Docket File

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

JUN 18 1986

Docket No.: 50-443

MEMORANDUM FOR: Victor Nerses, Project Manager
PWR Project Directorate #5
Division of PWR Licensing-A

FROM: Charles E. Rossi, Assistant Director
for PWR-A
Division of PWR Licensing-A

SUBJECT: SEABROOK STATION SER INPUT ON EQUIPMENT QUALIFICATION

Plant Name: Seabrook, Unit 1
Docket No.: 50-443
Licensing Stage: OL
Responsible Branch: PWR Project Directorate #5
Responsible Project Manager: V. Nerses
Review Status: Continuing

The enclosed inputs for the Supplemental Safety Evaluation Report (SSER) were prepared by PAEB, Mechanical Engineering Section and cover the following items in the subject report:

(1) Seismic and Dynamic Qualification of Seismic Category I Mechanical and Electric Equipment (Enclosure 1).

(2) Pump and Valve Operability Assurance Program (Enclosure 2).

(3) Purge and Vent Valve Operability (TMI II.E.4.2(6)) (Enclosure 3).

(4) Inservice testing of Pumps and Valves (Enclosure 4).

The SER input incorporates the results of the site audit at Seabrook during November 5-8, 1985 and applicant submittals thru June 13, 1986. There are two generic confirmatory items under Enclosure 2 of this SSER that need particular attention. Item 4 required confirmation that all pre-service tests had been completed prior to fuel load. The applicant stated in a letter dated December 31, 1985 (SBN-919) that these tests will be provided prior to commercial operation. The staff has concurred in the schedule adjustment; however, it remains as a confirmatory item. Item 5 required written confirmation from the applicant that all pumps and valves important to safety had been qualified. Confirmation has not yet been received. As written, the SSER indicates that confirmation was received, but leaves blank the date of the confirmation letter; as instructed by memorandum from T. Novak to addressees dated June 6, 1986.

The SALP input was provided with a prior issue of this SER.

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PDR ADOCK 05000443
A PDR

Charles E Rossi D/34
Charles E. Rossi, Assistant Director
Division of PWR Licensing-A

Enclosure: As stated

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(1) Seismic and Dynamic Qualification of Seismic Category I Mechanical and Electric Equipment.

(2) Pump and Valve Operability Assurance Program.

The SER input incorporates the results of the site audit at Seabrook during November 5-8, 1985 and applicant submittals thru April 8, 1986.

The SALP input was provided with a prior issue of this SER.

Charles E. Rossi, Assistant Director
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Enclosure: As stated

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4/24/86	5/6/86	5/9/86	/86

ENCLOSURE 1

DIVISION OF PWR-A LICENSING
ENGINEERING BRANCH

INPUT FOR SAFETY EVALUATION REPORT
SEABROOK STATION UNIT 1

DOCKET NO. 50-443

3.10 Seismic and Dynamic Qualification of Safety-Related Mechanical and Electrical Equipment

3.10.1 Seismic and Dynamic Qualification

3.10.1.1 Introduction

Evaluation of the applicant's program for seismic and dynamic qualification of safety-related electrical and mechanical equipment consists of: (1) a determination of the acceptability of the procedures used, standards followed, and the completeness of the program in general, and (2) an audit of selected equipment items to develop a basis for the judgment of the completeness and adequacy of the implementation of the entire seismic and dynamic qualification program.

Guidance for the evaluation is provided by Section 3.10 of the Standard Review Plan (SRP, NUREG-0800) and its ancillary documents: Regulatory Guides (RGs) 1.61, 1.89, 1.92, and 1.100; NUREG-0484; and Institute of Electrical and Electronics Engineers (IEEE) Standards 344-1975 and 323-1974. These documents define acceptable methodologies for the seismic qualification of equipment. Conformance with these criteria is ~~required~~ sufficient to satisfy the applicable portions of General Design Criteria (GDC) 1, 2, 4, 14, and 30 of Appendix A to Part 50 of Title 10 of the Code of Federal Regulations (10 CFR 50); Appendix B to 10 CFR 50; and Appendix A to 10 CFR 100. The program is evaluated by Seismic Qualification Review Team (SQRT) that consists of engineers from NRC and the Idaho National Engineering Laboratory (INEL, EG&G Idaho).

3.10.1.2 Discussion

The SQRT reviewed the equipment dynamic qualification information in the Final Safety Analysis Report (FSAR) Sections 3.9.2 and 3.10 and visited the plant from November 5 through November 8, 1985, to determine the extent to which the equipment installed at Seabrook Unit 1 meets the criteria described above. A representative sample of safety-related electrical and mechanical equipment as well as instrumentation, in both the nuclear steam supply system (NSSS) and the balance of plant (BOP) scopes, was selected for the audit. Table 3.1 identifies the equipment audited. The plant-site visit included field observations of the actual, final equipment configuration and its installation. Observing the field installation of the equipment is necessary to verify and validate equipment modeling employed in the qualification program. These observations were followed by a review of the corresponding design specifications and test and/or analysis documents maintained in the applicant's central files. The applicant also provided details of the maintenance, startup testing, and in-service inspection.

The audit identified both generic and equipment-specific concerns. Subsequently, the applicant submitted additional information resolving all of the issues. A summary of the issues and their disposition is presented in the following sections and Table 3.1.

3.10.1.3 Generic Items

During the field observation of the nuclear instrumentation system cabinet, the SQRT noted that the clearance between this unit and the adjacent solid state protection system train B was not adequate. The team also learned that this problem was associated with many other cabinets. However, the applicant was aware of the problem and indicated that the problem was being analyzed and its resolution was being actively pursued. Subsequent documentation submitted by the applicant confirmed the resolution of this problem on a generic basis. Therefore, this issue is closed.

During the documentation review of the reactor makeup water valve (RMWV-30: NSSS-5), it was discovered that the g-loading assumed for the valve qualification had not been reconciled with the as-built condition. In addition, this had not been done for other valves. However, the applicant indicated that a reconciliation program was in progress. Subsequent documentation provided by the applicant confirmed the completion of this program. Therefore, this issue is closed.

The life-span of nonmetallic parts for 3-inch air-operated valves had not been evaluated, nor had such an evaluation been performed for many other equipment items. The applicant subsequently submitted documentation providing maintenance and replacement schedules indicating that a program is in place that takes life-span into account. Therefore, this issue is resolved.

3.10.1.4 Equipment-Specific Item

The SQRT review of the Wyle Laboratories report on the diesel generator relay control cabinet (BOP-16) tests revealed a number of anomalies. These are detailed in the report. The applicant provided additional information noting that the pulling out of the stud will not make it an internal missile; considering its configuration and point of separation, it is acceptable to the staff. Further cracking of insulators did not affect operability. Therefore, this issue is resolved.

3.10.1.5 Confirmatory Items

The Wyle Laboratories tests on the emergency feedwater pump turbine (Terry Turbine: BOP-5) revealed many anomalies, some of which appeared to require field modifications. The applicant had to confirm that all the anomalies ~~are~~ were satisfactorily resolved.

Subsequent to SQRT review at the site, the applicant completed the review of new documentation based on a 1979 Terry turbine test and 1985 seismic analysis and found it acceptable with the two following explanations.

1. That the Seabrook turbine has a different governor system precluding the tripping problem, and

2. A support bracket was added to stiffen the lube-oil piping to eliminate the problem of excessive displacement.

The response is satisfactory. This issue is closed.

