



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D.C. 20555-0001

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION  
RELATED TO AMENDMENT NO. 170 TO FACILITY OPERATING LICENSE NO. DPR-35

BOSTON EDISON COMPANY

PILGRIM NUCLEAR POWER STATION

DOCKET NO. 50-293

1.0 INTRODUCTION

By application dated April 25, 1996, as supplemented on December 23, 1996, Boston Edison Company (BECO or the licensee) requested changes to the Technical Specifications (TSs) for Pilgrim Nuclear Power Station. The proposed changes will revise the definition of Operable-Operability, revise TSs and associated Bases Section for TSs 3.9.B.2, 3.9.B.3, "Auxiliary Electrical System," TS 3.4.B.1, "Standby Liquid Control System," TSs 3.7.B.1.a, c, and e, and 3.7.b.2.a, c, and e, "Standby Gas Treatment System and Control Room High Efficiency Air Filtration System," and TSs 4.5.F.1, "Core and Containment Cooling Systems," and delete TS 3.7.B.1.f, "Standby Gas Treatment System and Control Room High Efficiency Air Filtration System." The December 23, 1996, letter provided clarifying information and additional changes that did not change the initial proposed no significant hazards consideration determination.

2.0 EVALUATION

The licensee's April 25, 1996, letter to the NRC proposes to reformat and modify various TS Sections as noted above to make them consistent with the standard technical specifications (STS). The staff review compared the current requirements with the proposed requirements to ensure that either current TS limits are maintained or that a reasonable safety bases exist for adopting the STS requirements.

2.1 Requirements Maintained or Changed by the Proposed TS Change

The staff compared the current TS requirements with the proposed TS to ensure all the original requirements are maintained or a basis for modification or deletion is provided. An evaluation of the proposed TS changes are provided by the notes that follow. If a note does not appear, the staff has concluded that the original TS requirements have been maintained. Below is a table of the current requirements and their equivalent in the proposed TS:

DEFINITIONSCURRENT REQUIREMENTSLocation in Proposed TS

1.0 Definition of Operability Definition of Operability (Note 1)

NOTES

1. The current Pilgrim "Operable-Operability" definition considers systems/subsystems as operable provided that both sources of onsite (emergency) and offsite (normal) AC power are available. Thus, when one source of power is not available, Pilgrim's current definition requires the supported systems to be declared inoperable. The revised definition redefines the AC power needs to allow either onsite or offsite power available for systems/subsystems to be considered operable. Individual emergency diesel generator (EDG) Limiting Conditions for Operation (LCO) will be incorporated into specific system specifications to ensure an operable emergency power source is always available to the operable systems/subsystems. Reducing the need for both onsite and offsite power sources provides additional operational flexibility by allowing redundant systems/subsystems to still be considered "operable" within the requirements of their functional operability requirements. The licensee will adopt the current definition from the STSs. The NRC staff has reviewed TSs 3.9.B.1, 2, 3, and 4, and concluded that with the adoption of the standard definition and the proposed revisions to TSs 3.4.B.1, 3.7.B.1.c, 3.7.B.1.e, 3.7.B.2.c, and 3.7.B.2.e, system operability would require one safety train with both onsite and offsite AC sources and the redundant train with either onsite or offsite AC. Based on the above, the staff concludes that the change to the definition of operable is acceptable and is consistent with the STSs.

Standby Liquid Control (SLC) System TS ChangesCURRENT REQUIREMENTSLocation in Proposed TS

3.4.B.1 Operation with Inoperable Components 3.4.B.1 (Note 2)

NOTES

2. The proposed change to the LCO during plant operation adds a new condition requiring the EDG associated with the operable train of SLC to be operable. Although the revised definition of "Operable-Operability" would only require either the normal or emergency power sources to be available under these circumstances, the remaining train of SLC will include the requirement to have their associated emergency power source available. This provides assurance that the operable train will have an emergency source of power in the unlikely event of a loss of offsite power. Based on the above, the staff concludes that this TS change is acceptable and meets the intent of the STS.

