



CONNECTICUT YANKEE ATOMIC POWER COMPANY

HADDAM NECK PLANT

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

April 21, 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 50-213/94-008-00

Gentlemen:

This letter forwards the Licensee Event Report 94-008-00, 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 50-213/94-008-00

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

William Raymond
Sr. Resident Inspector
Haddam Neck

260063

JE22'

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 5	
TITLE (4) Auxiliary Feedwater Hydraulic Control System Setpoints Found Low																					

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	3	2	4	9	4	9	4	0	0	8	0	0	0	4	2	1	9	4	0	5	0	0	0																				
OPERATING MODE (9)		THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR 5. (Check one or more of the following) (11)																																									
5		20.402(b)										20.405(c)										50.73(a)(2)(iv)										73.71(b)											
POWER LEVEL (10)		01010										20.405(a)(1)(i)										50.36(c)(1)										50.73(a)(2)(iv)										73.71(c)	
		20.405(a)(1)(ii)										50.36(c)(2)										50.73(a)(2)(v)										OTHER (Specify in Abstract below and in Text, NRC Form 365A)											
		20.405(a)(1)(iii)										X 50.73(a)(2)(i)										50.73(a)(2)(vi)																					
		20.405(a)(1)(iv)										50.73(a)(2)(ii)										50.73(a)(2)(vii)(A)																					
		20.405(a)(1)(v)										50.73(a)(2)(iii)										50.73(a)(2)(viii)(B)																					
		20.405(a)(1)(vi)										50.73(a)(2)(iv)										50.73(a)(2)(ix)																					

LICENSEE CONTACT FOR THIS LER (12)										TELEPHONE NUMBER											
NAME A. Krinzman, Senior Engineer										AREA CODE 21013		216171-12151516									

COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)														
CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRC	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRC	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRC
B	B	A	I	P	S	B	0	7	0	Y				

SUPPLEMENTAL REPORT EXPECTED (14)										EXPECTED SUBMISSION DATE (15)		MONTH	DAY	YEAR			
X YES (If yes, complete EXPECTED SUBMISSION DATE)										NO		0	3	0	1	9	5

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

ABSTRACT

On March 24, 1994, at 0655 hours, with the plant in Mode 5, a surveillance was performed to verify the setpoints of the Auxiliary Feedwater control system DC hydraulic pump automatic start and low pressure trip pressure switches. The As-Found setpoint of the DC pump automatic start pressure switch setting was 25 psi below the Technical Specification allowable value. The cause of the event is still under investigation. The location of the switches may have been a contributing factor. Initial corrective action consisted of recalibrating the switches. Long term corrective action consists of increased monitoring of the setpoint of the switches during the remainder of this operating cycle and recalibrating as necessary. In addition, the replacement and/or relocation of the pressure switches is being evaluated. Although instrument drift found during a surveillance typically is assumed to have occurred at the time of discovery, the disproportionate number of unexpectedly large setpoint deviations provides reasonable doubt that the switch was within its Technical Specification limits following refueling outage 17 and prior to the February/March maintenance outage. This event is reportable under 10CFR 50.73 (a)(2)(i)(B) as a condition prohibited by the plant's Technical Specifications.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

APPROVED OMB NO. 3150-0104

EXPIRES: 8/31/88

FACILITY NAME (1) Haddam Neck	DOCKET NUMBER (2) 0 5 0 0 0 2 1 3 9 4	LER NUMBER (6)			PAGE (3)		
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER			
						OF	

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

BACKGROUND INFORMATION

Two 100 percent steam driven Auxiliary Feedwater (AFW) pumps (EIIS Code: BA) provide emergency feedwater to the steam generators after a loss of the Main Feedwater system (EIIS Code: SJ). The pneumatic actuators, originally supplied with the Terry Turbine steam admission valves, were replaced with electrohydraulic actuators, as part of the AFW control system modification, during refueling outage 16. Two hydraulic pumps are installed in each of the safety train hydraulic pump units. A non safety-related AC pump runs continuously, maintaining approximately 1100 psig hydraulic pressure. A standby, safety-related DC pump starts automatically on a low hydraulic system pressure signal from a Barksdale model B1T pressure switch (EIIS Code:PS) installed on the AC pump discharge. The applicable calibration procedures, performed each refueling outage, allow minimum and maximum DC pump start pressures of 970.0 psig and 982.0 psig, respectively, with a desired setpoint of 970.0 psig. This setpoint was established to provide a margin above the Technical Specification trip setpoint. The trip setpoint of the automatic start of the DC powered pump on low hydraulic system pressure is listed in Technical Specification Table 3.3-3 as greater than or equal to 961 psig, with an allowable value of greater than or equal to 934.5 psig. Each hydraulic unit also includes a low pressure trip pressure switch, set at 916.0 psig, for equipment protection. This switch is identical to the DC pump auto start switch.

EVENT DESCRIPTION

Surveillances performed on February 25, 1994 and March 24, 1994, with the plant in Mode 5 for a maintenance outage, identified excessive setpoint deviations for two of the four hydraulic pump unit pressure switches. The setpoint of the "B" train DC pump start switch was found to be 60.5 psi below the minimum allowed by procedure (61.5 psi below the as-left value) and 25 psi below the Technical Specification allowable value. The setpoint of the "A" train system low pressure trip switch was found to be 54 psi below the as-left value.

