Docket File

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

APR 26 1986

Docket Nos: 50-443/444

MEMORANDUM FOR: Victor Nerses, Senior Project Manager
PWR Project Directorate No. 5
Division of PWR Licensing - A

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

SUBJECT: INPUT FOR SUPPLEMENT TO THE SAFETY-EVALUATION REPORT SEABROOK STATION, UNITS 1 AND 2

Applicant: Public Service Company of New Hampshire
Plant Name: Seabrook Station, Units 1 and 2
Docket Numbers: 50-443/444
Licensing Stage: OL
Responsible Directorate: PWR PD #5
Project Manager: V. Nerses
PSB Reviewers: S. West, A. Singh, R. Giardina, J. Hayes and C. Li
Review Status: Awaiting Information

Enclosed is the Plant Systems Branch (PSB) input for Sections 6.2.1.2., 6.2.4., 9.5.1., 9.5.4.1., and 11.5 of the Seabrook Station, Units 1 and 2 Supplement to the Safety Evaluation Report (SSER).

In Section 9.5.1. of the Seabrook Station Safety Evaluation Report (NUREG 0896), dated March 1983, the staff indicated that its review of the applicant's fire protection program was complete. By letters dated May 2, 1983, September 14 and November 29, 1984, February 8, May 31, July 3, December 2, and December 20, 1985, and January 24, 1986, the applicant submitted additional information, including revised fire protection program and safe shutdown capability reports, and requests for approval of additional deviations from staff fire protection guidelines. The staff's evaluation of this information is included in Enclosure 1.

From January 27 to 31, 1986, the staff conducted a plant site audit of the applicant's fire protection program for Seabrook Station, Unit 1. As a result of the audit, a number of concerns pertaining to the applicant's commitments, the justifications for particular fire protection designs, and the degree of compliance with staff guidelines were expressed. A summary of these concerns, which were set forth in a memorandum from S. West to J. Milhoan dated March 11, 1986 is included in Section 9.5.1 of the enclosed evaluation. The applicant agreed to respond to these concerns in a time frame that would support the Seabrook Station Unit 1 fuel load date.

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A summary of all approved deviations from staff fire protection guidelines is included in Section 9.5.1.8 of the enclosed evaluation. The unresolved fire protection items are:

1. Concerns raised during the staff's plant site audit of the applicant's fire protection program for Seabrook Station, Unit 1.

2. Multiple high impedence faults.

3. Emergency lighting deviations.

A summary of other issues addressed in the SSER (Enclosure 1) is provided below:

° Section 6.2.1.2.
The applicant has not properly referenced the methodology used to calculate the mass and energy release data used for subcompartment analysis. This is important since the staff must know if the methodology has been previously reviewed and approved through the Topical Report review program. The applicant has informed the staff that Westinghouse Topical Report WCAP 8312-A should have been referenced, which has been approved by the staff. The correct reference will be included in a future amendment to the FSAR.

° Section 6.2.4.
The staff has evaluated the incremental increase in the offsite dose for a LOCA occurring during purge/vent system operation. The contribution to the offsite dose was found to be negligible and, therefore, not a factor in authorizing use of the system during normal plant operation.

° Section 11.5.
The staff evaluated and found acceptable the effluent monitoring system in terms of its conformance with Table 2 and Regulatory Position C of Regulatory Guide 1.97.

° 9.5.4.1
The staff evaluated and found acceptable the applicant's test program for vibration qualifying certain instrumentation and controls attached to the diesel generators.

The fire protection license condition is enclosed as Enclosure 2. A table of SER errata is enclosed as Enclosure 3. SALP input is enclosed as Enclosure 4.

Original signed by:

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

Contact: A. Singh, x27462

Enclosures:
As Stated

cc: T. Novak
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NAME	:SWest w/corrections	:ASingh w/ corrections	:RGiardina	:JHayes	:JShapaker	:JMilhoan	:CRossi
DATE	:4/23/86	:4/24/86	:4/24/86	:4/24/86	:4/24/86	:4/24/86	:4/26/86

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Enclosure 1

Plant Systems Branch (DPL-A)
Input for Supplement to Safety Evaluation Report
Seabrook Station Units 1 and 2
Docket Nos. 50-443/444

6.2.1.2 CONTAINMENT SUBCOMPARTMENT ANALYSIS

The applicant states in the FSAR that the mass and energy release data for all high energy line breaks considered for subcompartment analyses were generated by Westinghouse. However, the FSAR currently contains an incorrect reference to the blowdown model used. The applicant has agreed to include the appropriate reference (to Westinghouse Topical Report WCAP 8312-A) in a future FSAR amendment. This Topical Report was previously found acceptable, by the staff in its evaluation dated March 12, 1975. The staff, therefore, concludes that the methodology used in computing the mass and energy release data is acceptable. The staff is continuing its evaluation of the applicants subcompartment analysis and will report on the resolution of this matter in a supplement to the SER.

6.2.4 CONTAINMENT ISOLATION SYSTEM

The staff has evaluated the contribution to the offsite radiological consequences of purge system operation at the onset of a LOCA and before isolation valve closure occurs in response to the containment isolation signal. Using the guidance of Branch Technical Position CSB 6-4 of Standard Review Plan Section 6.2.4, the staff estimated the resultant purge contribution to the doses at the Exclusion Area and Low Population Zone Boundaries to be less than 1 Rem thyroid, which is negligible compared to the LOCA doses reported in Section 15 of the SER. Therefore, the staff concludes that the potential radiological consequences attributable to purge system operation at the onset of a postulated LOCA are not a factor in approving use of the purge system during normal plant operation.

Item II.E.4.2 of NUREG-0737 states that fluid lines of non-essential systems that penetrate containment should be automatically isolated in response to the containment isolation signal. In amendment 56 to the FSAR, the applicant defined an essential system (or line) as one that is necessary for mitigating the consequences of an accident, and identified the essential systems and lines in Table 6.2-83 of the FSAR. They include the residual heat removal system, containment spray system, high head safety injection system and containment containment pressure sensing lines. All other fluid lines penetrating containment are identified in Table 6.2-83 as being non-essential. The staff notes however, that the following non-essential system lines are not automatically isolated:

Chemical and Volume Control (Penetration Nos. 28, 29, 30, 31)
Primary Component Cooling Water Thermal Barrier (Penetration Nos. 48A, 48B, 49A, 49B.)
Reactor Coolant System (Penetration Nos. 77A, 77B, 78A, 78B.)

The applicant should provide appropriate justification for not automatically isolating system lines penetrating containment that have been declared non-essential. The staff will report on the results of its review in a supplement to the SER.

9.5.1 Fire Protection

In the Seabrook Station, Units 1 and 2 SER, the staff stated that its review of the applicant's fire protection program was complete. By letters dated May 2, 1983, September 14, and November 29, 1984, February 8, May 31, July 3, December 2, and December 20, 1985, and January 24, 1986, the applicant submitted additional information, including revised fire protection program and safe shutdown capability reports and requests for additional deviations from staff fire protection guidelines.

