



CONNECTICUT YANKEE ATOMIC POWER COMPANY

HADDAM NECK PLANT

RR#1 • BOX 127E • EAST HAMPTON, CT 06424-8341

October 20, 1989
Re: 10CFR50.73(A)(2)(v)

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 50-213/89-016-00

Gentlemen:

This letter forwards the Licensee Event Report 89-016-00, required to be submitted, pursuant to the requirements of Connecticut Yankee Technical Specifications.

Very truly yours,

Donald B. Miller, Jr.
Station Superintendent

DBM:REB/mlg

Attachment: LER 50-213/89-016-00

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

J. T. Shedlosky
Sr. Resident Inspector
Haddam Neck

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LICENSEE EVENT REPORT (LER)

FACILITY NAME (1) Haddam Neck						DOCKET NUMBER (2) 0 5 0 0 0 2 1 1 3			PAGE (3) 1 OF 0 4	
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Potential Rating Deficiency Identified In Molded Case Circuit Breakers

EVENT DATE (6)			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 9	2 2	8 9	8 9	0 1 6	0 0	1 0	2 0	3 9			0 5 0 0 0
THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR § (Check one or more of the following) (11)											

OPERATING MODE (8) 5	20.402(b)	20.405(c)	50.73(a)(2)(iv)	73.71(b)
POWER LEVEL (10) 0 1 0 0	20.405(a)(1)(i)	50.36(e)(1)	<input checked="" type="checkbox"/> 50.73(a)(2)(v)	73.71(c)
	20.405(a)(1)(ii)	50.36(e)(2)	50.73(a)(2)(vi)	OTHER (Specify in Abstract below and in Text, NRC Form 306A)
	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)						TELEPHONE NUMBER					
NAME K. Petschauer, Engineer						AREA CODE 2 1 0 3		2 1 6 1 7 - 1 2 1 5 1 6			

COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRRDS	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRRDS

SUPPLEMENTAL REPORT EXPECTED (14)				EXPECTED SUBMISSION DATE (15)		MONTH	DAY	YEAR
<input type="checkbox"/> YES (If yes, complete EXPECTED SUBMISSION DATE)				<input checked="" type="checkbox"/> NO				

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

ABSTRACT

On September 22, 1989, at approximately 1200 hours, with the plant in Mode 5 (Cold Shutdown), an engineering analysis identified 15 Westinghouse 480-V circuit breakers in motor control center (MCC) 5 which have fault-interrupting capability less than the potentially available (worst case) fault currents. It is postulated that if a bolted three-phase fault were to occur across the load terminals of one of these breakers, it could create an over trip condition. This over trip condition could cause the entire motor control center to isolate from the 480-V AC power system rendering certain residual heat removal (RHR) and safety injection (SI) valves inoperative. The root cause of this event was a design control deficiency. Corrective action will be to replace the identified circuit breakers with circuit breakers or motor circuit protectors which have the appropriate fault-interrupting capabilities. This event is reportable under 10CFR50.73(A)(2)(v) since a condition existed which alone could have prevented the fulfillment of a safety function of a system needed to mitigate the consequences of an accident.

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		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	

NOTE: If more space is required, use additional NRC Form 306A's (17)

BACKGROUND

The Haddam Neck plant has two emergency 4160-V buses which can be supplied from off-site power or by on-site diesel generators. These two 4160-V buses supply 480-V emergency buses designated Bus 5 and Bus 6. For reliability, motor control center (MCC) 5, which supplies power to various safety injection (SI) (EIIS Code BQ) and residual heat removal (RHR) (EIIS Code BP) motor-operated valves, can be powered from Bus 5 or Bus 6 via an automatic bus transfer scheme. Within MCC 5, fault protection is provided via molded case circuit breakers.

EVENT DESCRIPTION

On September 22, 1989, at approximately 1200 hours, with the plant in Mode 5, an engineering analysis identified 15 Westinghouse 480-V molded case circuit breakers in MCC 5 which have fault-interrupting capabilities less than the potentially available (worst case) fault currents.

The installed breakers are Westinghouse Style "FA" and "FB" and have a 14,000-amp interrupting rating (symmetrical). The available fault currents, as calculated in accordance with Standard IEEE 399-1980, range from approximately 20,000 to 22,000 amps (symmetrical).

The analysis postulated that if a bolted three-phase fault were to occur across the load terminals of one of these breakers, it could create an over-trip condition in which the feeder breaker to MCC 5 trips. The loss of MCC 5 would render certain SI and RHR valves electrically/remotely inoperative.

CAUSE OF THE EVENT

The original design of MCC 5 called for circuit breakers with interrupting capabilities of approximately 25,000 amps (symmetrical). A review of records has not identified when, or if, the original breakers were replaced, but it is suspected that some of the original breakers were replaced during the 1960s - 1970s time period. Engineering judgment indicates that the root cause of this event was a design control deficiency during the time period in question.

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NOTE: If more space is required, use additional NRC Form 305A's (17)

SAFETY ASSESSMENT

This event is reportable per 10CFR50.73(A)(2)(v)(B) and 10CFR50.73(A)(2)(v)(D) because a condition existed that alone could have prevented the fulfillment of the safety function of a system needed to remove residual heat and mitigate the consequences of an accident.

The safety significance of this event is small due to established means of dealing with the loss of MCC 5 and the very low probability of occurrence of a bolted three-phase fault at the breaker output terminals.

The loss of MCC 5 due to an over trip condition would cause various redundant safety-related systems to be compromised. In addition to the "A" battery charger, all safety injection valves, both diesel generator auxiliary panels, control air compressors and dryers, ICC cabinets, semivital AC, and charging pump auxiliaries are powered from MCC 5. Although the loss of MCC 5 affects various systems, the ramifications of such a loss are reduced by the fact that manual recovery from the over trip condition is possible and procedures have been established to deal with the loss.

It is important to note that for an over trip condition of MCC 5 to occur, the bolted three-phase fault must occur relatively close to (within 12 feet) or at the circuit breaker terminals. Faults which occur at distances greater than 12 feet would not create an over trip condition due to reduced fault current levels when considering the cables impedance. The probability of a bolted three-phase fault occurring at the circuit breaker terminals is extremely low. The switchgear room is within a controlled area of the plant and has limited personnel access. No vehicles or lift trucks are able to access this room, and the circuit breakers are contained within a motor control center which limits access and prevents the propagation of faults to other compartments. In addition, standard Haddam Neck maintenance practice with 480-V MCC circuit breakers is not to "bolt and ground" circuits while maintenance is being performed.

CORRECTIVE ACTION

Corrective action will be to replace the identified circuit breakers with circuit breakers or motor circuit protectors which have the appropriate fault-interrupting capabilities. Due to present day design control procedures this condition should not

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

reoccur. In the course of reviewing this condition MCC-6 and MCC-8 were also determined to have circuit breakers with under rated fault interrupting capabilities. This, however, did not create a condition reportable under 10CFR50.73. Corrective action for these MCC's will be the same as that addressed for MCC-5. The circuit breakers in the other MCC's are adequately sized.

ADDITIONAL INFORMATION

None.

SIMILAR EVENTS

LER 89-013-00