During the field observation of the emergency feedwater pump turbine (BOP-5), it was found that a temporary 3 inch drain line was installed. It was also reported that the line might become a permanent fix. Subsequent documentation provided by the applicant indicated that the 3 inch drain line is to become a permanent fix and is seismically qualified. This issue is closed.

3.10.1.6 Summary and Conclusion

On the basis of the observation of the field installation, the review of the qualification documents, and the applicant's responses to SQRT's questions during the audit, the staff finds that the applicant's seismic and dynamic qualification program is well defined [redacted] and adequately implemented. The applicant has demonstrated compliance with the applicable portions of GDC 1, 2, 4, 14, and 30; Appendix B to 10 CFR 50; and Appendix A to 10 CFR 100.

Table 3.1 Summary of SQRT audit

Item No.	Description	Applicant ID no.	Safety function	Review findings	Resolution	Status
NSSS-2	3-inch air-operated globe valve	LCV-459	Safety function moved to another valve; SQRT reviewed qualification for pressure containment.			Qualified
NSSS-3	Safety injection system accumulator tank	SI-TK-9A	Provides storage for emergency core cooling water.	Base anchor bolts smaller than those used to qualify the tank.	Independent analysis by UE&C showed smaller bolts have adequate strength.	Qualified
NSSS-4	Electric hydrogen recombiner power supplies		Provide power supply for electric hydrogen recombiner for containment hydrogen removal after a LOCA.			Qualified
NSSS-5	Reactor water makeup valve	RMW-V-30	Provides containment isolation.	1. Assumed g-load not reconciled with as-built condition (generic).	1. ~~To be examined~~ Done.	~~Confirmatory~~ Qualified
				2. Lifespan of nonmetallic parts not evaluated; clearance inadequate (generic).	2. Done.	
NSSS-6	8-inch motor-operated gate valve	RHR-8716A, B	Provides shutoff for the residual heat removal system.			Qualified
NSSS-7	Reactor trip switchgear	CP-CP-111	Provides reactor trip safety function.			Qualified
NSSS-8	Reactor vessel level information system 8086 cabinets	MM-CP-486A	Provide reactor vessel liquid level information after a seismic event.	Cabinets not installed.	SQRT reviewed installation drawings and considered them adequate.	Qualified pending proper installation
NSSS-11	Nuclear instrumentation system cabinet	RP	Provides alarm function; as secondary control function, indicates reactor status during startup, power operation; overpower trip protection.	Clearance from adjacent cabinets inadequate (generic).	To be handled on a generic basis.	Qualified
NSSS-12	Safeguards test cabinet	MM CP-14, 15	Supplies power to the control panel.			Qualified

Table 3.1 (Continued)

Item number	Description	Applicant ID no.	Safety function	Review findings	Resolution	Status
NSSS-13	Instrument bus power switch: static inverter	EDE-I-1A	Supplies power to the instrument bus distribution panel that provides power to instrumentation monitoring and indicating plant parameters.	Auditable link between the test report model and the field model missing.	Subsequently provided.	Qualified
BOP-1	36-inch butterfly valve	CAP-V-1, 4	Isolates the containment.	Model number not on the valve; therefore, it could not be compared to that shown on the long form.	Correct model number has been attached and traceability has been established.	Qualified
BOP-3	Control switch	CP-CS-6601-1	Trips the reactor manually from the main control board.			Qualified
BOP-4	Computing device	EDE-AY-9700, 9710	Converts signal for monitoring diesel generator output current for postaccident monitoring.	Site-specific required response spectra (RRS) exceed Westinghouse's generic RRS.	Requalification completed; device found acceptable.	Qualified
BOP-5	Emergency feedwater pump and turbine	FW-TD-2, FW-P-37A	Provide emergency feedwater to the steam generator.	1. A substantial number of anomalies to be resolved. 2. Temporary 3-inch line must be seismically qualified	1. Done. 2. Done	Qualified
BOP-6	4-inch motor-operated globe valve	MS-V-294, 205 206, 270	Provides isolation function in a 4-inch bypass line around the main steam isolation valves.			Qualified
BOP-7	Neutron flux signal processor	NI-NM-6600, etc.	Indicates the neutron flux and shutdown margin to the operator.	Model number did not match that on the long form.	The supplier changed the model number but the equipment is the same.	Qualified
BOP-11	Vibration monitoring control panel	VB-CP-299, VP-YM-6832	Indicates the position of the pressure relief valves to the operator; the recorder has no safety function.	Model number not shown on the panel; could be found only by referring to the drawing. (The number on the drawing was the one shown on the long form.)	Properly tagged and traceability established.	Qualified

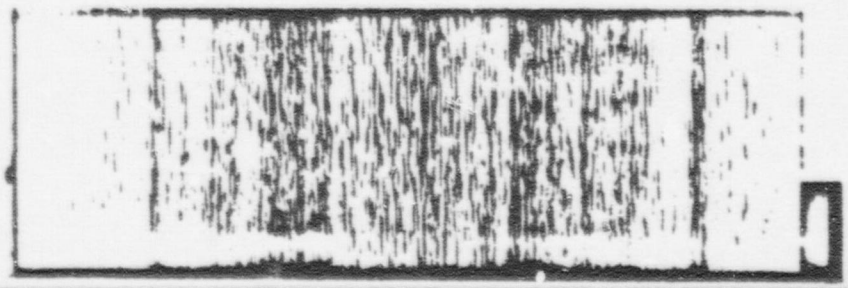

Table 3.1 (Continued)

Item number	Description	Applicant ID no.	Safety function	Review findings	Resolution	Status
BOP-14	18-inch feedwater isolation valve	FW-V-30	Provides containment isolation for the feedwater piping.	Valve operator test specimen had some test anomalies related to O-ring seal design.	Seals were redesigned to eliminate leakage problems.	Qualified
BOP-15	6-inch motor-operated gate valve	CBS-V-38	Provides shutoff for the containment spray system.			Qualified
BOP-16	Diesel generator relay control panel	DG-CP-36, 37	Provides a control function for the diesel generator.	Adequate justification not provided for two test anomalies.	Applicant provided adequate justification for these anomalies.	Qualified
BOP-17	Pressure switch	DGA-PS-OPL-1	Regulates lube oil flow to the diesel engine.	Qualification briefly reviewed to see that a complete qualification package was available.	Complete.	Qualified

3.10.2 Operability Qualification of Pumps and Valves

3.10.2.1 Introduction

The NRC staff performs a two-step review of each applicant's pump and valve operability assurance program to determine whether the program can ensure that all pumps and valves important to safety will operate when required for the life of the plant under normal and accident conditions. The first step is a review of FSAR Section 3.9.3.2. However, the information in the FSAR is general in nature and lacks sufficient detail to allow the staff to determine the scope of the overall equipment qualification program as it pertains to pump and valve operability. Thus, the staff also conducts an onsite audit, the second step of the review process.

A Pump and Valve Operability Review Team (PVORT), consisting of engineers from the NRC and INEL, conducts the audit, which reviews a representative sample of installed pump and valve assemblies and their supporting qualification documents at the plant site. On the basis of the results of both the audit and the FSAR review, the PVORT determines whether the applicant's overall program conforms to the licensing criteria in SRP Section 3.10. The applicant must conform to SRP Section 3.10 to satisfy the applicable portions of GDC 1, 2, 4, 14, and 30 and Appendix B to 10 CFR 50.