Standby Gas Treatment System TS ChangesCURRENT REQUIREMENTSLocation in Proposed TS

3.7.B.1.a	Applicability	3.7.B.1.a (Note 3)
3.7.B.1.b.1	DOP Tests on HEPA Filters	3.4.B.1.b.1
3.7.B.1.b.2	Carbon Sample Analysis	3.7.B.1.b.2
3.7.B.1.c	Operation with Inoperable Components	3.7.B.1.c (Note 4)
3.7.B.1.d	Fan Speed	3.7.B.1.d
3.7.B.1.e	Fuel Movement	Deleted (Note 5)
3.7.B.1.f	Operation with Inoperable Components- Refueling	3.7.B.1.e (Note 6)

NOTES

3. TS 3.7.B.1.a will be revised to eliminate the association to the diesel generators based on the proposed revision to the definition of "Operable-Operability" (See Note #1). The action requirements will be relocated to TS 3.7.B.1.c for reactor operation when the primary containment and reactor vessel are closed. A new requirement 3.7.B.1.e will be added to address actions to be taken during refueling operations. The proposed TS will reflect the change that TS requirements 3.7.B.1.c, e, and f will be revised/replaced by new TS requirements 3.7.B.1.c and e. The licensee referenced the secondary containment TS to define the applicable modes. The staff has discussed this with BECo and determined that statement of the applicable modes would provide a more definitive TS. By letter dated December 23, 1996, the licensee modified the proposed TS to add the specific Modes of Applicability. Based on the above, the staff concludes that these TS changes are acceptable and meets the intent of the STS.

The staff has also noted that the licensee proposed to delete both trains inoperable action statement. By letter dated December 23, 1996, the licensee has agreed not to delete this 36-hour shutdown action. In addition, the action will be made consistent with 3.7.B.1.c which requires the plant to be in cold shutdown in 36 hours.

4. The proposed changes to the LCO during plant operation are mostly editorial except for the addition of the new condition requiring the EDG associated with the operable train of SGT to be operable. This condition will be added as a result of the revised EDG LCO as discussed previously in Note #1. Although the revised definition of "Operable-Operability" would only require either the normal or emergency power sources to be available under these circumstances, the remaining train of SGT will include the requirement to have the associated emergency power source available. This provides assurance that the operable train will still have an emergency source of power in the unlikely event of a loss of offsite power. The 7 day allowed outage time is based on consideration of such factors as the availability of the operable redundant SGT

subsystem and the low probability of a DBA occurring during this period. The 7 days is consistent with the current TSs and the STS. The required action time of 36 hours for shutdown was relocated from TS 3.7.B.1.a and modified to require cold shutdown to be consistent with the STS. The allowed completion time is based on operating experience to allow the plant to reach the required plant condition from full power in an orderly manner without challenging plant conditions. The 36 hours is consistent with the current TSs and the STS. A condition not addressed by the STS is fuel handling operations during reactor operation. In this case, BECo has proposed that all fuel handling operations be terminated in 2 hours upon not meeting the action statement. The 2 hours will provide sufficient time for fuel handling operations in progress to be completed. Based on the above, the staff concludes that these TS changes are acceptable and meets the intent of the STS.

The staff has informed BECo that the requirement to test redundant components was included in early TS to provide a positive demonstration that a loss of safety function had not occurred. This requirement can now be deleted because the added assurance by testing is not sufficient to justify the loss of safety function during the test, provided required periodic surveillance testing is current and that there are no known reasons to suggest that the alternate train is inoperable. The periodic surveillance tests and the proposed verifications confirm that the redundant systems/components are operable and are sufficient to demonstrate the operability of the redundant system/component. These operability verifications can be accomplished by examination of appropriate plant records; e.g., surveillance test records, equipment tagging records, operating logs, and shift turnover records. The operability verification would involve an assessment within 2 hours of the cause of the system inoperability and a judgment as to the likelihood that the opposite train is similarly affected. By letter dated December 23, 1996, the licensee proposed to modify the proposed TS to delete the testing of the redundant train when one train has been declared inoperable. The staff concludes that this TS change is consistent with current staff guidance on the testing of redundant trains and therefore is acceptable.

5. Current TS 3.7.B.1.e will be deleted. When one train is inoperable, this TS prevented fuel movement from being started. Provisions were added to allow fuel movement with one inoperable train of SGT for 7 days as long as the remaining train of SGT is verified operable within 2 hours, and the EDG associated with the operable train is operable. Based on the above, the staff concludes that this TS change is acceptable and is consistent with the STS.