From January 27 to 31, 1986 the staff conducted a plant site audit of the applicant's fire protection program for Seabrook Station, Unit 1. The general fire protection features were observed to be in various stages of completion, with none being complete at the time of the audit. As a result of the audit, a number of concerns were expressed pertaining to the applicant's commitments, justifications for particular fire protection provisions, and the degree of compliance with staff guidelines. These concerns are summarized below. The applicable sections of the staff's fire protection guidelines are referenced after each concern.

1. Composite sheetrock/tube steel barriers serve as fire barriers in several plant areas. Fire test results were not available during the audit to substantiate the fire resistance rating of the barrier design (Section C.5.a of BTP CMEB 9.5-1).

2. A number of fire barrier penetrations, including bus duct penetrations and seismic gaps, are not protected by penetration seal designs qualified by fire test (Section C.5.a of BTP CMEB 9.5-1).

3. A number of door assemblies installed in fire barriers are not tested and approved by a nationally recognized laboratory (Section C.5.a(5) of BTP CMEB 9.5-1).

4. Structural steel forming a part of or supporting a number of fire barriers is not protected to provide fire resistance equivalent to that required of the barrier (Section C.5.6(2)(a) of BTP CMEB 9.5-1).

5. Charcoal filters are not protected in accordance with the guidelines of Regulatory Guide 1.52 (Section C.5.f.(4) of BTP CMEB 9.5-1).

6. By letter dated April 1, 1982, the applicant submitted its comparison to Appendix R to 10 CFR 50. During the audit, the applicant informed the staff that in view of continuing program development, this comparison was outdated. The applicant agreed to revise the comparison to reflect the current plant status.

The applicant agreed to respond to these concerns in a time frame that will support the Seabrook Station Unit 1 fuel load date. Resolution of these concerns will be addressed in a future supplement to the SER.

9.5.1.4 General Plant Guidelines

Building Design

By letter dated December 2, 1985, the applicant requested several deviations from Section C.5.a of BTP CMEB 9.5-1 to the extent that it states that openings in fire barriers should be protected to provide a fire resistance rating at least equivalent to that required of the barrier itself.

An unsealed 2-foot by 1-foot 8-inch trash trough runs the length of the service water pump house and passes through a fire barrier common with the circulating pump house. The staff was concerned that a fire might spread via the trough and affect safe shutdown systems on both sides of the barrier. However, because the trough is in the floor and because smoke and hot gases from a fire would tend to concentrate at the ceiling, the staff has reasonable assurance that the fire would be confined to the area of origin. In the unlikely event that a fire would spread through the trough, the applicant stated that alternate means of achieving safe shutdown, independent of these two areas, are available. On these bases, the staff concluded that the unsealed trash trough is an acceptable deviation from Section C.5.a of BTP CMEB 9.5-1.

The exhaust ducts serving fire areas in the waste processing building, primary auxiliary building, containment enclosure ventilation area, and fuel storage building are not equipped with fire dampers where they pass through exterior walls into the unit plant vent stack. For a fire to spread from one area to another, products of combustion would have to flow out of the area of fire origin, into the stack, and then back into the plant via another exhaust duct. Because hot gases would tend to rise up the stack, the staff does not consider fire propagation via the undampered exhaust ducts to be a credible scenario. On this basis the staff concluded that the lack of fire dampers at duct penetrations of the unit plant vent is an acceptable deviation from Section C.5.a of BTP CMEB 9.5-1.

By letters dated December 2, 1985 and January 24, 1986, the applicant requested deviations from Section C.5.a of BTP CMEB 9.5-1 to the extent that it requires door openings in fire-rated barriers to be protected by tested fire door assemblies. The applicant identified three sets of twin leaf, tornado missile-rated door assemblies and three sets of twin leaf pressure rated door assemblies installed in fire-rated walls. The tornado-missile rated doors are constructed of two-inch thick solid ASTM-A36 steel with a 1/2 inch by 3 inch steel astragal. The twin leaf pressure rated door assemblies are not fire rated. However, door assemblies of identical construction in a single leaf configuration have been tested and approved. The area on each side of each of these doors is provided with fire detectors as described in the December 2, 1985 letter and the applicant's fire hazards analyses. The staff evaluated conditions on both sides of these doors and found no significant unmitigated fire hazard in their proximity which might represent a threat to the door's structural integrity. Because of the presence of fire detectors the staff expects any fire to be detected before significant fire propagation or room temperature rise occurred. Moreover, because of the construction of the doors, it is the staff's judgement that they are capable of confining the effects of a fire to the room of origin pending arrival of the fire brigade and fire extinguishment. On these bases, the staff concluded that the non-fire rated door assemblies identified in the applicant's December 2, 1985 and January 24, 1986 letters are an acceptable deviation from Section C.5.a of BTP CMEB 9.5-1.

By letter dated January 24, 1986, the applicant requested a deviation from "the requirement that door assemblies have Underwriters Laboratory (UL) labels." Staff fire protection guidelines of BTP CMEB 9.5-1 state that door assemblies in fire barriers should be tested and approved by a nationally recognized laboratory. However, there is no staff requirement that door assemblies bear UL labels. Therefore, a deviation from staff guidelines does not exist.

In the SER, the staff stated that fire dampers will be UL labeled. By letter dated January 24, 1986, the applicant identified three multi-section fire damper assemblies that do not bear UL labels because the overall size of each assembly exceeds that listed by UL. One of the damper assemblies is installed in the control building in the fire barrier separating the control room from the control room HVAC equipment and duct area (HVAC room). The other two damper assemblies are installed in the diesel generator building. One of these dampers is in a barrier separating two train A fire areas and one is in a barrier separating two train B fire areas. Each section of these three multi-section dampers has been individually tested and approved by UL. However, the assemblies of individual sections have not been tested.

The staff was concerned that a fire in any of the fire areas separated by one of these damper assemblies would spread to the adjacent fire area through the non-UL labeled damper assembly and adversely affect safe shutdown. However, the staff evaluated the fire hazards and fire protection features provided on both sides of each of these dampers during the plant site audit and found no unmitigated fire hazards in their proxmity. Moreover, because the individual damper sections have been tested, the staff has reasonable assurance that the damper assemblies will operate under fire exposure conditions and prevent the spread of fire from one fire area to another. Furthermore, in the event that one of these three damper assemblies fails to operate allowing fire to spread into the adjacent fire area, the ability to achieve and maintain safe plant shutdown would not be affected. For a fire in the diesel generator building, plant shutdown could be achieved from either the control room or the remote shutdown panel, and for a fire in the HVAC room or the control room, plant shutdown could be achieved from the remote shutdown panel.

On these bases, the staff concluded that use of the three non-UL labeled fire damper assemblies identified in the applicants January 24, 1986 letter is an acceptable deviation from Section C.5.a(4) of BTP CMEB 9.5-1.

Safe Shutdown Capability

The applicant provided revised information concerning fire protection for the safe shutdown capability in their report entitled "Fire Protection of Safe Shutdown Capability," Revision 2, dated December 31, 1985. The following staff safety evaluation of safe shutdown capability replaces the evaluation reported in the Seabrook Station SER.

