



CONNECTICUT YANKEE ATOMIC POWER COMPANY

HADDAM NECK PLANT

362 INJUN HOLLOW ROAD • EAST HAMPTON, CT 06424-3099

May 26, 1994

Re: 10CFR50.73(a)(2)(i)

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

Reference: Facility Operating License No. DPR-61
Docket No. 50-213
Reportable Occurrence LER 50-213/94-004-01

Gentlemen:

This letter forwards the Supplemental Licensee Event Report 94-004-01, required to be submitted, pursuant to the requirements of the Haddam Neck Plant's Technical Specifications.

Very truly yours,

John P. Stetz
Vice President

JPS/mlg

Attachment: LER 50-213/94-004-01

cc: Mr. Thomas T. Martin
Regional Administrator, Region I
475 Allendale Road
King of Prussia, PA 19406

William Raymond
Sr. Resident Inspector
Haddam Neck

010097

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1) Haddam Neck	DOCKET NUMBER (2) 0 5 0 0 0 2 1 3	PAGE (3) 1 OF 6
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TITLE (4)
Automatic 480 Volt Bus Transfer Failure Due to Circuit Breaker Malfunction

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		
0	2	1	9	4	-	0	1	0	0 5 0 0 0		
6	9	4	9	4	-	2	6	9	0 5 0 0 0		
4	9	4	0	0	4	0	1	0	0 5 0 0 0		
2	6	9	4			4			0 5 0 0 0		

OPERATING MODE (9) 5	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR 5. (Check one or more of the following) (11)											
POWER LEVEL (10) 01010	20.402(b)			20.405(c)			50.73(a)(2)(iv)			73.71(b)		
	20.406(a)(1)(i)			50.36(c)(1)			50.73(a)(2)(v)			73.71(c)		
	20.406(a)(1)(ii)			50.36(c)(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)(ii)			50.73(a)(2)(vii)(A)					
	20.406(a)(1)(iv)			50.73(a)(2)(iii)			50.73(a)(2)(vii)(B)					
20.406(a)(1)(v)			50.73(a)(2)(iv)			50.73(a)(2)(ix)						

LICENSEE CONTACT FOR THIS LER (12)

NAME B. McKenna, Engineer	TELEPHONE NUMBER 2 0 3 2 6 7 1 - 2 5 5 6
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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	EIK	1512	W11210	Y					

SUPPLEMENTAL REPORT EXPECTED (14)

<input type="checkbox"/> YES (If yes, complete EXPECTED SUBMISSION DATE)	<input checked="" type="checkbox"/> NO	EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR
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ABSTRACT (Limit to 1400 spaces, i.e. approximately fifteen single space typewritten lines) (16)

ABSTRACT

On February 16, 1994, at 0130 hours with the plant shut down in mode 5 (cold shutdown) for Service Water piping repairs, performance of special test ST 11.7-126 "Functional Test Of MCC-5 Automatic Bus Transfer (ABT)" was unsatisfactorily completed when the 480 volt bus 6 feed to Motor Control Center (MCC) 5 circuit breaker 11C failed to close. The cause of the failure has been identified to be an out - of - position mechanical retaining device mounted on the manual operating shaft of the bus 6 11C breaker. This device being out of its normal position allowed the shaft to travel further than designed into the breaker operating mechanism causing the breaker to malfunction upon receiving a close signal. Corrective action consisted of replacing the breaker's manual operating mechanism and modifying the ABT scheme to minimize challenges to the breaker operation. The condition leading to the transfer failure had very likely existed for a time period in excess of the 72 hour Action Statement in Technical Specification 3.8.3.1.2 and thus is reportable under 10CFR50.73(a)(2)(i)(B) as a condition prohibited by the plant's Technical Specifications. This Supplemental Report provides the results of the root cause evaluation and the long term corrective action.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

FACILITY NAME (1) Haddam Neck	DOCKET NUMBER (2) 0 5 0 0 0 2 1 3	LER NUMBER (8)			PAGE (3)		
		YEAR 9 4	SEQUENTIAL NUMBER 0 0 4	REVISION NUMBER 0 1 0	OF		

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

BACKGROUND INFORMATION

The Motor Control Center (MCC) 5 Automatic Bus Transfer (ABT) circuit provides power to MCC-5 from either of two 480 volt AC power sources (EIIS Code: EK) (see Figure 1). MCC-5 is normally aligned so that bus 5 (Train 'A') provides power to MCC-5 via circuit breaker 9C. If for any reason bus 5 becomes de-energized the ABT scheme (see Figure 2) will transfer the feed for MCC-5 to bus 6 (Train 'B') via the 11C breaker. Upon restoration of bus 5 power the ABT scheme will then transfer the feed for MCC-5 back to bus 5 (the preferred supply). During the refueling outage of May to July 1993, an ABT failure was experienced. A root cause investigation performed following that failure was inconclusive yet a component, the 52X relay, common to both ABT circuit breakers (EIIS Code: 52) was determined to be the most suspect. These components were replaced on both the bus 5 9C breaker and bus 6 11C breaker. Connecticut Yankee (CY) committed to perform on-line testing of the 52X relay associated with the ABT. All testing on the bus 5 supply to MCC-5 has been successful since start-up from the 1993 refueling outage in July 1993. CY also committed to perform a functional test of the MCC-5 ABT whenever the plant entered Mode 5 (Cold Shutdown). The current shutdown for service water pipe repairs afforded an opportunity to perform this functional test.

