tested and found to be in good condition and appeared to be the original equipment. The OT10 fuses were replaced at 1445 hours using Work Request number 59726C.

At 1509 hours, Keowee Operators tested ACB-8 by swapping supplies to 2X from ACB-6 to ACB-8. This tested the closing circuit and fuses on ACB-8 which showed satisfactory results. 2X was then swapped back to it's normal source, ACB-6.

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 50.0 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE RECORDS AND REPORTS MANAGEMENT BRANCH (P-530), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

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

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

At 1510 hours, Lee was called and questioned by ONS Operation personnel as to the status of the Lee Combustion Gas Turbines. Lee Operators indicated that trouble was being experienced in the sequencing circuit and the startup of another Gas Turbine was in progress.

At 1513 hours, ONS Operations personnel were notified that Keowee Unit 2 was operable and the 24 hour LCO was exited.

At 1528 hours, ONS was notified by Lee that the Lee Gas Turbines were in operation and the 100 KV line was energized to CT-5. This was 1 hour and 58 minutes after the time that Keowee Unit 2 was declared technically inoperable. The Standby Buses were never energized from Lee because Keowee Unit 2 was returned to service prior to receiving power from Lee.

The blown fuse and similar good fuses were sent to Nuclear Services, Instrumentation and Electrical department for diagnostic testing and evaluation to determine the failure mechanism.

CONCLUSIONS

The root cause of Keowee Unit 2's inoperability is Equipment failure. With the failure of the "1B" positive 10 amp (OT10) fuse feeding ACB-8, one source of power available to the 2X Switchgear was lost, thus, rendering the CX Transformer and Keowee Unit 2 technically inoperable. It is not known exactly when the fuse blew, but it is assumed that on June 7, 1992, at approximately 1400 hours, the "1B" positive close fuse failed during the closure test performed on ACB-8 and the failure went unobserved until approximately 1200 hours on July 16, 1992.

Normally, only one of the indicating lights is illuminated to show the appropriate breaker position. However, when the "1B" positive fuse was blown, both the Trip and Close indicating lights were illuminated. This occurs because a bypass, series, circuit path exists. This path was from the positive power bus through contacts in the closed circuit of ACB-6, the Trip and Close indicating bulbs of ACB-8, and completing the circuit to the negative power bus; thus allowing both bulbs to be illuminated. When one bulb is removed or both the positive and negative are blown, the series circuit will be broken extinguishing both lights.

A Configuration and Control Inspection/Program will be initiated during the Unit 3's, EOC-13, outage to check the condition of fuses, terminal links, and housekeeping within Oconee and Keowee's electrical cabinets.

The blown fuse and similar good fuses were sent to Nuclear Services, Instrumentation and Electrical department for diagnostic testing and evaluation to determine the failure mechanism. A review of Work Requests written between February 19, 1981 and the event revealed no indication as

EXPIRES: 4/30/92

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 50.0 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE RECORDS AND REPORTS MANAGEMENT BRANCH (P-530), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

FACILITY NAME (1)

DOCKET NUMBER (2)

LER NUMBER (6)

PAGE (3)

Oconee Nuclear Station, Unit 1

0 15 0 10 0 12 6 9 9 2 — 0 0 8 — 0 0 0 6 OF 1 0

TEXT (If more space is required, use additional NRC Form 386A's) (17)

to when the OT10 fuse was replaced with a OT15 fuse. This fuse failure is not considered NPRDS reportable. A review of past Problem Investigation Reports indicate no similar failures, thus this part of the event is not considered recurring.

The root cause of failing to provide power to ONS's Standby Buses within 1 hour is Inappropriate Action (proper response identified but not in time). The one hour time limit begins at the time of the discovery of the equipment being out of service.

The initial observation of the problem with the lights on ACB-8 was on July 16, 1992 at 1200 hours. The time Keowee Unit 2 was confirmed to be technically inoperable was approximately 1330 hours, July 17, 1992, and, as a minimum, the time for compensatory actions should have started then. However, Operations personnel were not notified until 1415 hours, at which point compensatory actions were initiated. Therefore, the Technical Specifications time requirements for action was violated when power was not available to the Oconee Standby Bus from Lee Gas Turbines at 1430 hours.