The applicant's revised safe shutdown analysis states that systems needed for hot shutdown consist of redundant trains and that either one of the redundant trains would be free of fire damage, or an alternative shutdown capability would be available. The systems required for safe shutdown are those necessary to control the reactor coolant system temperature and pressure, to borate the reactor coolant system, and to provide adequate residual heat removal. For hot shutdown, at least one train of the following shutdown systems was stated to be available: (1) emergency feedwater system, (2) main steam system (specifically the main steam atmospheric relief valves), (3) reactor coolant system (specifically the pressurizer relief valves (PORVs) and heaters), and (4) chemical and volume control system (specifically the centrifugal charging pumps and borated water supply). Furthermore for cold shutdown, at least one train of the residual heat removal system (RHRS) would be available. The RHRS would be utilized for long-term decay heat removal and would provide the capability to achieve cold shutdown within 72 hours after a fire. The safe shutdown analysis considered components, cabling and support equipment for systems identified above which are needed to achieve shutdown. The support equipment includes the diesel generators, emergency electrical distribution system, primary component cooling water system, service water system (including ocean tunnels or cooling tower), instrument air, and necessary air handling and ventilation systems.

The applicant performed an essential cabling separation study as part of the safe shutdown analysis in order to ensure that at least one train of the above equipment and essential instrumentation would be available either from the control room or from an alternate location in the event of a fire in areas which might affect these components. Cable runs were traced through each fire area from the corresponding components to their power source. Additional equipment and electrical circuitry considered as associated either because of a shared common power source, common enclosure, or whose fire-induced spurious operation could affect shutdown were also identified. For the identified associated circuits, the applicant has provided circuit isolation and/or procedures to ensure that circuit failures would not prevent safe shutdown. For example, in order to prevent fire induced spurious signals from causing a LOCA from such sources as the RHR suction line or PORVs, power to one of the two series RHR suction line valves will be locked out during power operation. Similarly, the operator will trip the power supply breaker to PORVs solenoid operated valves from the switchgear rooms after a control room evacuation to prevent fire-induced spurious actuation of the PORVs.

During the course of the associated circuits review, the staff expressed a concern that fire-induced multiple high impedance faults could result in the loss of the necessary power supply for safe shutdown equipment. The effects of multiple high impedance faults can occur when several cables from a common bus are located in the same fire area. When a fire occurs in such an area, the resulting fire damage can cause electrical faults in these cables, but the faults may not be of low enough impedance to trip the individual circuit breakers. However, the sum of the faults may be sufficient to trip the main breaker which protects the power supply bus. If safe shutdown equipment is energized from the same bus, once the main breaker trips, this equipment will have lost its power source. The staff's review of the applicant's response to this issue is continuing. The staff will report resolution of this issue in a future SER supplement.

The adequacy of safe shutdown equipment cable separation was determined by the applicant, based on a computer cable routing drawing study. As a result of this analysis, the applicant noted that alternative shutdown capability was required for the control room, the cable spreading room, and the HVAC room to achieve safe shutdown since these areas contain more than one division of safe shutdown components and a fire in one of these areas will require control room evacuation. In lieu of providing fire protection separation, if a fire disables the control room, cable spreading room, or HVAC room, the remote shutdown panels, which are located in separate control building fire areas, provide an alternative means of achieving safe shutdown. The control functions and the indications provided at the remote shutdown panels are electrically isolated or otherwise separated and independent from the control room, cable spreading room, and HVAC room. In addition, based on the cable separation study, (discussed in Section 3 of the applicant's submittal, "Fire Protection of Safe Shutdown Capability," Revision 2) the applicant identified 37 other plant areas where the redundant cabling for normal control and indications from the control room of various safe shutdown functions could be disabled by a single fire. For these areas, the applicant has identified alternative manual actions that can be taken outside the control room, independent of the fire damaged cabling to restore the affected shutdown functions. These manual actions are taken at various local locations and at the remote shutdown panel, as necessary.

The staff reviewed the applicant's cable separation method and audited several arrangement drawings to verify correct application of the methodology. Based on this review and audit, the staff concluded that the applicant adequately addressed the effects of associated circuit interaction (except as noted above with regard to multiple high impedance faults), and that the isolation devices are adequate to ensure that such circuit interactions will not adversely affect safe shutdown. The staff further concluded that the applicant has provided an acceptable means of demonstrating that separation and/or barriers exist between redundant safe shutdown systems trains or that adequate independent alternative capability is provided where necessary. Refer to further discussion in Section 9.5.1 of this SER for adequacy of fire barriers and/or separation, fire detection, and suppression provided for additional assurance that one train of systems and equipment needed for safe shutdown will be free of fire damage, and further discussion of the alternative shutdown capability.

As discussed in the Seabrook Station SER, the staff evaluated and approved deviations from Section C.5.a of BTP CMEB 9.5-1 in the containment, the mechanical penetration area, the diesel generator building, the primary auxiliary building and the emergency feedwater pump room that pertain to the separation and protection of redundant safe shutdown related systems. In revision 2 to the safe shutdown analysis report, the applicant identified additional deviations in the containment, the mechanical penetration area, and the primary auxiliary building. For these areas, there are no significant differences between the configurations of the systems previously approved by the staff and the configurations identified in the revised report. On this basis and for the reasons stated in the SER, the staff concludes that the level of protection in the areas identified in revision 2 of the report is acceptable.

Based on the above review, the staff concluded that the functions of reactivity control, inventory control, decay heat removal and pressure control are adequate to assure safe shutdown following a fire in any plant area. The staff further concluded that the post-fire safe shutdown systems, the cable separation methodology, and the fire protection of safe shutdown systems, with approved deviations, meet Section C.5.b of BTP CMEB 9.5-1 and are, therefore, acceptable, pending satisfactory resolution of the multiple high impedence fault concern. The staff will report on the resolution of this issue in a future SER Supplement.

Alternative Shutdown Capability

The following staff safety evaluation of alternative shutdown capability supercedes the evaluation reported in the Seabrook Station SER. Section 3.3.2 of the applicant's report, "Fire Protection of Safe Shutdown Capability", describes the functional capability of the two remote safe shutdown panels and the associated alternate shutdown system operational locations, per Section C.5.c of BTP CMEB 9.5-1. The primary design objective of the two remote safe shutdown panels is to provide a central point to control and monitor plant shutdown in the event of control room evacuation. They also provide the capability to control and monitor various individual safe shutdown functions following fire damage in other fire areas. Each panel includes the capability to electrically isolate one of the redundant, separate divisions of required instrumentation indications and control functions for the necessary shutdown systems from the control room/cable spreading room. Selector switches on each remote shutdown panel allow the operator to transfer control of the equipment (controls and indications) required for safe shutdown from the control room to the shutdown panel. Transfer of control to the remote safe shutdown panels is alarmed in the control room.

The remote safe shutdown panels are located in separate fire areas in the control building. The emergency diesels can be started and controlled independently at the diesel generator local control panels in the diesel generator building. Capability for the control of cold shutdown support equipment and the pressurizer PORV is provided at local control stations. A number of manual operations can also be performed locally (such as manual valve operation) to achieve and maintain safe shutdown. This design assures the capability to achieve safe shutdown, given a fire in the control room, cable spreading room, HVAC room or at a remote safe shutdown panel since at least one train of required safe shutdown equipment will be available following a fire in any of these areas.

