PSNH

Public Service of New Hampshire

New Hampshire Yankee Division

SEABROOK STATION
Engineering Office

April 16, 1986

SBN- 1006
T.F. B7.1.2

United States Nuclear Regulatory Commission
Washington, DC 20555

Attention: Mr. Vincent S. Noonan, Project Director
PWR Project Directorate No. 5

References: (a) Construction Permits CPPR-135 and CPPR-136, Docket Nos. 50-443 and 50-444

Subject: NRC Requests for Additional Information

Dear Sir:

In discussions with our Bethesda Licensing Office during the week of April 7, 1986, the Staff requested additional information/clarifications concerning a few items. In response to these questions, enclosed please find the following:

- Further information concerning EQ operability time to that previously submitted by PSNH letter dated April 3, 1986 (SBN-988) - Attachment 1
- Further information relative to the EFW system modification that was previously submitted by PSNH letter dated April 1, 1986 (SBN-984) - Attachment 2
- Additional information concerning previous hot operational experience of Shift Superintendent - Attachment 3
- Revised excerpt of FSAR Section 6.2.1.2 (p 6.2-22) - Attachment 4

We trust that the enclosed provides the additional information/clarifications requested by the Staff and request that the acceptability of the enclosed, where applicable, be reflected in the upcoming supplement to Seabrook's SER.

Very truly yours,

John DeVincentis, Director
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Enclosures

cc: Atomic Safety and Licensing Board Service List

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ATTACHMENT 1

POST ACCIDENT OPERABILITY TIME, ADDITIONAL INFORMATION

The following is a comparison of the Engineering justification submitted in SBN-988 with Regulatory Guide 1.89 requirements for equipment required to perform its safety function only within the first ten hours of an event.

For the Feedwater Isolation Valves R.G. 1.89 recommends that the equipment remain functional in the accident environment for a period of at least 1 hour in excess of the time assumed in the analysis. Our analysis conservatively indicated that valve closure will occur in 1 minute and qualified post accident operating time is 4 hours which meets the recommendation. R.G. 1.89 requires a spectrum of breaks be considered. We have considered a spectrum of break sizes based on the design requirements for "superpipe" which is the type of pipe where the valves are located. The valve closure time was based on the smallest break and the environment based on the largest break. R.G. 1.89 requires consideration for the need of the equipment later in the event or during recovery operations. We stated that the plant would be safely shut down using the Auxiliary Feedwater System, which does not require operation of the Feedwater Isolation Valves (FIV). R.G. 1.89 requires that failure of the equipment after performance of its safety function will not be detrimental to plant safety or mislead the operator. We stated that Control Room indication is provided by Namco 180 Limit Switches which are qualified for 1 year post-accident operation. Any equipment failure causing the FIV to open would not be detrimental because of the F.W. check valves located immediately upstream. R.G. 1.89 requires a determination that the time margin applied to the minimum operability time account for uncertainties associated with the analysis. We concluded the four hour post-accident operability qualification has sufficient margin, and in fact surpassed the time margin required by IEEE 323-1974.

A similar comparison to R.G. 1.89 for the ASCO Temperatures Switches (File 252-38-01) is not practical because the functional requirement is greater than 10 hours and the qualified post-accident qualification time is 30 days. The worst case spectrum of events considered for the PAB location of the temperature switches last for 72 hours therefore, the 30 day post-accident qualification is more than sufficient. The peak temperature is 135°F. As stated previously in SBN-988 the need for this equipment is to automatically start safety grade fans (PAH-FN-42A&B). In the event of a temperature switch failure the fans have a continuous run feature which will override the temperature switch from control room operation. The fans have Class 1E Control Room operational indication which is direct from the fan motor control center. A separate high temperature alarm is available to the Control Room in the event of a temperature switch failure. We have determined that the margin for minimum operability time is sufficient and meets the requirement for IEEE 323-1974.

ATTACHMENT 2

EFW SYSTEM MODIFICATIONS, ADDITIONAL INFORMATION

As a result of a telecon discussion between D. A. Maidrand, P. H. Hannes, and NRC NRR personnel (04/09/86), the NRC requested clarification to specific concerns regarding the Seabrook Emergency Feedwater system. The following documents the concerns/questions addressed and provides the appropriate response and resolution.

