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ACCESSION NBR:8712080198 DOC.DATE: 87/12/04 NOTARIZED: NO DOCKET #
FACIL:50-261 H.B. Robinson Plant, Unit 2, Carolina Power & Light C 05000261
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SUBJECT: LER 87-028-00:on 871105,diesel generator B air start failure while diesel generator A inoperable.

W/8 ltr.

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NRC Form 366 (9-83)

U.S. NUCLEAR REGULATORY COMMISSION
APPROVED OMB NO. 3150-0104
EXPIRES: 8/31/88

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1)	DOCKET NUMBER (2)	PAGE (3)
H. B. ROBINSON STEAM ELECTRIC PLANT, UNIT NO. 2	0 5 0 0 0 2 6 1	1 OF 0 5

TITLE (4)
DIESEL GENERATOR "B" AIR START FAILURE WHILE DIESEL GENERATOR "A" INOPERABLE

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 5 0 0 0
1 1	0 5	8 7	8 7	— 0 2 8	— 0 0	1 2	0 4	8 7		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)			
N		20.402(b)	20.405(c)	50.73(a)(2)(iv)	73.71(b)
POWER LEVEL (10)	1 0 0	20.405(a)(1)(i)	50.36(c)(1)	X 50.73(a)(2)(v)	73.71(c)
		20.405(a)(1)(ii)	50.36(c)(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)(x)	

LICENSEE CONTACT FOR THIS LER (12)

NAME	TELEPHONE NUMBER
DON SAYRE, SENIOR SPECIALIST - REGULATORY COMPLIANCE	AREA CODE 8 0 3 — 3 8 3 - 1 2 4 2

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	

SUPPLEMENTAL REPORT EXPECTED (14)		EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR
X YES (If yes, complete EXPECTED SUBMISSION DATE)	NO		0 2	2 9	8 8

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

On November 5, 1987, with Unit No. 2 at 100 percent power and Diesel Generator "A" out of service for maintenance, Diesel Generator "B" failed to start at 0250 hours. Operability testing was underway and required a local start of the diesel with one of two parallel air start solenoid valves isolated. At the time, there was indication the air was venting to atmosphere and the start sequence was stopped. A second start attempt at 0256 hours was successful as was a third soon after. The Plant Nuclear Safety Committee determined Diesel Generator "B" was inoperable for the six minutes and the licensee notified the NRC of a four-hour nonemergency event pursuant to 10CFR50.72 (b)(2)(iii) at 1847 hours. Preliminary inspection of the air start system components could not determine root cause. The failure, however, has not recurred and the diesel has started successfully during each weekly operability test since the event. The licensee plans to replace the solenoid valve involved in the test alignment and examine it thoroughly with a Supplemental Report to follow. This report is submitted pursuant to 10CFR50.73(a)(2)(v).

NRC Form 366

NRC Form 366A (9-83)

U.S. NUCLEAR REGULATORY COMMISSION
APPROVED OMB NO. 3150-0104
EXPIRES: 8/31/88

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

I. DESCRIPTION OF EVENT

On Thursday, November 5, 1987, at 0250 hours, Operations surveillance testing of Diesel Generator "B" (DG-B) was underway.[1,2] The testing is required by Plant Technical Specifications to ensure operability of DG-B when the other diesel, Diesel Generator "A" (DG-A),[2] is out of service for maintenance.

The test requires starting DG-B locally. However, the diesel failed to start.[3] At the time, there was indication that the starting air was venting to atmosphere. The diesel start sequence was then stopped immediately.

A second local start was attempted six minutes later after being unable to find the source of the apparent air leakage and DG-B started successfully. A third attempt soon after was also successful and DG-B was declared operable. Licensee Operations and Maintenance personnel were unable to repeat the initial local start failure.

The Unit was operating at 100 percent power throughout the event.[4]

The licensee notified the NRC at 1847 hours of a four-hour nonemergency event pursuant to 10CFR50.72(b)(2)(iii). This notification was made after the licensee Plant Nuclear Safety Committee reviewed the incident and determined that DG-B should be considered inoperable for the six minutes prior to the first successful start.

This report is submitted in accordance with 10CFR50.73(a)(2)(v).