By letter dated September 1, 1982, the applicant stated that post-fire alternate shutdown procedures will specify manual actions required and will also address manpower requirements based on postulated fire damage to shutdown equipment following a fire in any plant area. The applicant has verified that required manual actions can be taken in sufficient time to achieve and maintain safe shutdown. During the Region I based safe shutdown capabilities inspection at Seabrook Station, Unit 1, conducted from January 27 through 31, 1986, the staff walked through the procedures with the operators and found them to be acceptable. Fire brigade members are not included in the shutdown manpower requirements. The plant Technical Specifications provide for periodic testing of remote shutdown control circuits, transfer switches, and instrumentation.

In Section 3.3.5 of the applicant's report, the applicant stated that the operator will trip the reactor, trip all four reactor coolant pumps (RCPs), and close all four main steam isolation valves (MSIVs) before leaving the control room in the event of a fire in the control room, cable spreading room, or HVAC room. However, the staff expressed concern that the operators may not be able to trip the RCPs and close the MSIVs as well as trip the reactor before leaving the control room. By letter dated September 1, 1982, the applicant stated that a control room evacuation would be expected to be deliberate and planned with sufficient time for the operator to trip the reactor and the RCPs and to close the MISVs. Subsequently, the applicant has provided the capability to close all four MSIVs from each remote safe shutdown panel independent of fire damage to the control room. In addition, the RCPs can be tripped from outside the control room by opening the 13-KV breaker located in the nonessential switchgear room. Furthermore, the applicant indicated that failure to trip the RCPs before control room evacuation does not present an immediate concern, because their operation does not affect the integrity of the primary system. The above capabilities satisfy the staff's concern in this area.

The staff reviewed the design of the remote shutdown panels and other alternative shutdown control stations to determine compliance with the performance goals outlined in Section C.5.c of BTP CMEB 9.5-1. Reactivity control is initially accomplished by a manual reactor scram before the operators leave the control room. Reactivity control is subsequently provided by boron addition via the chemical and volume control system (charging pump), controlled from the remote shutdown panel, to compensate for leakage through the reactor coolant pump seals and volume shrinkage during cooldown. Reactor coolant system pressure is controlled by the use of pressurizer heaters operated from the remote shutdown panel. For control of pressure increases, the pressurizer relief valves (PORVs) can be operated from a local panel. Reactor decay heat removal in hot shutdown is provided through the steam generator by the emergency feedwater system (turbine driven emergency feedwater pump) and main steam atmospheric relief valves which can be controlled from the remote shutdown panel. Additional local manual operations to cope with spurious operations and to provide additional control functions will be taken as necessary. Support functions in cold shutdown are provided by the cooling water system and essential service water system which are controlled at local motor control centers. Cold shutdown can be achieved within 72 hours following a fire in any plant area. This may involve replacing fire damaged cables but replacement of major components such as pump motors will not be required. Cables are available on site to replace those that may be damaged by fire and needed for cold shutdown.

The following direct reading of process variables are provided at the remote shutdown panels:

1. Emergency feedwater flow
2. Reactor coolant loop hot and cold leg temperatures
3. Steam generator level (wide range)
4. Steam generator pressure
5. Pressurizer level and pressure
6. Primary component cooling water temperature
7. Boric acid tank level
8. Wide range neutron flux monitor

Condensate storage tank level indication is available locally at the tank. The above indications are either electrically isolated from the control room, cable spreading room and the other affected areas or are provided with power from cables routed separately from those that pass through the control room, cable spreading room, HVAC room or other areas to ensure their availability in the event of a fire in those areas. As part of the review of the alternate shutdown capability and as a result of the issuance of IE Information Notice NO. 85-09, "Isolation Transfer Switches and Post-Fire Shutdown Capability," the staff requested additional information on the design of the isolation capability for the alternate shutdown circuits. The concern identified was that the circuits needed for alternate shutdown may contain a single fuse which could fail as a result of a fire induced short prior to isolation of that circuit from the control room. If the fuses fail, they would need to be replaced in order to achieve operation form the remote (alternate) shutdown panels. Such replacements are considered repairs and repairs are not permitted to achieve hot shutdown. The applicant has not provided the results of their evaluation of the existing isolation transfer switches to determine if the above situation exists. By letter dated July 3, 1985, the applicant committed to provide redundant parallel fuses in one train (train B) of equipment/component control circuits to assure control power availability in the event the existing set of fuses fail due to damage occurring to the control room circuits prior to isolation at alternate shutdown locations. The staff finds the applicant's provision of redundant fuses for one train of circuits to be acceptable to resolve this concern.

In its report, the applicant requested a deviation from the alternate shutdown criteria of BTP CMEB 9.5-1, Section C.5.c(3) regarding independence of the alternate shutdown capability from the fire area of concern for the emergency feedwater (EFW) pump room. In the event of the loss of redundant EFW pumps because of a fire in the EFW pump room, the startup feedwater pump will be available to supply feedwater to the steam generators for post-fire hot shutdown. The startup feedwater pump is located in a separate fire area. The capability to power the startup feedwater pump from an onsite Class IE bus during a loss of offsite power has been provided as discussed in Section 6.8 of the Seabrook SER. However, the redundant EFW control valves and associated flow transmitters, which are part of the alternate shutdown capability (flow path) utilizing the startup feedwater pump, are located in the EFW pump room. The redundant EFW control valves are separated from each other by 60 feet. These valves, which are normally open, fail as is (open) and are to remain open for the initial phases of hot shutdown. Only two steam generators are required to satisfy the safe shutdown requirements, hence only two control valves, one on each of two lines need to be disabled (failed) to ensure that they remain open. The operators will prevent spurious operation (closure) of these valves by tripping the power supply breakers in train A and B switchgear rooms. On the basis of the indicated configuration, the applicant requested a deviation from the Section C.5.c(3) of BTP CMEB 9.5-1 alternate shutdown criteria.

To evaluate this deviation, and to assess damage due to a postulated fire in the EFW pump room, the staff reviewed the area during a site visit. Based on its evaluation of this area, the staff concurs with the applicant's contention that a fire is unlikely to damage the redundant EFW control valves because of their separation and the lack of significant combustible loading in the area. Therefore, the staff concludes that the alternative shutdown capability provided in the event of a fire in EFW pump room is acceptable without independence from the fire area

The normal safe shutdown capability may be lost for a postulated fire in the mechanical penetration/containment fan enclosure area since the use of the normal reactor coolant pump seal injection path for reactor coolant makeup may be damaged by the fire. In such an event, the use of the high head injection flow path would be required for makeup. The seal injection path requires that a minimum of two of the four seal injection valves be operable. These valves are located in the same fire area that contains the high head injection valves. The seal injection valves are normally open and remain open for shutdown. The operators will prevent spurious operation (closure) of these valves by tripping the power supply breakers in the train A switchgear room. The high head injection valves are normally closed and may be opened to provide an alternate hot standby charging path as indicated above. The normal seal injection path is available; therefore, the position of the high head injection valves during hot standby is inconsequential.

