PSNH

Public Service of New Hampshire

New Hampshire Yankee Division

George S. Thomas
Vice President-Nuclear Production

NYN-88009

January 25, 1988

United States Nuclear Regulatory Commission
Washington, DC 20555

Attention: Document Control Desk

References: (a) Facility Operating License No. NPF-56, Docket No. 50-443

(b) PSNH Letter (SBN-1086), dated June 4, 1986, "Inservice Testing (IST) of Pumps and Valves (SER Outstanding Issue No. 4)," G. S. Thomas to V. S. Noonan

(c) PSNH Letter (SBN-1136), dated June 23, 1986, "Inservice Testing (IST) of Pumps and Valves (SER Outstanding Issue No. 4)," G. S. Thomas to V. S. Noonan

(d) PSNH Letter (SBN-1144), dated June 25, 1986, "Inservice Testing (IST) of Pumps and Valves (SER Outstanding Issue No. 4) Relief Request No. 46," G. S. Thomas to V. S. Noonan

(e) PSNH Letter (NYN-87081), dated June 17, 1987, "Inservice Testing (IST) of Pumps and Valves (Changes to Revision 1 of the Inservice Testing Program)," G. S. Thomas to NRC

Subject: Inservice Testing (IST) of Pumps and Valves (Changes to Revision 1)

Gentlemen:

Reference (e) provided changes to Revision 1 of the Seabrook Station Inservice Testing (IST) Program for pumps and valves. These changes were reviewed by the NRC Staff and their contractor, EG&G. On December 18, 1987, members of the NRC Staff, EG&G, and New Hampshire Yankee (NHY) discussed, by telephone, several concerns that were identified during the review. The enclosed material provides the changes to the IST program that are necessary to resolve the Staff concerns.

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Should you have any further questions regarding this matter, please contact our Bethesda office (Mr. R. E. Sweeney) at 301-656-6100.

Very truly yours,

George S. Thomas

Enclosure

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ENCLOSURE TO NYN-88009

Relief Request: P-3

Pumps: CC-P-11A, CC-P-11B, CC-P-11C, CC-P-11D, RH-P-8A, RH-P-8B, SW-P-41A, SW-P-41B, SW-P-41C, SW-P-41D, SW-P-110A and SW-P-110B

Code Class: 2 and 3

Function: Pumps required to perform a function in shutting down the reactor or in mitigating the consequences of an accident, and are provided with an emergency power source.

Test Requirements: Table IWP-3100-2 specifies the allowable ranges of inservice test quantities in relation to reference values. This table limits the acceptable performance of the differential pressure (ΔP) for each pump to 103 percent ($1.03 \Delta Pr$). If the differential pressure of any pump exceeds this limit, the pump shall be declared inoperable and not returned to service until the cause of the deviation has been determined and the condition corrected.

Basis for Relief: The requirement to declare a pump inoperative when pump performance exceeds the reference value by 3 percent is impractical and is not clearly indicative of pump degradation for the following reasons:

a. The 3 percent limitation is overly restrictive when compared to the total accuracy of the instrumentation used to gather the test data. In order to consistently remain below the 3 percent limitation, extremely lower instrument loop accuracies than those required by Table IWP-4110-1 would have to be established. This is particularly evident when testing pumps that have high flow rates and low discharge head characteristics such as the pumps listed above.

b. Power plant operating systems were not designed to provide laboratory type conditions required to meet the 3 percent limitation. The primary component cooling water (CC) and service water (SW) systems require the use of large butterfly valves using remote manual control to throttle large volumes of water to the reference flow rate. Normally flow rates can only be established to $\pm$ 100 gpm of the specified reference flow. A deviation of flow of 200 gpm can significantly affect measured test quantities.

Basis for Relief: (continued)

c. Reference values are specific sets of values determined by measuring or observing pump performance when a specific pump is known to be performing its required function acceptably. Merely exceeding the 3 percent limitation is not a clear signal of pump degradation. It may signify that the reference value is at the lower side of the statistical scatter of the test data in comparison with other periodic test data.

d. For the pumps listed, the difference between the differential pressure reference value and 103 percent required action value have been in the range from 1.7 to 5.7 psid. This is extremely restrictive and is easily exceeded by any combination of statistical scatter, instrument inaccuracy and minor flow variations. In the past, these pumps have been declared inoperable due to high differential pressure readings exceeding the allowed range by less than 0.5 psid. Further evaluation of these conditions has shown there has been no pump degradation. Furthermore, since an actual increase in pump differential pressure is not indicative of degraded pump performance, it is not necessary to maintain such a strict upper limit.

e. Relief from the 3 percent limitation will provide an acceptable level of quality and safety and will not endanger the public.

Alternate Testing: Pumps shall be tested in accordance with Subsection IWP with the following exceptions:

a. The Required Action Range (High) will be a value greater than 1.10 Δ Pr.

b. The Alert Range (High) will be a value greater than 1.05 Δ Pr.