QUESTION NO. 1

Why didn't MSV-127 and MSV-128 readily open upon receipt of an EFW initiation signal? Clarify how MSV-127 and MSV-128 opened during Hot Functional Testing.

RESPONSE

The functional reason why MSV-127 and MSV-128 didn't readily open is due to the application of these type valves as EFW steam supply isolations. MSV-127 and MSV-128 are wedge-type gate valves (fail-open). During an EFW system standby condition, there is approximately a 1100 psi differential across these valves. This high differential pressure across the valve(s) gate contributed to a lagged opening response.

During Hot Functional Testing, it was observed that MSV-127 and MSV-128 didn't simultaneously open upon EFW system initiation. One isolation valve opened followed by opening of the alternate isolation valve shortly thereafter.

QUESTION NO. 2

Why will the new EFW isolation valves (MSV-393, MSV-394) alleviate the opening problem that existed with MSV-127 and MSV-128?

RESPONSE

MSV-127 and MSV-128 are no longer utilized as EFW steam supply isolation valves. These valves have been reassigned a "normal open" position. The new EFW steam isolation valves (MSV-393, MSV-394) are globe valves. In the shut position, a steam header pressure of approximately 1100 psi is applied beneath the valve(s) disk. This steam pressure aids the opening of MSV-393 and MSV-394 upon receipt of an EFW initiation signal.

QUESTION NO. 3

When will plant operators take action to close MSV-127 and/or MSV-128?

RESPONSE

a. Steam Generator Tube Rupture Event if necessary.

or

b. Valve surveillance testing.

Note: At no time should both MSV-127 and MSV-128 be closed concurrently.

QUESTION NO. 4

When will the EFW pump(s) recirculation line MOVs be opened?

RESPONSE

Applicable Seabrook Station Procedures are being updated to reflect opening the EFW recirculation line isolations valves prior to throttling EFW flow to the SGs. This will ensure the minimum required EFW pump(s) recirculation flow. The attached excerpts (pgs. 6&7) are typical of procedural provisions being invoked to ensure the minimum EFW pump(s) recirculation flow is retained during EFW system operation.

Code:	Symptom/Title:	Procedure No. Revision No./Date:
N/A	SAFE SHUTDOWN AND COOLDOWN FROM THE REMOTE SAFE SHUTDOWN FACILITIES	OS1200.02 00 /

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

6 Check SG Pressures:

CP-108A		CP-108B	
SG-A	PI-3173	SG-B	PI-3174
SG-C	PI-3178	SG-D	PI-3179

a. Control SG atmospheric steam dump valves to - MAINTAIN 1100 PSIG UNTIL COOLDOWN COMMENCES:

- Jog Switches

- OR -

- Modulating Control

a. IF RSS control panel control is ineffective, take local control of atmospheric steam dump valve(s).

CP-108A		CP-108B	
	JOG SW		JOG SW
SG-A	HIC-3001	SG-B	HIC-3002
	JOG SW		JOG SW
SG-C	HIC-3003	SG-D	HIC-3004

CAUTION OPEN EFW pump recirculation valves before throttling EFW Flow.

7 Check SG WR Level:

CP-108A		CP-108B	
SG-A	LR-4310, LI-4310	SG-B	LR-4320, LI-4320
SG-C	LR-4310, LI-4330	SG-D	LR-4320, LI-4340

a. Control EFW flow control valves to maintain SG WR level - BETWEEN 65% AND 90%:

a. IF designated EFW flow control valves do NOT control flow, use valves on opposite train RSS panel, OR control locally.

CP-108A		CP-108B	
SG-A	FW-FV-4214A	SG-B	FW-FV-4224B
SG-C	FW-FV-4234A	SG-D	FW-FV-4244B

CP-108B		CP-108A	
SG-A	FW-FV-4214B	SG-B	FW-FV-4224A
SG-C	FW-FV-4234B	SG-D	FW-FV-4244A

	Symptom/Title:	Procedure No. Revision No./Date:
	SAFE SHUTDOWN AND COOLDOWN FROM THE MAIN CONTROL ROOM	OS1200.01 00 /