6. With the change in the definition of Operability, TS 3.7.B.1.f is no longer applicable as the requirement to have both trains of EDG during refueling is no longer required. Existing SGT TS 3.7.B.1.f will be replaced by the proposed change to TS 3.7.B.1.e, which makes the compensatory measures formerly contained in (f) unnecessary. Former references to (f) are revised to (e) in TS 3.7.B.1.a and 3.7.B.1.c. Previous TS 3.7.B.1.e provided conditions for not entering the SGT LCO when the train did not have its safety-related bus and/or EDG. New TS 3.7.B.1.e provides an LCO for an inoperable SGT train during refueling. Refueling operations are allowed to continue for 7 days based on the verification of operability of the remaining train within 2 hours and the requirement that it's associated EDG also be operable. With one train out of service, a single failure could possibly prevent the remaining train from achieving its stated design purpose. The 7-day completion time is based on consideration of such factors as the availability of the operable redundant SGT subsystem and the low probability of a DBA occurring during this period. After 7 days, the operable SGT system must be placed in operation for the refueling activities to continue. This action places the train in the active operational mode thereby providing the safety actions essential to avoiding unacceptable safety results associated with abnormal operational transients and accidents. In this condition, the remaining operable SGT subsystem is adequate to perform the required radioactivity release control function. In addition, because the SGT is designed to automatically start upon receipt of a high radiation signal in the secondary containment, operating the system eliminates a potential failure mechanism. If the SGT system is not placed in operation all fuel activities must be suspended immediately. Based on the above, the staff concludes that this TS change is acceptable and is consistent with the STS.

#### Control Room High Efficiency Air Filtration (CRHEAF) System TS Changes

##### CURRENT REQUIREMENTS

##### Location in Proposed TS

3.7.B.2.a	Applicability	3.7.B.2.a (Note 7)
3.7.B.2.b.1	DOP Tests on HEPA Filters	3.7.B.2.b.1
3.7.B.2.b.2	Carbon Sample Analysis	3.7.B.2.b.2
3.7.B.2.c	Operation with Inoperable Components	3.7.B.2.c (Note 8)
3.7.B.2.d	Fan Speed	3.7.B.2.d
3.7.B.2.e	Operation with Inoperable Components- Refueling	3.7.B.2.e (Note 9)

##### NOTES

7. TS 3.7.B.2.a will be revised to eliminate the association to the diesel generators based on the proposed revision to the definition of "Operable-Operability" (See Note #1). The proposed TS will reflect the change that TS requirements 3.7.B.2.c and e will be revised/replaced by new TS requirements 3.7.B.2.c and e. The action requirement will be relocated to TS 3.7.B.2.c for reactor operation and when the primary containment and reactor vessel are

closed. A new requirement 3.7.B.2.e will be added to address actions to be taken during refueling operations. The licensee referenced the secondary containment TS to define the applicable modes. The staff has discussed this with BECo and determined that statement of the applicable modes would provide a more definitive TS. By letter dated December 23, 1996, the licensee modified the proposed TS to add the specific Modes of Applicability. Based on the above, the staff concludes that these TS changes are acceptable and meets the intent of the STS.

The staff has also noted that the action statement for both trains inoperable does not exist. By letter dated December 23, 1996, the licensee has agreed not delete this 36 hour shutdown action. In addition, the action will be made consistent with 3.7.B.1.c which requires the plant to be in cold shutdown in 36 hours.

8. The proposed changes to the LCO during plant operation are mostly editorial except for the addition of the new condition requiring the EDG associated with the operable train of CRHEAF to be operable. This condition is added as a result of the revised EDG LCO as discussed previously in Note # 1. Although the revised definition of "Operable-Operability" would only require either the normal or emergency power sources to be available under these circumstances, the remaining train of CRHEAF will include the requirement to have the associated emergency power source available. This provides assurance that the operable train will still have an emergency source of power in the unlikely event of a loss of offsite power. The 7-day allowed outage time is based on consideration of such factors as the availability of the operable redundant CRHEAF subsystem and the low probability of a DBA occurring during this period. The 7 days is consistent with the current TSs and the STS. A condition not addressed by the STS is fuel handling operations during reactor operation. In this case, BECo has proposed that all fuel handling operations be terminated in 2 hours upon not meeting the action statement. The 2 hours will provide sufficient time for fuel handling operations in progress to be completed. Based on the above, the staff concludes that these TS changes are acceptable and meets the intent of the STS.

