



Commonwealth Edison
Braidwood Nuclear Power Station
Route #1, Box 84
Braceville, Illinois 60407
Telephone 815/458-2801

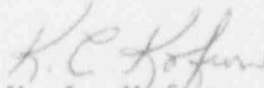
March 21, 1994
Bw/94-0046

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

Dear Sir:

The enclosed Licensee Event Report from Braidwood Generating Station is being transmitted in accordance with the requirement of 10CFR50.73(a)(2)(vii), which requires a 30-day written report.

This report is number 94-002-00, Docket No. 50-456.


K. L. Koffron
Station Manager
Braidwood Station

Encl: Licensee Event Report
No. 456/94-002-00

cc: NRC Region III Administrator
NRC Resident Inspector
INPO Record Center
CECo Distribution List

9403250188 940321
PDR ADOCK 05000456
S PDR

JE22

LICENSEE EVENT REPORT (LER)

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

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 50.0 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE INFORMATION AND RECORDS MANAGEMENT BRANCH (MNBB 7714), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555-0001, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

FACILITY NAME (1) Braidwood 1	DOCKET NUMBER (2) 05000456	PAGE (3) 1 OF 6
----------------------------------	-------------------------------	--------------------

TITLE (4) Main Control Room Ventilation Dampers Declared Inoperable Due to Battery Failure

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 NAME	DOCKET NUMBERS
02	18	94	94	-- 002 --	00	03	21	94	South Texas	05000498
									Braidwood Unit 2	05000457

OPERATING MODE (9) 1	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §. (Check one or more) (11)									
POWER LEVEL (10) 093	<input type="checkbox"/> 20.402(b)	<input type="checkbox"/> 20.405(c)	<input type="checkbox"/> 50.73(a)(2)(iv)	<input type="checkbox"/> 73.71(b)						
	<input type="checkbox"/> 20.405(a)(1)(i)	<input type="checkbox"/> 50.36(c)(1)	<input type="checkbox"/> 50.73(a)(2)(v)	<input type="checkbox"/> 73.71(c)						
	<input type="checkbox"/> 20.405(a)(1)(ii)	<input type="checkbox"/> 50.36(c)(2)	<input checked="" type="checkbox"/> 50.73(a)(2)(vii)	<input type="checkbox"/> OTHER						
	<input type="checkbox"/> 20.405(a)(1)(iii)	<input type="checkbox"/> 50.73(a)(2)(i)	<input type="checkbox"/> 50.73(a)(2)(viii)(A)	(Specify in Abstract below and in Text, NRC Form 366A)						
	<input type="checkbox"/> 20.405(a)(1)(iv)	<input type="checkbox"/> 50.73(a)(2)(ii)	<input type="checkbox"/> 50.73(a)(2)(viii)(B)							
<input type="checkbox"/> 20.405(a)(1)(v)	<input type="checkbox"/> 50.73(a)(2)(iii)	<input type="checkbox"/> 50.73(a)(2)(x)								

LICENSEE CONTACT FOR THIS LER (12)

NAME J. Gosnell, System Engineering	TELEPHONE NUMBER (Include Area Code) (815) 458-2801 x2322
--	--

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
X	VC	Battery	Borg-Warner	N					

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 15 single-spaced typewritten lines) (16)

On February 17, 1994, Braidwood began investigating a potential problem with the batteries in several of the damper actuators of the Control Room Ventilation (VC) System. At 1405 on February 18 the Station declared both trains of VC inoperable. Technical Specification 3.0.3 was entered. The Station requested discretionary enforcement, which the NRC granted. The Station exited 3.0.3 at 1027 on Sunday, February 20. The root cause of the event was a Programmatic Deficiency in that there was no preventative maintenance for the damper actuators. Also, the Station failed to write and perform a surveillance to check the condition of the battery. Additionally, these damper actuators were improperly taken out of service prior to 1992, resulting in battery drainage. The corrective actions include establishing preventative maintenance programs for the damper actuators and the batteries, and the scheduling of periodic surveillances of the batteries. The procedures associated with de-energizing electrical buses feeding these actuators were revised to include pulling actuator fuses. This minimized battery drainage. There have been no previous reportable occurrences at Braidwood Station of battery failures due to the causes identified above. This issue was initially identified at South Texas.