3.10.2.2 Discussion

The PVORT reviewed the pump and valve operability assurance information in FSAR Section 3.9.3.2 and conducted an onsite audit to determine the extent to which the pumps and valves important to safety meet the criteria listed above. The results of the FSAR evaluation appeared in the SER (dated March 10, 1983). These were supplemented by specific comments presented at a pre-audit meeting held August 7, 1985. Several of these issues were adequately resolved by the applicant in a letter dated September 24, 1985. The remaining issues were addressed and resolved during the onsite audit.

Table 3.2 summarizes the status of the 10 items identified in the SER. The staff has determined (1) that the applicant's position on these items has been adequately clarified and (2) that the applicant has committed to actions that will adequately address the concerns.

The onsite audit, which was conducted November 5 through November 8, 1985, consisted of field observations of equipment configuration and installation for a representative sample of plant equipment. The PVORT selected for evaluation three NSSS and six BOP pump and valve assemblies. Table 3.3 summarizes the status of each assembly that was audited. The field observations were followed by a review of the design and purchase specifications, test/analysis documents, and other documents related to equipment operability that are maintained in the applicant's central files. In addition to reviewing information concerning the selected assemblies, the PVORT reviewed information on the plant's overall equipment qualification program. Included within this broad evaluation were those programs and procedures necessary to ensure that equipment qualification issues and concerns will continue to be addressed for the life of the plant. One such program--concerning the deep draft pump issue (refer to IE Bulletin 79-15)--was reviewed in depth.

The PVORT resolved all but five of the specific operability concerns that were identified. These five concerns follow.

(1) Auxiliary feedwater pump turbine operability with moisture in the steam was not addressed.

(2) The auxiliary feedwater pump turbine end seal was cracked and the cause had not been determined.

(3) Operability of the auxiliary feedwater pump turbine trip and throttle valve was not ensured after an overspeed trip.

(4) Timing requirements were not addressed for control check valve FW-V-331.

(5) Cooling tower pump SW-P-110A O-ring maintenance procedures were not addressed in accordance with the manufacturer's requirements.

In addition, the applicant was informed of five generic issues that were to be addressed before fuel load. These five issues follow.

(1) Not all of the preservice tests required before fuel load were completed.

(2) Approximately 10 to 15% of all pumps and valves important to safety were not yet qualified and installed.

(3) The plant maintenance procedures were not complete enough for the staff to determine that safety-related equipment will be maintained in its qualified state for the life of the plant.

(4) BOP valves less than 2 inches in size were not included in the Seabrook pump and valve operability assurance program.

(5) The FSAR active valve lists were not current.

These concerns and issues were confirmatory and form the basis for the discussion presented in Section 3.10.2.3 below.

May 1, 1986, and June 13, 1986)

After the site audit, the applicant submitted letters dated December 31, 1985, and April 8, 1986, which resolved ~~four~~ Three of the specific issues and ~~all five~~ all of the generic issues. ~~The remaining specific issue to be resolved is operability of the auxiliary feedwater pump turbine trip and throttle valve following an overspeed trip (item 3 of the specific issues).~~ The manner in which each confirmatory issue was addressed is briefly discussed in Section 3.10.2.3 and is indicated in Table 3.3.

The PVORT has found that the applicant is dealing with the equipment qualification issue in a positive manner. All of the SER items were adequately resolved through additional clarifications and appropriate commitments provided by the applicant. During the audit, the applicant addressed all questions posed by the PVORT and committed to resolve all audit issues before fuel load. Furthermore, the applicant discussed significant aspects of the overall equipment qualification program--such as amplified response spectra reconciliation, equipment modification and reconciliation of original qualification reports, nozzle load verification, and review of non-safety-related equipment located in close proximity to safety-related equipment. Consequently, the PVORT believes that the continuous implementation of the applicant's overall program should provide adequate assurance that the pumps and valves important to safety will operate as required for the life of the plant.

3.10.2.3 Confirmatory Issues

Based on the PVORT's evaluation of the Seabrook pump and valve operability assurance program, the staff ~~has~~ identified to the applicant the following five equipment-specific issues and five gener c confirmatory issues that ~~must~~ were to be resolved before fuel load:

Equipment-Specific Confirmatory Issues

(1) The applicant shall confirm that the auxiliary feedwater pump (FW-P-37A) turbine operability is addressed in regard to the potential of having moisture in the driving steam.

Applicant Response During hot functional testing, problems were identified involving water slug formation in the steam supply lines to the turbine-driven emergency feedwater (EFW) pump. The applicant explained that design changes ~~are~~ being implemented, which will protect the piping and supports as well as minimize associated problems with the EFW pump turbine. The changes include the addition of drains, resloping lines, adding time-sequenced valves, heat tracing, modification of the turbine governor, and the use of a lower viscosity hydraulic fluid in the turbine governor. The commitment to complete the modifications before fuel load, as well as the onsite review of the qualification documents provided confidence that the EFW pump turbine will function as required. The staff ~~is satisfied~~ verified that this commitment ~~is~~ has been met.

(2) Before the audit, the turbine end of the auxiliary feedwater pump (FW-P-37A) was found to have a cracked seal. The cause of the seal failure had not been determined nor had steps been taken to prevent a recurrence. The applicant ~~shall~~ was to confirm that this failure ~~is~~ was investigated and resolved.

Applicant Response After a 48-hour endurance run during hot functional testing, minor leakage was identified at the seal. A dimensional check discovered that the rotor was mismachined in the area of the seal. This machining error prevented the seal from being properly secured to the rotor. The applicant stated that the rotor has been remachined by Ingersoll and is now reinstalled. Retesting before fuel load will verify seal integrity. The staff ~~will~~ verify that this commitment ~~is~~ met.

(3) Operation of the auxiliary feedwater pump (FW-P-37A) turbine trip and throttle valve was not investigated when a maximum differential pressure existed across the valve (such as a turbine overspeed trip condition). The applicant ~~shall~~ confirm that the trip and throttle valve can be operated easily during an emergency condition.

Applicant Response ~~To date, the applicant has not provided a response which confirms that the trip and throttle valve can be operated easily during an emergency condition. This issue remains as a confirmatory item.~~ INSERT

(4) Check valve FW-V-331 was changed from a swing check to a control check valve that has specific opening and closing times. The operating times for this control check valve were not addressed in the startup, testing, or operating procedures. The applicant ~~shall~~ confirm that the operating times have been investigated and the timing requirements identified and met.

Applicant Response The applicant provided several reasons why the in-service test (IST) program will not include closing time requirements for the valve. (1) For the purpose of controlling waterhammer effects, a valve closure time slower than design is acceptable. (2) The valve closure time is not very likely to speed up during its qualified life. (3) The valve closure time requirements were established based upon faulted plant conditions. (4) Any test performed at less than faulted plant conditions will not be meaningful, because the closure times will always be slower than the critical limit. This explanation combined with the onsite review of the qualification documents provides confidence that this component will function as required. This issue is resolved.

(5) The maintenance procedures for the cooling tower pump (1-SW-P-110A) were still in draft form at the time of the audit. The procedures did not address the two O-rings located at the lateral supports for the pump column. The applicant ~~shall~~ confirm that the final maintenance procedures specify the special handling and replacement of the O-rings.

Applicant Response The applicant has submitted copies of the repetitive task sheets (RTSs) for the service water pump. The implementation of these tasks combined with the onsite discussion of the overall maintenance program adequately resolves this issue.