The applicant requested a deviation from the independence criteria of Section C.5.c.(3) of BTP CMEB 9.5-1 for the mechanical penetration/containment fan enclosure area based on existing separation between the above two identified charging flow paths. The area is sectioned into compartments by concrete walls, with small openings for access. The staff reviewed the mechanical penetration/containment fan enclosure area during a site visit to evaluate the requested deviation. Because of separation between the seal injection and high head injection valves and low in situ combustible loadings, the staff concurs with the applicant that the present configuration will assure post-fire safe shutdown makeup capability for a postulated fire in this area. Therefore, the staff concludes that the alternate shutdown capability for the mechanical penetration/containment fan enclosure area is acceptable without independence from the fire area.

The applicant also requested deviations from Section III.G.3 of Appendix R to 10 CFR 50 for the control room and HVAC room, to the extent that it states that a fire suppression system should be installed in an area for which alternate shutdown capability is provided. As stated in Section 9.5.1 of the Seabrook Station SER, the staff has reviewed the applicant's fire protection program against SRP 9.5.1 (NUREG-0800), which contains, in BTP CMEB 9.5-1, the staff's fire protection guidelines. BTP CMEB 9.5-1 does not include a guideline recommending such a system. Therefore, a deviation from staff guidelines does not exist.

The applicant has provided alternative safe shutdown capability for the service water pump building independent of cables, systems, and components in this area. Redundant safe shutdown service water pumps, discharge valves, and pumphouse cooling fans are contained in the fire area such that a fire could prevent operation of the service water system. The alternative safe shutdown equipment required to operate in the event of a fire in the service water pump building consists of the cooling tower fans, cooling tower pumps, discharge valves, cooling tower air handling system, and service water valves needed to transfer from the service water pumps to the cooling tower pumps. The operators have the capability to control and monitor all equipment needed to transfer the service water supply from the service water pumps to the cooling tower pumps. Cooling tower operation is automatically initiated on a tower actuation signal that is generated on low station service water discharge pressure. This capability is independent of postulated fire damage in the service water pump building. For further discussion of cooling tower operation, see Section 9.2.5 of the Seabrook Station SER. Based on above, the staff concludes that the alternative shutdown capability for the service water pump building meets Section C.5.c of BTP CMEB 9.5-1 and is, therefore, acceptable.

Based on the foregoing discussion the staff concludes that the alternative shutdown capability, with approved deviations, meets Section C.5.c of BTP CMEB 9.5.1, and is, therefore, acceptable.

Electrical Cable Construction, Cable Trays, and Cable Penetrations

In the Seabrook Station SER the staff concluded that automatic sprinkler systems had been provided for cable concentrations in accordance with Section C.5.e. of

BTP CMEB 9.5-1. Subsequently, the staff expressed concern that the applicant may not have provided adequate fire protection in areas containing concentrations of cables. At the staff's request, the applicant submitted, by letter dated December 2, 1985, the criteria used to assess the fire hazards associated with concentrated quantities of cable insulation. The applicant's criteria adequately addressed the staff's concerns. Based on a review of the applicant's criteria, the staff finds this issue resolved.

Lighting and Communication

By letter dated January 24, 1986, the applicant requested deviations from Section III.J of Appendix R to 10 CFR 50 in the control room, switchgear room A, and switchgear room B. These deviations are under staff review and will be addressed in a future SER supplement.

9.5.1.5 Fire Detection and Suppression

Fire Detection

In the SER, the staff evaluated and approved deviations from Section C.6.a of BTP CMEB 9.5-1 to the extent that it states that fire detectors should be installed in all safety-related areas. In the December 2, 1985 letter the applicant identified additional safety-related areas that are not equipped with fire detectors. The staff was concerned that if a fire of significant magnitude occurred in any of these areas it would burn undetected and would damage redundant systems that are necessary for safe plant shutdown. However, the subject areas do not have significant concentrations of combustible materials or unmitigated fire hazards or contain only one shutdown division. The staff, therefore, has reasonable assurance that in the event of a fire in any of the subject locations, safe shutdown could be achieved and maintained. The staff, therefore, concludes that the lack of areawide fire detection systems in the locations delineated in the applicant's December 2, 1985 letter is an acceptable deviation from Section C.6.a of BTP CMEB 9.5-1.

Fire Protection Water Supply System

By letter dated January 24, 1986, the applicant requested a deviation from Section C.6.b.(11) of BTP CMEB 9.5-1 to the extent that it states that the fire protection water supply should consist of at least 300,000 gallons per tank. The applicant stated that 215,000 gallons of water is available for fire protection in each of the station's two fire protection water tanks. Either of these two separate water supplies can provide the largest expected water demand for any fixed fire suppression system installed in a safety-related area plus 500 gpm for hose streams for two hours. Therefore, the staff has reasonable assurance that an adequate water supply will be available for both automatic and manual fire suppression efforts in all safety-related areas. On this basis, the staff concludes that the existing fire protection water supplies are an acceptable deviation from Section C.6.b.(11) of BTP CMEB 9.5-1.

Sprinkler and Standpipe Systems

By letter dated December 2, 1985, the applicant requested a deviation from Section C.6.c of BTP CMEB 9.5-1 to the extent that it states that components used in fire protection systems should be UL listed or Factory Manual (F.M.) approved. Valves for the fire protection systems which serve Seismic Category I standpipes do not meet these guidelines. The steel valves installed are designed to specifications outlined in ANSI/ASTM B31.1. The staff concludes that these valves will provide at least the same level of protection as UL listed or F.M. approved valves. This is, therefore, an acceptable deviation from Section C.6.c(1) of BTP CMEB 9.5-1.

9.5.1.6 Fire Protection of Specific Plant Areas

Containment

By letter dated February 8, 1985, the applicant requested a deviation from Section C.7.a of BTP CMEB 9.5-1 for providing a container for the oil collection systems which will contain the entire inventory of the reactor coolant pump's lube oil systems.

Each of the four reactor coolant pumps contains approximately 240 gallons of oil. Two oil collection tanks each having a capacity of 320 gallons have been provided.

Each tank serves two pumps. Each tank is sized to hold the inventory of one pump plus 25 percent. However, if the lube oil systems for two pumps connected to the same tank were to fail simultaneously, there would be an excess of 160 gallons of oil per tank. To contain this excess oil, a seismically designed dike has been built around each tank. The tanks and their dikes are located such that the excess oil does not present a fire exposure hazard to any safety-related equipment. Additionally there is no ignition source near the diked areas. The staff concurs with the licensee that this combination of features is an acceptable deviation from Section C.7.a of BTP CMEB 9.5-1.

Control Room

In the SER, the staff approved the installation of carpeting with an ASTM E-84 flame spread rating of 25 in the control room. During the plant site audit, the applicant informed the staff that the carpeting installed had been tested in accordance with ASTM E-648, "Standard Test Method for Critical Radiant Flux of Floor-Covering Systems Using A Radiant Heat Energy Source," instead of ASTM E-84.

Direct correlation with the ASTM E-84 test results cannot be made. However, ASTM E-648 test results indicate that the proposed carpet presents no greater hazard than the previously approved carpet. The average critical radiant flux was determined to be greater than or equal to 0.45 watts/cm^2 by ASTM E-648. Therefore, the carpet is classified by NFPA as a Class I interior floor finish. The staff concludes that the installation of this carpet will not decrease the level of fire safety in the control room and is, therefore, an acceptable deviation from Section C.7.b of BTP CMEB 9.5-1.