EVENT DESCRIPTION

On February 16, 1994, at 0130 hours, with the plant shut down, in mode 5 (cold shutdown), a failure of the MCC-5 Automatic Bus Transfer scheme, while under test was experienced. Operations personnel were performing ST 11.7-126 "Functional Test Of MCC-5 Automatic Bus Transfer (ABT)". This test includes the sequential tripping of the 480 volt bus 5 (4851) and then the bus 6 (4961) feeder breakers. The bus 5 feeder breaker, 4851 was tripped and the ABT switched, i.e., bus 5 9C breaker opened and the bus 6 11C breaker closed, providing power to MCC-5 from bus 6. The bus 5 feeder breaker 4851 was then closed and the ABT successfully switched back powering MCC-5 from bus 5 once again. Bus 5 loads were restored in preparation of the second section of the test. When the preferred source selector switch (SS43) was selected from position 1 to position 2 in order to select bus 6 as the preferred source the bus 5 9C breaker tripped but the bus 6 11C breaker did not close. This left MCC-5 and all its associated loads de-energized. The operator manually closed the bus 5 9C breaker. This restored power to MCC-5 and its associated loads. The test was terminated at this point.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

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			0 0 4	0 1	0 3	OF	0 6

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

CAUSE OF THE EVENT

The cause of the bus 6 11C breaker to not close when position 2 was selected on the SS43 switch has been determined to be due to a mechanical problem within the breaker operating mechanism. A snap retaining ring was discovered approximately a half inch away from its mounting slot. This allowed the manual operating shaft to move further into the breaker than designed. It was able to travel far enough into the breaker that it interfered with the trip bar and actually maintained the breaker in the tripped position. When the breaker was called upon to close it would close and immediately trip. Performance of a root cause evaluation to determine all the circumstances that led to the MCC-5 ABT failure, including an assessment of the previous root cause evaluation was completed. The root cause of the ABT failures was confirmed to be an out-of-position retaining ring on the breaker closing handle operating shaft. Although it could not be determined how the retaining ring came out of position the most likely cause was that during breaker maintenance the retaining ring was moved out of position to lubricate the shaft and may not have been correctly re-installed. An assessment of the June 27, 1993 event found the previous root cause report to be comprehensive given the intermittent nature of the failure. The conclusive determination of the root cause of the recent failure was facilitated by the repeatability of the failure on demand.

SAFETY ASSESSMENT

This event is reportable under 10CFR50.73(a)(2)(i)(B) since a condition existed prohibited by the plant's Technical Specifications. Technical Specification 3.8.3.1.2 requires MCC-5 to be energized and capable of automatically obtaining power from 480 volt busses 5 and 6 in Modes 1, 2, 3 and 4. This condition had most likely existed for a time in excess of the 72 hour ACTION statement of Specification 3.8.3.1.2. MCC-5 and the associated Automatic Bus Transfer (ABT) are required to provide power to Emergency Core Cooling System (ECCS) valves needed to mitigate the consequences of design basis accidents with the failure of emergency diesel generator EG-2A. A postulated single failure of the ABT could render the ECCS inoperable. Throughout Cycle 18 the preferred power source selector switch SS43 for MCC-5 has been in the position whereby bus 5 would be the preferred power source. Having SS43 in the bus 5 position has ensured that the ABT would return to bus 5 (if energized) in the event of a failure of the bus 6 supply breaker (11C). All testing thus far on the bus 5 supply to MCC-5 has been successful. The safety function of MCC-5 would still be provided through bus 5. In addition, both emergency diesel generators were available had there been a loss of off-site power to bus 1 and 2.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

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						0 4 OF 0 6

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

Emergency diesel generator EG-2A would restore power to bus 5 and the ABT would provide power to MCC-5 from bus 5. There are also emergency operating procedures in place to restore power to MCC-5 and associated loads as required. Based on the above the safety significance of this event is minimal.

CORRECTIVE ACTION

Initial corrective action included the following:

1. Replacement of bus 6 breaker 11C manual operating mechanism.
2. Verification of position and condition of other breakers' manual operating shaft retaining devices.
3. Implementation of a modification to eliminate the preferred source selector switch SS43 and redesign the MCC-5 ABT scheme to block the trip of the normal feed bus 5 9C breaker on a total loss of AC power to minimize challenges to breaker operation.