Generic Confirmatory Issues

(1) At the time of the audit, the maintenance procedures were available for review in draft form only. The applicant ~~shall~~ confirm that the final maintenance procedures will be consistent with the component manufacturer's recommendations. The applicant ~~shall~~ describe how limited-life components

INSERT (page 3-9, Seabrook SSER 4)

The applicant indicated that during one phase of the plant hot functional tests, the turbine trip and throttle valve was deliberately tripped and manually opened three times. Only one person from plant operations was needed to manually open the valve. During this test the steam inlet pressure was approximately 1100 psig, developing the full differential pressure across the valve. This test demonstration, together with the review of the qualification documents, provides confidence that the valve will perform its safety function as needed. This issue is closed.

are identified, and how the equipment will be maintained in an operable and qualified state for the life of the plant. The applicant ~~shall~~ was to provide several examples (at least one pump and one valve) of the final maintenance procedures for review.

Applicant Response The applicant has submitted copies of the repetitive task sheets (RTSs) that illustrate the manner by which various maintenance tasks will be performed. Each RTS includes necessary information such as task description, equipment identification, acceptance criteria, references to pertinent vendor procedures, and safety precautions. This material combined with the onsite discussion of the maintenance program adequately resolves this issue.

(2) The applicant ~~shall~~ was to provide written confirmation in the FSAR that all active BOP valves are covered by the Seabrook pump and valve operability assurance program. In particular, the applicant ~~shall~~ was to confirm that BOP valves smaller than 2 inches have been included in its valve operability qualification program.

Applicant Response The appropriate sections of the Seabrook FSAR have been revised by Amendment 56, resolving this generic issue.

(3) At the conclusion of the PVORT audit, it was apparent that a complete list of active valves had not been provided in the FSAR. The applicant ~~shall~~ was to confirm that all active valves are correctly identified in the FSAR.

Applicant Response The safety-related BOP and NSSS valves have been identified in FSAR Table 3.9 (B)-25 and 3.9 (N)-11 by Amendment 56. This issue is resolved.

(4) At the time of the audit, most construction tests had already been completed. However, the hot functional tests were still in progress. The applicant ~~shall~~ was to confirm that all pre-service tests that are required before fuel load have been completed.

Applicant Response ~~In a letter dated April 8, 1986,~~ the applicant committed to complete the preservice testing before commercial operation. The staff will verify that this commitment is met.

(5) At the time of the audit, approximately 10 to 15% of all pumps and valves important to safety had not been qualified. The applicant shall confirm that all pumps and valves important to safety are properly qualified and installed. In addition, the applicant shall provide written confirmation that the original loads used in tests or analyses to qualify pumps and valves important to safety are not exceeded by any new loads, such as those imposed by a loss-of-coolant accident (hydrodynamic loads) or as-built conditions.

Applicant Response ~~In a letter~~ dated April 8, 1986, the applicant has committed to complete the qualification of all safety-related active pumps and valves before fuel load. The ~~staff will verify~~ applicant has confirmed that this commitment ~~is met~~ was met by letter dated _____.

3.10.2.4 Summary

On the basis of the results of (1) the component walkdown and the review of the qualification document packages, (2) the additional explanations and information provided by the applicant throughout the audit, and (3) the resolution of the SER unresolved items, the staff concludes that an appropriate pump and valve operability assurance program has been defined and implemented. The continuous implementation of this overall program should provide adequate assurance that all pumps and valves important to safety will perform their safety-related functions as required for the life of the plant. Provided the commitments identified in Section 3.10.2.3 have been met, the staff concludes that the applicant has qualified those pumps and valves important to safety to meet the applicable portions of GDC 1, 2, 4, 14, and 30 (Appendix A to 10 CFR 50), as well as Appendix B to 10 CFR 50.

Table 3.2 Status of pump and valve operability assurance items

SER items[1]	Finding/ resolution	Status
Based on the summaries in FSAR Tables 3.9(B)-14 and 3.9(B)-18 (Amendment 53), it is not clear if the applicant has completely qualified the emergency feedwater and fuel oil transfer pumps. The applicant should provide the appropriate information in each table to demonstrate that these pumps are qualified in a manner consistent with FSAR Section 3.9(B).3.2a (Amendment 53).	Satisfactory	Closed[2]
It is not clear from FSAR Table 3.9(B)-2 and Section 3.9(B).3.1 (Amendment 48) that LOCA loads have been specified in the design load combinations for BOP Class 1 components and supports. The applicant should confirm that LOCA loads have been applied to the appropriate BOP equipment in a manner similar to that given in FSAR Section 3.9(N).1.6 for NSSS equipment.	Satisfactory	Closed[3]
FSAR Section 3.9(B).3.2b (Amendment 48) describes operability assurance for active BOP valves 2 inches and larger. The applicant should include all sizes of active BOP valves in the operability assurance program.	Satisfactory	Closed[3]
The applicant should provide specific information for the BOP pumps and valves similar to the information provided in FSAR Tables 3.9(N)-10 and -11 for NSSS pumps and valves.	Satisfactory	Closed[2]
FSAR Table 3.9(B)-2 (Amendment 47) summarizes the load combinations for Class 1, 2, and 3 BOP components and supports. The applicant should identify the stress criteria used to qualify Class 1 BOP valves.	Satisfactory	Closed[2]
FSAR Tables 3.9(B)-3 and 3.9(N)-7 provide the stress criteria for Class 2 and 3 non-active BOP and NSSS pumps, respectively. The applicant should identify these non-active pumps.	Satisfactory	Closed[2]
The applicant should clearly show the extent to which RG 1.148, ANSI/ASME N551.1 draft standards, and ANSI B16.41 are met.	Satisfactory	Closed[3]

See footnotes at end of table.

Table 3.2 (Continued)

SER items[1]	Finding/ resolution	Status
The applicant should clarify the methods used for qualification. Specific information should be presented in the FSAR, and be available for review at the site. The applicant should demonstrate: • The extent to which operational testing is performed at design-basis conditions (full flow, pressure, temperature, etc.). • The technical basis for qualifying equipment by similarity analysis and prototype testing. • Qualification of the equipment as an assembly rather than individual components.	Satisfactory	Closed[3]
The applicant should clearly show how implementation of the initial test program, maintenance and surveillance, in-service inspection, and quality assurance programs will maintain equipment operability throughout the 40-year plant life. Specific criteria should be presented in the FSAR, and be available for review at the site.	Satisfactory	Closed[3]
The following actions by the applicant would enhance the staff's understanding of the plant: • The terms "DSL" and "LOCA DISPL" in FSAR Table 3.9(B)-6 (Amendment 48) should be defined. • The seismic accelerations discussed in FSAR Section 3.9(B)3.2a should be specified and how they were used to qualify "rigid" and "flexible" BOP pumps, should be described. • FSAR Sections 3.9(B)3.2b and 3.9(N)3.2a(2) describe BOP and NSSS programs for testing valves of various designs and sizes during simulated faulted conditions. The criteria used to select the valves for testing and specify the range of sizes that are covered should be discussed.	Satisfactory	Closed[2]

See footnotes at end of table.

Table 3.2 (Continued)

SER items[1]	Finding/ resolution	Status
• Confirm that the evaluation of NSSS check valves will include "stress analysis of critical parts which may affect operability, including faulted condition loads," as is the case for BOP check valves.		

[1] Items were identified in the SER and supplemented by specific comments presented at a pre-audit meeting on August 7, 1985.