The staff has informed BECo that the requirement to test redundant components was included in early TS to provide a positive demonstration that a loss of safety function had not occurred. This requirement can now be deleted because the added assurance by testing is not sufficient to justify the loss of safety function during the test, provided required periodic surveillance testing is current and that there are no known reasons to suggest that the alternate train is inoperable. The periodic surveillance tests and the proposed verifications that the redundant systems/components are operable are sufficient to demonstrate the operability of the redundant system/component. These operability verifications can be accomplished by examination of appropriate

plant records; e.g., surveillance test records, equipment tagging records, operating logs, and shift turnover records. The operability verification would involve an assessment within 2 hours of the cause of the system inoperability and a judgment as to the likelihood that the opposite train is similarly affected. By letter dated December 23, 1996, the licensee proposed to modify the proposed TS to delete the testing of the redundant train when one train has been declared inoperable. The staff concludes that this TS change is consistent with current staff guidance on the testing of redundant trains and therefore is acceptable.

9. With the change in the definition of Operability, TS 3.7.B.2.e is no longer applicable as the requirement to have both trains of EDG during refueling available is no longer required. CRHEAF TS 3.7.B.2.e will be replaced by a new TS 3.7.B.2.e, which makes the compensatory measures formerly contained in (e) unnecessary. New TS 3.7.B.2.e will provide a LCO for an inoperable CRHEAF train during refueling. Refueling operations are allowed to continue for 7 days based on the verification of operability of the remaining train within 2 hours and the requirement that its associated EDG also be operable. With one train out of service, a single failure could possibly prevent the remaining train from achieving its stated design purpose. The 7-day completion time is based on consideration of such factors as the availability of the operable redundant CRHEAF subsystem and the low probability of a DBA occurring during this period. After 7 days, the operable CRHEAF subsystem must be operated for 15 minutes every 24 hours for the refueling activities to continue. The CRHEAF has no automatic start signals and initiation is manual. The CRHEAF has credible operating history on demand and continuous operation would not provide any additional assurance of system operability. In addition, the CRHEAF is of lower capacity than the normal HVAC system for the control room and extended use of the CRHEAF could make the control room uncomfortable for normal refueling activities. The remaining operable CRHEAF subsystem is adequate to perform the required radioactivity release control function. If the CRHEAF subsystem is not operated daily, all fuel activities must be suspended immediately. Based on the above, the staff concludes that this TS change is acceptable and is consistent with the STS.

#### AUXILIARY ELECTRICAL SYSTEM TS CHANGES

##### CURRENT REQUIREMENTS

##### Location in Proposed TS

3.9.B.1	Loss of incoming power	3.9.B.1 (Note 10)
3.9.B.2	Loss of Startup and Shutdown Transformers	3.9.B.2 (Note 10)
3.9.B.3	System Specific LCOs	3.9.B.3 (Note 11)

##### NOTES

10. The TS 3.9.B.1 and 2 requirements to demonstrate both EDGs and

associated emergency buses operable will be deleted. This change is based on the NRC guidance provided in item 10.1 of Generic Letter 93-05, "Line-Item Technical Specification Improvements to Reduce Surveillance Requirements for Testing During Power Operation." The requirement to test redundant components was included in early TS to provide a positive demonstration that a loss of safety function had not occurred. This change is similar as it requires the demonstration of onsite power on the loss of an offsite power source. The logic for the testing of redundant trains can be applied to this situation also. The requirement for testing of the EDGs can now be deleted because the added assurance by testing is not sufficient to justify the loss of safety function during the test, provided required periodic surveillance testing is current. The periodic surveillance tests that the redundant systems/components are operable are sufficient to demonstrate the operability of the redundant system/component. These operability verifications can be accomplished by examination of appropriate plant records; e.g., surveillance test records, equipment tagging records, operating logs, and shift turnover records. The staff agrees that the proposed TS to delete the testing of the EDG when offsite power has been declared inoperable is acceptable.