9.5.1.8 Summary of Approved Deviations from BTP CMEB 9.5-1

The following deviations from BTP CMEB 9.5-1 were approved in the Seabrook Station SER:

- carpet in the control room

- lack of an automatic fire suppression system and 20-ft separation between redundant safety-related equipment required for safe shutdown in certain fire areas,

- lack of fixed suppression systems in the service water pump house, intake and discharge structure, and emergency feedwater pump building,

- lack of fire detectors in the control room logic cabinets, containment operating floor, diesel generator air intake areas DG-F-3E-A and 3F-A, primary auxiliary building fire zones PAB-F-42 filter areas and PAB-F-1K-Z pipe chase, turbine building ground floor el 21 ft-0 in. and mezzanine el 50 ft-0 in., service water cooling tower fire area CT-F-3-0, and the waste processing building fire areas W-F-2A-Z and 2B-Z,

- drains in the switchgear rooms,

- 1500-gallon diesel fuel day tanks,

- fuel oil storage tanks in the diesel generator building.

Based on the above evaluation, the staff concludes that the following additional deviations are acceptable:

- Lack of independence for the alternate shutdown capability from certain fire areas (9.5.1.4),

- non-fire-rated wall as described in Section 9.5.1.4,

- lack of fire dampers in certain HVAC ducts (9.5.1.4),

- non-fire-rated special-function doors (9.5.1.4),

- non-UL labeled dampers in certain fire areas (9.5.1.4),

- lack of automatic fire suppression and 20 feet of separation between redundant shutdown systems in containment, the primary auxiliary building and the mechanical penetration/containment fan enclosure area (9.5.1.4),

- lack of areawide fire detection in certain fire areas. (Section 9.5.1.5).

- fire protection water supply tanks' capacity less than 300,000 gallons. (Section 9.5.1.5)

- certain water control valves are not listed (Section 9.5.1.5).

9.5.1.9 Conclusions

The following items are unresolved; and will be addressed in a subsequent SER Supplement:

- Concerns raised during the staff's plant site audit of the applicant's fire protection program for Seabrook Station, Unit 1.

- Multiple high impedence faults concern.

- Emergency lighting deviations

9.5.4.1. EMERGENCY DIESEL ENGINE AUXILIARY SUPPORT SYSTEMS (GENERAL)

(3) Vibration of Instruments and Controls

By letter dated February 1, 1983, in response to a staff concern regarding vibration induced wear of diesel generator controls and instrumentation, the applicant committed to do the following:

(a) Qualify all equipment whose failure could degrade operation or cause shutdown of the engine will be performed, or

(b) Remove the "relay and terminal box" from the engine skid and mount as a free-standing, floor-mounted panel, or

(c) Qualify equipment within the relay and terminal box during pre-operational or qualification testing to confirm that actual equipment vibration is within the tolerances specified as acceptable by the manufacturer.

In the Seabrook SER (NUREG-0896, dated March, 1983) the staff found the above three alternatives acceptable. Futhermore, if alternatives (a) or (c) were used to resolve the issue, the staff required the applicant to submit the test results for staff review and evaluation.

By letter dated February 24, 1986, the applicant notified the staff that alternative (a) was used, and provided the test results for qualifying the control devices mounted in the relay and terminal panel. The applicant's test program involved measuring the vibration due to diesel generator (DG) operation, and then using this result to age the controls in a laboratory for an expected 40-year lifetime.

The test program showed that the controls are qualified for their location. Based on staff's evaluation of the test program and results, the staff concludes that its concern over vibration induced wear of diesel generator controls and instrumentation has been satisfactorily resolved.

11.5 PROCESS AND EFFLUENT MONITORING

In Section 11.5 of the Seabrook SER it was indicated that the applicant would be required to submit details of the effluent monitoring system in terms of its conformance with Table 2 and Regulatory Position C of Regulatory Guide 1.97. The applicant has provided this information. The staff finds that the Seabrook plant conforms to Table 2 and the Regulatory Position C in terms of effluents resulting from accidents.

Enclosure 2

Seabrook Station, Unit 1
Fire protection License Condition

The licensee shall implement and maintain in effect all provisions of the approved fire protection program as described in the Final Safety Analysis Report, the Fire Protection Program report, and the Fire Protection of Safe Shutdown Capability report for the facility (or as described in submittals dated __________) and as approved in the SER dated ________ (and Supplements dated ________) subject to the following provision:

> The licensee may make changes to the approved fire protection without prior approval of the Commission, only if those changes would not adversely affect the ability to achieve and maintain safe shutdown in the event of a fire.

Page	Line	Change
9-49	20	change "cool" to "maintain habit-ability of"
9-50	10	change "CC-V176" to "CC-V176 and CC-V256"
9-51	40	delete "1/2-"
9-52	15	delete "an"
9-52	15	change "system" to "capability"
9-52	16	change "system" to "capability"
9-52	38	change "system" (last word on line 38) to "capability"
9-52	39	change "system" to "capability"
9-52	41	change "A manual" to "Manual"
9-52	41	delete "system"
9-52	42	delete "also"
9-53	1	delete "sprinkler"
9-53	1	change "heat" to "cross zoned smoke"
9-53	23	change "Ionization smoke" to "Smoke"
9-53	25	change "in the areas for fire manual" to "for manual fire"

Enclosure 3

Seabrook Station, Units 1 and 2

SER Errata
Section 9.5.1, "Fire Protection"

Page	Line	Change
9-42	29	change "containment el" to "containment and el"
9-42	3	change "unit, feed" to "unit, hydraulic fluid power unit, feed"
9-42	13	change "high-pressure gas" to "high-pressure bulk gas"
9-46	10	change "PAB-F-1K-2" to "PAB-F-1K-Z"
9-46	19,20	delete "and automatic connection to a Class 1E emergency power bus"
9-46	last	change "fire is" to "fire pump is"
9-47	16	change "250 ft" to "approximately 250 ft"
9-48	1	change "safe shutdown" to "safety-related"
9-48	10,11	change "in the computer room and quality assurance storage and document" to "secondary alarm station computer room in the turbine building and the document"

Page	Line	Change
9-53	36	change "detection" to "suppression"
9-54	1	delete "sprinkler"
9-54	42	change "over" to "inside"
9-54	47	change "area DG-F-3AB-A" to "areas DG-F-3A-Z and DG-F-3B-Z"
9-54	47	change "50" to "51"
9-55	27,28	delete "Exterior building walls identified as 1-1/2-hour-minimum fire rating are concrete walls located below grade."
9-55	29	change "deluge" to "preaction"
9-55	30	change "heat" to "smoke and flame"
9-57	17	change "B" to "A"
9-57	24	change "1BA" to "1B-A"
9-57	39	change "V5" to "V4"
9-58	23	change "EFT" to "EFP"
9-59	1	change "SW-F-1E-A" to "SW-F-1E-Z"
9-61	1	change "safety-related" to "safe shutdown"
9-59	18	delete "only" and "the Unit 1"

Page	Line	Change
9-59	19	change "intakes" to "intake and discharge"
9-59	31	change "Safety-Related to "Shutdown"
9-59	34	change "located at various points" to "installed"
9-59	40	change "safety" to "safe"

safety. Justifications provided in support of the applicant's fire protection program were usually based on sound fire protection engineering principles.