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 INFORMATION AND RECORDS MANAGEMENT BRANCH (MNB 7714), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555-0001, 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)
Braidwood 1	05000456	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER
		94	-- 002 --	00
				2 OF 6

TEXT (if more space is required, use additional copies of NRC Form 366A) (17)

A. PLANT CONDITIONS PRIOR TO EVENT:

UNIT: Braidwood 1; EVENT DATE: February 18, 1994;
EVENT TIME: 1405;
MODE: 1; RX POWER: 93% (End of Life Conditions);
RCS [AB] TEMPERATURE/PRESSURE: NOT/NOP

UNIT: Braidwood 2; EVENT DATE: February 18, 1994;
EVENT TIME: 1405;
MODE: 1; RX POWER: 100%;
RCS [AB] TEMPERATURE/PRESSURE: NOT/NOP

B. DESCRIPTION OF EVENT:

On February 17, 1994, the Braidwood NRC Resident Inspector notified the Site System Engineering Supervisor that the South Texas Plant had recently experienced problems with the backup batteries for the actuators in their Control Room Ventilation (VC) System. An investigation was immediately begun to see if a similar situation existed at Braidwood. System Engineering determined that the similar damper actuators were only in the Main Control Room Ventilation system. There are four dampers in each affected train, with two dampers in each train having two actuators. Therefore, each train of VC had six actuators. By 1400, System Engineering had determined that two actuators on Train B may have a bad battery. Each actuator has a battery test card which applies a half amp load on the battery for five seconds every day. When the voltage at the end of the test drops below 69 volts, a "battery bad" light stays lit. This light, like others on the card, are under the actuator's cover. Some actuators require scaffolding to reach. Since the lights and batteries are not easy to reach, System Engineers did not immediately check other actuators.

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 INFORMATION AND RECORDS MANAGEMENT BRANCH (MNBB 7714), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555-0001, 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
Braidwood 1	05000456	94	-- 002 --	00	3 of 6

TEXT (if more space is required, use additional copies of NRC Form 366A) (17)

B. DESCRIPTION OF EVENT (continued):

System Engineering also began reviewing the design basis of the system to assure themselves that the batteries performed a safety function. There was also some doubt about whether the batteries were bad because other lights were lit on the circuit tester card. Additionally, the vendor manual says that the "battery bad" light illuminates at 69 volts, but the battery can perform acceptably down to 60 volts. The vendor had also told the Station that these batteries have a 10-year life. To find out whether the battery is really bad would require a manual test that would have to be done by Electrical Maintenance.

On the morning of 2/18/94, System Engineering collected battery voltages to attempt to learn the extent of the problem. They found four bad batteries on B train. The Station was still investigating whether the batteries were actually required, and there was some uncertainty about the test method that the System Engineers used to gather the voltage data. By noon that day, the Station had determined that the B train batteries were bad and the test method that the engineers used was correct.

At 1305, Station Management met to discuss the issue. Site Engineering confirmed that the batteries were required. While Station Management discussed the issue with Engineering, System Engineers returned from the with data that showed that all the batteries on A train were below required 60 volts. At 1405 the Station declared both trains of VC le. Technical Specification 3.0.3 was entered and the Station NRC to grant discretionary enforcement at 1515. The NRC granted giving the Station 72 hours to block the dampers shut. The ed 3.0.3 at 1027 on Sunday, February 20.

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 INFORMATION AND RECORDS MANAGEMENT BRANCH (MNB 7714), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555-0001, 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	
Braidwood 1	05000456	94	-- 002 --	00	3 of 6

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

B. DESCRIPTION OF EVENT (continued):

System Engineering also began reviewing the design basis of the system to assure themselves that the batteries performed a safety function. There was also some doubt about whether the batteries were bad because other lights were lit on the circuit tester card. Additionally, the vendor manual says that the "battery bad" light illuminates at 69 volts, but the battery can perform acceptably down to 60 volts. The vendor had also told the Station that these batteries have a 10-year life. To find out whether the battery is really bad would require a manual test that would have to be done by Electrical Maintenance.

On the morning of 2/18/94, System Engineering collected battery voltages to attempt to learn the extent of the problem. They found four bad batteries on B train. The Station was still investigating whether the batteries were actually required, and there was some uncertainty about the test method that the System Engineers used to gather the voltage data. By noon that day, the Station had determined that the B train batteries were bad and the test method that the engineers used was correct.

At 1305, Station Management met to discuss the issue. Site Engineering confirmed that the batteries were required. While Station Management discussed the issue with Engineering, System Engineers returned from the plant with data that showed that all the batteries on A train were below the required 60 volts. At 1405 the Station declared both trains of VC inoperable. Technical Specification 3.0.3 was entered and the Station asked the NRC to grant discretionary enforcement at 1515. The NRC granted it at 1600, giving the Station 72 hours to block the dampers shut. The Station exited 3.0.3 at 1027 on Sunday, February 20.

