



CONNECTICUT YANKEE ATOMIC POWER COMPANY

HADDAM NECK PLANT

362 INJUN HO'LOW ROAD • EAST HAMPTON, CT 06424-3099

May 26, 1994

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 50-213/94-012-00

Gentlemen:

This letter forwards the Licensee Event Report 94-012-00, 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 50-213/94-012-00

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

William Raymond
Sr. Resident Inspector
Haddam Neck

010086

IFERD
11

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1) Haddam Neck	DOCKET NUMBER (2) 0 5 0 0 0 2 1 3	PAGE (3) 1 OF 0 4
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TITLE (4)
Potential Loss of Service Water Due to Flood Induced Strainer Fouling

EVENT DATE (5)			LER NUMBER (8)			REPORT DATE (7)			OTHER FACILITIES INVOLVED (6)							
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	MONTH	DAY	YEAR	FACILITY NAMES		DOCKET NUMBER(S)					
0	4	2 8 9	4	9	4	0	1	2	0	0	0	0	5	0	0	0
0	4	2 8 9	4	9	4	0	5	2 6	9	4		0	5	0	0	0

OPERATING MODE (9) 1

POWER LEVEL (10) 1 1 0 0

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR 5. (Check one or more of the following) (11)

<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 checked="" 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 type="checkbox"/> 50.73(a)(2)(vii)	OTHER (Specify in Abstract below and in Text, NRC Form 365A)
<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)	
<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)(ix)	

LICENSEE CONTACT FOR THIS LER (12)

NAME S. Weyland, Senior Engineer	TELEPHONE NUMBER AREA CODE: 2 0 3 2 6 7 2 5 5 6
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COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)

CAUSE	SYSTEM	COMPONENT	MANUFAC TURER	REPORTABLE TO NRRDS	CAUSE	SYSTEM	COMPONENT	MANUFAC TURER	REPORTABLE TO NRRDS

SUPPLEMENTAL REPORT EXPECTED (14)

YES (If yes, complete EXPECTED SUBMISSION DATE) NO

EXPECTED SUBMISSION DATE (15)

MONTH	DAY	YEAR

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

ABSTRACT

On April 28, 1994, at 1230 hours, with the plant in Mode 1 at 100 percent power, a previously unidentified external flooding scenario was discovered which has the potential to incapacitate the service water (SW) system at a river flood elevation less than that which was assumed in the design analysis. Under this newly discovered scenario, a flood at slightly above site grade elevation would enter the plant's intake structure and completely flood the lower level. This would prohibit personnel from entering the lower level to clean the SW pump discharge strainers. It is further postulated that river debris could clog the SW strainers to the point that the SW pumps are not capable of delivering sufficient flow. The cause of this condition was the apparent lack of recognition of the potential need to clean SW strainers during floods. Corrective action consisted of providing the operating shifts with alternatives for mitigating this event and incorporating appropriate changes into plant procedures. This event is reportable under 10CFR50.73(a)(2)(v)(D) as a condition that alone could have prevented the fulfillment of the safety function of a system needed to mitigate the consequences of an accident.

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TEXT (If more space is required, use additional NRC Form 360A's) (17)

BACKGROUND INFORMATION

The Updated Final Safety Analysis Report (UFSAR) Section 2.4.2 discusses the potential for flooding at the Haddam Neck site. This section states that the probable maximum flood (PMF) at the site is elevation 39.5' MSL. UFSAR Section 3.4.1 provides a discussion of the flood protection features at Haddam Neck. It states that structures and components required for safe shutdown of the plant are protected from external floods to an elevation of 30' 0" MSL (grade level is approximately 21' MSL). Floods in excess of 30' are of very low probability and procedures have been written and temporary equipment is available on site to maintain the plant in a safe condition for floods in excess of elevation 30'.

During the period of April 4, 1994 to May 6, 1994, the Service Water Operational Performance Inspection (SWOPI) was conducted to verify the ability of the service water system (EIIS Code: BI) to meet its design basis. One of the items which the inspectors postulated was a flood slightly in excess of grade elevation. This assumed flood would enter the intake structure (EIIS Code: MK) and flood its lower level by means of a stairwell. Two service water pumps (EIIS Code: P) are protected to elevation 30' 0" by means of fiberglass cans placed around the pump motors upon warning of impending site flooding. However, flooding of the lower level of the intake would make the service water discharge strainers (EIIS Code: STR) inaccessible for cleaning by normal means.