FOR INFORMATION ONLY

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
8	Perform Applicable Manual Disabling Functions Based On Fire Area/Zone - APPENDIX A WHILE CONTINUING WITH THIS PROCEDURE	
9	Check SG Pressures:	
	a Control available SG ASDVs - MAINTAIN 1100 PSIG UNTIL COOLDOWN COMMENCES	a. Control SG ASDVs in jog mode - OR - Take local control of SG ASDVs.
	CAUTION: Open EFW Pump Recirculation Valve(s) Before Throttling EFW Flow.	
10	Check SG WR Level:	
	a Maintain SG level: BETWEEN 5% AND 50% NR - OR - BETWEEN 65% AND 90% WR	a. Control EFW flow control valves as necessary.
11	Check RCS Pressure:	
	a Maintain PRZR pressure - BETWEEN 2100 AND 2250 PSIG • Proportional heater group • Backup heater group C • Backup heater group D	a. IF designated heater groups are ineffective, THEN use the following: • Backup heater group A • Backup heater group B b. IF pressure continues to decrease, THEN verify PORVs closed OR close block valves. - AND - Verify Aux spray isolated: • CS-V185 - CLOSED - OR - • CS-V142 - CLOSED - OR - • CS-V143 - CLOSED

Seabrook Station

SHIFT SUPERINTENDENT

Previous Experience

(Months)

NAME	AGE	PREVIOUS NRC LIC.	- EDUCATION - College Credits	Degree	MILITARY NUCLEAR EXPERIENCE	COMMERCIAL NUCLEAR EXPERIENCE	- OTHER EXPERIENCE - Test Reactor	Fossil	Related Exp.	HOT OPS EXP. RO/SRO	
David, MR	39	RO/SRO		BS	58 EWS	57				6/1	(PWR)
Fritz, LH	38	RO		BS	69 ERS	72				49/0	(PWR)
Madej, EV	52	RO/SRO		AS		144		36		30/11	(PWR)
Peterson, JL	39	RO	176		36 EWS	69				55/0	(PWR)
Strickland, RG	36	RO		BS	24 ERS	81				41/0	(BWR)
Thompson, RB	40	RO		BS	60 EWS	61				13/0	(PWR)
Staff:											
Walsh, LA	45	RO/SRO	118		28 EOOW	114		28		48/72	(PWR)
Grillo, JM	39	RO/SRO		BS, AS	36 ERS	104				48/12	(PWR)
Malone, JM	40			BS	72 EOOW				40	0/0	

3. Pressurizer Compartment

The pressurizer compartment is a reinforced concrete structure extending from El. 0'-0" to El. 63'-0" which encloses the pressurizer and its associated piping. The pressurizer skirt, which is a cylindrical support extending from the bottom of the pressurizer, anchors the pressurizer to the compartment floor. A ring support at El. 23'-6 3/4" provides lateral support for the pressurizer. Section and plan drawings of the pressurizer compartment are shown in Figures 6.2-35 through 6.2-40. Free volumes and vent areas have been calculated assuming the insulation remains intact during the transient. The HVAC ducting and sheet metal panels at elevation 16'-6" are designed to blow out in the event of a pressure buildup of 0.25 psig in the compartment to prov'de additional vent area. The total free volume of the compartment used in the analysis is 6638 cu. ft. and the total vent area to the containment is 400 sq. ft. 47 47

4. Pressurizer Skirt Cavity

The pressurizer skirt cavity is formed by the bottom of the pressurizer and its supporting skirt. A 14" surge line which connects the reactor coolant system with the pressurizer passes through a 5½ ft. diameter opening in the pressurizer compartment floor. Figures 6.2-41 and 6.2-42 show the plan and elevation drawings of the pressurizer skirt cavity. The volume below the pressurizer skirt has a large vent opening to the containment. The total free volume of the skirt cavity is 1860 cu. ft. and the total vent area to the containment is 238 sq. ft. The insulation on the pressurizer and on the surge line is assumed intact in calculating the free volume and vent openings.

c. Design Evaluation

1. Mass and Energy Release Data

The mass and energy release data for all the breaks considered for the subcompartment analyses has been generated by Westinghouse. Discussions of the blowdown model are provided in Reference (8)

2. Computer Code for Subcompartment Pressurization Analysis

The subcompartment pressure transients were calculated using COMPRESS - a digital computer program. A detailed description of the analytical method can be found in Appendix 15C and Reference 2. Some important aspects of the method are outlined below: 54