The HOS recognized that Keowee Unit 2 was into a Technical Specification issue. Once the blown fuse was identified, the HOS should have notified the Operations shift personnel (i.e. the Control Room), immediately, versus attempting to contact the Operations staff personnel or expediting the replacement of the fuses. This resulted in a 45 minute delay in the initiation of compensatory actions. Licensee Event Report 269/92-02 (Equipment Failure in Emergency Power System and Inappropriate Action Result in Technical Specification Violation) addresses the need for immediate notification of operability status of the Keowee Units to the ONS Control Room. Keowee operators have been directed to notify Oconee Control Room, immediately, during an operability concern of the Keowee Units. Corrective actions from that report did not prevent the recurrence of this communications issue. Therefore, this portion of the event is recurring.

At 1415 hours, ONS Unit 2 Supervisor was notified that a blown fuse was found in ACB-8 at 1330 hours. The Unit 2 Supervisor recognized that this made Keowee Unit 2 technically inoperable. This required the energizing of the Standby Buses via the Lee Gas Turbines through the 100 KV dedicated lines. Lee Steam Station (Lee) was notified that their services would be required. After experiencing problems with the sequencing circuit on the 5C Turbine, 4C Gas Turbine was started. Interviews revealed that Lee understood that they had one hour to start and close into the 100 KV line to CT-5 after they were officially notified through the ONS procedures, rather than the actual time of inoperability. At 1528 hours, ONS was notified by Lee that the Lee Gas Turbines were in operation and the 100 KV lines were energized to CT-5. This was 1 hour and 58 minutes after the time that Keowee Unit 2 was determined to be technically inoperable, which exceeded the time limit. To prevent a misunderstanding, ONS will revise OP/O/A/1107/03, Enclosure 3.3 to include notifying Lee Steam Station of the

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 50.0 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE RECORDS AND REPORTS MANAGEMENT BRANCH (P-530), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

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		
		9 2	— 0 1 0 8 —	0 0	0	7 OF 10

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

time the Combustion Gas Turbines are required to be in service. Lee will change their operating practices to initiate a start of a second Combustion Gas Turbine if the primary turbine does not start, or trips after initial starting.

Offsite personnel who operate equipment which provides safety related support functions to ONS need to adequately understand the appropriate communication paths for reporting equipment problems and to report these problems immediately. The fact that the Control Room was not notified more promptly indicates a lack of understanding of associated requirements.

There were no releases of radioactive material, radiation overexposures, or personnel injuries associated with these events.

CORRECTIVE ACTIONS

Immediate

- 1) Fuses OT10 and OT15 from ACB-8 Control Power were removed and replaced by OT10 fuses. ACB-8 was tested satisfactorily. Keowee Unit 2 declared operable.

Subsequent

- 1) Keowee's Breaker Status checklist has been revised to include additional breaker and indicator status for each breaker; also, the checklist gives direction on what to look for and who to call for guidance on other than normal conditions.
- 2) Quality Assurance qualified OT10 fuses and a maximum and a minimum to be maintained in stock has been established.

Planned

- 1) A formal rounds and turnover procedure will be initiated to enhance the monitoring of Keowee Hydro equipment.
- 2) Training will given to Keowee personnel on the new Keowee procedures, checklists, and the time restrains of Technical Specifications.
- 3) Nuclear Services, Instrumentation and Electrical department will investigate the cause of the fuse failure and test similar fuses for possible failure mode(s).

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 50.0 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE RECORDS AND REPORTS MANAGEMENT BRANCH (P-530), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

FACILITY NAME (1)

DOCKET NUMBER (2)

LER NUMBER (6)

PAGE (3)

YEAR	SEQUENTIAL NUMBER	REVISION NUMBER
92	008	00

Oconee Nuclear Station, Unit 1

0 15 0 0 0 2 6 9 9 2 — 0 0 8 — 0 0 0 8 OF 1 0

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

- 4) Training will be given to Lee Steam Station personnel concerning the operating practice of initiating a start of the second Combustion Gas Turbine if the primary turbine does not start or trips after initial start.
- 5) Oconee Nuclear Station's OP/O/A/1107/03, Enclosure 3.3 will be revised to include notifying Lee Steam Station of the time the Combustion Gas Turbines are required to be in service and establish a notification step early in the procedure as possible.
- 6) Problem Investigation Process O-092-0293 was initiated on July 27, 1992 to resolve the problem with the bypass, series, circuit. A proposed resolution will be developed by October 26, 1992.