EVENT DESCRIPTION

On April 28, 1994, at 1230 hours, with the plant in Mode 1 at 100 percent power, a previously unidentified external flooding scenario was discovered which has the potential to incapacitate the service water (SW) system at a river flood elevation less than that which was assumed in the UFSAR. Under this newly discovered scenario, a flood at slightly above grade elevation (approximate el. 21' MSL) would enter the plant's intake structure and completely flood the lower level. This would prohibit personnel from entering the lower level to clean the service water pump discharge strainers. It is further postulated that river debris could clog the SW strainers to the point that the service water pumps are not capable of delivering sufficient flow to maintain vital functions (Emergency Diesel Generator cooling and Residual Heat Removal).

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

Although it is believed that the service water system will remain operable for some time after the intake lower level is flooded and may remain operable throughout the entire flood, it cannot conclusively be shown that the service water system will remain operable. This condition has therefore been conservatively judged to be reportable.

CAUSE OF THE EVENT

The cause of this event was the apparent lack of recognition of the potential need to clean the service water strainers during floods. The methods and hardware modifications for coping with flooding conditions were evaluated during the Systematic Evaluation Program (SEP).

SAFETY ASSESSMENT

This event is reportable under 10CFR50.73(a)(2)(v)(D) as a condition that alone could have prevented the fulfillment of the safety function of a system needed to mitigate the consequences of an accident.

Abnormal Operating Procedure AOP 3.2-24 requires a plant shutdown prior to the flood arriving at the plant site. Therefore, required service water flow to maintain the plant in a safe condition is greatly reduced. All non essential Service Water loads will be isolated (Service Water to the diesels and to the Component Cooling Water (CCW) heat exchangers would be the only requirements during this scenario). Also, the diesel cooling requirement will be lessened due to the light loading of the diesel (when compared to design basis LOCA loading) and reactor heat loads rejected to service water through the Residual Heat Removal (RHR) and CCW systems will be greatly reduced from those experienced immediately after reactor shutdown.

Because of the reduced Service Water flow requirement in this scenario, the Service Water System would remain operable with considerably greater strainer clogging than would be permitted during power operation. It is estimated that a total service water flow of approximately 2000 GPM would be sufficient to maintain the plant in a safe condition (runout for a single Service Water pump is about 7000 GPM). It is therefore highly probable that Service Water would be available to provide its limited cooling requirements for a substantial period of time after the flood. In the event that the Service Water strainers clog and Service Water is not able to remove the required heat load, divers may be used to clean the clogged strainers.

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

Additionally, throttle valves on the downstream side of the diesel generator and CCW heat exchanger could also be opened as the strainers clog to partially compensate for strainer blockage.

The actions to be taken to assure plant safety, assuming Service Water System failure due to strainer clogging, involved changes to AOP 3.2-24. Specifically, a gas driven pump will be set up on the mid level of the Turbine Building and suction will be taken from the Demineralized Water Storage Tank (DWST) or the Condensate Storage Tank (CST) to provide cooling water to the depressurized steam generators. In addition, the Primary Water Storage Tank (PWST) and the Recycle Primary Water Storage Tank (RPWST) can be used as backup sources of water. As a last resort flood water can be supplied to the gas driven pump.

Based on the above, the overall safety significance of this postulated scenario is minimal.

CORRECTIVE ACTIONS

The operating crews were briefed of the postulated scenario on April 28, 1994. Several potential alternatives to mitigate this unlikely event, including use of the portable gas driven pump, were discussed.

Plant procedure AOP 3.2-24 "Flooding of the Connecticut River" was enhanced to ensure that appropriate actions, as discussed above, are taken to maintain the plant in a safe condition during a postulated flood of a lower elevation.

ADDITIONAL INFORMATION

None.

PREVIOUS SIMILAR EVENTS

None.