II. CAUSE OF EVENT

The cause of the local start failure of DG-B has yet to be determined. Licensee Maintenance personnel will continue to investigate the local start configuration and system components to identify a root cause. The intermediate cause of the reportable condition was the failure of DG-B to start with DG-A inoperable. The incident, however, has not recurred nor have Maintenance personnel been able to recreate the failure. It is believed this was an isolated incident.

[1]The Operations surveillance test was conducted using Plant Operating Manual Procedure OST-401, Revision 13.
[2]Diesel Generator EIIS Codes: System - EK; Component - DG; Manufacturer - F018.
[3]Cause Code: X.
[4]H. B. Robinson Unit No. 2 is a Westinghouse Pressurized Water Reactor.

NRC Form 366A (9-83)

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

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

The Operations surveillance test provides verification of operability of the two pilot-actuated air start solenoid valves for the diesel air start system. When the test is performed, one of the two parallel solenoid valves is isolated at its inlet isolation valve to allow independent testing of the opposite solenoid. The solenoids are three-way valves normally energized in a standby condition. Downstream of each solenoid is a check valve, to prevent backpressure, and another isolation valve (normally open). The solenoids vent to atmosphere. When the pilot of either valve is de-energized, the starting air to that solenoid repositions the valve to close the vent and to align the other two ports to the starting air manifold.

Figure 1 provides a flow diagram of the DG-B air start system.

It is suspected that the solenoid under test (one of two) may not have repositioned fully.

III. ANALYSIS OF EVENT

At no time was there an actual threat to the safety of the Plant or the health and safety of the public. Normal power supplies were available throughout the six minutes that both diesel generators were inoperable. Had DG-B not started successfully following the initial failure to start, the Plant would have been required by Plant Technical Specifications to proceed to Hot Shutdown within eight hours unless the condition could be corrected. With both diesel generators inoperable, the Plant is without emergency onsite power supplies for either Emergency Buss should offsite power become unavailable. This condition is prohibited by Plant Technical Specifications.

The operability of DG-B has been tested weekly since the event and the diesel has started successfully each time[5] with the air start system aligned identically.

IV. CORRECTIVE ACTION

DG-B was returned to service following the successful air starts immediately following the initial failure.

The air start system has been thoroughly examined by licensee Maintenance personnel. Both solenoid valves and the two downstream check valves have been inspected. The valves have been reinstalled and tested to operate properly. New solenoid valves have been ordered and upon receipt,[6] the solenoid valve aligned for the air start of DG-B at the time of the event will be removed, disassembled, and examined by licensee Maintenance personnel. The results of their investigation will determine additional actions to be taken. A Supplemental Report will be submitted to document these continuing activities.[7]

[5]Four times.
[6]Delivery expected February 5, 1988.
[7]LER-87-028-01.

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U.S. NUCLEAR REGULATORY COMMISSION
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TEXT (If more space is required, use additional NRC Form 366A's) (17)

The Operations Surveillance Test procedure has been revised to require a different testing configuration than when the air start failure occurred. This revision was made to enhance the procedure following review of the event to minimize the potential that the test configuration may have contributed to the air start failure.

V. ADDITIONAL INFORMATION

A. FAILED COMPONENT IDENTIFICATION

The failure of the DG-B air start system has yet to be attributed to a root cause. Air start is an auxiliary subsystem of the diesel engine. Its major components include an air supply from a compressor, an air dryer, an air receiver, two air start solenoids in parallel with isolation valves on either side, two downstream check valves in parallel, distributors, and starting air headers. The system provides sufficient starting air for about eight cold starts of the diesel engine. Engine starting is accomplished by the action of compressed air on the pistons in their firing order.

Both diesel generator units are Fairbanks-Morse Model 38TD8 1/8, 12-cylinder, opposed piston, fuel injected, turbocharged, air start, 12442 cubic inch displacement engines rated at 3600 horsepower, with 2500 kilowatt 480 Volt AC generators.

B. PREVIOUS SIMILAR EVENTS

There are no known prior Licensee Event Reports concerning an air start failure on either diesel.