Since their installation in 1992, each of the four hydraulic unit pressure switches has been calibrated twice. Each was found to be very close to the "as-left" setpoint during one of the two surveillances and significantly below that value during the other. The setpoints of the DC pump start switches for the two trains have not been out of tolerance concurrently. Earlier significant setpoint deviations were found during routine refueling outage surveillances. One was attributed to contact during maintenance in the area prior to the calibration. The other was 14 psi below the allowable value and was dispositioned as an isolated case.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

APPROVED OMB NO. 3150-0104

EXPIRES: 8/31/88

FACILITY NAME (1) Haddam Neck	DOCKET NUMBER (2) 0 5 0 0 0 2 1 3	LER NUMBER (6)			PAGE (3)		
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER			
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TEXT (If more space is required, use additional NRC Form 306A's) (17)

When the setpoints of two of the four switches were again found to be significantly below acceptable limits during the recent outage, the deviations could no longer be assumed to be isolated. Although instrument drift found during a surveillance typically is assumed to have occurred at the time of discovery, the disproportionate number of unexpectedly large setpoint deviations provides reasonable doubt that the switch was within its Technical Specification limits following refueling outage 17 and prior to the February/March maintenance outage.

CAUSE OF THE EVENT

The cause of the event is still under investigation and the results will be provided in a Supplemental Report.. The location of the switches may have been a contributing factor. All four pressure switches are mounted directly on the hydraulic pump skids and are subject to continuous vibration. Further, the switches are connected directly to the discharge of the AC pumps with no provision for damping pressure pulsations from the pumps. A search of the NPRDS database has identified numerous instances of setpoint deviations experienced with similar pressure switches.

SAFETY ASSESSMENT

This event is reportable under 10CFR50.73(a)(2)(i)(B) since it resulted in a condition prohibited by the plant's Technical Specifications.

Per Technical Specification Table 3.3-3, the Auxiliary Feedwater (AFW) hydraulic units are required to maintain a minimum pressure of 934.5 psig to ensure the Terry Turbine steam admission valves are capable of opening against the design basis steam header pressure of 1015 psig. An AC powered hydraulic pump in each unit runs continuously to provide the motive force to the respective steam admission valve. A standby DC powered pump is required to start upon a low discharge pressure signal from the AC pump.

The two turbine-driven AFW pumps automatically start if two of four steam generator wide range signals fall below the wide range low level setpoint, or both main Feedwater pump circuit breakers open. The most probable occurrence of AFW automatic initiation is a loss of offsite power causing the main Feedwater pump breakers to open on under-voltage.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

APPROVED OMB NO. 3150-0104

EXPIRES: 8/31/88

FACILITY NAME (1) Haddam Neck	DOCKET NUMBER (2) 0 5 0 0 0 2 1 3 9 4 -	LER NUMBER (6)			PAGE (3)		
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER			
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TEXT (If more space is required, use additional NRC Form 365A's) (17)

Pressure from the AC powered pumps falls quickly to zero following a loss of offsite power. The DC pump start pressure switch setpoint in this event is not significant since any non-zero value will actuate the safety-related pumps. Since no switch has failed to change state during calibration, AFW operability during a loss of offsite power, would not have been affected by the setpoint deviations.

Loss of Feedwater with offsite power available is a credible accident. In this event, the DC pumps remain in standby and hydraulic pressure is provided by the AC hydraulic pumps. The DC pumps would be required only in the event of significant degradation or failure of one of the AC pumps. Failure of an AC pump would cause pressure to fall to zero and, as discussed above, the DC pump would start regardless of the switch setpoint. Degradation of an AC pump which causes hydraulic pressure to decrease below the minimum allowable, concurrent with a DC pump start pressure switch setpoint decrease to a value less than the output of the AC pump, could affect AFW availability, depending on steam header pressure. The safety significance of this event is low since the probability of a loss of both main Feedwater pumps with offsite power available concurrent with parallel degradation of both an AC hydraulic pump or pump pressure control valve and the corresponding DC pump start switch is unlikely.

CORRECTIVE ACTION

All four pressure switches have been recalibrated. The frequency of monitoring the pressure switch setpoints has been increased. The setpoints will be trended and recalibrated as necessary during the remainder of cycle 18 to ensure system operability and to troubleshoot the cause of the deviations. In addition to replacement of the switches with an alternative type, the design of the pressure switch installation is under evaluation to determine if relocation could improve reliability. If deemed appropriate, replacement and/or relocation will be effected during the next refueling outage.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

APPROVED OMB NO. 3150-0104

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FACILITY NAME (1) *	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)	
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER		
Haddam Neck	0 5 0 0 0 2 1 3 9 4	-	0 0 8	-	0 0	0 5 OF 0 5

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

ADDITIONAL INFORMATION

<u>Component</u>	<u>Manufacturer</u>	<u>Model</u>
Pressure Switch	Barksdale	BIT-H12

A Supplemental Report providing the results of failure cause and the long term action taken will be provided following the next refueling outage (approximately March 1, 1995).

PREVIOUS SIMILAR EVENTS

None