[2] This item was adequately resolved on the basis of information submitted by the applicant in a letter from R. Sweeney, Bethesda Office Manager Seabrook Station, to V. Nerses, NRC Seabrook Project Manager, dated September 24, 1985, entitled "Advance Copies of Annotated FSAR Pages and System Turnover Status."

[3] This item was adequately resolved on the basis of information reviewed by the staff during the site audit on November 5-8, 1985. The applicant committed to close out this item in a manner and time that are acceptable to the staff.

Plant ID no.	Description	Safety Function	Findings	Resolutions	Status	Remarks
FW-P-34A (BOP)	Turbine-driven auxiliary feedwater pump	Provides feedwater to the steam generator if normal feedwater is not available.	a,b,c,	d	Closed	Findings "a" and "c" were resolved by by applicant's April 8, 1986, letter. Finding "b" was resolved by the the applicant's letter dated June 13, 1986.
FW-V-331 (BOP)	Main feedwater to steam generator B isolation check valve	Isolates the feedwater header if feedwater is lost.	f	d	Closed	Operating time of this valve important to safety. Timing requirements were not addressed. This issue was resolved by applicant's April 8, 1986, letter.
CC-V-975 (BOP)	Primary component cooling water to radiation monitor isolation valve	Isolates the radiation monitor when full primary containment cooling water flow is required by safety-grade equipment.			Closed	Specific concerns were resolved during the audit.
FW-V-48 (BOP)	Steam generator C feedwater containment isolation valve	Closes on containment isolation signal.			Closed	Specific concerns were resolved during the audit.
CC-V-122 (BOP)	Primary component cooling water return isolation from non-safety-grade components	Closes on isolation signal.			Closed	Specific concerns were resolved during the audit.
SW-P-110A (BOP)	Cooling tower pump A	Provides cooling water flow when the cooling tower is used as the ultimate heat sink.	g	d	Closed	Two O-rings are used to control lateral support of pump column. The O-rings should be maintained for the life of the plant. This issue was resolved by applicant's April 8, 1986, letter.
CS-P-28 (NSSS)	Centrifugal charging pump B	Provides borated and makeup water as well as high-head safety injection.			Closed	Specific concerns were resolved during the audit.
RC-V-456A (NSSS)	Pressurizer power-operated relief valve	Opens to prevent a reactor trip due to overpressure of pressurizer.			Closed	Specific concerns were resolved during the audit.
RH-V-14 (NSSS)	Cold-leg injection residual heat removal return line isolation valve	Closes for containment isolation and hot-leg recirculation			Closed	Specific concerns were resolved duri the audit.
--	All pumps and valves important to safety	Operate as required during the life of the plant under normal and accident conditions.	h,i,j,k,l	d	Closed	All generic issues were solved by the applicant's April 8, 1986, letter.

See footnotes that follow table.

Table 3.3 (Continued)

a. Turbine operation when moisture is mixed with the steam was not investigated; turbine operation with moisture in the steam must be addressed (specific).

b. The turbine trip and throttle valve was not installed in a way that ensured easy operation. Easy operation of the trip and throttle valve with a maximum differential pressure across the valve (for example, a turbine overspeed condition) was not demonstrated. Easy operation of the trip and throttle valve must be investigated (specific).

c. The turbine end pump seal was found to be cracked. The cause of the cracked pump seal needs to be investigated and resolved (specific).

d. At the conclusion of the site audit, the staff summarized the remaining open issues. The applicant was informed of the appropriate actions necessary to resolve the specific and generic confirmatory issues before fuel load (specific).

e. The qualification status will be "Closed" when the specific and generic issues are resolved (specific).

f. This valve was changed from a swing check valve to a control check valve that has specific opening and closing times. The operating times were not addressed in the startup, testing, or operating procedures. The applicant shall confirm that the operating times have been investigated and the timing requirements identified and met (specific).

g. The maintenance program did not include procedures for replacing the O-rings per manufacturer's recommendations. The maintenance program should include procedures for maintaining the qualification status of the O-rings for the life of the plant (specific).

h. Maintenance procedures were in a draft form and generally not available for review. The applicant shall confirm that all final maintenance procedures are consistent with manufacturer's requirements. The applicant shall describe how limited-life components are identified. The applicant shall provide examples of maintenance procedures for review (generic).

i. BOP valves smaller than 2 inches were not included in the FSAR active valve list. The applicant shall confirm that the FSAR BOP list addresses valves less than 2 inches (generic).

j. The active valve lists in the FSAR were not complete. The applicant shall confirm that all active pumps and valves are included in the FSAR active component lists (generic).

k. All preservice tests have not been completed. The applicant shall confirm that all preservice tests that are required before fuel load have been completed (generic).

l. The applicant has not completed the qualification of all pumps and valves important to safety. The applicant shall confirm that all pumps and valves important to safety are qualified before fuel load (generic).

3.10.3 Purge and Vent Valve Operability (TMI II.E.4.2(6))

Demonstration of operability of the containment purge and vent valves, particularly the ability of these valves to close during a design basis accident, is necessary to assure containment isolation. This demonstration of operability is required by GDC 1, 2, 4, 16, 54, and 56 of Appendix A to 10 CFR Part 50. Guidance for meeting these requirements is provided in Standard Review Plan Sections 6.2.4 and 3.10.

The applicant's containment purge and vent valve qualification program has been reviewed and evaluated by the staff with technical assistance provided by Idaho National Engineering Laboratory (INEL). A Technical Evaluation Report prepared by INEL is included as Appendix ___ to this SER Supplement. Information which formed the basis of this evaluation included the applicant's Final Safety Analysis Report and the following applicant submittals: letter from J. DeVincentis of PSNH to G. W. Knighton of NRC, Seabrook Station Units 1 and 2, Response to RAI 271.12, Containment Purge and Vent Valve Operability, dated November 6, 1985; Operability Demonstration of the PSI COP Valves for Public Service Company of New Hamphsire, et al, performed by Stearns Roger Manufacturers, Inc., dated January 22, 1985; Nuclear Seismic and LOCA Analysis, performed by Posi-Seal International, Inc., dated August 22, 1985; letter from J. DeVincentis of PSNH to V. Noonan of NRC, Request for Additional Information, COP System Isolation Valves dated May 13, 1986; and, letter from G. S. Thomas of PSNH to V. Noonan of NRC, Request for Additional Information COP System Isolation Valves - Further Clarification, dated June 4, 1986. Operability of the applicant's purge valves was based upon aerodynamic flow tests which simulated the as-built configuration of the valves and worst case load combinations. Stress analyses were performed to consider the effects of a combined LOCA and seismic event.

Based on the review of the applicant's FSAR and test reports concerning the containment on-line purge valves the staff concludes that the applicant has demonstrated the ability of these valves to close against the buildup of containment pressure following LOCA or DBA and to provide containment isolation. The applicant's program to demonstrate the operability of the purge valves is acceptable and does meet the applicable portions of GDC 1, 2, 4, 16, 54 and 56 of Appendix A to 10 CFR Part 50.

3.9.6 Inservice Testing of Pumps and Valves

By letters dated December 31, 1985 and June 6, 1986, the applicant for Seabrook Station submitted an inservice testing (IST) program for pumps and valves. The applicant has stated that the IST program will meet the requirements of 10 CFR 50.55a(g), including the 1980 Edition of the ASME Boiler and Pressure Vessel Code, Section XI through the Winter 1981 Addenda. The applicant has requested relief from these code requirements pursuant to 10 CFR 50.55a(g)(5)) for certain pump and valve tests.