NRC Form 366A (9-83)

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

U.S. NUCLEAR REGULATORY COMMISSION
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		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
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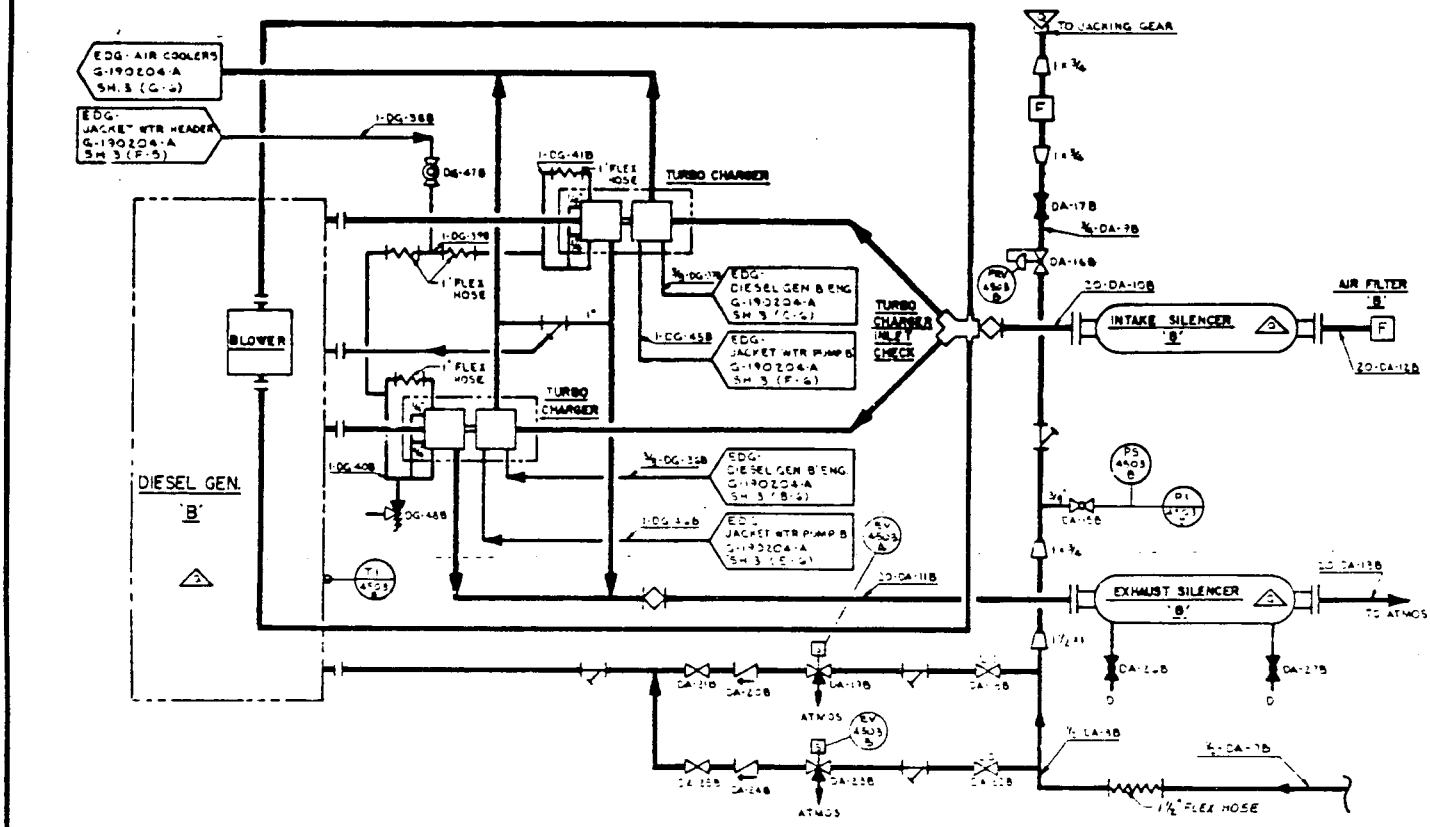
TEXT (If more space is required, use additional NRC Form 366A's) (17)