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 INFORMATION AND RECORDS MANAGEMENT BRANCH (MNB 7714), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555-0001, 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	
Braidwood 1	05000456	94	-- 002 --	00	4 OF 6

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

B. DESCRIPTION OF EVENT (continued):

An emergency notification system phone call was conservatively made at 1658 hours pursuant to 10CFR50.72(b)(2)(iii)(D). Subsequent evaluation determined that this ENS call was not necessary and the event was only reportable as noted below via an LER.

This event is reportable pursuant to 10CFR50.73(a)(2)(vii)(D) - any event where a single cause or condition caused at least...two independent trains or channels to become inoperable in a single system designed to mitigate the consequences of an accident.

C. CAUSE OF EVENT:

The root cause of the event was a Programmatic Deficiency in that the Station did not specify any preventative maintenance for the damper actuators. The vendor manual for the actuators does not specify any periodic maintenance, but does include test procedure for checking battery condition. These actuators were added during construction under an Engineering Change Notice so there was no formal modification process to identify testing requirements. During Start-up testing, Engineers verified that the actuators failed to the closed position when AC power was removed.

A contributing factor is an additional Programmatic Deficiency. The Station failed to write and perform a surveillance to check the condition of the battery. On July 28, 1992 System Engineering and Maintenance decided that a surveillance should be performed every 12 to 18 months to check the condition of the battery. The group did not use any formal tracking to ensure that the procedures would be written.

A further contributing factor was the failure to take these damper actuators properly out of service prior to 1992. During planned Bus outages, actuator battery fuses were left in place causing the batteries to discharge trying to keep their dampers closed. This degraded the batteries every time there was a bus outage. This contributed to the short life of the batteries and resulted in their failure. In August of 1992, the procedures associated with de-energizing the electrical buses feeding these actuators were revised to include pulling actuator fuses. A note was also added about the fuses in Outage Editor, in case the dampers are taken out of service for some other reason.

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 INFORMATION AND RECORDS MANAGEMENT BRANCH (MNB 7714), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555-0001, 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	
Braidwood 1	05000456	94	-- 002 --	00	5 of 6

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

D. SAFETY ANALYSIS:

The Main Control Room Ventilation system is common to both Units 1 and 2 and serves the Control Room, Auxiliary Electric Equipment Rooms, Upper Cable Spreading rooms, Ventilation Equipment room, Security Control Center, Record Room and miscellaneous locker room, toilets, kitchen, and storage rooms. It is a Safety Category I system designed to provide environmental conditions conducive to habitability and long component life in the control room under normal and abnormal station conditions. The system conforms to NRC General Design Criteria 19 (GDC 19) and is designed with redundancy to meet the single failure criteria.

On receipt of an ESF actuation to the control room ventilation system, the operating train will realign to the emergency makeup mode. The affected dampers in both ventilation trains close to isolate unfiltered air paths and allow the makeup filter unit to maintain positive control room envelope pressure.

In addition to ensuring habitability during accident conditions, the ventilation system also may be realigned upon notification of an offsite chlorine event near Braidwood. The control room outside air intakes would be manually isolated by the control room operators and the main control room ventilation system would be operated in 100% recirculation mode.

Braidwood believes the safety significance of this event is low for the following reasons:

-If a loss of safety related power (AC) to one train of control room ventilation had occurred, Braidwood Station's engineering judgement is that the remaining train would have maintained positive pressure in the control room envelope with respect to its surroundings. This judgement is based on the fact that the remaining dampers in the ventilation system fail closed. These remaining dampers, while not leak tight, are downstream of the affected dampers and provide isolation to the affected dampers. This will minimize unfiltered in-leakage to the control room envelope. Any in-leakage which does occur will be filtered.

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 INFORMATION AND RECORDS MANAGEMENT BRANCH (MNBB 7714), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555-0001, 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	
Braidwood 1	05000456	94	--002--	00	6 OF 6

TEXT (if more space is required, use additional copies of NRC Form 366A) (17)

-The iodine source term assumed in accident analysis has been found to be extremely conservative. The actual source term is expected to be significantly less than the assumed value.

E. CORRECTIVE ACTIONS:

A preventative maintenance program will be established for the damper actuators. This will be tracked to completion by action item 456-180-94-0201.

A surveillance requirement will be established to check the condition of the battery. This will be tracked to completion by action item 456-180-94-00202.

The procedures associated with de-energizing electrical buses feeding these actuators were revised to include pulling actuator fuses. This minimized battery drainage.

F. PREVIOUS OCCURRENCES:

There have been no previous reportable occurrences at Braidwood Station of battery failures due to the causes identified above. This issue was identified at South Texas project as reported in "LER 50-498/94-00500, Heating Ventilating, and Air Conditioning System Damper Battery Backup Failures."

G. COMPONENT FAILURE DATA:

MANUFACTURER	NOMENCLATURE	MFG PART NUMBER
Borg-Warner	Battery	90305