The staff has completed a preliminary review of the Seabrook Station IST program. This preliminary review includes an evaluation of the applicant's general IST program and evaluation of the applicant's request for relief from certain ASME Code requirements for certain pumps and valves. The requests for relief are based on the applicant's determination that ASME Code requirements for certain pumps or valves are impractical within the limitations of design, geometry, and accessibility. The staff will recommend granting the relief where the applicant's request has satisfied the requirements of 10 CFR 50.55a(g)(6)(i).

Based on our review of the IST Program, the staff concludes that the applicant's general program meets the requirements of 10 CFR 50.55a(g) for low power (5%) plant operation. The relief that the applicant has requested from certain of the pump and valve testing requirements of the 1980 edition of the ASME Code Section XI through Winter 1981 Addenda is acceptable on an interim basis, pending the staff completing the review of each relief request, for low power (5%) plant operation. This conclusion is based on the fact that the minimum interval for inservice testing is 90 days and the staff will complete its review and have a fully approved program in less than 90 days. Interim relief from certain ASME Code requirements will not endanger life, property, or the common defense and security of the public and is in the public interest giving due consideration to the burden on the applicant that could result if the requirements were imposed.

The applicant may not exceed low power plant operation until a detailed review of the justifications for each relief request has been completed in accordance with the requirements of 10 CFR 50.55a(g)(6)(i) and the final IST program is accepted. If the detailed review results in any request for relief being denied the applicant will be required to comply with the appropriate Section XI requirements. In addition if the detailed review identifies any pumps or valves which are not categorized as ASME Code Class 1, 2, or 3 but perform a safety function, those pumps or valves will be included in the IST program.

JUN 21 1986

Docket Nos.: 50-443
and 50-444

APPLICANT: Public Service Company of New Hampshire

FACILITY: Seabrook Station, Unit 1 and 2

SUBJECT: MEETING SUMMARY

On May 13 and 14, 1986, a working meeting was held in Bethesda, Maryland with Public Service of New Hampshire, NRC, and EG&G Idaho, Inc. representatives to discuss the questions resulting from the review of the Seabrook Station pump and valve inservice testing (IST) program. Enclosed is a list of the meeting attendees, the questions that served as an agenda for the meeting, and the responses to those questions as taken from the meeting minutes. The utility representatives were given a brief introduction outlining the agenda and the methods used for the documentation of questions and responses. This was followed by detailed discussions concerning specific pumps and valves in the Seabrook IST program.

Of the 113 questions and comments discussed at this working meeting, 19 remain as open items to be resolved at a later date. These open items are identified in the enclosure. There are several additional items where the utility has agreed to make corrections or changes to their IST program as indicated in the responses to the questions.

Victor Nerses, Project Manager
PWR Project Directorate #5
Division of PWR Licensing-A

Enclosure:
As stated

cc: See next page

PD#5
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6/20/86

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UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

JUN 2 1 1986

Docket Nos.: 50-443
and 50-444

APPLICANT: Public Service Company of New Hampshire

FACILITY: Seabrook Station, Unit 1 and 2

SUBJECT: MEETING SUMMARY

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Victor Nerses

Victor Nerses, Project Manager
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ATTENDANCE LIST

INSERVICE TESTING PROGRAM WORKING MEETING

PLANT: Seabrook Station DATES: May 13 and 14, 1986

Name	Representing
Goutam Bagchi	NRR/PWR-A/EB
Donald Caphton	NRC/Rgn. I/DRS
James Connolly	NHY
Gary Hammer	NRR/PWR-B/EB
Shou-nein Hou	NRR/PWR-A/EB
Rom Lipinski	NRR/PWR-B/EB
Robert Martel III	NHY
Clair Ransom	EG&G/INEL
Herb Rockhold	EG&G/INEL
Norman Romney	NRR/PWR-A/EB
Robert Sweeney	NHY-Bethesda

MEETING MINUTES
SEABROOK STATION

May 13 and 14, 1986

SEABROOK STATION
PUMP AND VALVE INSERVICE TESTING PROGRAM
WORKING MEETING MINUTES

May 13 and 14, 1986

A. General Questions and Comments

1. Are all valves that are Appendix J, Type C, leak tested included in the IST program and categorized A or A/C as appropriate?

Response: Yes.

2. Relief Requests that reference the FSAR, Technical Specifications, and other documents should be expanded to provide a brief discussion of the technical information contained in the applicable document.

Response: The utility will include additional information in their relief requests to identify the specific operational problems that make pump or valve testing undesirable or impractical.

3. The NRC staff position concerning stroke time measurements of power operated valves is that those measurements must be trended in accordance with Section XI so the information can be utilized to monitor valve degradation and predict valve failure. The exception to this position is explained as follows.

Rapid-acting valves are defined as those power operated valves that stroke in 2 seconds or less. Relief from the trending requirements of Section XI (Paragraph IWV-3417(a), 1980 Edition through Winter 1981 Addenda) presents no safety concerns for these valves since variations in

6. A description of the plant operating modes should be added to the IST program legend.

Response: The utility will include this information in their IST program.

Additional Comment: The utility is working on determining limiting values of full-stroke time for power operated valves in the Seabrook IST program, but has not yet determined the values for all of these valves. The utility will provide a listing of these limiting values of full-stroke times in their program resubmittal.

B. Main Steam P&ID 202074

1. How are valves MS-PV3001, -PV3002, -PV3003, and -PV3004 fail-safe tested quarterly? Can these valves be stroke timed during fail-safe testing?

Response: The utility will fail-safe test these steam generator atmospheric dump valves during the quarterly valve exercising tests by using the remote valve positioning switches. The manual block valves may be closed prior to valve testing; this does not pose a problem for the utility.

Additional Comment: The utility will reference in their general discussion section of the IST program the administrative procedures for performance of pump and valve inservice testing used to meet ASME Section XI requirements.

C. Emergency Feedwater P&ID 202076

1. Should valves FW-V64 and -V70 be Category A/C in Figure 5.3? Relief Request 5 does not apply to these valves as stated in Note 4. Provide a detailed technical justification for not full-stroke exercising these two valves during each cold shutdown.

Response: These are Category C valves that are not leak rate tested. These valves will be exercised during cold shutdowns, however, this may not be a full-stroke exercise for FW-V64 since the turbine driven emergency feedwater pump may not be able to establish full flow at this time. This remains an OPEN ITEM for the utility to determine if the testing at cold shutdowns is a full-stroke exercise of FW-V64; and if it is not, it is open for them to determine a method and frequency to full-stroke exercise this valve. The utility is monitoring the pipe temperature upstream of these valves to verify that there is no major back leakage through the valves.

2. The system and P&ID identification at the top of page 3 of 47, Figure 5.3, is incorrect.

Response: This is a typographical error that will be corrected.

3. Why are valves FW-V30, -V39, -V48, and -V57 fail-safe tested when the P&ID indicates that they fail "as-is"? Relief Request 1 does not apply to these valves as stated in Note 2.

Response: The identified fail-safe test will be deleted for these valves. Relief Request #4 applies to these valves.

F. Diesel Generator Cooling Water

1. Provide P&ID 202103 for our review.

Response: The P&ID was provided.