Rating Category 2

3. Responsiveness to NRC Initiatives: With few exceptions, the licensee provided timely written and oral responses to the staff's requests for information.

Rating Category 2

B. Functional Area: Vibration of Diesel Generator Instrumentation

2. Approach to resolution of technical issues: Applicant's response to staffs concern was adequate, and commensurate with approaches taken by other applicants.

Rating Category 2

3. Responsiveness to NRC Initiatives: Applicant was slow in responding to staff concern; concern was identified in February 1983, but no response provided until February 1986.

   Rating Category 3

C. Functional Area: Containment Functional Design and Containment Isolation

1. Management involvement in assuring quality: Incorrect references and incomplete responses indicate that management involvement could be improved.

   Rating Category 3

2. Approach to resolution of technical issues: The information submitted does not fully resolve staff concerns.

   Rating Category 3

3. <u>Responsiveness to NRC Initiatives</u>: Applicant response could have been more timely since issues remain unresolved.

<u>Rating Category 3</u>

Enclosure 4

Seabrook Station, Units 1 and 2

Input to the SALP Process

A. Functional Area: Fire Protection

1. Management involvement in assuring quality: Throughout the review process the licensee's activities exhibited evidence of prior planning and assignment of priorities. Decisions were usually made at a level that ensured adequate management review. Management was aware of the importance of fire protection and took steps to see that the staff was provided the necessary information and assistance to complete its review.

Rating Category 2

2. Approach to resolution of techncial issues: During the various meetings, telecons, and in the documents submitted, the licensee's representatives displayed understanding of the staff's concerns with the level of fire protection. Commitments generally revealed a conservative approach toward providing an adequate level of fire

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

MAY 0 1 1986

Docket No.: 50-443

APPLICANT: Public Service Company of New Hampshire (PSNH)

FACILITY: Seabrook Station, Unit 1

A meeting with New Hampshire Yankee Division (NYH) of PSNH was held on April 23, 1986, to discuss comments on Section 3/4.6 of the proof and review version of the Seabrook Station Technical Specifications (STS) and to discuss scheduling problems. Some of the more significant issues discussed were:

1. PSNH asked that the pressure for determining containment integrity be changed from 46.8 to 48.7 psig but did not provide a basis for the change in the comments on the technical specifications. The applicant is considering submitting the results of a further reanalysis to justify accepting a higher temperature in the refueling water storage tank that would result in a higher containment pressure.

2. PSNH asked that for the containment air lock the technical specifications be changed to allow entry by opening the outer door when the inner door is inoperable for the purpose of repairing the inner door. The staff agreed to the change with a modification to limit the cumulative time to one hour per year for opening the outer door with an inoperable inner door.

3. PSNH agreed to provide justification for the operational limits on containment internal pressure.

4. PSNH asked that the technical specification for the containment ventilation system be changed to allow purging for specified reasons without a limitation on cumulative time. The staff agreed to apply a techincal specification being formulated as a potential replacement for the standard techincal specification.

5. Secondary system containment isolation valves have not yet been added to Table 3.6.2, CONTAINMENT ISOLATION VALVES.

D/23

6. PSNH asked that the time required to produce the design basis negative pressure in the annulus be increased from 1 to 5.4 minutes. The staff understood that offsite dose calculations assumed a time of 3.6 minute. PSNH agreed to determine the correct value

7. The applicant confirmed that a request is being made for an exemption to Appendix J, paragraph III.D.2.(b)(ii).

8. The applicant agreed to provide justification for proposed increases in action times for several systems.

9. The applicant agreed to verify specified differential pressure for the containment spray pumps.

10. The applicant was informed that the Seabrook STS was established on an optimistic schedule, and it is important that the milestones be met in order to support the June 30, 1986 fuel load date. It was further noted that the staff STS review is limited to docketed material; therefore, this has to be recognized for planning purposes in order to assure the STS milestone schedules can be met.

Victor Nerses

Victor Nerses, Project Manager
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J. Pulsipher
C. Li
V. Nerses

Applicant: W. Hall
G. Thomas
R. Sweeney

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

cc: See next page

PD#5
VNerses
4/30/86

Meeting Summary Distribution

Docket or Central File
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J. Partlow (Emergency Preparedness only)
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NRC Participants

C. Moon
J. Pulsipher
C. Li

cc: Licensee and Plant Service List

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

Changed Date

MAY 05 1986

Docket Nos.: 50-443
and 50-444

MEMORANDUM FOR: Vincent S. Noonan, Director
PWR Project Directorate #5
Division of PWR Licensing-A

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

SUBJECT: FORTHCOMING SEABROOK PUMP AND VALVE INSERVICE TESTING PROGRAM MEETING*

DATE & TIME: May ~~20-22~~ 13-15, 1986
8:30 a.m.

LOCATION: PSNH-NHYD, Seabrook Project Office
7910 Woodmont Avenue, Suite 1309
Bethesda, Maryland

PURPOSE: To have the applicant address the staff comments and question that form the attached agenda.

PARTICIPANTS:

PSNH-NHY	NRC
R. Sweeney, et al	N. Romney, et al

Victor Nerses

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

Enclosure: As stated

cc: See next page

* Meetings between NRC technical staff and applicants for licenses are open for interested members of the public, petitioners, intervenors, or other parties to attend as observers pursuant to "Open Meeting Statement of NRC Staff Policy", 43 Federal Register 28058, 6/28/78. Those interested in attending this meeting should make their intentions known to the Project Manager, V. Nerses, at (301) 492-8535, by no later than 1:00 p.m., May 19, 1986.

D|24

20 py

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AGENDA FOR

SEABROOK, UNIT 1

PUMP AND VALVE INSERVICE TESTING PROGRAM

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?

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.

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 stroke times will be affected by slight variations in the response times of the personnel performing the tests. However, the staff does require that the licensee assign a maximum limiting stroke time of 2 seconds to these valves in order to obtain this Code relief. Where this requirement cannot be met, the licensee is required to meet the Code. (See Note 25.)

4. The NRC has concluded that the applicable leak test procedures and requirements for containment isolation valves are determined by 10 CFR 50, Appendix J. Relief from Paragraphs IWV-3421 through -3425 (1980 Edition through Winter 1981 Addenda) for containment isolation valves presents no safety problem since the intent of these paragraphs is met by Appendix J requirements, however, the licensee must comply with the Analysis of Leakage

Rates and Corrective Action Requirements Paragraphs IWV-3426 and -3427 (1980 Edition through Winter 1981 Addenda). Additionally, those valves that serve both a containment isolation function and a pressure isolation function must be leak tested to both Section XI and Appendix J requirements.

5. Not all valves addressed in Relief Request 10 are Category A/C valves.

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

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?

2. Are valves MS-V94 and -V96 individually verified to full-stroke during testing? Do these valves perform a safety-related function in both the open and closed positions?

3. Can valves MS-V127 and -V128 be stroke timed during fail safe testing?

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.

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

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.

4. Should valves FW-V76, -V82, -V88, and -V94 be Category A/C in Figure 5.3? Relief Request 5 does not address valves FW-V82, -V88, and -V94 as stated in Note 4. Why has relief from exercising FW-V76 been requested twice and why is it categorized differently in those requests? Provide a detailed technical justification for not full-stroke exercising these four valves during each cold shutdown.