Long term corrective action will include the revision of all appropriate preventive maintenance procedures for Westinghouse type DB breakers to include verification that the retaining ring is securely in place.

ADDITIONAL INFORMATION

<u>Component</u>	<u>Manufacturer</u>	<u>Model/Part Number</u>
Circuit Breaker	Westinghouse	Model No. DB-25
Operating Mechanism	Westinghouse	Part No. 405D804B07

This Supplemental Report is being issued to provide the results of the root cause evaluation and the long term corrective action.

PREVIOUS SIMILAR EVENTS

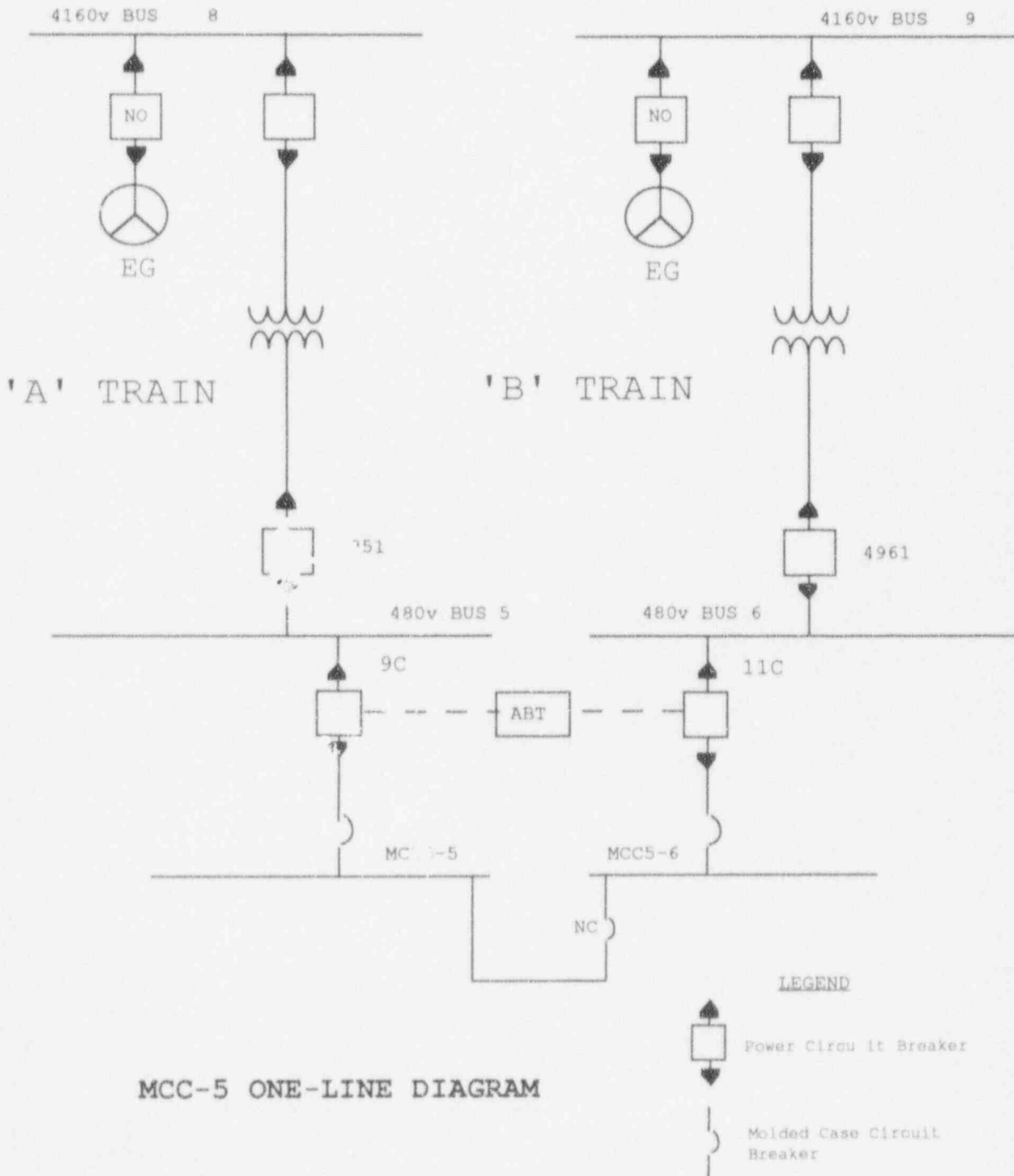
MCC-5 ABT failure during the 1993 refueling outage (June 27, 1993).

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

FACILITY NAME (1) Haddam Neck	DOCKET NUMBER (2) 0500021394	LER NUMBER (6)			PAGE (3)		
		YEAR 94	SEQUENTIAL NUMBER 004	REVISION NUMBER 01			

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

FIGURE 1



MCC-5 ONE-LINE DIAGRAM