11. TS 3.9.B.3 will be revised to include references to other sections in the TS that require continued operability of the remaining train of equipment that depends on the operable diesel generator as a source of emergency power. Adding additional system operability requirements to TS 3.9.B.3 will provide a positive measure to prevent entry into the EDG LCO if any redundant system that relies on the operable diesel generator for its source of emergency power is out of service. The following systems were added SLC, SGT, and CRHEAF to the TS which currently includes the low pressure cooling and containment cooling systems. This logic is consistent with the STS which requires an action to verify that if a train has an inoperable power source that the redundant train does not have an inoperable feature which would leave the plant with the loss of a required feature (See Note 1). Based on the above, the staff concludes that this TS change is acceptable and is consistent with the STS.

#### SURVEILLANCE REQUIREMENTS

#### CORE AND CONTAINMENT COOLING SYSTEMS

#### CURRENT SURVEILLANCE

#### Location in Proposed TS

4.5.F.1      1 Diesel Inoperable Surveillance      4.5.F.1 (Note 12)

#### NOTES

12. TS 4.5.F.1 will be revised to delete the daily testing of the operable diesel generator when the other EDG becomes inoperable



(See Note 10). Instead, a determination must be made within 24 hours that a common cause failure does not exist for the operable EDG or the diesel generator must be tested. Actions are also added to verify breaker alignment and indicated power availability for each offsite circuit. This verification assures AC power availability without compromising the AC power distribution. By letter dated December 23, 1996, the licensee proposed to correct a typographical error the staff discovered by changing the surveillance to be performed from 4.9.A.1.2 to 4.9.A.1.a. Surveillance 4.9.A.1.2 is associated with breaker alignment and is an incorrect reference. In addition, by letter dated December 25, 1996, the licensee has added the words "within 1 hour" and "thereafter" to the breaker alignment sentence to be consistent with the STS. Based on the above, the staff concludes that this TS change is acceptable and is consistent with the STS.

#### STANDBY GAS TREATMENT SYSTEM

##### CURRENT SURVEILLANCE

##### Location in Proposed TS

4.7.B.1.a	General Operability Test	4.7.B.1.a
4.7.B.1.b	In-place cold DOP Testing	4.7.B.1.b

#### CONTROL ROOM HIGH EFFICIENCY AIR FILTRATION SYSTEM

##### CURRENT SURVEILLANCE

##### Location in Proposed TS

4.7.B.2.a	Pressure Drop Tests	4.7.B.1.a
4.7.B.2.b	General Operability Test	4.7.B.1.b
4.7.B.2.c	Inlet Heaters Test	4.7.B.1.c
4.7.B.2.d	Humidistats Test	4.7.B.1.d

The staff has concluded that the proposed TS specify more clearly when SBT and CRHEAF is required, what actions to take if these systems are inoperable, and time frames for completing the actions. The removal of testing of redundant trains is consistent with current NRC policy. Based on the above, the staff concludes that the proposed TSs enhance the current TS by making them more definitive and supplementing them with action statements and required completion times and, therefore, the changes are acceptable. In addition, the staff has reviewed these proposed changes and concluded that the proposed changes are consistent with the STS.

### 3.0 BASES SECTION

The licensee has revised the associated BASES sections related to the above TS changes for the SGT and CHREAF systems. The proposed changes modify the BASES section to describe the action taken should an inoperable train of SGT or CRHEAF be inoperable for greater than 7 days during a refueling. As noted above the proposed TS changes are consistent with the STS and the BASES sections have been changed to reflect the new requirements. The new BASES pages B3/4.7-10 and 12 are included with the new TS pages.

## 5.0 STATE CONSULTATION

In accordance with the Commission's regulations, the Massachusetts State official was notified of the proposed issuance of the amendment. The State official had no comments.

## 6.0 ENVIRONMENTAL CONSIDERATION

The amendment changes a requirement with respect to installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20 and changes surveillance requirements. The NRC staff has determined that the amendment involves no significant increase in the amounts, and no significant change in the types, of any effluents that may be released offsite, and that there is no significant increase in individual or cumulative occupational radiation exposure. The Commission has previously issued a proposed finding that the amendment involves no significant hazards consideration, and there has been no public comment on such finding (61 FR 31172). Accordingly, the amendment meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b) no environmental impact statement or environmental assessment need be prepared in connection with the issuance of the amendment.

## 7.0 CONCLUSION

The Commission has concluded, based on the considerations discussed above, that (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendment will not be inimical to the common defense and security or to the health and safety of the public.

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Date: February 10, 1997