Additional Comment: The emergency diesel generators are tested at 100% load monthly for 60 minutes which should verify that the check valves in this system full-stroke open. The air operated valves and the 3-way control valves in the diesel cooling water system should be evaluated to determine if they should be included in the IST program. This remains an OPEN ITEM for the utility. If these valves have a required fail-safe position, they must be included in the IST program.

G. Leak Detection P&ID 500037-2

1. Review the safety-related function of valves LD-V4 and -V5 (Location D-3) to determine if they should be included in the IST program and categorized A.

Response: These valves have been removed from the piping and the pipe has been capped and seal welded closed.

H. Containment Purge P&ID 604131

1. Relief Request 7 does not address valves CAP-V1, -V2, -V3, and -V4 as stated in Note 8. Provide a detailed technical justification for not full-stroke exercising these valves during each cold shutdown.

Response: Valve CC-V32 will be stroke timed when it is exercised quarterly and the limiting value of full-stroke time will be identified.

2. Should the valve identified in Figure 5.3 as CC-V226 actually be CC-V265?

Response: Yes, this was a typographical error.

3. Should valve CC-V445 be stroke timed when it is exercised quarterly?

Response: This valve will be stroke timed quarterly and the limiting value of full-stroke time will be provided.

L. Floor Drain P&ID 804994

1. What is the P&ID location of valve WLD-V200?

Response: There is no valve WLD-V200, it should be identified as WLD-V209. The valve listing table will be corrected and note 25 will be deleted for this relief valve.

2. What is the correct description of valve WLD-FV8331? Is this a rapid-acting valve?

Response: WLD-FV8331 is a rapid acting valve. The valve listing table will be corrected for this valve.

M. Reactor Coolant P&IDs 805002, 805003, and 805006

1. Provide a detailed technical justification for not full-stroke exercising valves RC-V323 and RC-FV2881 during each cold shutdown. Is valve RC-FV2881 a rapid-acting valve?

N. Reactor Coolant Pressurizer P&ID 805007

1. The NRC staff position concerning PORVs is that the valves be exercised each cold shutdown and if the PORVs are utilized for low-temperature overpressure protection that they be full-stroke exercised prior to initiation of system conditions for which vessel protection is needed. Therefore, provide a more detailed technical justification for not full-stroke exercising valves RC-PCV456A and -PCV456B during each cold shutdown. Are these valves rapid-acting valves?

Response: These pressurizer PORVs will be exercised during each cold shutdown. These are rapid acting valves and will have a limiting value of full-stroke time of 2 seconds.
Note: These valves do not conform to the staff's positions on cold shutdown testing; they must be tested during each cold shutdown not necessarily to exceed once every 3 months.

O. Residual Heat Removal P&ID 805008

1. How are valves CBS-V55 and -V56 full-stroke exercised during pump tests?

Response: These valves will not be exercised quarterly because they are not in the pump test flow path. These valves cannot be exercised during cold shutdowns because there is no flow path except into the RCS and flow cannot be established into the RCS since there is no place to put the additional inventory of water. A relief request will be provided for these valves that will provide for testing them during refueling outages.

6. Review the safety-related function of valves RH-V14, -V26, -V32, and -V70 to determine if they should be categorized A.

Response: These valves are not currently Appendix J leakrate tested to verify a containment isolation capability. These valves will not be categorized A.

7. Review the safety-related function of valves RH-FCV606, -FCV607, -FCV618, and -FCV619 to determine if they should be included in the IST program.

Response: This is an OPEN ITEM for the utility to determine if these valves are required to change position to take the RCS to the cold shutdown condition.

P. Safety Injection Accumulators P&ID 805009

1. The system and P&ID identification at the top of page 22 of 47, Figure 5.3, is incorrect.

Response: This is a typographical error that will be corrected.

2. Are valves SI-V3, -V17, -V32, and -V47 full-stroke exercised during each cold shutdown? Is power removed from the operators during cold shutdowns?

Response: These valves are closed going into cold shutdowns and are opened when starting up from cold shutdowns. Power is removed from the valve operators during cold shutdowns with the valves closed. The utility will classify these valves as passive valves and need not perform a Section XI exercising test.

3. Are valves SI-V5, -V20, -V35, and -V50 leak tested during each cold shutdown? These valves have not been included in Relief Request 10.

5. Category A, passive, valves SI-V62 and -V70 are not required to be exercised according to Paragraph IWV-3700.

Response: The exercise tests will be deleted for these passive valves.

Q. Safety Injection-High Head P&ID 805010

1. How are valves CBS-V48 and -V52 full-stroke exercised during pump testing?

Response: These valves can only be partial-stroke exercised quarterly during power operation. These valves cannot be full-stroke exercised during cold shutdowns due to low-temperature overpressurization considerations. These valves will be full-stroke exercised during refueling outages. A relief request will be provided by the utility.

2. Provide a detailed technical justification for not full-stroke exercising valves RH-V50 and -V51 during each cold shutdown. Relief Request 18 does not address these valves as stated in Note 19.

Response: These valves cannot be exercised during cold shutdowns since establishing flow through the valves could result in RHR cooling flow bypassing the reactor core. These valves are addressed in relief request #19. The relief request will be augmented to include a cold shutdown justification.

3. Provide a detailed technical justification for not full-stroke exercising valves RH-V52 and -V53 during each cold shutdown. Relief Request 19 does not address these valves as stated in Note 19.

7. Provide a detailed technical justification for not full-stroke exercising valves SI-V106 and -V110 during each cold shutdown. Relief Request 19 does not address these valves as stated in Note 19.

Response: These valves cannot be exercised during cold shutdowns because it could result in low-temperature overpressurization of the RCS. The utility will augment relief request #18 to include the cold shutdown justification.

8. Review the safety-related function of valve SI-V114 to determine if it should be categorized A.

Response: This valve is not currently leak tested per the Appendix J requirements. This valve need not be categorized A.

9. Provide a detailed technical justification for not full-stroke exercising valves SI-V118, -V122, -V126, and -V130 during each cold shutdown. Relief Request 19 does not address these valves as stated in Note 19.

Response: These valves cannot be exercised during cold shutdowns because it could result in low-temperature overpressurization of the RCS. The utility will augment relief request #18 to include the cold shutdown justification.

10. Should the stroke time value be the same for valves CBS-V49 and -V53 since they appear to be identical?

Response: The stroke times for these similar valves may be the same.

11. Review the safety-related function of valves SI-V138 and -V139 to determine if they should be categorized A. Has a maximum stroke time limit been determined for these valves?

2. Is Category A valve CS-V143 leak rate tested?

Response: This valve is not currently leak rate tested to Appendix J requirements and will be categorized B in the IST program.

3. Provide a detailed technical justification for not full-stroke exercising Category A/C valve CS-V144 quarterly or during each cold shutdown. What is the safety position of this valve? Is this valve leak rate tested?

Response: The utility will determine if this valve performs a safety related function in the open position to pass flow for auxiliary pressurizer spray. This valve is not currently leak tested to the Appendix J requirements and will be recategorized C. This is an OPEN ITEM for the utility.

4. Provide a detailed technical justification for not full-stroke exercising valves CS-V149 and -V150 quarterly.

Response: The utility will full-stroke exercise these valves during cold shutdowns and refueling outages. Relief Request #21 will be modified to expand the technical justification for not exercising these valves quarterly during power operation which will include loss of pressurizer level control and a possible plant trip.

5. In reference to Relief Request 22, are the reactor coolant pumps ever secured at any time other than refueling outages?