D. <u>Main Turbine and Steam Drains</u> P&ID 202086

1. What is the safety-related function of valves MS-V44, -V45, -V46, and -V47?

E. <u>Auxiliary Boiler Steam and Condensate Return</u> P&ID 202100

1. What is the safety-related function of valves AS-V175 and -V176?

F. <u>Diesel Generator Cooling Water</u>

1. Provide P&ID 202103 for our review.

G. <u>Leak Detection</u> 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.

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.

I. Fire Protection — P&ID 604146

1. Should valve V592 be listed as a passive valve? If not, it must be exercised in accordance with the requirements of Section XI.

J. Post Accident Sampling — P&ID 804978

1. Is valve SS-FV2857 stroke timed when it is exercised quarterly? Is this a rapid-acting valve?

2. Should valve SS-V273 be categorized A/C?

K. Component Cooling — P&IDs 804981 and 804982

1. Should valve CC-V32 be stroke timed when it is exercised quarterly?

2. Should the valve identified in Figure 5.3 as CC-V226 actually be CC-V266?

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

L. Floor Drain — P&ID 804994

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

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

M. <u>Reactor Coolant</u> 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?

2. Provide a more detailed technical justification for not full-stroke exercising valves RC-V22 and -V23 quarterly. Do these valves perform both a pressure boundary isolation function and a containment isolation function?

3. Provide a more detailed technical justification for not full-stroke exercising valves RC-V87 and -V88 quarterly. Do these valves perform both a pressure boundary isolation function and a containment isolation function?

N. <u>Reactor Coolant Pressurizer</u> 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?

O. <u>Residual Heat Removal</u> P&ID 805008

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

2. How are valves RH-V4 and -V40 full-stroke exercised during pump tests?

3. Provide a detailed technical justification for not full-stroke exercising valves RH-V14 and -V26 quarterly.

4. Provide a detailed technical justification for not full-stroke exercising valves RH-V15 and -V29 during cold shutdowns?

5. Provide a detailed technical justification for not full-stroke exercising valves RH-V30 and -V31 during cold shutdowns.

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

P. <u>Safety Injection Accumulators</u> P&ID 805009

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

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?

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.

4. Provide a detailed technical justification for not full-stroke exercising valves SI-V5, -V6, -V20, -V21, -V35, -V36, -V50, and -V51 during each cold shutdown. Does the accumulator injection test performed during refueling outages demonstrate that these valves will accommodate the required design flow rate for which credit is taken in the safety analysis? Can valves SI-V5, -V20, -V35, and -V50 be full-stroke exercised during cold shutdowns utilizing RHR system flow?

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

Q. <u>Safety Injection-High Head</u> P&ID 805010

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

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.

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.

4. Provide a detailed technical justification for not full-stroke exercising valves SI-V71 and -V96 during each cold shutdown. Relief Request 19 does not address these valves as stated in Note 19.

5. Review the safety-related function of valves SI-V77 and -V102 to determine if they should be categorized A.

6. Provide a detailed technical justification for not full-stroke exercising valves SI-V81, -V82, -V86, and -V87 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.

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

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

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?

12. In reference to Relief Request 20, what are the consequences of a loss of charging flow control? Can valves SI-V140, -V144, -V148, -V152, -V156, and -V297 be partial-stroke exercised at the Code-specified frequency?

13. Is Category A valve SI-V157 leak rate tested?

R. <u>Chemical and Volume Control/Purification</u> P&ID 805011

1. Provide a detailed technical justification for not full-stroke exercising valves CS-V142 and -V143 quarterly and during each cold shutdown.

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

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?

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

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

6. Provide a detailed technical justification for not full-stroke exercising valve CS-V177 quarterly. What type of operator is installed on this valve? What is its safety-related function?

7. Provide a detailed technical justification for not full-stroke exercising valves CS-V178, -V179, -V181, and -V182 quarterly. What is the safety-related function of these valves? Should valve CS-V180 be included in the IST program?

8. What are the consequences of full-stroke exercising valves CS-V185 and -V186 quarterly during power operation?

9. Provide a detailed technical justification for not full-stroke exercising valves RC-LCV459 and -LCV460 quarterly. These valves are incorrectly identified on page 25 of 47, Figure 5.3.

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

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

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?

13. Provide a detailed technical justification for not full-stroke exercising valves CS-LCV112B and -LCV112C quarterly. Why is it proposed to exercise these identical valves at different frequencies?

14. What is the safety-related function of valve CS-V213?

15. Review the safety-related function of valves CS-V154, -V158, -V162, and -V166 to determine if they should be included in the IST program and categorized A.

S. <u>Component Cooling</u> P&ID 805016

1. Provide a detailed technical justification for not full-stroke exercising valves CC-TV2771-1 and -TV2771-2 at least at a refueling outage frequency. Relief Request 29 does not address these valves as stated in Note 26.

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.

T. <u>Component Cooling</u> 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.

2. Provide a detailed technical justification for not full-stroke exercising valves CC-V341, -V426, and -V427 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.

U. <u>Service Water</u> P&ID 805019

1. Review the safety-related function of valve SW-V75 (Location D-2) to determine if it should be included in the IST program and tested in accordance with Section XI.

2. Review the safety-related function of all check valves on P&ID 805019 that are utilized as vacuum breakers to determine if they should be included in the IST program. The NRC staff position concerning check valves utilized as vacuum breakers is that they should be included in the IST program, categorized C, and tested as closely as possible to the requirements of IWV-3520.

V. <u>Nitrogen Gas</u> 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 values?

W. Reactor Makeup Water P&ID 805021

1. Provide P&ID 805021 for our review.

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

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

X. Combustible Gas Control P&ID 805022

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

2. Review the safety-related function of valves CGC-4 and -25 to determine if they should be categorized A/C.

3. Review the safety-related function of valves CGC-3, -10, -24, and -32 to determine if they should be categorized A.

4. Why is valve CGC-V46 identified as an active valve and exercised quarterly and then relief requested from exercising in Relief Request 8?

Y. Containment Spray P&ID 805023

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

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.

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

AA. <u>Primary Component Cooling</u> 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.

2. What is the testing frequency of relief valves CC-V474 and -V840?

BB. <u>Primary Component Cooling</u> P&ID 805029

1. Provide a detailed technical justification for not full-stroke exercising valves CC-V168, -V557, -V121, and -V122 quarterly in accordance with Section XI. What is the correct valve number for -V557? Relief Request 22 does not address these valves and it also appears that Note 22 does not apply.

2. What is the testing frequency of relief valves CC-V410 and -V845?

CC. <u>Demineralized Water</u> P&ID 805030

1. What is the testing frequency of relief valve DM-V18?

DD. <u>Service Water</u> 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.

EE. <u>Service Air</u> 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.

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

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

7. Review the safety-related function of valve CBS-V14 to determine if it should be categorized A.

8. Review the safety-related function of valve CBS-V17 to determine if it should be categorized A.

9. Review the safety-related function of valve CBS-V18 to determine if it should be categorized A/C. 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?

Z. <u>Sample Service</u> P&ID 805025

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

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

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.

Pumps

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.

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

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