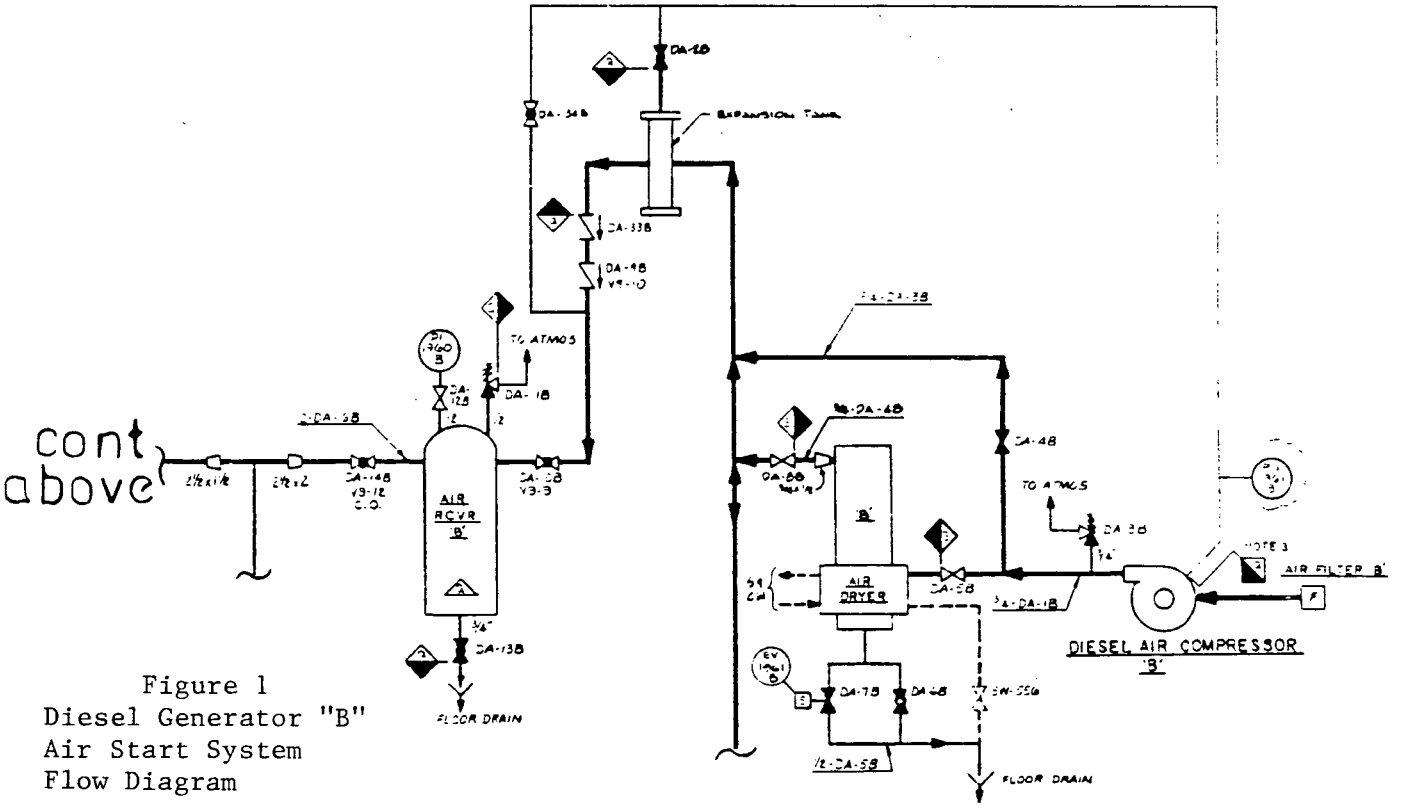


Figure 1
Diesel Generator "B"
Air Start System
Flow Diagram

CP&L

Carolina Power & Light Company

ROBINSON NUCLEAR PROJECT DEPARTMENT
POST OFFICE BOX 790
HARTSVILLE, SOUTH CAROLINA 29550

DEC 04 1987

Robinson File No: 13510C

Serial: RNPD/87-5912
(10 CFR 50.73)

United States Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, D. C. 20555

H. B. ROBINSON STEAM ELECTRIC PLANT, UNIT NO. 2
DOCKET NO. 50-261
LICENSE NO. DPR-23
LICENSEE EVENT REPORT 87-028-00

Dear Sir:

The enclosed Licensee Event Report (LER) is submitted in accordance with the Licensee Event Report System of 10 CFR 50.73 and the recommendations of NUREG-1022 and Supplement Nos. 1 and 2.

Very truly yours,

for R. E. Morgan
General Manager
H. B. Robinson S. E. Plant

DAS:jch

Enclosure

cc: Dr. J. N. Grace
Mr. R. Latta
INPO

IE22
1/1