Response: The reactor coolant pumps can be secured during cold shutdowns, therefore, valves CS-V167 and V168 will be exercised during cold shutdowns when the reactor coolant pumps are secured. Relief request #22 will be revised to conform to this position.

Response: The utility feels that these valves are passive and need not be included in the IST program. This remains an OPEN ITEM for the NRC to determine if these valves perform an active safety function.

10. Provide a detailed technical justification for not full-stroke exercising valves CBS-V58 and -V60 quarterly and during cold shutdowns.

Response: The utility will provide a relief request for these valves and will include in their justification for not exercising quarterly the basis that testing would inject higher concentrations of boric acid into the RCS which could result in a plant shutdown. The basis for not exercising during cold shutdowns will be the low-temperature overpressurization concerns. The correct valve listing table entries will be made for these valves.

11. How is valve CS-V192 full-stroke exercised during pump testing? What is the safety-related position of this valve?

Response: This valve does not perform a safety related function and need not be included in the IST program.

12. Is the required design basis accident flow rate achieved during pump testing to demonstrate a full-stroke exercise of valves CS-V200 and -V209?

Response: The quarterly testing results in a partial-stroke exercise of these valves. They cannot be full-stroke exercised during cold shutdowns due to low-temperature overpressurization concerns. These valves will be full-stroke exercised during refueling outages. A relief request will be provided for these valves.

Response: These valves will be exercised during cold shutdowns and refueling outages when the cooling loads are low enough to allow securing one train of component cooling. A relief request will be provided for these valves.

2. Provide a detailed technical justification for not full-stroke exercising valves CC-V447 and -V448 at least at a refueling outage frequency. Are these modulating valves whose stroke time need not be measured? Relief Request 29 does not address these valves as stated in Note 26.

Response: These valves will be exercised during cold shutdowns and refueling outages when the cooling water to non-essential loads can be isolated. A relief request will be provided for these valves. The limiting value of full-stroke time will be provided for these valves.

T. Component Cooling P&ID 805018

1. Provide a detailed technical justification for not full-stroke exercising valves CC-TV2171-1 and -TV2171-2 at least at a refueling outage frequency. These valves are incorrectly identified on page 29 of 47, Figure 5.3. Relief Request 29 does not address these valves as stated in Note 26.

Response: These valves will be exercised during cold shutdowns and refueling outages when the cooling loads are low enough to allow securing one train of component cooling. A relief request will be provided for these valves.

V. Nitrogen Gas — P&ID 805020

1. Has a minimum value of limiting stroke time been assigned to valves NG-V13, -V14, -FV4609, and -FV4610? Are these passive valves?

Response: These valves will be classified as passive valves that need not be exercised in the IST program. The limiting value of full-stroke time need not be provided for these passive valves.

W. Reactor Makeup Water — P&ID 805021

1. Provide P&ID 805021 for our review.

Response: The P&ID was reviewed and will be provided with the utilities resubmittal.

2. Should valve RMW-V29 be identified as passive?

Response: This valve is a passive valve and it need not be exercised by the IST program.

3. Has a maximum value of limiting stroke time been assigned to valve RMW-V30?

Response: Valve RMW-V30 is a category A-passive valve that need not be exercised by the IST program.

X. Combustible Gas Control — P&ID 805022

1. Has a maximum value of limiting stroke time been assigned to valves CGC-14 and -28?

Response: These are Category A-passive valves. The limiting values of full-stroke time for these passive valves need not be assigned.

2. The valve identified as CBS-V6 on page 34 of 47, Figure 5.3, is incorrect and should be CBS-V7. The valve identified as CBS-V7 should be CBS-V8 and the valve identified as CBS-V8 should be CBS-V9.

Response: This is a typographical error that will be corrected.

3. How is valve CBS-V7 full-stroke exercised?

Response: The utility is establishing flow through this valve during pump testing. The test flow of ~2000 gpm is below the ~3000 gpm design accident flow. This is an OPEN ITEM for the utility to determine a method and frequency for full-stroke exercising these check valves.

4. Review the safety-related function of valve CBS-V8 to determine if it should be categorized A.

Response: This valve is not currently leak tested to the Appendix J requirements. This valve need not be categorized A.

5. Review the safety-related function of valve CBS-V11 to determine if it should be categorized A.

Response: This valve is not currently leak tested to the Appendix J requirements. This valve need not be categorized A.

6. Review the safety-related function of valve CBS-V12 to determine if it should be categorized A/C instead of B. How is this valve full-stroke exercised during refueling outages? Provide a detailed technical justification for not full-stroke exercising this valve each cold shutdown.

10. Should valves CBS-V31, -V32, and -V33 be stroke timed when tested?

Response: These valves will have their stroke times measured during valve exercising.

Additional Comment: Valves CBS-V9, V15, V25, and V26 will be disassembled and inspected during refueling outages. They will be disassembled on a sampling basis with two groups made up of valves CBS-V9 and V15 and valves CBS-V25 and V26. Relief request #28 will be expanded to discuss sample disassembly and inspection for these valves.

Z. Sample Service P&ID 805025

1. What is the normal position of valve RC-FV2836?

Response: The normal position of this valve is closed.

2. It is unnecessary to full-stroke exercise relief valve RC-V312 quarterly.

Response: This is a typographical error and the valve need not be exercised. The relief valves are passive valves.

AA. Primary Component Cooling P&ID 805028

1. Provide a detailed technical justification for not full-stroke exercising valves CC-V175, -V176, -V256, and -V257 quarterly in accordance with Section XI. Relief Request 22 does not address these valves as stated in Note 22 and it also appears that Note 22 does not apply.

DD. Service Water P&ID 805033

1. Review the safety-related function of valves SW-V63 and -V64 to determine if they should be included in the IST program and tested in accordance with the requirements of Section XI.

Response: These valves do not perform a safety related function and need not be included in the IST program.

EE. Service Air P&ID 202108 and 804989

1. Review the safety-related function of valves SA-V229 and -V1042 to determine if they should be included in the IST program and categorized A.

Response: These valves are currently leakrate tested per Appendix J and will be included in the IST program as category A-passive valves.

FF. Containment Air Handling P&ID 604131

1. Valve CAH-V12 should be Category A/C. Note 1 does not apply to this check valve.

Response: This valve will be categorized A/C. This is an OPEN ITEM for the utility to determine if valves CAH-FV6572, FV6573, and FV6574 are active or passive valves. Note 1 will be deleted for valve CAH-V12 in the valve listing table.

2. PUMP TESTING PROGRAM

1. Provide the documentation that demonstrates that all safety-related pumps are being tested quarterly in accordance with Section XI. This information should be included in the IST program and can be in the form of a table similar to the valve test tables identifying the pump, tests performed, and any applicable relief requests.

Response: A table listing the pump testing performed at Seabrook Station was provided. This table will be included in the IST program resubmittal.

2. In reference to Relief Request 31, does using the computer readout when measuring pump flow provide repeatable test data?

Response: The utility will provide a listing of the instrument accuracies as an attachment to the IST resubmittal. The computer readout meets the requirements for repeatable test data.

3. Are both flow and differential pressure measured when testing the service water pumps?

Response: Yes, both pump flow and differential pressure will be measured for these pumps. The relief request for not varying pump flow in the fixed flow system will be deleted.

Additional Comment: It is an OPEN ITEM for the utility to determine which type of pump vibration measurements will be taken at Seabrook. If velocity measurements are used, it is open for the utility to determine the alert and required action ranges.