SAFETY ANALYSIS

Keowee Hydro Station provides an emergency power source to Oconee Nuclear Station for scenarios which involve a Loss of Offsite Power (LOOP). As mentioned earlier in this report, Keowee can feed Oconee through either an overhead or an underground path. Additionally, in the event both Keowee Units are unavailable, the busses connected to the underground path can be supplied from the Central Switchyard or from Lee Steam Station (Lee) Gas Turbines via dedicated lines. The supply from Lee should be available within one hour of identifying the need, but, in this event, it was not available until approximately one hour and fifty-eight minutes after the initial inoperability of the Keowee Unit was recognized.

Each Keowee Unit shall be capable of starting and accelerating without AC power to either of its auxiliaries. They can black start. A review of the Final Safety Analysis Report (FSAR) indicates that the worst case accident for this event is a LOOP affecting all three Oconee units and a concurrent Loss of Coolant Accident (LOCA) on one unit.

FSAR 15.8.3 addresses a simultaneous LOOP event on all three units. This analysis shows that natural circulation of the Reactor Coolant System (RCS) [EIIS:AB], Turbine Driven Emergency Feedwater System [EIIS:BA], Condenser Circulating Water gravity induced flow, and gravity insertion of the control rods [EIIS:ROD] are among the design features provided to ensure the removal of decay heat for the RCS without offsite power being available. Additionally, FSAR Section 15.8.3 states that "Each reactor can sustain a complete electrical power loss without emergency cooling for about 23 minutes before the steam volume in the pressurizer is filled with reactor coolant" and that "beyond this time reactor coolant will boil off, and an additional 83 minutes will elapse before the boil off will start to uncover the core." Therefore, even without cooling from the Turbine Driven

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 50.0 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE RECORDS AND REPORTS MANAGEMENT BRANCH (P-530), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

FACILITY NAME (1)

DOCKET NUMBER (2)

LER NUMBER (6)

PAGE (3)

Oconee Nuclear Station, Unit 1

0 5 10 0 10 12 6 9 9 12 — 0 10 8 — 0 0 0 9 OF 1 0

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

Emergency Feedwater Pump or the Standby Shutdown Facility, the FSAR states that core uncover will not occur for 106 minutes after the initial loss of power. Even though it was delayed in this event, power was available from Lee within 73 minutes.

In a scenario involving a LOOP affecting all three Oconee units and a concurrent LOCA on one unit, Emergency Feedwater and/or the SSF would not be able to assist in mitigating the LOCA. FSAR 15.14.3.3.6 states that "The failure of transformer CT-4 has been identified as a more limiting single failure for the large break LOCA. With the assumed LOOP, this single failure results in a 48 second delay until Emergency Core Cooling System fluid is delivered to the RCS." If an event had occurred that would have rendered the normal power source to 1X and 2X inoperable, the alternate power source could have been aligned by the manual operation of ACB-8 or ACB-7 breaker. Several factors allow time for this manual operation to occur: 1) ACB-8 and ACB-7 are manually operable, 2) Keowee Station is manned 24 hours per day, 3) Keowee Batteries can carry the DC loads for approximately one hour, 4) Keowee Alarm Response Manual directs the operator on a loss of voltage to the 600 VAC Switchgear (1X and 2X) to verify feeder breaker tripped and close the alternate breaker, 5) the Keowee governor controls can be operated four and one half full cycles of the wicket gates before depleting the accumulator pressure (1 1/2 to 2 cycles are required for start-up, then minor changes afterwards). During a normal start the accumulator low trip of 250 psi will trip the Unit, but during a emergency start this trip is bypassed. Therefore, power can be regained manually to 1X or 2X within a short time once the event is recognized.

However, even though technically inoperable, Keowee would still have been able to respond in a significant manner. Even in the condition described in this event, if a LOOP or LOCA/LOOP had occurred, Keowee Unit 2 would have responded to an emergency start signal by starting up with all necessary support systems powered by the Keowee DC Battery System and compressed air stored in an accumulator. Keowee would have been able to operate for an indeterminate time, during which the Keowee operator on duty should have time to diagnose the loss of AC power with the use of existing Abnormal Procedures and manually close ACB-8 to connect to the alternate power source.

As described above, emergency power would have been available, and even if a LOCA/LOOP had occurred during this time, the health and safety of the public would not have been endangered.

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 50.0 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE RECORDS AND REPORTS MANAGEMENT BRANCH (P-530), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

FACILITY NAME (1)

DOCKET NUMBER (2)

LER NUMBER (6)

PAGE (3)

Oconee Nuclear Station, All Units

0 5 0 0 0 2 6 9 9 2 - 0 0 8 - 0 0 1 0 OF 1 0

TEXT (If more space is required, use additional NRC Form 388A's) (17)

ATTACHMENT 1