Relief Request:	P-4
Pumps:	SW-P-110A, SW-P-110B, SW-P-41A, SW-P-41B, SW-P-41C and SW-P-41D
Code Class:	3
Function:	Pumps required to perform a function in shutting down the reactor or in mitigating the consequences of an accident, and are provided with an emergency power source.
Test Requirements:	IWP-4200 requires direct pressure measurements. Table IWP-4110-1 acceptable instrument accuracy for pressure measurement.
Basis for Relief:	a) The above listed pumps are vertical turbine pumps with no direct means to obtain the inlet pressure measurements as required by IWP-4200. b) Plant installed level instrumentation is accurate to $\pm$ 0.5% which is within the requirements of Table IWP-4110-1, but total loop accuracy is $\pm$ 2.5% which exceeds the requirement of Table IWP-4110-1.
Alternate Testing:	The inlet pressure shall be calculated based on the water level above the pump inlet using existing plant instrumentation to measure pump suction pressure.

Relief Request:	V-48
Valves:	FW-V99, FW-V216, FW-V357 and CO-V-340
Category:	C
Code Class:	3 and NNS
Function:	Active
Test Requirements:	IWV-3530 (3 months)
Basis for Relief:	Full flow through these normally closed check valves quarterly during power operations would require establishing emergency feedwater flow to the steam generators and would unnecessarily introduce cold water into the steam generators causing thermal shock to the feed nozzles. This is the only full flow path for these valves. Thermal shocking of the feed nozzles could lead to their premature failure. Also, introducing the required flow to full-stroke exercise these valves could cause feedwater control problems during operation which could lead to a plant trip.
Alternate Testing:	All of these valves shall be full stroke exercised during cold shutdowns. CO-V-340 shall be partially stroked on a quarterly basis.

FIGURE 5.3

VALVE TESTING REQUIREMENTS

SYSTEM - REACTOR COOLANT - LOOP 1 P&ID NO. 805003			
VALVE	RCV22	RCV23	RCV24
COORDINATES	B2	B1	C1
FUNCTION	A	A	A
CODE CLASS	1	1	2
CATEGORY	A	A	AC
SIZE (IN.)	12	12	3/4
VALVE TYPE	G	G	S
ACTUATOR	M	M	-
NORM POSIT	C	C	C
LEAK TEST REQ	1	1	2
LEAK TEST REL	X	X	
LEAK TEST ALT	1	1	
EXER TEST REQ	1	1	2
EXER TEST REL	X	X	
EXER TEST ALT	2	2	
F.S. TEST REQ			
POS IND TEST	X	X	
NOTES:	10 11	10 11 61	1
REMARKS:		X	X

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FIGURE 5.3

VALVE TESTING REQUIREMENTS

SYSTEM - REACTOR COOLANT - LOOP 4 P&ID NO. 805006			
VALVE	RCV-8807	RCV-8808	RCV-8809
COORDINATES	B2	B1	C1
FUNCTION	A	A	A
CODE CLASS	1	1	2
CATEGORY	A	A	AC
SIZE (IN.)	12	12	3/4
VALVE TYPE	G	G	S
ACTUATOR	M	M	-
NORM POSIT	C	C	C
LEAK TEST REQ	1	1	2
LEAK TEST REL	X	X	
LEAK TEST ALT	1	1	
EXER TEST REQ	1	1	2
EXER TEST REL	X	X	
EXER TEST ALT	2	2	
F.S. TEST REQ			
POS IND TEST	X	X	
NOTES:	10 11	10 11 61	1
REMARKS:		X	X

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FIGURE 5.3

VALVE TESTING REQUIREMENTS

SYSTEM - CONTAINMENT SPRAY P&ID NO. 805023																					
VALVE	CBS-V2	CBS-V3	CBS-V5	CBS-V7	CBS-V8	CBS-V9	CBS-V11	CBS-V12	CBS-V14	CBS-V15	CBS-V17	CBS-V18	CBS-V25	CBS-V26	CBS-V31	CBS-V32	CBS-V33	CBS-V38	CBS-V43	CSL-CV112D	CSL-CV112E
COORDINATES	B3	B3	B2	B2	B1	B3	D1	D1	B1	A2	C1	C1	A2	C4	D1	D2	D1	D4	D3	D3	D3
FUNCTION	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
CODE CLASS	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
CATEGORY	B	C	B	C	B	C	A	AC	B	C	A	AC	C	C	B	B	B	B	B	B	B
SIZE (IN.)	12	12	12	12	16	12	8	8	16	12	8	8	16	16	4	4	4	6	6	8	8
VALVE TYPE	G	C	G	C	G	C	G	C	G	C	G	C	C	C	B	B	B	G	G	G	G
ACTUATOR	M	-	M	-	M	-	M	-	M	-	M	-	-	-	P	P	P	M	M	M	M
NORM POSIT	O	C	O	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
LEAK TEST REQ							2	2			2	2									
LEAK TEST REL																					
LEAK TEST ALT																					
EXER TEST REQ	1	3	1	3	1	3	1	3	1	3	1	3	3	3	1	1	1	1	1	1	1
EXER TEST REL		X		X		X		X		X		X	X	X						X	X
EXER TEST ALT		3		3		3		3		3		3	3	3						2	2
F.S. TEST REQ															X	X	X				
POS IND TEST	X		X		X		X		X		X				X	X	X	X	X	X	X
NOTES:		47		47		29		28		29		28	29	29						31	31
REMARKS:							X	X			X	X									

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